ONE-STOP CHILD ENRICHMENT AND SPORTS CENTRE SYSTEM

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UNIVERSITI TUNKU ABDUL RAHMAN

ONE-STOP CHILD ENRICHMENT AND SPORTS CENTRE SYSTEM

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A project report submitted in partial fulfilment of the requirements for the award of Bachelor of Science (Honours) Software Engineering

Lee Kong Chian Faculty of Engineering and Science Universiti Tunku Abdul Rahman

May 2024

DECLARATION

I hereby declare that this project report is based on my original work except for citations and quotations which have been duly acknowledged. I also declare that it has not been previously and concurrently submitted for any other degree or award at UTAR or other institutions.

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ABSTRACT

Enrichment programs, encompassing sports clubs, martial arts, dance classes, academic lessons and other extracurricular activities played a vital role in children's development. However, in Malaysia, parents face challenges in searching and comparing these activities due to the lack of a centralized platform. Therefore, the One-Stop Child Enrichment and Sports Centre System is introduced and aimed to fill this gap by offering a one-stop platform where parents can easily find suitable extracurricular activities for their children, while allowing service providers to advertise their programs. The system provides parents with a centralized platform to search, filter, compare and enrol in various enrichment programs and sports activities for their children. It also offers efficiency and visibility for activity providers to showcase their offerings and attract a wider audience. The system also implemented Single Sign-On (SSO) to ensure security and improve the user experience for parents. Moreover, the project utilized an iterative and incremental software development methodology, with initial planning followed by iterative phases of requirements gathering, analysis, design, implementation, testing, and evaluation. Besides, the development tools that used in this project are including Vue.js, Laravel, MySQL, Visual Studio Code and Pusher were employed to build the system. All objectives of this project have been successfully achieved, culminating in the development and implementation of the system, while several recommendations for future improvements also have been identified.

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LIST OF SYMBOLS / ABBREVIATIONS

API	Application Programming Interface
CSS	Cascading Style Sheets
ERD	Entity Relationship Diagram
HTML	HyperText Markup Language
HTTP	HyperText Transfer Protocol
PHP	Hypertext Preprocessor
SDLC	Software Development Life Cycle
SSO	Single-Sign On
SUS	System Usability Scale
UAT	User Acceptance Test

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CHAPTER 1

INTRODUCTION

1.1 Introduction

In today's fast-paced world, the parents are increasingly determined to provide their children with the best possible educational advantage and equip their children with a competitive advantage that will serve them well in the future. As Rosalind Ahju who is a senior lecturer at HELP University highlighted that today's parents understand the value of providing a head start in formal learning. This understanding drives them to send their children to classes from an incredibly young age with some enrolling their kids as early as six months old (TheStar, 2022). They are actively seeking out enrichment centres that offer a wide array of a typical skills ranging from robotics and coding to car pantry and sewing. As the importance of equipping children with essential 21st-century skills intensifies, these enrichment classes have become a fundamental part of a child's academic journey (TheStar, 2022).

Moreover, early exposure to a diverse range of lessons, as underscored in the news article by (Kiddy123.com, 2023), allows children to explore their passions and ambitions. According to Bidjerano and Newman's (2010) study, parents of North American children have more autonomy in choosing their children's enrichment activities than do parents of East Asian children. Parents in North American are played more active role in facilitating their children to participate in enrichment and sport activities. However, there has been an evolution in focus in Malaysia's parental approach. In Malaysia, parents are increasingly recognizing the value of sending their children to enrichment classes which provide a little more support for struggling learners while offering a competitive advantage in the classroom.

Beyond academic proficiency, enrichment programs aimed to instil a love of learning, critical thinking abilities and sharpen the interpersonal skills. Some example of enrichment activities are robotic and coding workshops, languages classes, art workshops, music lessons, science and STEM programs and so on. On the other hand, Hedstrom and Gould (2004) stated that the atmosphere of sports has become increasingly more competitive in nature during recent years. This is because it has constitute deeply engaging with significant implication for physical, psychological, emotional and social development. The sport activities can help the children develop motor skills, coordination, endurance and discipline. The sports activities involved physical exercises and games that promote physical fitness, teamwork and competition. For example, soccer, basketball and volleyball are the team sports that can learn the cooperation, communication and sportsmanship. Besides, the individual sports like swimming, gymnastics and martial arts can foster self-discipline, determination and personal achievement. Both enrichment and sports activities play essential roles in a child's overall development.

In line with this growing demand for unique enrichment and sports activities, the One-Stop Child Enrichment and Sports Centre System is a webbased platform, also served as a centralized platform that streamline the finding process, enrolment, communication process and accessing the enrichment or sport activities for their children. The system aimed to provide parents with a centralized platform where they can easily search, filter, and compare various enrichment programs and sports activities for their children. By offering a comprehensive range of activities in one system, parents no longer need to spend time and effort for searching through multiple websites or physically visiting different centres to find suitable enrichment programs. At the same time, the system also aimed to enhance efficiency for service providers a platform to showcase their offering, advertise their programs and attract a wider audience by bringing together diverse programs and service providers in one place.

1.1 Background of the Problem

In Malaysia, parents have faced challenges in finding and enrolling their children in appropriate enrichment and sport activities. The traditional process of finding suitable enrichment and sports activities for children has been a cumbersome task for parents. This is because they often had to rely on scattered information from flyers, community centres, hoarding advertisement or wordof-mouth recommendations so that making it challenging to explore a wide range of options (Ali, 2021). Some of the parents are finding the various activities or programs across multiple websites or physical location. This finding process make it difficulties for the parents to find activities that match their child's unique interests, age groups and developmental needs. This is because lack of the personalized recommendations, so parents need to manually filter through an overwhelming number of options of activities which makes search time-consuming. Besides, some of the parents only can get information, review or feedback about enrichment and sport activities from the other parents due to lack of rating and review system (LeRoy, 2023). This method will affect the parents to make well-informed decisions and resulting in mismatches between activities and child's unique needs.

Additionally, the traditional enrolment process involving manual paperwork, phone calls, and in-person visits to service providers further adds inconvenience and delays. The parents usually are quite busy with their work, they don't have extra time to visit the activity centres physically or navigate through multiple steps for registration (Kirsten et.al, 2018). These fragmented approached often led to a time-consuming and cumbersome experience for them and also increase the complexity of process significantly. Furthermore, the process is further disrupted by the limited communication channels between parents and service providers result in missed opportunities to update and share important information. Since their outreach efforts may be hampered if their programs are unnoticed among an enormous number of options available. As a result, parents might miss out important program updates, scheduling adjustment or essential guidelines.

Unfortunately, there is currently no centralized platform in Malaysia that provides a comprehensive overview of available enrichment and sport activities for children. This lack of a one-stop solution means that parents must invest significant effort and time in searching and comparing programs individually or frequently relying on word-of-mouth recommendations and limited local resources. The absence of a centralized platform not only impacted parents but also created obstacle for service providers in promoting their programs effectively. The service providers offer child enrichment and sports programs often struggle to reach their target audience effectively because their programs may go unnoticed among many different options available. This limitation undermined their efforts to communicate the unique benefits and features that set their programs apart. Therefore, despite the fact that their offerings are innovative and well-structured but they are unable to capture the attention of parents seeking suitable activities for their children due to the lack of an effective advertising channel.

1.2 Problem Statements

The three main problems faced by parent and service providers in Malaysia are identified. Firstly, the problem that faced by parents are inefficient and timeconsuming search process when seeking enrichment and sports activities for their children. Secondly, the problem is limited exposure for service providers to reach their target audience. The last problem is the inefficiency of traditional manual login process for parents.

1.2.1 Inefficient and Time-Consuming Search Process

Parents in Malaysia are faced with the challenging task of finding appropriate enrichment and sport activities for their children which frequently navigating through a fragmented landscape of different websites and physically visiting various activity centres. These approaches are highly time-consuming and inefficient because the parents required to access each website separately as the information is spread across different platforms. Each platform may have its own set of events, timetables, age suitability, fees and registration procedures so making it difficult for parents to gather all the necessary information in a single and accessible place. As a result, parents must spend substantial time and effort to gather and compare information from multiple sources that spread over several websites, directories and physical locations. According to Dell'Antonia's book, a single survey found that 35% of parents expressed that managing their child's school and extracurricular activities arrangements is more stressful than dealing with taxes (Strauss, 2018). This stress is compounded by the need for some parents to physically visiting numerous locations to obtain information, further burdening their already busy lives with work schedules, household responsibilities and managing their children's daily routines. Hence, parents have limited time for exhaustive research which often leads to frustration and the potential overlook of valuable enrichment opportunities that might be available elsewhere.

This current fragmented approach to finding enrichment and sport activities in Malaysia imposes significant challenges on parents. It is not only waste the time and effort of parents but also hinders their ability to make a wellinformed decision regarding their children's development. By addressing this issue, a centralized platform can be developed to aggregate all the information in one place to streamline the search process so that parents can easily discover, compare and register for suitable enrichment and sports programs for their children (Ellucian, 2020).

1.2.2 Limited Exposure for Service Providers

The absence of a centralized platform for child enrichment and sports activities not only impacts parents but also poses challenges for service providers offering these programs. With no comprehensive and standardized platform to showcase their offerings, service providers faced a limited exposure to their target audience, hindered their ability to effectively promote and market their enrichment programs. They only rely on their individual marketing efforts and word-of-mouth referrals to attract potential participants. This decentralized approach made it challenging for them, particularly smaller or lesser-known establishments to gain visibility and recognition in a crowded market. As a result, some valuable and innovative enrichment programs may go unnoticed, preventing service providers from reaching a wider audience of interested parents and children.

Besides, service providers cannot convey essential details about their programs in a standardized manner. The important information involves activities or programs descriptions, schedules, fees, and contact details might be scattered across different websites, directories, or offline materials, making it difficult for parents to access and compare these details easily. Consequently, service providers may miss out on potential enrolments due to the challenge of presenting their programs in a comprehensive and consistent manner. Hence, the limited exposure for service providers due to the absence of a centralized platform creates hurdles for them in reaching their target audience effectively. The decentralized approach hampers their marketing efforts, makes it difficult to convey program details consistently and restricts their ability to showcase expertise.

1.2.3 Inefficient User Login Process

The study by Ghasemisharif et al. (2018) highlights the rise in demand for Single Sign-On (SSO) authentication in today's digital age. They discovered that many websites now allow users to login by utilizing Single Sign-On with social media integration which means using the social media credentials. This has showed that individuals are more prefer to this login methods because they can use their existing social media credentials to login into the system which can streamline the authentication process and enhance user experience (Koo and Norliza, 2014). However, in the case of child enrichment and sport websites in Malaysia as examined in Chapter 2 are mostly use the basic way of logging in and registration procedures which presents a few problems. For instance, the parents who want to explore different enrichment and sport activities for their child must create separate accounts on each enrichment centre's website. This would involve entering their personal information, creating usernames and passwords, and managing multiple sets of credentials. This login method is insecure since it leaves accounts for unauthorized people to access account. Besides, this way of logging method is not very user-friendly because users have to repeat the same steps every time when they want to engage with different websites. This repetitiveness causing inconvenience into user experience and make using these websites frustrating.

1.3 Project Objectives

The objectives to be achieved in this project are as follow:

i. To study the requirements of the child enrichment and sports centre system which involves identifying the specific needs and requirements of parents and service provides.

ii. To develop a web-based One-Stop Child Enrichment and Sports Centre System application that serves as a centralized platform.

iii. To evaluate the application through a user acceptance test to assess the usability, functionality, and overall satisfaction of the developed system.

1.4 Proposed Solution

To address the problems outlined in the problem statement, a proposed solution is the development of a web-based One-Stop Child Enrichment and Sports Centre System. This system aims to resolve the identified issues through the integration of several key features for parents, service providers and system security, as depicted in Figure 1.1.



Figure 1.1: An Overview of the Features of the Proposed System

The proposed solution is a web-based One-Stop Child Enrichment and Sports Centre System to solve the problem that stated in the problem statements. This web-based system serves as a centralized platform for parents to access comprehensive information about available enrichment and sport activities offered by service providers. This centralization makes it easier for parents to explore and access a wide range of activities options for their children which is ranging from art classes and music lessons to various sports activities. Besides, parent will be able to use advanced search and filtering options enable them to customize their search based on specific criteria to ensure they can find activities that perfectly align with their child's interests, age, location, class size, frequency and price.

The system inclusion of a comprehensive rating and review features for parents to make informed decisions. This feature is really helpful for parents because they can access valuable insights from other users who have firsthand experience with the activities. Besides, the system aims to simplify the booking process by providing parents to enrol their children in activities directly. Parents also can direct message to service providers to ask questions and seek clarifications.

Moreover, the system provides service providers with a platform to advertise their programs effectively. Each service provider will have a dedicated profile where they can showcase their activities, facilities and expertise by providing parents with a detailed overview of what they offer. Service providers can highlight the facilities and resources they have available to support their programs. For example, they may mention well-equipped classrooms, sports fields, musical instruments, or other specialized equipment that enhances the learning or training experience. Besides, service providers track the enrolment of user. They are also able to set their availability, update schedules, and make adjustments as needed.

In addition to providing a comprehensive platform for parents and service providers, the proposed solution seeks to enhance security and user
experience by implementing Single Sign-On (SSO) with social media integration. Users able to quickly and conveniently login using their existing social media credentials such as Facebook, Google or Twitter to effortlessly access to system (Jelle and Alan, 2019). This is a helpful way for users to mitigate the inconvenience of having to create and remember different login details for several platforms (Koo and Norliza, 2014). It can enhance the overall usability by clicking on a social media button and granting permission then users can seamlessly enter the system. Therefore, parents can engage with the system seamlessly and saving their time and also reduce the hassle of repetitive login processes.

1.4.1 Proposed Design Architecture

Based on the Figure 1.2, it is an overview of the architecture for the One-Stop Child Enrichment and Sports Centre System. The system has two primary users will use the system which are service providers and parents. They will interact with web application through their web browser and each role having specific access and permission.



Figure 1.2: Web Design Architecture

On the front-end side, Vue.js will be used, it is a powerful JavaScript framework that will run on the user's browser then handle the user interface and user interaction. When a user is performing an action such as searching for activities, the frontend will send HTTP requests to the backend to request specific data.

On the back-end side, the system will be developed by using Laravel. It will process the request which may involve querying the database for relevant data, performing business logic and handling the authentication and authorization.

The database that used for the system is MySQL, it is the relational database management system that can efficiently store and retrieve data. The backend interacts with the database to fetch the necessary information and generate a response with the requested information or status updates.

Upon receiving the response from the backend, frontend will process the data and generate HTML content for the user interface. Then, the users' web browser will display the updated HTML content which is the results of their actions such as view activity details, enrol in the enrichment programs or sport activities and access other relevant information.

1.5 Proposed Approach

In the proposed approach, an iterative and incremental development approach is adopted in this project.

1.5.1 Development Approach

The development approach used in this project is an iterative and incremental model. Iterative and incremental model is more flexibility to respond to change quickly and as efficiently as possible with each iteration and increment. This can help the project to divide into multiple small iterations and each iteration involves development of specific features or sets of functionalities (Adel Alshamrani & Abdullah Bahattab, 2015).

This approach allows me to showcase tangible progress at regular intervals. The development process is repeated in cycles with each iteration building upon the previous one, so resulting in a progressively refined and complete system. This model is more suitable for a project where the requirements are subject to change or does not have a complete understanding of all requirements upfront. Being a one-person project, the incremental method is able to reduce risk and provide opportunities to validate the functionality of the system early on. It also allows to adjust and refine the system based on feedback and changing requirements.



Figure 1.3: Iterative and Incremental Model

There are several benefits provided by the iterative and incremental model for the software development such as continuous improvement, flexibility, risk mitigation, progressive delivery and so on. The model can facilitate continuous improvement through regular iterations and allow to revisit and improve the software continually (Craig and Victor, 2003). It has the opportunity to refine existing features, optimize performance, fix bugs and enhance user experience with each iteration. This iterative refinement contributes to a higher overall software quality and making the system more reliable and user-friendly over time.

Besides, the model has the ability to accommodate changes in requirements. Its inherent flexibility is particularly useful since it allows adapt to changing user requirements and priorities and adjust the project direction accordingly as go through each iteration (Suhasinigadam, 2023). This flexibility ensures that the finished product better complies with current needs. The model also assists in risk mitigation by detecting and addressing possible issues early in the development process by delivering functional increments at each iteration (Suhasinigadam, 2023).

Moreover, each increment is delivered gradually so that users may take advantage of valuable features sooner in the development cycle. Users may start engaging with and getting benefit from the system progressively rather than waiting for the full system to be finished which encourages user engagement and satisfaction.

1.6 Scope of Project

The scope of the project is focused on the development of a web-based One-Stop Child Enrichment and Sports Centre System. The target users of the web system are parents and service providers. The system allows parents to search for extracurricular activities based on their preferences such as activity type, children's age, location, and activity price. It will provide recommendations based on ratings and reviews. Service providers also can advertise their programs and manage their profiles on the platform.

1.6.1 Targeted Users

There are two targeted users in this project which are service providers and parents.

Service Providers

Service providers refer to organizations, clubs, or individuals who offer various child enrichment and sports programs and activities. They could be martial arts schools, dance studios, music instructors, sports coaches, educational centers, or any other entity that provides extracurricular activities for children. Service providers will have dedicated profiles on the platform to promote their programs, facilities, expertise, schedules, fees and other relevant information. They will use the system to advertise their programs effectively, manage activity listings, update their profiles and interact with parents who are interested in enrolling their children in their programs.

<u>Parents</u>

Parents represent the target audience who are seeking suitable child enrichment and sports activities for their children. The parents use the system to search and explore the comprehensive database of activities available for children. They can refine their searches based on activity types, age suitability, locations, schedules and budget preferences. The system provides a user-friendly web interface for parents to view activity details, read reviews and ratings from other users and make informed decisions about enrolling their children in specific programs or activities. Parents can also use the system to register their children for activities, manage their enrollments and provide feedback and reviews based on their experiences.

1.6.2 Project modules

There are several modules discussed below that will be developed in this project in order to enhance user experience.

Login and Registration

This module allows users (parents and service providers) to create accounts, log in, and manage their profiles. The system will implement user roles to differentiate between parents and service providers with each role having specific access and permissions. SSO will be implemented to simplify the authentication process by allowing users to log in once and gain access to multiple interconnected systems such as Google and Facebook. For example, users can click on the "Log in with Google" button instead of entering traditional login credentials so that the user gains access to their profile without needing to enter a separate system-specific password.

Enrichment Programs and Sport Activities Listing and Details

The system will provide a comprehensive list of available enrichment programs and sports activities. Each activity has a title, description, schedule, location, and other relevant details. Each individual page for each activity will be created to show detailed information which includes a thorough description, instructor details and any prerequisites.

Activities Search and Filtering

The system allows parents to search for enrichment programs and sport activities based on criteria such as activity type, children's age, location, and budget. Advanced filtering options will be provided to refine search results and help parents find the most suitable programs for their children.

Rating and Review Activities

The parents are able to provide feedback and ratings for the particular activities or programs that have participated in. Parents will also be able to view ratings and reviews from other users to make informed decisions.

Notifications and Communication

Implement a notification module to keep parents informed about upcoming activities to remind them to attend the activities. Besides, a communication channel will be developed to enable direct messaging between parents and providers for inquiries.

Enrollment and Booking Management

Parents can register their children for selected activities and service providers can manage and track the registration for their programs. The system also enables parents to easily manage their children's enrollments including viewing enrollment history and exploring future activities.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Six existing similar systems have been analysed to compare about their functions and features in order to gather valuable insights and inspiration for my project. This review serves as a valuable reference and informing the design of my system by identifying effective functionalities for enrichment and sports activities. Additionally, traditional authentication is compared with Single Sign-On (SSO) authentication method to determine the best authentication for login and registration method. Besides, the various SSO protocols are reviewed and compared to identify the most suitable protocol that could be applied in the SSO authentication. Finally, the several software development methodologies are explored to identify the most suitable approach for my project. This comprehensive analysis sets the stage for a thorough understanding of the best practices and strategies that will guide my platform's development and success.

2.2 Study of Existing Similar System

This study delves into each platform's individual features, functionalities, strengths and limitations. There are 6 existing similar system are explored such as ActivityHero, KidPass, ActivityRockets, AOneLearn, Gymboree and Kiddy 123. ActivityHero, KidPass, and ActivityRockets are international platforms that serve users in overseas locations like the United States, New York, and India. In contrast, AOneLearn, Gymboree, and Kiddy 123 are localized platforms that specifically designed to provide service to the users in Malaysia.

2.2.1 ActivityHero

ActivityHero is an online platform that aims to connect parents with a variety of children's activities, classes, and programs. It serves as a centralized hub where parents can explore, discover, and enrol their children in a wide range of enrichment, educational and sport activities offered by activity providers. ActivityHero also presents a dynamic opportunity for activity providers to showcase and promote their services, consequently expanding their customer base. A broad spectrum of categories that ranging from academic and arts to coding, dance and sports which is offered by both large and small providers and amounting to over 6000 options. ActivityHero is designed to serve two main types of end-users which are parents and activity providers. It is primarily focuses on serving users in the United States and it is available at https://www.activityhero.com/.

Sign Up and Sign In Methods

ActivityHero has implemented SSO for sign up and sign in methods. It would likely allow users to use their existing accounts from another trusted platform such as Google and Apple to sign up and sign in to access ActivityHero without having to create a separate account. In addition to SSO options, ActivityHero also provides the traditional manual sign up and sign in methods.

rman	OR	email			G Sign in with Google
ill name	Already have an Account?	passwor	d	OR	Sign in with Apple
p code			Forgot your password? Forgot your login email?		Create a new Account
Sign Up			Sign In		

Figure 2.1: Sign Up and Sign In Methods of ActivityHero

Search and Filtering

There are three options to allow users (parents) to choose the preferred format of activities such as live online sessions, in-person classes and on-demand content. Parents can directly enter keywords related to the activity into textbox and filter the activities based on the age range of the children when they are searching for live online classes or on-demand content.



Figure 2.2: Search and Filtering at the homepage of ActivityHero

When users choose the "In-Person" option, the search box expands to allow them to enter both the desired activity and their location.



Figure 2.3: Search and Filtering when choosing on In-Person option

Comprehensive Filtering

Users are provided with a comprehensive set of filters on the search results page that enables users to narrow down activities based on specific preferences. These filters include options like times, prices, length of activities, dates, age groups, features and categories. This design is likely to make the process of finding suitable activities for children more efficient and tailored to individual preferences.



Figure 2.4: Filter Result of ActivityHero

Map-based Search

ActivityHero has integrated a map-based search feature along with comprehensive filtering options to enhance the user's ability to find suitable In-Person activities. Users can interact with the map to point to specific locations they are interested in. This helps users visually identify activity venues within their preferred areas. Users have the ability to apply a variety of filters to narrow down their search for in-person activities. These filters include ages, times, prices, activity types, length, days of week, driving distance, feature and categories.



Figure 2.5: Map-based Search of ActivityHero

User Review and Rating

Parents and participants who have enrolled in activities through ActivityHero can leave reviews based on their experiences. They are also can rate the activity on a numerical scale (out of 5 stars).

	Write a Review 🗶	
	How likely are you to recommend Learn with Logic to a friend?	un 2)
Reviews ★ 5.0 (5)	See our review guidelines	25/class
	Tell us about your experience with Learn with Logic	ember
There are no reviews yet for this a		
June 29, 2023 - Sarika Singh	//////////////////////////////////////	Add to Cart
My son really enjoyed making or	Draw your Dreams :)	
again soon!	Attach a photo (Min 35KB and Max 4MB)	
Learn with Logic	upload or drag and drop here	
Thank you so much!!! it's great		
· · · · · · · ·	By uploading this photo, you acknowledge that you have the rights on this photo and are giving ActivityHero	
January 6, 2023 - Sheryll Fra:	consent to use this photo publicly.	
The projects were lots of fun for r	Cancel Submit	
engaging in her conversation. Ma	aking sure that my daughter understood the	
instructions, answering questions	s and being very patient during the process.	

Figure 2.6: Specific Review and Rating for an Activity

Booking and Scheduling Activity

ActivityHero provides a booking and scheduling process that allows users to add activities to their cart and then select specific dates and available time slots for their children to attend.

Select a time slot you would like to attend					×
2 <	Augu	ist 2023	>	Selected: Monday, August 28	
Sun Mo	n Tue	Wed Thu	Fri Sat	^	
6 7			8:20 AM		
(13) (14 20) (21	(13) (14) (15) (16) (17) (18) (19) (20) (21) (22) (23) (24) (25) (26)	9:00 AM			
27 28	29 (30 (31)		9:40 AM	
Time Zor Seaster	n e n Time (l	JS & Canad	la)	10:20 AM	
				~	_
				Add to Cart	

Figure 2.7: Calendar and Scheduling of an Activity

My Cart		<mark>문</mark>	
		Cart Total	
C. S. S.	Jun 2 - Sep 30, 2023 300 pm - 3:40 pm Eastern Time (US & Canada) (Fun Class)	1 session s	\$29.00
a fine	Ages 5 - 12 by Learn with Logic	Proceed to Checkout	
	Mon, Aug 28 - 9:40 AM 📋 📝	By proceeding to Checkout, I acknowledge I the participant or am authorized to register	l am the
	Save for Later Remove	participant/s for all programs in My Cart.	
+ Add another time slot		Add a promo or discount code	
Select Participants			
Session Amount (1 class)	x \$29) \$29.00		
	+ Add New Participant		

Figure 2.8: Attendee Details and Cart Review

Service Provider Registration

ActivityHero offers a registration process for activity providers (Independent Teacher, Small Business and Franchies), allowing them to list their activities and services on the platform. There are 4 steps to help providers set up their profiles, describe their unique services, select promotion plans and complete the payment process.

V ActivityHero		Singcheel My C
	About You	
About You	Which of these best describes you?	Lam an independent toarber
Your Unique Services	This will help us recommend the best options for you. It will not affect how your	
How You'll Get Promoted	activities are presented.	i am a smail pusiriess.
Payment Information		I am a franchise.
Enish Up	Tell us about your business	Name your business page *
	This is the activity provider nome that will appear on your business page.	
		What kids activities do you offer? *
6 5	Think of this a tweet of max, 256 characters about who you are or what you do. Example: We teach summer art campal	le.
		What is your website? :
	Yes can enter a Facebook or instagram page If you don't have a website.	
	And the second statement of th	What is your phone number?
	We will reach out to you if there are any issues with your account.	
	Need Help? Contact us at 1-800-437-6325	Save

Figure 2.9: Step 1 of Provider Information

Your Unique Services

Tell us what makes your business unique Tell us about the types of activities you offer, your teaching philosophy, or what makes your programs unique. This will be disalayed in the About section of your business page.	
Add your business logo, if available Your logo will appear on your business page	
	Upload a File Import from URL or Drag & Drop Here
Add photos to your business page Choose photos that represent your business as a reas, or any special materials or supplies used b	a whole. Close-us, focus shots of kids having fun are ideal. You might also include your staff, your storefront, workplay 29 students in your program. The recommended image size is 1224 x 824 p.c.
	Upload a File Import from URL or Drag & Drop Here

Figure 2.10: Step 2 of Unique Service Description



Figure 2.11: Step 3 of Promotion Plans Selection

How You'll Get Paid	
How do you want to get paid?	PayPal 🗸
seller fees	Your PayPal ID *
	PayPal Id, Email or Phone number
W/5-5	
What currency do you user Tell us what currency you need to get paid in. Families who visit ActivityHero will see your prices in US dollars. If you want to be paid in a currency that is not listed, choose PayPail as the payment method.	US Dollar (\$) 🗸 🗸
What is your mailing address?	Street Address *
We need this to process payments for your account. If you are a business, please enter	
your official business address. If you are an individual teacher, please enter your mailing	City * State *
address. All check payments will be mailed to this address	· · · · · · · · · · · · · · · · · · ·
	Zip *
	I am outside the US

Figure 2.12: Step 4 of Payment

Activity Schedule Planner

ActivityHero has provided a feature called activity planner. This feature can greatly enhance the user experience by providing a comprehensive tool for parents to organize and manage their children's schedules and activities. Parents can centralize all their children's activities in one place and making it easier to keep track of schedules and commitments. The planner helps parents efficiently allocate time for various activities to avoid overlaps and ensuring a balanced schedule.

Activity Hero			Seyncon	Create I	New Event		×		Destrictions Singere
In Person Camps & Classes On	dine Classes	s & Camps Sumr	ner Camps Single Do	Event Title: *					
				Date/s: *					
Wee	kend	Activities ~		Time:					0 🕚 Share
				Location:	Enter a location				≡ List View
				Timezone:	Pacific Time (US & Car	nada)			< > August 2023 •
Ġ	i.	Sun	Mon	Notes				PH.	Sat
New	Event								
C	2						4		
				Add to List:	Weekend Activities				
							Save Event		
				-		_			
								100	19
			28						

Figure 2.13: Create a Personal Activity Schedule Calendar to organize and manage their children's schedules and activities

ted	Registered	Unavailable N	ot Replied C	lear All		<	> April -
	Sun	Mon	Tue	Wed	Thu	Fri	Sat
v	29			1	2	3	4
	5	6	7	8	9	10 Kids Coo	1.86
	12	13 Science o	14 1 💍 Abstract	15 1 👸 Artistic C		17 . 1 💍 CD's Art	18 18
			STEAM A	1 👸 Beep Be.	1 🖧 Little Me	18	
	19	20	21	22	23	24	25
		Artistic C	1 🖧 Emeryvill	1 🖧 Etiquette	1 🖧 Little Me	1 🖧 CD's Art	18
						The second se	3 02

Figure 2.14: Sample of Personal Activity Schedule Calendar

Communication Channel

Parents can initiate direct messages to activity providers to foster communication and inquiries. This communication mechanism enhances the overall user experience by facilitating seamless interactions between parents seeking information and activity providers offering activities.

🔍 Messages	Message Center Home
Message notifications are sent to parent@momn	ndad.com
Super Amazing Kids Camp February 02, 2022 07/13 AM PST	Jane Smith February 02, 2022 07:05 AM PST Will you be holding in-person camps this summer?
	Super Amazing Kids Camp February 02, 2022 07:12 AM PST John Johnson Yes! Summer Camp registration will open February 15th!
	Write a message
	Dookmark Send

Figure 2.15: Direct Messaging between Activity Providers and Parents

2.2.2 KidPass

KidPass is a comprehensive online platform that designed to simplify the process of discovering, booking, and enrolling children in a diverse range of activities, classes and programs. KidPass serves as a one-stop solution for parents seeking to enrich their children's lives through engaging children's interests and passions. KidPass also provides the service for their partners with various service providers such as instructors, studios, schools and organizations, which offer programs to children. The two primaries of end-users are parents and service providers. It is primarily offered the in-person activities for local users in New York, while also providing online classes that are accessible to users from other countries. This hybrid approach allows KidPass to serve both local users who prefer in-person activities and users from different regions who can participate in online classes. It is available at https://kidpass.com/.

Sign Up and Sign In Methods

KidPass has implemented SSO functionality for their sign up and sign in processes along with multiple methods for users to create accounts and log in such as Facebook and Apple. KidPass also offers manual sign up and sign in methods so that users can create a new account directly on KidPass by providing users' information.

Create Your KidPass Account	Memberlogin
Get access to 10,000+ kids activities	Weinber Login
SIGN UP WITH FACEBOOK	
🗯 Sign up with Apple	🗯 Sign in with Apple
	10
First Name	
Last Name	Email
Email	Password
() Kampong Bukit Mati, Malaysia	Remember me
Phone Number	LOG IN
Create Password	Forgot password?
SIGN UP	

Figure 2.16: Sign Up and Sign In Method of KidPass

Search and Filtering for Activities and Service Providers

KidPass provides a robust search function that allows parents to filter activities or service providers. It provides users a filtering options to refine their search for activities based on time, distance, ages, class size, categories and credits. User also can filter the service providers through maps, distance, ages, and categories. These two filtering options enable users to tailor their search for activities and service providers according to their preferences to make it more likely for them to find options that match their children's interests and needs.



Figure 2.17: Activity Filters of KidPass



Figure 2.18: Service Providers Filters of KidPass

User Review and Rating

KidPass allows users to leave reviews and ratings for activities after participating in an activity and service providers (instructors, studios, businesses) that offer the activities.



~			
SO	<u>e al</u>	rev	ENVC
00	c ai		0003



PROVIDER	Academy of Excellence (Online) Academy of Excellence (Online) Academy of Excellence (Online) Share: Share: VIEW SCHEDULE ASK A QUESTION	
User Reviews		
4.9 ***	ews	WRITE A REVIEW
Magic of Math : f RHONA M. Aaron loves it.!	ior little ones	
Crazy Cool Draw	ings	
★★★★★ Nov 1	•	
Great step-by-ste	p instruction. 5.5 year old daughter stuck bored at home sick, this was a perfect activity	
Crazy Cool Draw Sharona K.	ings	
★★★★★ Nov 4	, 2022	
Emily had a great	time and can't wait for the next session	
Reading for Begin Joshna C.	nners (Online)	
**** Oct 12	2, 2022	
good class to dev	elop passion towards reading in your kids.	

Math Magic Joshna C.

Figure 2.20: User Review and Rating for the Service Provider

Scheduling and Booking Activity

KidPass allows parents to easily choose the schedule and proceed with booking and payment. KidPass displays the upcoming schedule options for the activity. The availability of upcoming schedules included date calendar and time slider features to enhance the booking process and allows parents to conveniently choose the most suitable date and time for their child's participation. After selecting the schedule, parents can continue proceed with the booking and

payment. View more from Academy of Upcoming Schedule for Crazy Cool Drawings r∱1 Share C? Favorite About Schedule Reviews Provider Drop-ins Camps Orop-In Date Time Saturday, Aug 26 6:20 PM - 7:00 PM +08 5:00 AM 11:00 PM Sat, Aug 26 Standard Price: \$28.00 9:00 PM - 9:40 PM +08 4 credits or \$27.00 0.0 \$27.00 or 4 credits Clear KidPass Premium Membership Benefits: • 10 credits/month to book activities Crazy Cool Drawings Sat, Aug 26 Save up to 70% on classes 9:30 PM - 10:10 PM +08 ***** 4.9 (7 • \$49/month after trial - cancel anytime 0.0 4 - 12 Years \$27.00 or 4 credits BOOK FOR \$27.00 Reservations closed on 8/26 at 6:20 PM See m **Crazy Cool Drawings** Sat. Aug 26 **** 4.9 (7 10:00 PM - 10:40 PM +08 4 - 12 Years 9.0 \$27.00 or 4 credits Camp Sun, Mon, Tue, Wed, Thu, Fri, Sat 6:20 PM - 7:00 PM +08 Sun, Mon, Tue, Wed, Thu, Fri, Sat 7:00 PM - 7:40 PM +08 Sun, Mon, Tue, Wed, Thu, Fri, Sat 7:30 PM - 8:10 PM +08 Crazy Cool Drawings Sat. Aug 26 10:30 PM - 11:10 PM +08 **** 4.9 (7 \$27.00 or 4 credits (0.0) 4 - 12 Years Figure 2.21:Scheduling and Booking Activity of KidPass

First Month Free	
After trial, your membership w	ill automatically renew for \$49.00 per month for 10
credits on the Basic Plan.	
 Save up to 70% on kids activiti 	es & online classes.
 No commitments. Cancel anyt 	ime.
yment Information	
Card Number	EVIC
MM/YY	Postal Code
Have a side and as a second and a?	
neve a grit card of promo code.	NW Class
JOINKP2022	Ly Clear
roa nave appres me code for ap to \$49 of	(your max moon)
der Summary	
Due Next Month	\$49.00

Figure 2.22: Payment Process of KidPass

Partner (Service Provider) Registration

KidPass provides free service to businesses (Businesses & Organization, Independent teachers) to allow them to use the platform to attract new customers and generate revenue from their classes and programs. After registering, the next step is for KidPass's Partnership Team to reach out to the registered providers.

-ill out the	form below and our Partnership Team will contact you
	Art Craft Business
	singcheelo1@gmail.com
	19295772763
	156, Park Avenue
	New York
	NY
	10022
	US
	Air Craft Children
	Sing Chee
	Stella
	SIGN UP

Figure 2.23: Registration Process of Service Provider

Communication Channel

KidPass offers a communication channel to facilitate the interactions between parents and service providers. Parents can directly communicate with activity providers to address questions, clarify details and ensure a smooth experience.

Messages	Academy of Excellence (Online)	
Academy of Excellence (Onli Aug 27 Thanks for reaching out	Aug 26, 2023, 10:46 PM Sent from page for Drawing cute animals	
	Hi, May i ask will you be holding one-to-one teaching?	
	Aug 27, 2023, 12:01 AM	
	A Yes	
	A But if your child is interested, we can arrange another child for company	
	Will go the way your child is interested :)	
	A Thanks for reaching out	
	Wite a message	SEND

Figure 2.24: Direct Messaging between Parent and Service Provider

2.2.3 ActivityRockets

ActivityRockets is an online platform for discovering and hosting unique extracurricular activities, classes and events for all age groups. ActivityRockets provides a seamless way for individuals to explore and discover exciting new hobbies. There are provided online class and on-demand activity including art, coding, dance, vocals, languages, sports, robotics, math class and so on. The primary of end-users are learners and instructors only. The learners are including the child, teenager or adult. The instructors are teacher, trainer or coach that expert in their fields. Activity Rockets primarily focuses on serving users in Bengaluru, Karnataka. It is available at https://activityrockets.com/.

Sign In and Sign Up Methods

ActivityRockets uses a manual sign-in and sign-up approach to facilitate user access to the platform. This method involves users personally inputting their credentials and information to create an account or log into an existing one.

Get Yourself Onboard	Register	Login	
With Us	Type *	Login	
Over 1000+ courses and top teachers waiting for you	Student -	Phone *	
-	Student Teacher	IN (+91) 🔻	
1 20	Last Name *	Password *	
			0
	Phone *		
	IN (+91) -		
	Password *	Forgot password?	Login
	8	Don't have an account ? Register I	Here
	I accept the Terms & Conditions & Privacy Policy Register		
	Already have an account ? Login		

Figure 2.25: Sign In and Sign Up Methods

Activty Filtering

ActivityRockets offers filtering that allows users to refine their search according to various criteria such as age ranges, online or offline class and activity categories.



Figure 2.26: Activity Filter of ActivityRockets

Scheduling and Booking

ActivityRockets enable users to choose between one-on-one sessions or group classes. Upon selecting their preference, the platform dynamically displays the available time slots. Once a suitable time is identified, users can proceed to add their chosen class to the cart and make payment.



Figure 2.27: Booking Process of ActivityRockets



Figure 2.28: Scheduling of Activity and Add to Cart

My Cart		Clear Cart	Billing	
Item Description	Price		Total	7.0
NTSE For S Batch Name Example	trice 70		Other Charges Discount	र 0 - र 0
Batch Diffic Batch Time: Monday 050 CMT+0530V PM CMT+051	A Beginner M - 06:00 PM Jay 05:00 PM - 06:00 PM neday 05:00 PM - 06:00 riday 05:00 PM - 06:00 PM		Apply coupon if any	₹ 0

Figure 2.29: Make Payment for the Activity

Service Provider Registration

ActivityRockets is focus on individual teachers, trainers, instructors, and coaches who offer their services online. This indicates that the platform primarily caters to individuals who want to teach or provide instruction in various areas through online sessions.

Get Yourself Onboard	Pegister
With Us	Type *
Over 1000+ courses and top teachers waiting for you	Teacher 🔹
	First Name *
	IN (+91) •
	Password *
	I accept the Terms & Conditions & Privacy Policy Register
	Already have an account ? Login

Figure 2.30: Teacher Registration Process for ActivityRockets

2.2.4 AOneLearn

AOneLearn provides opportunity for both local and online learning experiences. The platform offers a diverse range of sport, enrichment and educational/tuition classes. Users can choose their preferred activities and available options of lesson classes, private tutors and physical learning centres which is providing a tailored and flexible learning experience. AOneLearn provide classes for individuals of all ages from toddlers, kids, teenagers and adults. The main types of end-users for AOneLearn are learners, private tutors and learning centres (service providers). Learners engage with the platform to enrol in classes and activities, while learning centres and private tutors utilize the platform to offer their educational services. The primary focus of AOneLearn is on users located in Malaysia. It is available at https://aonelearn.my/.

Sign In and Sign Up Method

In AOneLearn platform, users are required to manually provide their information during the sign-up and sign-in processes. When new users wish to create an account, they will need to navigate to the platform's sign-up page and fill in their details such as name, email address, phone numbers, and a password of their choice.

Confirm Password I agree Platform's Terms of service and Privacy Policy		ain
Password	O Remember Me	Forgot password?
+60 V Enter a phone number		
Email Address	Password	
Full name	Email Address	
student V		

Figure 2.31: Sign In and Sign Up Methods

Activity Searching

AOneLearn allows users to find available classes through a categorized approach by utilizing a drop-down menu. When user selects a specific category like "Sport and Fitness", it will display a range of sport-related activities and locations.



Figure 2.32: Activity Searching of AOneLearn

Inquiry-Based Enrolment

AOneLearn allows users to find their desired classes and there is a specific process for enrolment rather than providing a direct enrolment and make payment. It is facilitated engagement by allowing users to send inquiries directly to learning centres/service providers offering the class.

Kids Badminton Group Training In Setapak & Ampang Lesson By Jun Badminton Academy	مې
Age Age 4 - 17	RM150 per month Fees included:
About This Class	Shuttlecock for Training Sessions Badminton Hall Rental
Are you looking for quality or intensive badminton training for your children? To kids who have been playing badminton for so long but having difficulty to improve in terms of skills, here we are to provide you guys a good platform for badminton training to help your kids in improving their skills. If you feel that group training is not enough and want to get your kids to improve faster, this 1 to 1 training session is tailored to your personalized attention and helping those who required a customized training pattern.	Fees excluded: • Badminton Hall Rental • Badminton Hall Rental • Badminton Hall Rental
Other Private Training areas that we covered: - Cheras - Ampang - Setapak - Puchong - Old Klang Road - Kepong - Petaling Jaya	Send Inquiry
- Serdang - Bangi	

Figure 2.33: Details of Activity and Send Inquiry to Service Providers

Send Inquiry to Kids Badminton Group Training in Setapak & Ampang	×
Name	
Kang Sing Cheee	
Phone	
60108154157	
Email	
singcheelo@gmail.com	
Message	
Message	
Subm	it

Figure 2.34: Send Inquires or Message Directly to Service Provider

y Inquiry			You will received message or call from the educal inquiry. We would highly appreciate if you could u leave a review. It would be a great insight to the p with the lesson too!	tor after submitted an pdate the inquiry statu reers who are interested	s and d
Date	Centre Name	Subject		Message	Action
Wed, Aug 30, 2023 4:24 PM	JUN Badminton Academy	Inquiry about Ampang	lesson : Kids Badminton Group Training in Setapak &	how to join this class?	C

Figure 2.35: History of User Inquiry

Service Provider Registration

AOneLearn provides a registration process for two types of roles such as learning centres and private tutors. These entities can be either verified business entities or individual educators. Once a service provider completes the registration process and submits their information, the platform initiates an approval process. Providers need to await platform approval before their classes or services are made accessible to potential learners.



Figure 2.36: The Roles that Provided by AOneLearn

Learning Centre	*
Tutor	
Full name	
Empil Addross	
Email Audress	
Estate the second	h e s
■ +60 ▼ Enter a phone num	Iber
Password	
Confirm Password	
I agree Platform's Terms of ser	vice and Privacy Policy
Rec	lister

Figure 2.37: Registration Process of Service Providers

2.2.5 Gymboree

Gymboree is a well-known international chain of play and learning centres for young children. These centres provide various classes and activities that focus on early childhood development, which is offering structured play, art, music, and movement programs. Gymboree classes are typically categorized based on age groups and allowing children to engage in age-appropriate activities and interact with peers in a safe and supportive environment. The aim of Gymboree is to provide a fun and educational space for children and parents to learn and bond together. The main type of end-users for Gymboree are parents and teachers. Parents are seeking enriching and developmental activities for their children, typically ranging from infants to preschool-age. Gymboree also provide job openings for teachers, instructor, and educator. Gymboree operates internationally with multiple countries around the world which is including Malaysia. It is available at http://www.gymboreeclasses.com.my/.

Activity Enrolment

Gymboree offers a few of activities for children's early childhood development such as music, art, sport, school-skills and Gymboree play and learn.





Parents have the flexibility to choose from three convenient locations: Bangsar Village II, Publika Dutamas and Empire Subang. Additionally, each location comes with a map view for enabling parents to easily visualize the centre's proximity and plan their visit accordingly.



Figure 2.39: Location-Based Class Enrolment

Gymboree provided a free class for interested parents to register for a trial without any cost.

GYMBORCC Component Compone				
Name				
e.g. John Roe				
Contact Number				
e.g. 60121234567				
Email				
e.g. john.roe@gmail.com				
Baby's Name				
e.g. John Roe				
Baby's Age				
e.g. 6 months				
Location				
Bangsar Village II	~			

Figure 2.40: Free Class Sign-Up of Gymboree

Job Applying

The individual who are interested in applying for a teaching position can do so by submitting their CV through email.

Innual L	eaves, EPF, Socso, Medical, Incentives, Regional Training opportunities
Respons	sibilities:
• Fa • Pr • M	 Role does not require children supervision responsibilities, instead, will be conducting classes, introducing activities using lesson plan prepared by Gymboree Play & Music United States epare class materials based on lesson plan provided aintain good rapport with parents and children
Requires	ments Systems Diploma, Advanced/Higher/Graduate Diploma, Bachelor's Degree, Post Graduate Diploma, Professional Degree, Master's goree, Art/Design/Creative Multimedia, Education/Teaching/Training, Linguistics/Languages, Music/Performing Arts Studies, Physical herapy/Physiotherapy, Physcology or equivalent. alits: teaching, singing and dancing resonality: fun, warm, cherefful and has a passion for children inimum commitment of a year lifting to work on weekends ood command of English as classes are conducted in English all-Time, Part-Time and Contract positions are available.
Available • Ba • Pr • Er • Sr • IC	e vacancies: angsar Village (KL) ublika Solaris Dutamas (KL) mpire Subang (Subang) umway Velocity (Cheras) I City Mali (Putrajaya)

Figure 2.41: Email-Based Job Application Process of Gymboree

2.2.6 Kiddy123

Kiddy123 serves as a directory for various learning platforms and activities to simplify the parenting journey for Malaysian parents. This platform offers an expansive directory encompassing children-related businesses and service providers, parenting advice, guides and children's event information. It provides a quick and efficient way for parents to discover services, events, and places that best suit their children's needs. The main type of end-users for Kiddy123 are parents and service providers. The platform primarily focuses on serving users in Malaysia. It is available at https://www.kiddy123.com/.

Activity Searching

Kiddy123 allows parents to search activities based on categories and states. Additionally, the advanced search option enhances this functionality by enabling parents to refine their search even further. They can narrow down their search by selecting specific categories, subcategories, as well as states and cities.



Figure 2.42: Search Activity of Kiddy123



Figure 2.43: Advanced Search of Kiddy123

Activity Filtering

Kiddy123 provides a filtering and sorting options enable parents to tailor their search and exploration based on various factors such as level, alphabetically, popularity, ratings, and location.



Figure 2.44: Activity Filtering of Kiddy123

Enrolment Inquiry

Users have the option to send inquiries to service providers for enrolment in various activities. However, the platform does not seem to offer a direct booking process where users can confirm and secure their spots in activities immediately. Instead, the "send enquiry" feature allows parents to reach out to service providers to gather more information and potentially initiate the enrolment process.



Figure 2.45: Enquiry-based Enrolment of Kiddy123



Figure 2.46: Enrolment Information Submission

Users Review and Rating

Kiddy123 allows parents to share their experiences and opinions about the activities or services they have enrolled in.



Figure 2.47: Users Review and Rating for a Service Provider

Job Applying

Kiddy123 provides a job listing section for individuals to apply and find available job opportunities along with the ability to send job applications via email. This feature allows individuals, such as teachers or instructors to explore employment opportunities within the educational or enrichment field.

12 Results Jobs	barta 🧰 Advertas Contactius Elaaming Magaphe	
CON CUT FEAM	Early Childhood Teacher / Special Needs Educator (*) Nannys Preschool & Kindle, Sert Kambangan I ar an antiyn an actuated trapping specific years in a winder the set for the set of the set of the set of the set of the set of the set of the set of the set of the set of the set of the set of the set of the set of the set of the se	Deb Requirements 10-10-10-10-10-10-10-10-10-10-10-10-10-1
	SI Inno Imma > Read More >	CONTACT EASTER ALABAR
curigokids	Principal @ CURIOOKids, Desa Parkcity, Kuala Lumpur III Aduct Te ren generation of entropeneus, betgens, scientist and leader through encoment extenses. Our learning program develop the product and betweeved skills that leads to addenic pottement as a bigit fruit.	D-0-05 Plaza Arkadia, Jalan Intitisel Perdana. Dese Parkoty, Kepong, Kuala Lumpur 52200 Malaysia
	Footed on: 14 August 2023 Footed on: 74 August 2023 Molecial Margaria, Kuele Lampur 52280 Molecial	🭠 rieko@curiso.mypecisjingsaw@kiddy123.com (Sakher Alajbari)
	E3 assotswa + Read More >	http://www.curloo.my
	Kinderparten Teacher / Assistant Teacher @ Tadika Kastil	
	Bukit Indah, JB Fourwards become a Portessional Kindergarten Teacher and also love to mingle around with children	

Figure 2.48: Job Listing and Application Centres

Service Provider Registration

Kiddy123 allows service providers to register and provide necessary information when signing up on the platform.

SET IN CONTACT eed more information? Let us know how we can help. ave us a message and we will get back to you shortly.	And A		
DROP US A MESSAGE!	CONTACT INFORMATION		
CONTACT NUMBER E-MAIL	 info@kiddy123.com Kiddy123.don Bid (1005921+9) Bidock D SA 5 Seri Gembina Avenue, Jalan Semurg Ria, Taman Gembina, S8200 Kuala Lumpur, Malaysia. 		
TYPE OF BUSINESS	FOR GENERAL AND ADVERTISIN ENQUIRIES: 603.7972 1833 / +60 12-630 0560		
	OR WHATSAPP US		

Figure 2.49: Service Provider Registration Form

2.2.7 Comparison of Existing Similar System

Table 2.1: Comparison of Existing Similar System

System	Activity	KidPass	Activity	AOneLearn	Gymboree	Kiddy123
Names	Hero		Rockets			
Features						
User Type	Parents, Service	Parents, Service	Learners,	Learners,	Parents, Service	Parents, Service
	Providers	Providers	ServiceProviders	ServiceProviders	Providers	Providers
Geographic Focus	United States	New York	India	Malaysia	Malaysia	Malaysia
Online/Offline Classes	Both	Both	Both	Offline	Offline	Offline
Manual Registration	Yes	Yes	Yes	Yes	No	No
SSO implementation	Yes	Yes	No	No	No	No
Search	Yes	Yes	No	Yes	No	Yes
Filter	Yes	Yes	Yes	No	No	Yes
Map-based Search	Yes	Yes	No	Yes	No	Yes
Scheduling	Yes	Yes	Yes	No	No	No
Enrolment	Online	Online	Online	Inquiry	Inquiry	Inquiry
Add To Cart	Yes	No	Yes	No	No	No

Add To Favourite	Yes	Yes	No	No	No	No
Communication Channel	Yes	Yes	No	No	No	No
Personal Schedule	Yes	No	No	No	No	No
Calendar Planner						
User Review and Rating	Yes	Yes	No	No	No	Yes
Service Provider	Online	Online	Online	Online	Email	Online
Registration						
Service Provider Type	Independent	Independent	Teacher, Trainer,	Private Tutor,	Teacher	Business,
	Teacher.	Teacher.	Instructor, Coach	Business		Organisation,
		,	,			-
	Business,	Business,	,			School
	Business, Franchise	Business, Organisation				School
Service Provider Profile	Business, Franchise Yes	Business, Organisation Yes	Yes	Yes	Yes	School Yes
Service Provider Profile Free Trial Class	Business, Franchise Yes Yes	Business, Organisation Yes No	Yes Yes	Yes No	Yes Yes	School Yes No
Service Provider Profile Free Trial Class Notification and Updates	Business, Franchise Yes Yes Yes	Business, Organisation Yes No Yes	Yes Yes No	Yes No No	Yes Yes No	School Yes No No
Service Provider Profile Free Trial Class Notification and Updates Auto Recommendation	Business, Franchise Yes Yes Yes Yes	Business, Organisation Yes No Yes No	Yes Yes No No	Yes No No No	Yes Yes No No	School Yes No No No
In summary, in the realm of existing similar systems, there are some of system functions come with certain limitation that should be taken into consideration. This limitation included booking methods often relying on inquiry-based enrolment such as the Malaysia platforms: AOneLearn, Gymboree, and Kiddy123. The users need to send inquired to service providers to enrol in activities which can lead to uncertainty and delay, and affect user experience, users may find it frustrating to navigate through multiple messages to finalize enrolment. The service provider also might experience missed enrolments due to delays in responding to inquiries or overlooking messages. This could impact their outreach and business growth.

Besides, some system especially Malaysia platforms are utilizing manual login and registration methods or lack a login mechanism entirely which will lead to inconvenience and limited personalization. This is because manual login and registration methods can be time-consuming and cumbersome for users. They may need to remember multiple usernames and passwords which can lead to frustration and deter users from engaging with the platform. Kiddy123 platform is without a login mechanism which are unable to provide personalized experience to users. This includes tailored recommendations, saved preferences and tracking of previous activities, which can enhance user engagement.

There are several functions can be integrated in my project:

Features/Functions	Reason
SSO Authentication	Allows users log in using their existing
	credentials from other platforms such as
	Google, Facebook, or Apple without the need
	to create a new account to enhance user
	convenience and streamline the registration
	process
User Review and Rating	This feature builds trust and credibility among
	users. Reviews and ratings from other users

Table 2.2:	List	of l	Features	Included	in	the	Pro	ject
								,

	provide valuable insights into the quality of		
	activities and services offered to help users		
	make informed decisions		
Comprehensive Search and	A robust search and filtering function ensures		
Filter	that users can quickly find activities that match		
	their preferences to save their time and		
	improving their overall experience on the		
	platform		
Online Enrolment and	Enabling online enrolment and booking		
Booking	simplifies the process for users to secure their		
	spots in activities without the hassle of manual		
	inquiries to enhance user satisfaction and		
	increase the likelihood of successful		
	enrolments		
Direct Communication	Providing direct communication channels		
Channels	between users and service providers fosters		
	clear and prompt interaction. This enhances		
	the user-provider relationship and reduces		
	misunderstandings		

These are the features or functions that can integrate into my project to enhance functionality and user experience. By seamlessly integrating these features, it will help my project to address the limitations observed in existing systems and provide an enhanced user experience that offers convenience, transparency and effective communication throughout the process.

2.3 Authentication Method for Login and Registration

User authentication is a crucial aspect of modern-day systems to ensure secure access to various services. It is an important ensures that individuals are who they claim to be when interacting with these systems. User authentication is a foundational element, especially in the realms of web applications and online platforms where personal data, confidential information and sensitive transactions are exchanged. This section delves into the various methods such as traditional and SSO authentication methods that used for user authentication during the login and registration processes. Additionally, the components of SSO authentication and protocols often utilized in SSO system will be explored and examined.

2.3.1 Traditional Authentication

The traditional login approach to user authentication involves utilizing a combination of user ID or username and password, which remains the primary means of verifying users in web applications (Koo Lee Chun and Norliza Katuk, 2014). However, this approach requires online users to create and manage accounts that use of same information repeatedly across numerous websites during sign up process. The research conducted by Nick and Haile (2011) reveals that the typical web user manages approximately twenty-five accounts that necessitate passwords. On a daily basis, these users find themselves enter an average of eight passwords to access various online services and platforms. Unfortunately, Miller's (1955) study shows that individuals have a limited capacity to effectively remember approximately seven distinct items in their short-term memory. This limitation complicates the task of managing multiple login details and passwords effectively.

There are numerous applications or systems are relied on traditional authentication methods which can pose significant challenges in terms of user convenience and security. It can become burdensome for users to manage their identity across multiple platforms and potentially leading to "password fatigue" (Koo Lee Chun and Norliza Katuk, 2014). Furthermore, in a site-centric environment, the online profiles and content information are often restricted and limited to the administrators of a single domain so making it difficult to share profiles across different domains.

Strengths	Limitations		
Universally understood	• Password fatigue due to		
• Simple and easy of use	multiple accounts need to		
• Direct control over user data	remember different username		
• No third-party dependency	and password		
	• Security risks from weak		
	passwords		
	• Risk of password reuse		
	• Longer and more		
	cumbersome registration		
	process		

Table 2.3: Strength and Limitation of Traditional Authentication

2.3.2 SSO Authentication

Nevertheless, the recent technological advancements have simplified the process of maintaining credentials to allow users alleviate the complexities associated with managing multiple profiles. Hence, Single Sign-On (SSO) is introduced since it is valuable and important in addressing the challenges associated with managing multiple credentials and enhancing user convenience and security.

Single Sign-On is an authentication process that allows users to access multiple applications or services by using a single set of credentials. In other words, users only need to log in once to gain access to a variety of connected systems without needing to log in separately to each application. SSO enhances user convenience by eliminating the need to remember multiple usernames and passwords for different platforms. One of the SSO authentication method is Single Sign-On with social media integration which means using social media credentials. It is also known as Social Single Sign-On (SSSO) authentication, it also called Social Login, Social Authentication, or Social Sign-In which is an authentication method where the social media platforms such as Facebook, Google or Apple are used by other systems to authenticate users (Jelle Kalkman and Alan Verresen, 2019).

SSO authentication is favoured over traditional username and password credentials for several reasons. It helps alleviate the burden of password fatigue which is a common issue caused by the need to remember numerous passwords. Additionally, it encourages better password practices and theoretically results in more secure passwords.

Table 2.4: Strength and Limitation of SSO Authentication

Strengths	Limitations		
Convenience for users	• Dependent on third-party		
• Eliminate password fatigue	providers		
• Faster registration process	• Limited control over user data		
• Enhanced user convenience	• Risk if IdP credentials are		
• Encourages stronger	forgotten		
passwords			

2.3.3 Components of SSO Authentication

There are two components of SSO authentication which are Identity Provider (IdP) and Service Providers (SPs). The **Identity Provider (IdP)** is a trusted entity responsible for managing user identities and authentication. It serves as the central authority that verifies users and issues authentication tokens. The IdP maintains user profiles, securely stores user credentials, and authenticates users. When a user needs to access a Service Provider (SP), the IdP confirms their identity and provides an authentication token. The **Service Providers** also known as Relying Parties which are the systems, websites, or applications that users want to access. They rely on the IdP for user authentication. SPs do not handle user authentication themselves instead of redirect users to the IdP for

authentication. Once a user is authenticated, the IdP provides an authentication token to the SP and granting access to the user.

In SSO systems, especially Social Single Sign-On (SSSO), social media platforms like Facebook or Google act as IdPs. Users link their social media accounts to various SPs. When a user wants to access an SP, they are redirected to the respective social media platform for authentication. Once authenticated by the social media IdP, the user receives an authentication token which grants them access to the SP. However, there are some concerns associated with SSO authentication. If the IdP becomes unavailable or experience downtime, users lose access to all SPs linked to it. Besides, if a user forgets their credentials for the IdP, they cannot access any of their linked accounts.

Single Sign-On (SSO) authentication can be implemented using a number of existing protocols such as OpenID Connect or OAuth. According to Mainka et al. (2015), these procedures often involve a series of steps that can be generalized as illustrated in Figure 2.49.

- 1. The user initiates a login request through their user agent (UA) on the Service Provider (SP).
- 2. The SP communicates with the IdP if necessary to gather information which will later be used for signing and verifying messages.
- 3. The SP responds to the initial user request with a token request, which can be obtained from the IdP and then redirects the user to the IdP.
- 4. If the user has not yet been authenticated, the IdP proceeds to authenticate the user. Subsequently, the user authenticates themselves to their IdP. This authentication often involves entering a username and password combination. Some protocols and IdPs may require additional user interaction to authorize access to the user's data such as email address, nickname, birthday or gender. This step is often transparent for the user if they are already authenticated on the IdP.

- Following successful authentication, the IdP then sends the token response, which contains all the necessary information for the SP to identify the user. This message is forwarded to the IdP.
- 6. Optionally, the SP may verify the token response by contacting the IdP.
- 7. If all steps proceed without issues, the user is now authenticated by the SP.



Figure 2.50: The general Social SSO authentication flow

2.3.4 SSO Protocol

There are several different SSO protocols, the most widespread are SAML, OpenID Connect and OAuth 2.0. These technologies facilitate the secure exchange of information and further enhancing the SSO experience. Each of these protocols has its own strengths, use cases and areas of application. The choice of which one to use depends on factors such as the specific requirements of the system, compatibility with existing infrastructure, and security considerations.

2.3.4.1 SAML

Security Assertion Markup Language (SAML) is an XML-based standard used for exchanging authentication and authorization information between different parties, typically between an Identity Provider (IdP) and a Service Provider (SP). It is primary purpose is to enable Single Sign-On (SSO) and facilitate secure communication between these entities.

The process involves a sequence of steps of SAML is often depicted in a diagram like Figure 2.51. When a user attempts to access a resource or service provided by the SP, they are redirected to the IdP. This redirection is often achieved through a web browser. The IdP authenticates the user by requesting credentials such as username and password or by using other authentication methods like multi-factor authentication (MFA). After successful authentication, the IdP generates a SAML assertion. This assertion is an XML document that contains information about the user, the conditions under which it is valid and the user's permissions and attributes.

Then, the SAML assertion is embedded in a SAML response and sent back to the user's browser. The user's browser forwards the SAML response back to the SP. The SP validates the SAML assertion to ensure its authenticity and that it was issued by a trusted IdP. This validation process typically involves checking digital signatures and the expiration time of the assertion. If the SAML assertion is valid, the SP grants access to the requested resource or service. The user is now authenticated without needing to enter credentials again (T.Gross, 2003).



Figure 2.51: SAML SSO Flow

SAML commonly used in enterprise environments and web applications where a centralized authentication system is required. It is especially useful when multiple applications need to share user authentication.

Table 2.5:	Strength	and I	Limitation	of SAML
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Strengths	Limitations		
• Proven security track record	Complex implementation		
• Centralized authentication	• Interoperability challenges		
and authorization	due to XML		
• Fine-grained authorization	• Potential performance		
control	overhead (XML parsing)		
• Supports federated identity	• Scalability challenges with		
• Industry-standard protocol	many users and services		
	• Limited support for modern		
	protocols		

SAML is a widely used protocol known for its strong security history and centralized control. Its strengths are being able to provide proven security measures, centralized authentication and authorization management, and precise control over who can access what so that make it suitable for detailed authorization needs. SAML also supports federated identity that allow organizations to establish trust and share user information securely.

However, it has some limitations like complex implementation may require specialized expertise and interoperability challenges may arise particularly due to its XML-based format. There is also the potential for performance overhead because of XML parsing. Additionally, scalability may become a challenge when managing many users and services so it may have limited support for modern protocols so making it less suitable for certain contemporary/modern use cases.

2.3.4.2 OAuth 2.0

Open Authorization 2.0 (OAuth 2.0) is an industry-standard protocol used for authorization and authentication. It is widely used by applications and services to allow secure access to resources on behalf of a user without exposing their credentials such as username and password. OAuth 2.0 is essential for securing APIs and it is commonly used for scenarios like allowing third-party applications to access a user's data from another service like logging into a website using the Google or Facebook account.

OAuth 2.0 involves several roles:

- Resource Owner: The user who owns the data and grants permission to access it.
- Client: The application or service that requests access to the user's data.
- Resource Server: The server that hosts the protected resources (data) the client wants to access.
- Authorization Server: The server that issues access tokens after the user grants permission. It verifies the client's identity and the user's consent.

The process involves a sequence of steps of OAuth 2.0 is often depicted in a diagram like Figure 2.52. The process begins when a user wants to access a third-party application (the client). The user initiates an action within the client application (e.g., logging in) that requires access to their protected resources. The client redirects the user's browser to the authorization server's authorization endpoint. The user is prompted to log in or authenticate with the authorization server.

After successful authentication, the authorization server presents the user with a consent screen, listing the requested permissions (scopes). The user consents to or denies the client's request for access. Upon user consent, the authorization server generates an authorization code. The client securely exchanges the code for an access token using its credentials. Then, the authorization server validates the authorization code and client credentials. If everything is valid, the authorization server responds with an access token and optionally a refresh token.

The access token represents the user's authorization to access the requested resources. With the access token in hand, the client can now make authorized requests to the resource server's API. The resource server receives the request and validates the access token. If the access token is valid and authorized to access the requested resource, the resource server serves the requested data or performs the desired action on behalf of the user (Mainka et al., 2015).



Figure 2.52: OAuth 2.0 SSO Flow

OAuth 2.0 is commonly used in scenarios like social logins (e.g., "Log in with Facebook"), allowing third-party apps to access user data (e.g., Google Sign-In) and securing APIs for mobile and web applications.

Table 2.6: Strength and Limitation of OAuth 2.0

Strengths	Limitations			
• Flexible authorization	• Complex for user			
framework	authentication			
• Enables third-party	• Potential security risks if not			
integration	properly configured			
• Ideal for modern web and	• Primarily focused on			
mobile apps	authorization, not			
• Broadly adopted and	authentication			
supported	• Limited user profile			
• Scalable for a large number of	information exchange			
clients and users				

OAuth 2.0 is a versatile framework because it is flexibility and compatibility with modern applications. It excels in providing a framework for secure authorization which makes it ideal for securing APIs and facilitating third-party integrations. OAuth 2.0 is particularly well-suited for contemporary web and mobile apps because of its widespread adoption and support. Additionally, it can scale effectively to accommodate a large number of clients and users.

However, OAuth 2.0 primarily addresses with authorization, not user authentication, which might make user login procedures more difficult. OAuth 2.0 might potentially present security vulnerabilities if incorrect configuration is used. Furthermore, it has limited built-in capabilities for exchanging detailed user profile information because it is focusing more on permissions and access control.

2.3.4.3 OpenID Connect

OpenID Connect (OIDC) is an authentication and identity layer built on top of the OAuth 2.0 framework. Its primary purpose is to provide a standardized way for applications to authenticate users and obtain basic profile information about them. The general flow is almost identical to OAuth 2.0 as described in the previous sub-section of 2.3.4.2. OIDC is specifically designed for *authentication*, user identity, and user consent, in contrast to OAuth 2.0 which focuses on *authorization* and access to resources.



Figure 2.53: Authentication vs Authorization

OIDC introduces the concept of ID tokens. These are JSON Web Tokens (JWTs) that contain information about the authenticated user, such as their unique identifier, username, email, and other relevant profile data. The process involves a sequence of steps of OpenID Connect is often depicted in a diagram like Figure 2.54. The user initiates authentication with an OIDCenabled application. The application redirects the user to an OpenID Identity Provider (IdP). The IdP verifies the user's identity. The user may be asked to provide credentials such as a username and password or use other authentication methods like multi-factor authentication (MFA).

If the user's authentication is successful, the IdP generates an authorization code and returns it to the client application/relying party. This code is a short-lived token used in the next step. When the client application received the authorization code, it will send a request to the IdP to exchange the authorization code for an access token and often a refresh token. These tokens allow the client to access protected resources on behalf of the user.

Once the client has an access token, it can use this token to make authorized requests to the UserInfo Endpoint or other protected resources. This UserInfo Endpoint provides basic profile information about the authenticated user (Teleport, 2022).



Figure 2.54: OpenID Connect SSO Flow

OIDC is widely used for SSO in web applications, mobile apps, and other scenarios where user identity is essential. It is especially popular for adding identity to OAuth-secured APIs.

Strengths	Limitations		
• Adds an identity layer to	• May require OAuth 2.0 for		
OAuth 2.0	authorization		
• Provides user profile	• Implementation complexity		
information	due to OAuth and OIDC		
• Ideal for modern apps and	• Adoption can vary across		
user authentication	different ecosystems		
• Includes privacy features and	• Doesn't inherently protect		
user consent	API resources		
	• Requires additional learning		
	beyond OAuth 2.0		

Table 2.7: Strength and Limitation of OpenID Connect

OpenID Connect (OIDC) builds upon the OAuth 2.0 framework, adding a critical identity layer that is especially beneficial for modern applications. OIDC excels in user authentication that providing user profile information and enhancing privacy and user control through consent features. It is an excellent fit for contemporary apps and user identity management.

However, OIDC typically relies on OAuth 2.0 for authorization which means it may involve a two-step process. Implementation can be somewhat complex due to the combination of OAuth and OIDC and adoption levels can vary across different technology ecosystems. Additionally, OIDC does not inherently protect API resources so additional security measures may be required. Despite these considerations, OIDC provides valuable capabilities for modern identity and user authentication which is requiring developers to expand their knowledge beyond basic OAuth 2.0 concepts.

2.3.5 Comparison of Authentication Method

In the following table, I was using a table to compare traditional authentication methods with Single Sign-On (SSO) authentication, particularly focusing on Social SSO integration. Traditional authentication typically involves username and password combinations, while SSO authentication leverages social media credentials for streamlined access. The comparison highlights key differences in authentication methods, password management, user convenience and security risks.

Aspect	Traditional	SSO Authentication	
	Authentication		
Authentication	Username and Password	Social Media Credentials	
Method		(e.g., Facebook, Google)	
Password	Users need multiple	Single set of credentials	
Management	passwords	for multiple platforms	
User Convenience	Multiple logins required	Single login for various	
		platforms	
Security Risks	Password fatigue and	Risk if social media	
	weakness	account is compromised	

Table 2.8: The Difference of Traditional Login and Social SSO Login

In summary, SSO with social media integration (Social SSO) is chosen for my project because it provides a simpler, more user-friendly and efficient authentication process. It enhances security and reduces password-related issues so that making it the most suitable choice compared to traditional authentication methods.

2.3.6 Comparison of SSO Protocols

In the following table, the three prominent Single Sign-On (SSO) protocols are compared which are SAML, OAuth 2.0 and OpenID Connect. Each protocol serves distinct purposes and exhibits unique characteristics regarding security, complexity, interoperability, performance, scalability, use cases and more. The strengths, limitations and differences of these protocols are analysed to determine the most suitable choice for my project's authentication and authorization needs.

Aspect	SAML	OAuth 2.0	OpenID Connect	
Purpose	Authentication	Secure API	Identity layer for	
	and authorization	authorization and	user	
	in enterprise	access control	authentication	
			and SSO	
Security	Proven Security	Authorization-	Secure	
		focused, secure if	authentication	
		properly	and user identity	
		configured		
Complexity	Complex	Moderately	Implementation	
	implementation	complex	complexity	
Interoperability	XML format,	Widely adopted,	Adoption across	
	interoperability	interoperable in	different	
	challenges	modern web and	ecosystems	
		mobile apps		
Performance	Potential	Efficient,	Efficient	
	performance	minimal	performance,	
	overhead (XML	performance	utilizes JWTs	
	parsing)	impact		
Scalability	Scalability	Scalable for large	Scalable for SSO	
	challenges with	number of clients	and user	
	many users and	and users	authentication	
	services			
Use Case	Enterprise SSO,	API security,	SSO, user	
	web apps, cloud	third-party	authentication,	
	services	integration, SSO	user profile data	
Single Sign-On	Yes	Possible with	Yes	
(SSO)		OIDC		

Table 2.9: The Difference between SAML, OAuth 2.0 and OpenID Connect

User Profile Data	Limited user	Not inherently	Standardized
	profile data	provided, may	user profile
	exchange	require OIDC	information
			retrieval
Privacy &	Limited privacy	Limited privacy	User consent for
Consent	and consent	features, requires	data sharing
	features	proper setup	
Standardization	Industry	Industry	extends OAuth
	standard, widely	standard, widely	2.0 for user
	supported	adopted	authentication

There are strengths, limitations and difference in each SSO protocols. SAML provides centralized authentication and fine-grained authorization, but it may be overly complex and less suitable for SSSO. OpenID Connect is known for its comprehensive identity layer and facilitated secure authentication alongside authorization. However, its additional features and complexity may not be necessary for my project primarily focused on authorization and access control, where OAuth 2.0 excels.

Therefore, OAuth 2.0 is the most suitable protocol for my project. It offers a robust framework for securing API authorization and access control, which aligns well with the project's emphasis on third-party integration and SSO. By integrating with social media platforms, parents can seamlessly log in using their social media accounts to enhance the user convenience. Additionally, OAuth 2.0 allows access to basic user profile information, facilitating personalized user experiences and account management. Moreover, OAuth 2.0's privacy features and user consent management capabilities are crucial for handling sensitive child-related services. In summary, OAuth 2.0 offers a secure and user-friendly solution for implementing SSO with social media integration in my project.

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2.4 Software Development Methodology

Software Development Methodology refers to a structured approach or framework that containing a collection of defined processes, techniques, tools and documentation. Its major objective is to facilitate and guide system developers throughout the process of conceptualizing, designing, implementing and maintaining a new information system (Avison & Fitzgerald, 2006). These methodologies serve as roadmaps for developers that offering a clear path from concept to finished product. The common software development methodology models include waterfall, spiral, iterative and incremental model. The principles, characteristics, strengths and limitations of each model are explored for understanding of their applicability in various software development scenarios.

2.4.1 Waterfall Model

The Waterfall Model is one of the oldest and most straightforward software development methodologies. It is widely utilized in government projects and many major companies due to its sequential approach. This model moves through distinct phases including requirements analysis, design, coding, testing, deployment and maintenance to ensure that design flaws are addressed before product development begins. It follows a sequential and linear approach where each phase must be completed before moving on to the next (DESPA, 2014).



Figure 2.55: Waterfall Model (Lutkevich, 2019)

Waterfall model involves less direct engagement with end users after the initial stages of requirement gathering. This approach allows the development team to move through the project stages quite quickly. Besides, the waterfall model is particularly well-suited for teams and projects that aim to adhere closely to fixed or unchanging requirements defined at the project's inception (Alshamrani and Bahattab, 2015). It is also suitable for the project are constrained by strict cost or time limitations. A thorough review and signoffs are also often conducted in the waterfall process before moving on to the following stage. The waterfall model has meticulous planning and documentation so make it especially useful for projects where strict quality control is required.

Strengths	Limitations		
• Easy to understand and	• Inflexible to changes in		
implement	requirements		
• Thorough documentation at	• Limited client/end-user		
each phase	involvement during phases		
• Ideal for projects with stable	• Difficult to adapt to evolving		
requirements	technology or markets		
• Strong emphasis on quality	• Not suitable for projects with		
control	uncertain or evolving		
• Predictable and easy to	requirements		
manage	• Not suitable for projects with		
• Effective for small to	uncertain or evolving		
medium-sized projects	requirements		
	• Clients may lack clarity about		
	their wants and needs		
	• Client may have limited		
	chances to preview the		
	system		

Table 2.10: Strengths and Limitations of Waterfall Model

2.4.2 Spiral Model

The Spiral Model is a software development process model that combines elements of iterative development and prototyping models. It is particularly well-suited for large and complex projects. One of its primary focuses is on risk assessment and mitigation throughout the project's life cycle. The spiral model is characterized by a series of iterative cycles, each of which is divided into several phases including planning, risk analysis, engineering, and evaluation. It is particularly suitable for projects with medium to high levels of uncertainty and risk, as its iterative nature helps identify and address these risks progressively (Boehm, 1988).



Figure 2.56: Spiral Model (Testbytes, 2019)

When customers are uncertain about their requirements, which is often the case in software development, the model's iterative approach accommodates changing requirements. In this model, the development team starts with a limited set of requirements and progresses through each development phase for the initial set of requirements. This approach allows the team to learn valuable lessons from the initial iteration through a comprehensive risk analysis process. Additionally, the team able gradually adds functionality for additional requirements in successive spirals until the application is ready for the installation and maintenance phase. Each iteration before reaching the production version is essentially a prototype of the application (Alshamrani and Bahattab, 2015). Therefore, the spiral model is the method of choice when the software development journey that requires frequent deliveries, tackles on complicated and large-scale projects, navigates through evolving requirements and involves sizable financial commitments.

Strengths	Limitations			
• Effective risk management	• Management is more			
and mitigation	complex.			
• Strong approval and	• Can be time-consuming due			
documentation control	to iterative nature			
• Accommodates evolving	• May not be suitable for small			
requirements	projects as it can be expensive			
• Promotes continuous	• Can be more costly due to			
improvement	extensive testing			
• End-users can review and see	• Not ideal for projects with			
the system early	fixed budgets			
• Suitable to develop a highly	• Large number of intermediate			
customized product	stages requires excessive			
	documentation			
	• Project's success is highly			
	dependent on the risk analys			
	phase			

Table 2.11: Strengths and Limitations of Spiral Model

2.4.3 Iterative and Incremental Model

The Iterative and Incremental Model is a software development approach that breaks down a project into smaller or manageable parts which is known as iterations or increments. It is a flexible and adaptable approach that allows for the continuous improvement and refinement of the software throughout its development life cycle. In this model, the project is divided into cycles or iterations. Each iteration represents a complete development cycle, encompassing planning, design, coding, testing, and deployment. These iterations are repeated until the final software product is achieved.



Figure 2.57: Iterative and Incremental Model (Suhasinigadam, 2023)

In this model, the initial iteration or increment focuses on addressing the basic and core requirements, resulting in a foundational product. This model builds a partial implementation of the entire system rather than delivering all features at once. It starts with a basic set of functionalities and then gradually adds increased functionality with each subsequent iteration. This incremental approach means that each new release builds upon the previous one and adding one or more new functions until all the designed functionalities are fully implemented. It aligns with the principles of iterative and incremental development that providing flexibility to adapt to changing requirements. It is particularly well-suited for projects with evolving or unclear requirements and those were delivering partial functionality early is advantageous.

Strengths	Limitations		
• Adaptability to changing	• Managing multiple iterations		
requirements and priorities.	can be challenging		
• Early deliveries for user	• Requires good planning and		
feedback	design		
• Continuous customer	• Requires early definition of a		
collaboration	complete and fully functiona		
• Effective risk management	system to allow for the		
• Continuous improvement and	definition of increments		
refinement of the software	• Does not permit iterations		
based on feedback	within each increment		
• Thorough testing and quality			
control			
• Partial functionality			
demonstrated early			
• Alignment with evolving or			
unclear requirements			

Table 2.12: Strengths and Limitations of Iterative and Incremental Model

2.4.4 Comparison of Software Development Methodologies

The three prevalent software development methodologies such as Waterfall, Spiral, and Iterative and Incremental models. Each methodology offers distinct approaches to managing the software development lifecycle, with varying degrees of flexibility, adaptability and risk management. The key aspects of each methodology is analysed and identified to determine the most suitable choice for my project development needs.

Table 2.13: Comparison of	Waterfall, Spiral,	Iterative and	Incremental Models
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Aspect	Waterfall	Spiral		Iterative a	nd
				Increment	al
Development	Sequential	Iterative an	nd	Iterative	and
Approach		Spiral		Incremental	

Phases	Linear	Iterative Cycles	Iterative Cycles
Risk	Limited	Emphasized	Addressed Early
Management			
Flexibility	Low	Less flexible	Flexible
Ease of	Easy	Complex	Easy
Implementation			
Simplicity	Simple	Intermediate	Intermediate
Complex Project	Inappropriate	Appropriate	Appropriate
Requirement	Difficult to	Can be	Easily Adaptable
Changes	Accommodate	Incorporated	
Suitability for	Less Suitable	Suitable	Highly Suitable
Unclear			
Requirements			
Testing and	Late-Stage	Emphasized	Continuous
Quality Control	Testing	Testing	Testing
Maintenance	Least	Yes	Maintainable
	maintainable		
Ideal Project	Well-Defined,	Large and	Evolving or
Туре	Short	Complex	Uncertain

In summary, there are strengths and limitations in each software development methodology. Waterfall model is a well-structured model but it is less adaptable and might not align with the evolving nature of the project. It is more difficult to accommodate changing requirements or incorporate early user feedback effectively. On the other hand, Spiral model is provided management advantages but can be complex and resource-intensive for a solo developer.

However, the Iterative and Incremental model aligns closely with my needs as a sole developer for my project. It allows to work in manageable iterations that providing incremental deliveries for early feedback and continuous improvement. This model flexibility and adaptability are particularly beneficial for handling potential changes in my project requirements and accommodating my evolving understanding of what a onestop child enrichment and sports centre entails.

As a result, the Iterative and Incremental Model is most suitable for my project as it is highly flexible and adaptive align perfectly with my objective of developing a one-stop child enrichment and sports centre system that genuinely meet the needs of the targeted users including parents and service providers.

CHAPTER 3

METHODOLOGY AND WORK PLAN

3.1 Introduction

The iterative and incremental models is applied in my project as an effective software development methodology. The workplan and Gantt chart will be laid out that forms the foundation of my approach to develop the one-stop child enrichment and sports centre solution. This roadmap will provide a clear and structured path to guide me through the various phases of my project, from inception to completion. Besides, the key development tools have identified are the Laravel PHP framework, Vue.js, MySQL, Postman, and Visual Studio Code.

3.2 Iterative and Incremental Methodology

Based on the findings presented in Chapter 2 of the study, the Iterative and Incremental model was selected as the preferred software development methodology. This model was chosen due to its alignment with the project specific requirements and goals.



Figure 3.1: Iterative and Incremental Model

In this model, the project is divided into cycles or iterations. Each iteration represents a complete development cycle, encompassing four essential phases such as requirement gathering, analysis and design, coding and testing. These iterations are repeated until the final software product is achieved. It also promotes an incremental development process that allowing for the gradual addition of functionality and features with each iteration. After each iteration, a working version of the software is produced, allowing for incremental improvements and modifications based on feedback. Iterative and Incremental model can help the users including parents and service providers to identify their needs and expectations of the one-stop child enrichment and sports centre solution.

3.2.1 Initial Planning

During the initial planning phase, the project objectives, scope and requirements are defined. The targeted users of this project have been identified including parents and service providers. The background research is conducted to gain a comprehensive understanding of current landscape of enrichment and sport centre in Malaysia. The research found that there is absence of one-stop child enrichment and sport centre in Malaysia. Therefore, the specific project objective has defined such as developing a centralized platform and simplifying the search process for parents while assisting service providers in promoting their offerings. In the initial planning phase, a comparative analysis of similar existing systems is carried out to identify features and best practices that will serve as a reference point for the project. This initial planning phase creates a solid foundation for the subsequent stages of development and setting the stage for the effective implementation of the project.

3.2.2 Iteration 1

In this initial iteration, the development cycle is divided into small manageable parts known as iterations. The primary focus on this phase is to implement the essential authentication methods for login and registration process.

3.2.2.1 Requirements Gathering

The requirement gathering phase is a subset of the initial planning phase, focusing specifically on collecting detailed requirements from key stakeholders. Since there are no stakeholders in this project, the primary focus is the users such as parents and service providers. During this phase, a comprehensive market research is conducted to understand their specific preferences of the login and registration methods through the existing similar system.

3.2.2.2 Analysis and Design

Following the requirements gathering phase, the analysis reveals that many international platforms in the child enrichment and sports sector leverage Single Sign-On (SSO) as their preferred method for login and registration to streamline the user experience. Consequently, SSO is determined as the most suitable authentication method for the project after comparing the strengths and limitations between traditional authentication and SSO authentication. In this phase, the SSO implementation will be analysed and designed. This includes defining the components such as the Identity Provider (IDP) and Service Provider (SP). Additionally, the various SSO protocols are evaluated including SAML, OAuth 2.0, and OpenID Connect. Then, the user interface for the login and registration module.

3.2.2.3 Coding and Testing

The development phase will be initiated by implementing the chosen SSO authentication method, specifically using the OAuth 2.0 protocol. After the development process was done, the testing activity will also conduct to ensure the functionality and security of the authentication system. Any issues or errors encountered during this phase are addressed promptly and the code is refined.

3.2.2.4 Incremental Software Product 1

This phase represents the tangible outcome of Iteration 1. If any errors are found during testing, the iteration may be returned to the development or even the design phase of login and registration module for further refinement. Only when the testing phase of the first iteration has been successfully completed do we move on to subsequent iterations. Only when the testing phase of the first iteration has been successfully completed do move on to subsequent iterations.

3.2.3 Iteration 2

In Iteration 2 is more emphasis on the user experience by introducing features such as user reviews and ratings, search functionality, and advanced filtering options.

3.2.3.1 Requirements Gathering

The specific requirements related to user reviews and ratings, as well as the search and filtering functions will be gathered in this phase. Engagement with user groups including parents and service providers, allow for a better understanding of their expectations and preferences regarding these features.

3.2.3.2 Analysis and Design

The analysis and design of the user interface for these new features will carry out based on the gathered requirements. This includes designing the layout and functionality for users to rate and review activities, creating a user-friendly search bar and designing filters that allow users to refine their activity searches by criteria such as activity type, age suitability, location, schedule, and price.

3.2.3.3 Coding and Testing

In the coding phase, the functionalities will develop for user reviews and ratings, the search bar, and the filtering options. Testing will be conducted to ensure that these new features work seamlessly, user-friendly, and free of any bugs or issues.

3.2.3.4 Incremental Software Product 2

Incremental Software Product 2 represents the outcome of Iteration 2. It will include the implementation of user review and rating functionalities, the search bar, and the advanced filtering options. Users will be able to provide feedback on activities, search for activities based on their preferences and easily filter and narrow down their choices. As with previous iterations, any issues identified during testing will be addressed before proceeding to the next iteration.

3.2.4 Iteration 3

In Iteration 3, the primary focus shifts towards enhancing the platform capabilities by introducing online enrolment and booking features and establishing direct communication channels to improve user engagement and interaction. Besides, the project entails the development of a comprehensive dashboard and activity management system tailored specifically for service providers. This feature will empower service providers with the tools they need to efficiently manage their offerings, including activity scheduling, participant enrolment tracking, and performance analytics.

3.2.4.1 Requirements Gathering

During this crucial phase, detailed requirements related to online enrolment and booking, and direct communication channels are gathered. This involves comprehensive discussions and interactions with both parents and service providers to understand their specific needs and preferences regarding these functionalities. These discussions encompass aspects such as the user flow for enrolling in activities, booking procedures, preferred communication methods and notification preferences. Additionally, by streamlining administrative tasks and providing valuable insights, the dashboard and activity management component will enable service providers to optimize their operations and enhance the overall user experience for both parents and children participating in enrichment and sports activities.

3.2.4.2 Analysis and Design

Based on the gathered requirements, the analysis and design phase will involve creating user interfaces and designing the workflows for these new features. The user interface elements will be created to facilitate online enrolment and booking seamlessly but also to streamline activity management for service providers. This includes developing intuitive interfaces for service providers to efficiently manage their activities, schedule sessions, track participant enrolment, and monitor performance metrics.

3.2.4.3 Coding and Testing

In the coding phase, the development of communication channels for parents and service providers will take place. Besides, the online enrolment and booking functions and activity management feature will be implemented. After completing the development process, the testing phase will start to assess the functionality of these three modules to ensure proper implementation without errors. This testing also involves verifying that all flows are delivered accurately and in a timely manner.

3.2.4.4 Incremental Software Product 3

Incremental Software Product 3 also represents the final integrated version of the software. This version encompasses all the modules have been developed throughout the various iterations. Besides, this iteration also undergoes system integration testing to assess the seamless functionality of the entire system when all modules were combined. This thorough testing ensure that the final software system could effectively and harmoniously operate with all its components united and providing users with a reliable and fully functional platform.

3.2.5 Deployment

The deployment phase is the last stage of the project where the meticulously developed and thoroughly tested software system is ready for implementation in its intended environment. The deployment phase also includes the rollout of the final software product to users, along with any necessary training and documentation to ensure a smooth transition. The training ensures that users are proficient in using the platform, while documentation serves as a valuable resource for reference and guidance. The project is complete with the successful deployment since users may now fully utilize the platform to accomplish their goals and objectives.

3.3 **Project Planning**

The project planning phase involves structuring the project tasks and creating a timeline for execution. The Work Break Down Structure (WBS) and Gantt chart are discussed in this section. The WBS is used to provide a hierarchical breakdown of the project tasks and deliverables to ensure clarity in task allocation and responsibility. The Gantt chart provides a timeline view of the project activities and helps in tracking progress over time.

3.3.1 Work Break Down Structure (WBS)

- 0.0 One-Stop Child Enrichment and Sports Centre System
- 1.0 Preliminary Planning
 - 1.1 Analyse the Project Title
 - 1.2 Study of Background Problem
 - 1.3 Define Problem Statements
 - 1.4 Define Project Objectives
 - 1.5 Propose Project Solution
 - 1.5.1 Proposed Design Architecture
 - 1.6 Propose Project Approach
 - 1.6.1 Identify Development Approach
 - 1.7 Determine Project Scope
 - 1.7.1 Identify Targeted Users
 - 1.7.2 Identify Modules Covered
- 2.0 Project Analysis
 - 2.1 Requirements Gathering and Analysis
 - 2.2 Review on Existing Similar System
 - 2.2.1 Study Features of ActivityHero
 - 2.2.2 Study Features of KidPass
 - 2.2.3 Study Features of ActivityRockets
 - 2.2.4 Study Features of AOneLearn
 - 2.2.5 Study Features of Gymboree
 - 2.2.6 Study Features of Kiddy123
 - 2.2.7 Comparison of Existing Similar System
 - 2.3 Review on Authentication Method for Login and Registration
 - 2.3.1 Research on Traditional Authentication
 - 2.3.2 Research on SSO Authentication
 - 2.3.3 Research on Components of SSO Authentication
 - 2.3.4 Research on SSO Protocol
 - 2.3.4.1 Research on SAML Protocol
 - 2.3.4.2 Research on OAuth 2.0 Protocol
 - 2.3.4.3 Research on OpenID Connect Protocol
 - 2.3.5 Compare the Difference of Authentication Methods

- 2.3.6 Compare the Difference of SSO Protocols
- 2.4 Review on Software Development Methodologies
 - 2.4.1 Study Features of Waterfall Model
 - 2.4.2 Study Features of Spiral Model
 - 2.4.3 Study Features of Iterative and Incremental Model
 - 2.4.4 Compare and Contrast the Features of Software Development Methodologies
- 3.0 Project Initial Specification
 - 3.1 Project Scheduling
 - 3.1.1 Create Work Break Down Structure (WBS)
 - 3.1.2 Create Project Duration Plan
 - 3.1.3 Create Gantt Chart
 - 3.2 Project Tool
 - 3.2.1 Determine Development Tools
 - 3.3 Requirement Specifications
 - 3.3.1 Identify Functional Requirements
 - 3.3.2 Identify Non-Functional Requirements
 - 3.4 Use Case Modelling
 - 3.4.1 Create Use Case Diagrams
 - 3.4.2 Create Use Case Descriptions
- 4.0 Iterative and Incremental Methodology
 - 4.1 Initial Planning for Main Functions
 - 4.2 Iteration 1
 - 4.2.1 Conduct Market Research to Identify User Needs for Authentication Method
 - 4.2.2 Analysis and Design of SSO Authentication
 - 4.2.2.1 Refine UI for Login and Registration Features
 - 4.2.3 Development and Testing of SSO
 - 4.2.3.1 Create Login and Sign Up UI
 - 4.2.3.2 Implement SSO Authentication
 - 4.2.3.3 Test Functionality and Security of SSO Authentication
 - 4.2.4 Incremental Software Product 1

- 4.3 Iteration 2
 - 4.3.1 Requirements Gathering Related to User Review Rating and Searching and Filtering Features

4.3.2 Analysis and Design

- 4.3.2.1 Refine UI of Review and Rating Features
- 4.3.2.2 Refine UI of Searching Features
- 4.3.2.3 Refine UI of Filtering Activities Features
- 4.3.3 Coding and Testing
 - 4.3.3.1 Create Review and Rating UI
 - 4.3.3.2 Create Search Bar and Filtering Options
 - 4.3.3.3 Develop Review and Rating Features
 - 4.3.3.4 Develop Searching Activities Function
 - 4.3.3.5 Develop Filtering Activities Function
 - 4.3.3.6 Test Review and Rating
 - 4.3.3.7 Test Search Activities Function
 - 4.3.3.8 Test Filtering Activities Options Function
- 4.3.4 Incremental Software Product 2

4.4 Iteration 3

- 4.4.1 Requirements Gathering
 - 4.4.1.1 Identify the User Flow of Enrolment Activity
 - 4.4.1.2 Identify the Enrol and Booking Process
 - 4.4.1.3 Identify the User Preferred Communication Method
- 4.4.2 Analysis and Design
 - 4.4.2.1 Refine Online Enrolment and Booking Activity UI
 - 4.4.2.2 Refine Direct Communication Channel UI

4.4.3 Coding and Testing

- 4.4.3.1 Create Enrolment UI
- 4.4.3.2 Create Booking Activity UI
- 4.4.3.3 Create Communication Channel UI
- 4.4.3.4 Develop Enrolment Function
- 4.4.3.5 Develop Booking Function

- 4.4.3.6 Develop Communication Channel
- 4.4.3.7 Test Enrolment Function
- 4.4.3.8 Test Booking Function
- 4.4.3.9 Test Direct Communication
- 4.4.3.10 Conduct Integration Testing
- 4.4.4 Final Incremental Software Product

4.5 Deployment

- 4.5.1 Deploy Production
- 4.5.2 Create System Documentation
3.3.2 Gantt Chart

The Gantt Chart is used in my project as a visual representation of project tasks and timelines. This tool can help me to track my progress, manage resources and coordinate activities effectively. Tasks are displayed as horizontal bars along a timeline with their start and end dates clearly indicated. Overall, the Gantt Chart serves as a valuable project management tool for planning, scheduling and monitoring my project activities.



Figure 3.2: Gantt Chart (Part A)



	START			нти 4	15	WEI	Jul 31	eting I		WEEK	START	TING	1	Aug	LARTIN g 54	4G	v	VEEK S	TARTIN 19 21	ю	WE	Aug 1	RTING		WEE	K STAR Sep 04	TING		WEEK	Sep 11	TING		WEEK	STAR iep 10	TING		WEEK S	START	ING
TASK NAME	DATE	END DATE	DAYS)	Th	F	MT	r w	Th F	E N	т	w	Th F	м	TN	IT Th	F	м	т	W Th	F	м	w	Th	F	и т	w	Th	F N	T	w	Th I	м	т	w	Th P	м	т	w 1	h F
3.0 Project Initial Specification	8/9	8/29	20	Т																															1				T
3.1 Construct WBS structure	8/9	8/11	3																																				
3.2 Construct Gantt Chart	8/11	8/12	2																																				
3.3 Determine development tools	8/12	8/14	3	E																																			
3.4 Identify functional requirements	8/14	8/15	2																																				
3.5 Identify non-functional requirements	8/16	8/17	2																																				
3.6 Use Case Modelling	8/18	8/23	6																																				
3.6.1 Develop use case diagram	8/18	8/20	3																									T											
3.6.2 Develop use case description	8/21	8/23	3																																				
3.7 Design Prototype	8/24	8/29	6																																				
Figure 3.4: Gantt Chart (Part C)																																							





Figure 3.7: Gantt Chart (Part F)

3.4 Development Tools

In the development of the one-stop child enrichment and sports centre platform, several essential tools have been utilized to ensure a robust and efficient software solution. Each tool serves a unique purpose and collectively contributes to the successful realization of the platform objectives.

3.4.1 Vue.js

Vue.js is a popular open-source JavaScript framework that has been used for creating dynamic and interactive user interfaces and single-page application. It was created by then Google employee Evan You. One of its biggest attractiveness stems from the ability to create user interfaces using HTML, CSS, and JavaScript (Psenak and Tibensky, 2020). The framework is most notably used by Alibaba, GitLab, Baidu, 9GAG, and is appreciated by developers and designers globally (Kumar, 2018). It is really easy to start learning web development with Vue JS because its lightweight nature and flexibility make it an ideal choice for building the frontend of the platform. Vue.js is also known for its reactive data binding system an enabling UI updates based on application state changes through a virtual DOM and reactivity system. It also emphasizes a component-based architecture, fostering the creation of reusable, encapsulated components for streamlined maintenance and scalability. Vue.js enables the seamless integration of user-centric features and ensures a responsive and engaging user experience.

3.4.2 Laravel Blade

Laravel Blade is a powerful templating engine provided by the Laravel PHP framework that designed to simplify the process of creating dynamic and reusable user interface components in web applications (Newns, 2023). It allows developers to write clean and expressive PHP code within their HTML views, enables seamless integration of logic and presentation layers. Therefore, developers can easily define layouts, partials, and components to make it straightforward to organize and maintain complex frontend structures. Besides, Blade templates support features like template inheritance which allows for the creation of base layouts that can be extended and customized by child views. Additionally, Blade provides directives for control structures such as loops and

conditional statements to allow developers to iterate over data and conditionally render content. Blade's syntax is intuitive and easy to learn, so making it a preferred choice for Laravel developers looking to build elegant and efficient web applications.

3.4.3 Bootstrap

Bootstrap is a popular front-end framework that simplifies and accelerates the process of building responsive website and web applications. Bootstrap provides a collection of pre-built HTML, CSS, and JavaScript components which is including buttons, forms, navigation bars, and more so that can be easily integrated into web projects (Zola, 2022). One of Bootstrap's key features is its grid system which allows developers to create responsive layouts that automatically adjust to different screen sizes and devices. This makes it ideal for creating websites that look great on desktops, tablets, and smartphones without the need for extensive custom styling or media queries. Additionally, Bootstrap offers built-in support for popular web browsers and provides extensive documentation and community support. Therefore, this making it a favorite choice for developers of all skill levels. Overall, Bootstrap enables developers to create attractive, functional, and consistent web interfaces quickly and efficiently.

3.4.4 Laravel

Laravel is a powerful and widely used open-source PHP web application framework, serves as the foundation for the platform backend development. It was created by Taylor Otwell and first released in 2011. It designed to make web development tasks easier and more efficient instead of spending time to write the repetitive coding. These PHP frameworks provide many robust libraries and convenient tools so that able help to reduce the repetitive tasks and complex task, which means can write less and do more with the highest quality in a certain amount of time (Neha et al., 2019). It facilitates the implementation of core functionalities, manages databases, and ensures secure server-side operations. Laravel also serves as a comprehensive framework that not only simplifies web development but also streamlines core functionalities such as database management and server-side operations. It provides tools and features that enhance security including built-in safeguards against common threats like CSRF attacks and input validation. This holistic approach makes Laravel a reliable choice for building robust and secure web applications while maintaining developer-friendly syntax and structure.

3.4.5 MySQL

MySQL is a robust relational database management system that used for efficient data storage and retrieval. It provides a structured database for storing user information, activity schedules, and other critical data, enabling seamless data-driven operations. According to the Vaswani's (2010) book stated that MySQL has emerged as the preferred database system for both business and personal applications because its exceptional speed, robustness, and user-friendly database system. The popularity of MySQL is due to a particular combination of unique features including speed, reliability, extensibility, and open-source code so making it an attractive choice for a wide range of users and applications.

3.4.6 Visual Studio Code

Visual Studio Code is a popular and streamlined code editor with support of essential development tasks like debugging, task automation and version control. Its widespread adoption in the Laravel development community because of its extensive feature set which is thoughtfully designed to create an efficient and tailored development environment for Laravel projects. Its exceptional extensibility through a wide range of extensions makes it very beneficial. These extensions not only enhance the code editing experience but also facilitate effortless debugging so making it a preferred choice for this project seeking a versatile and productive development tool.

3.4.7 Axure RP

Axure RP is a powerful prototyping tool used by designers and developers to create interactive wireframes, prototypes, and specifications for web and mobile applications. Users can Axure RP to design complex interactions and dynamic content without writing a single line of code. The tool offers a wide range of features including drag-and-drop interface elements, conditional logic,

animations, and data-driven interactions. One of the key benefits of Axure RP is its ability to create realistic prototypes that simulate the functionality and user experience of the final product. This allows me to create high-fidelity prototypes that accurately represent my vision for web system.

3.4.8 Pusher

Pusher is a hosted API service which makes adding real-time data and functionality to web and mobile applications seamless. Pusher simplifies the process of adding real-time functionality to web and mobile applications by providing a set of APIs and libraries. This can use to implement features such as live chat, real-time updates, notifications, and collaboration tools without the complexity of managing infrastructure. Pusher operates on a publish-subscribe model, where clients subscribe to channels and receive updates whenever new data is published to those channels. This asynchronous communication model allows for efficient and instantaneous data transmission between clients and servers. Additionally, Pusher offers various SDKs and integrations for popular programming languages and frameworks so that it can be accessible and versatile for developers across different technology stacks.

3.4.9 Postman

Postman is a popular and powerful API development tool that simplifies the process of designing, testing, and documenting Application Programming Interfaces (APIs). It allows to create and execute HTTP requests to test APIs. For example, send GET, POST, PUT, DELETE, and other types of requests to interact with API endpoints. It also can be used to automate the testing processes by creating collections of API requests and defining test scripts. This automation ensures that critical functionalities such as user registration, login, or data retrieval are thoroughly tested and validated.

CHAPTER 4

Project Initial Specifications

4.1 Introduction

In this Chapter 4, the functional and non-functional requirements are outlined to establish a foundational understanding of user needs. Besides, the use case modelling is constructed like use case diagrams and use case descriptions to describe the functionality of the system in accordance with the findings from the literature review in Chapter 2.

4.2 Requirement Specifications

There are the functional and non-functional requirements for the one-stop child enrichment and sports centre system. The functional requirements are divided into three roles which are parents, service providers and admin.

4.2.1 Functional Requirements

The functional requirements for parents:

- The system shall allow parents to manually register new user accounts.
- The system shall allow parents to login in to system after successful registration.
- The system shall allow parents to login by using Google SSO.
- The system shall allow parents to login by using Facebook SSO.
- The system shall allow parents to manage their profiles including view and update personal information.
- The system shall allow parents to search for child enrichment and sports activities.
- The system shall allow parents to filter search results by category, state, age group, class size, price and frequency.
- The system shall allow parents to view detailed information about each activity.
- The system shall allow parents to enrol their children in the activity.
- The system shall allow parents to make payment for an activity.

- The system shall allow parents to view detailed profiles of service providers.
- The system shall allow parents to chat with specific service provider.
- The system shall allow parents to view enrolment history.
- The system shall allow parents to view schedule history.
- The system shall allow parents to rate and review service providers based on their experiences.
- The system shall allow parents access to a repository of all activity ratings and reviews, along with the ability to view personal review history.
- The system shall allow parents to view own transaction history after payment is made.
- The system shall allow parents to receive email notification regarding the upcoming events.
- The system shall allow parents to add favourite activity in their wishlist.
- The system shall allow parents to view and remove the activity from wishlist.

The functional requirements for service providers:

- The system shall allow service providers to register with information such as school name, contact details, address, description and so on.
- The system shall allow service providers to receive email notification upon the account status is approved or rejected.
- The system shall allow service providers to view and update their profiles.
- The system shall allow service providers to login after their account is approved by admin.
- The system shall allow service providers to view own dashboard.
- The system shall allow service providers to manage their activity listings, including the ability to add new activities, edit existing listings and delete activities.

- The system shall allow service providers to manage child enrolment records including view enrolment history, adding new students, editing existing details and deleting records as needed.
- The system shall allow service providers to manually add parents to the system.
- The system shall allow service providers to view all user (parent) list that enrolled their children in the activity.
- The system shall allow service providers to view all learner (student) list.
- The system shall allow service providers to view transactions for parents who have helped their child enrol successfully in their activities.
- The system shall provide a messaging function for communication between parents and service providers.
- The system shall allow service providers to monitor parents' feedback and ratings, allowing them to publish or unpublish the review and rating to parents.
- The system shall allow service providers to notify all parents for an upcoming activity.
- The system shall allow service providers to view their activities created is displayed on the calendar.

The functional requirements for admin:

- The system shall allow admin to login to the system.
- The system shall allow admin to manage service provider by verifying their application including update service provider status, view their profile and delete service provider.

4.2.2 Non-Functional Requirements

- The system shall implement secure authentication methods including Social Single Sign-On (SSSO).
- The system shall maintain responsiveness by responding to user input within a maximum of 6 seconds.
- The system shall validate the user's account credentials to confirm the authenticity and validity of the account.
- The system shall be able to display the prompt message clearly to ensure that users understand the subsequent actions they should take.

4.3 Use Case Modelling

In this section of use case modelling, it is included the development of a use case diagram and provide detailed use case descriptions for the project.

4.3.1 Use Case Diagram

The use case diagram is created to illustrate the interactions between the two primary users which are parents and service providers in the child enrichment and sport centre system.



Figure 4.1: Use Case Diagram

4.3.2 Use Case Descriptions

Table 4.1: Use Case Description of Register New User Account

Use Case Name: Register	r New User	ID: UC1	Importance Level: High					
Account								
Primary Actor: Parent		Use Case	Type: Detail, Essential					
Stakeholders and Interest	Stakeholders and Interests:							
Unregistered Parent – wa	Unregistered Parent – wants to create a new account in finding the activity.							
Brief Description: This use case describes how the user create an account to								
find an activity by using the system.								
Trigger: Parent wants to create an account to login and access the system.								
Relationships:								
Association	: Unregistered	Parent						
Include	: Login Accou	int						
Extend	: N/A							
Generalization	: N/A							
Normal Flow of Events:								
1. The unregistered	parent navigate	s to the regi	stration page.					
2 The unregistered	narent is presen	ted with the	option to either manually					
enter their person	al information of	or log in usi	ng Single Sign-On (SSO)					
		, 10g in usi	ng bingle bign on (bbo).					
3. If choosing manu	al registration:							
3.1 The unregister	ed parent is requ	uired to ente	er their personal					
information wl	nich includes fu	ll name, em	ail and password. (S1)					
3.2 The system ver	rifies the accour	nt details to	ensure that all required					
information is	provided. (E1)							
3.3 The system cre	eates a new user	in the data	base.					
3.4 Perform Login	Account use ca	ise.						
4. If choosing SSO:								
4.1 The parent sele	ects the preferre	d SSO optio	on (e.g., Facebook,					
Google).								
4.2 The system rec	lirects the paren	t to the cho	sen SSO provider's login					
page.								
4.3 The parent log	s in using their	SSO creden	tials.					

4.4 The system retrieves necessary personal information from the SSO provider.

4.5 Perform Login Account use case.

Sub-flows: {optional section}

S1:

3.1.1: Parent enters the name.

3.1.2: Parent enters the email.

3.1.3: Parent enters the phone number.

3.1.4: Parent enters the password.

Alternate/Exceptional Flows:

E1 – Lack of personal details to create new account. If the parent does not provide all of the required information for the new account, the system will display an error message prompting the parent to enter the missing information.

Table 4.2: Use Case Description of Register New Service Provider Account

Use Case Name: Registe	r New Service	ID: UC2	Importance Level: High				
Provider Account							
Primary Actor: Unregistered Service Use Case Type: Detail, Essential							
Provider							
Stakeholders and Interests:							
Unregistered Service Provider- wants to create a new account to list their							
activities on the platform.							
Brief Description: This use case describes how the unregistered service							
provider create an account	nt.						
Trigger: Unregistered set	rvice provider w	ants to crea	te an account to access				
the system.							
Relationships:							
Association	: Unregistered	Service Pro	ovider				
Include	: N/A						
Extend	: N/A						
Generalization	: N/A						

Normal Flow of Events:

- 1. The unregistered service provider navigates to the registration page.
- 2. The unregistered service provider can manually enter their personal information including full name, email, phone number, school name, address, details and password. (S1)
- 3. The system verifies the account details to ensure that all required information is provided. (E1)
- 4. The system creates a new service provider with "pending" status in the database.
- 5. Perform Verify Application use case.

Sub-flows: {optional section}

S1:

- 2.1: The unregistered service provider enters their full name.
- 2.2: The unregistered service provider enters their email.
- 2.3: The unregistered service provider enters their phone number.
- 2.4: The unregistered service provider enters their school name.
- 2.5: The unregistered service provider enters their address.
- 2.6: The unregistered service provider enters a password.

Alternate/Exceptional Flows:

E1 – Lack of personal details to create new account. If the unregistered service provider does not provide all of the required information for the new account, the system will display an error message prompting she/he to enter the missing information.

Table 4.3: Use Case Description of User Login						
Use Case Name: User Login	ID: UC3	Importance Level: High				
Primary Actor: Registered Parent Use Case Type: Detail, Essential						
Stakeholders and Interests:						
Registered Parent – wants to log in to the	Registered Parent – wants to log in to their account to access system.					
Brief Description: This use case describes how the registered parent log in to						
Brief Description: This use case describe	es how the	registered parent log in to				

Table 4.3: Use Case Description of User Login

Trigge	er: Registered parer	nts wants to log in to their accounts and access the user						
home	page.							
Relation	onships:							
	Association	: Registered Parent						
	Include	: N/A						
	Extend	: N/A						
	Generalization	: N/A						
Norma	al Flow of Events:							
1.	The registered par	rent can select "Login" or "Get's started" button in the						
	menu navigation	bar page.						
2.	2. User Login Page:							
2.1 The system prompts the registered parent to choose between Single								
Sign-On (SSO) or manual user login.								
2.2 If choosing SSO, the parent is redirected to the SSO provider's login								
page. If choosing manual login, the parent is prompted to enter their								
	login credenti	als. (S1)						
	2.3 The system ve	erifies and authenticates the login details. (E1)						
	2.4 The registered	d parent is logged in to the system successfully.						
	2.5 Use case ends	3.						
Sub-fl	ows: {optional sec	tion}						
S1:								
2.2	2.1: Parent enters th	ne email address.						
2.2	2.2.2: Parent enters the password.							
Altern	ate/Exceptional Fl	ows:						
E1 –It	f the registered pa	arent enters invalid email address or password, the						
system	n will display an er	ror message prompting the parent needs to re-enter the						
email	and password.							
	1							

Table 4.4: Use Case Description of Admin and Service Provider Login							
Use Case Name: Admin and Service	ID: UC4	Importance Level: High					
Provider Login							

Prima	ry Actor: Registered Se	ervice	Use Case Type: Detail, Essential				
Provid	ler and Admin						
Stakel	Stakeholders and Interests:						
Regist	Registered Service Provider – wants to log in to their account to access system.						
Admi	Admin- wants to log into the account to access system.						
Brief	Description: This use ca	ase describe	s how the registered service provider				
and a	lmin log in to their res	spective acc	counts to access system features and				
content.							
Trigge	Trigger: Registered service provider or admin wants to log in to their respective						
accou	nts and access the perso	onalized das	hboard.				
Relati	onships:						
	Association : R	legistered Se	ervice Provider and Admin				
	Include : N	J/A					
	Extend : N	I/A					
	Generalization : N	J/A					
Norm	al Flow of Events:						
1.	The registered service	provider an	d admin can select "Service Provider"				
	at the footer then it wi	ill navigate 1	to their login page.				
2.	Registered Service Pro	ovider and A	Admin Login Page:				
	2.1 For registered serv	vice provide	ers and admins, they must navigate to				
	the service provide	er login pag	e.				
	2.2 On the service pro	ovider login	page, the system prompts the user to				
	choose between lo	ogging in as	an admin or a service provider.				
	2.3 After selecting the	e appropriate	e option, they need to enter their email				
	address and passw	vord. (S1)					
	2.4 The system verifie	es and authe	nticates the login details. (E1)				
	2.5 The registered se	ervice provi	ider or admin is logged into their				
	respective account	t successfull	ly.				
	2.6 Use case ends.						
1							

Sub-flows: *{optional section}* S1:

2.3.1: Registered service provider or Admin enters the email address.

2.3.2: Registered service provider or Admin enters the password.

Alternate/Exceptional Flows:

E1 –If the registered service provider or admin enters invalid email address or password, the system will display an error message prompting them need to reenter the email and password.

14010 1101 0 50	east 2 to the phot	i ei i einij i	-pp					
Use Case Name: Verify A	Application	ID: UC5	Importance Level:					
			High					
Primary Actor: Admin		Use Case 7	Type: Detail, Essential					
Stakeholders and Interest	s:							
Admin - responsible for verifying service provider applications.								
Brief Description: This use case describes how the admin receives and verifies								
service provider applications after registration. Admin can either approve or								
reject these applications based on predefined criteria.								
Trigger: Service provider submits registration application.								
Relationships:								
Association	: Admin							
Include	: N/A							
Extend	: N/A							
Generalization	: N/A							
Normal Flow of Events:								
1. The admin naviga	1. The admin navigates to the service provider list page.							
2. The admin reviews the list of pending service provider applications.								

 Table 4.5: Use Case Description of Verify Application

- 3. For each pending application, the admin can view the details of the service provider.
- 4. The admin updates the status of the service provider application to "pending", "approved" or "rejected".
- 5. If the status is updated:
 - 5.1 If approved or rejected, the system automatically sends an email to the service provider's registered email address informing them of their application status.
- 6. Use case ends.

Table 4.6: Use Case Description of Manage Service Provider								
Use Case Name: Manage Se	ervice	ID: UC6	Importance Level: High					
Provider List								
Primary Actor: Admin Use Case Type: Detail, Real								
Stakeholders and Interests:								
Admin – responsible for managing service provider information.								
Brief Description: This use case describes how the admin manage the list of								
registered service providers.								
Trigger: Admin navigates to the service provider management page.								
Relationships:								
Association :	Admin							
Include :	Verify Appli	cation						
Extend :]	N/A							
Generalization :	N/A							
Normal Flow of Events:								
Normal Flow of Events:								
1. The admin navigates	to the servic	e provider	management page.					

providers.

- 3. For each service provider listed, the admin can view relevant details such as name, contact information, registration status and application details.
- 4. Use case ends.

Sub-flows: {optional section} -

Alternate/Exceptional Flows:

		т (т 1					
Use Case Name: Manage Profile	ID: UC/	Importance Level:					
		High					
Primary Actor: Registered Parent and	Use Case	Type: Detail, Essential					
Registered Service Provider							
Stakeholders and Interests:							
Registered Parent – wants to manage their personal information.							
Registered Service Provider – wants to manage their profile information.							
Brief Description: This use case describes how the registered parent or							
service provider manage their profile information.							
Trigger: A registered parent or service provider initiates the profile viewing							
or editing process.							
Relationships:							
Association : Registered P	arent, Regis	stered Service Provider					
Include : N/A							
Extend : N/A							
Generalization : N/A							
Normal Flow of Events:							
1. The registered parent or service p	rovider nav	igates to their					
respective profile section of the s	ystem.						
2. For registered parents:							

Table 4.7: Use Case Description of Manage Profile

- 2.1 The parent can view or edit their name, phone number, email, and password as needed.
- 3. For registered service providers:

3.1 The service provider view or update their name, school name, address, phone, email, image, description, website and password as necessary.

- 4. If there are any updated, the system validates the updated information to ensure accuracy.
- 5. The changes are saved to the database.
- 6. Use case ends.

		1					
Use Case Name: Chat		ID: UC8	Importance Level: High				
Primary Actor: Registere	Primary Actor: Registered Parent and Use Case Type: Detail, Real						
Registered Service Provider							
Stakeholders and Interests:							
Registered Parent – wants to chat with service providers.							
Registered Service Provider – wants to chat with parents.							
Brief Description: This use case describes how the registered parent or service							
provider can communicate with each other.							
Trigger: A registered parent or service provide wants to review the chat							
conversation and reply to	o new message.						
Relationships:							
Association	: Registered Pa	arent, Regis	stered Service Provider				
Include	: N/A						
Extend	: Reply Messa	ge					
Generalization	: N/A						
Normal Flow of Events:							
1. The registered parent or service provider accesses the chat interface.							

Table 4.8: Use Case Description of Chat

2. The registered parent or service provider can view the chat history and messages.

3. Use case ends.

Sub-flows: {optional section} -

Use Case Name: Manage Wishlist	ID: UC9	Importance Level:	
		Moderate	
Primary Actor: Registered Parent	Use Case	Type: Detail, Real	
Stakeholders and Interests:			
Registered Parent - can add, view and	remove the	favorite activities from	
their wishlist.			
Brief Description: This use case describe	s how the re	gistered parent manages	
their wishlist of activities			
Trigger: A registered parent wants to manage their wishlist of activities			
Relationships:			
Association : Registered P	arent		
Include : N/A			
Extend : N/A			
Generalization : N/A			
Normal Flow of Events:			
1. The registered parent navigates to their wishlist page.			
2. The system displays the parent's wishlist and showing the activities			
they have previously added.			
3. The parent able to:			

- 3.1 Add new activities to their wishlist by clicking on the "love" icon button while browsing activity listings or clicking the "bookmark" icon on the specific activity detail page.
- 3.2 View details of each activity in their wishlist, including activity name, schedule, location and any additional information
- 3.3 Remove activities from their wishlist by clicking on the "trash" icon associated with each activity.
- 4. The system updates the wishlist accordingly based on the parent's actions.
- 5. The registered parent completes their wishlist management tasks.
- 6. Use case ends.

Use Case Name: Search A	Activity	ctivity ID: UC10 Importance Lev	
			High
Primary Actor Registered	d Parent	Lise Case 7	
Tilliary Actor. Registered	u i arent		ype. Detail, Real
Stakeholders and Interest	s:		
Registered Parent – wants	s to search for e	nrichment of	r sport activity.
Brief Description: This	use case desc	ribes how	the registered parent
searches for a specific act	tivity.		
Trigger: The registered pa	arent wants to se	earch for an	activity based on their
preference.			
Relationships:			
Association	: Registered Pa	arent	
Include	: Filter Activit	у	
Extend	: N/A		
Generalization : N/A			
Normal Flow of Events:			
1. The registered parent accesses the search feature.			
2. The registered parent specifies the search criteria. (S1)			

Table 4.10: Use Case Description of Search Activity

3. The registered parent initiates the search by clicking "Search" button.

4. The parents receive search results matching their criteria.

5. Perform Filter Activity use case.

Sub-flows: {optional section}

S1:

2.1: Registered parents can enter any activity category name in the search bar such as Art and Design, Sport and Fitness, Music and Dance, Baking and more.

2.2: Registered parents also can enter any activity subcategory/subject name in the search bar such as swimming, badminton, taekwondo, gymnastics in search box.

2.3 Registered parents also can enter any activity specific name such as "Piano Grade 1 Class" in search box.

1 able 4.11. Use	Table 4.11: Use Case Description of Filter Activity			
Use Case Name: Filter Activ	vity	ID: UC11	Importance Level:	
			High	
Primary Actor: Registered P	'arent	Use Case Type: Detail, Real		
Stakeholders and Interests:				
Registered Parent – wants to	o filter for er	nrichment or	sport activity.	
Brief Description: This use	case describ	bes how the	registered parent filter	
and tailor their search for an activity.				
Trigger: The registered parent wants to apply various filters to refine their				
search results when looking for activities.				
Relationships:				
Association :]	ation : Registered Parent			
Include :	: View Activity Details			
Extend :]	N/A			

 Table 4.11: Use Case Description of Filter Activity

Normal Flow of Events:

- 1. The registered parent accesses the search results based on their initial search criteria.
- 2. The registered parent finds a set of filters available on the search results page. (S1)
- 3. The registered parent selects one or more filters by clicking checkboxes to narrow their search results.
- 4. After selecting their desired filters, the system will direct filter it without clicks any button.
- 5. The system generates a new set of search results based on the selected filters and displays only the activities that meet the specified criteria.
- 6. Registered parents see a refined list of extracurricular activities that match their chosen filter criteria.
- 7. Perform View Activity Details use case.

Sub-flows: {optional section}

S1:

2.1: The filters include activity category, class size, frequency, state, price range and so on.

Use Case Name: View Activity	ID: UC12	Importance Level:			
Details	High			ils Hig	
Primary Actor: Registered Parent	Use Case T	ype: Detail, Real			
Stakeholders and Interests:					
Registered Parent – wants to view a spec	cific activity	details.			
Brief Description: This use case describ	es how the r	egistered parent access			
detailed information about a specific en	richment or s	sport activity.			
Trigger: The registered parent wants t	to view deta	ailed information after			
initiated a search for activities.					
Relationships:					
Association : Registered F	Parent				
Include : N/A					
Extend : View Servic	Extend : View Service Provider Profile				
Generalization : N/A					
Normal Flow of Events:					
1. The registered parent browse thr	rough the sea	arch results and find an			
activity that interests them.					
2. The registered parent clicks or	n "eye" ico	n to view its detailed			
information.					
2 The sector displace a dedicated					
5. The system displays a dedicated	activity deta	in page for the selected			
activity. (S1)					
4. Use case ends.					
Sub-flows: {optional section}					
S1:					
3.1: The system provides comprehensive information such as activity					
name, description, schedule, pricing, location, information of service					
provider, user review and rating.					
Alternate/Exceptional Flows: -					

Table 4.12: Use Case Description of View Activity Details

Use Case Name: View Service Provider	ID: UC13	Importance Level:	
Profile		Moderate	
Primary Actor: Registered Parent	Use Case 7	ype: Detail, Real	
Stakeholders and Interests:	I		
Registered Parent - wants to view detail	ed informat	ion about a service	
provider.			
Brief Description: This use case descri	bes how th	e registered parent	
accesses detailed information about a servi	ice provider	offering enrichment	
or sports activities.			
Trigger: The registered parent wants to vie	ew detailed	information about a	
service provider after initiating a view activ	vity details.		
Relationships:			
Association : Registered Pare	ent		
Include : N/A			
Extend : N/A			
Generalization : N/A			
Normal Flow of Events:			
1. The registered parent clicks on the school name of service provider			
to view its detailed information.			
2. The system displays comprehensiv	e informatio	on about the service	
provider's profile. (S1)			
5. Use case ends.			
Sub-flows: {optional section}			
S1:			
3.1: The system provides comprehe	ensive info	rmation of service	
provider including their name, descri	ption, conta	ct details, location,	
website. Besides, it will also display the categories and subjects of			
activities that offer.			
Alternate/Exceptional Flows: -			

 Table 4.13: Use Case Description of View Service Provider Profile

	el:		
High			
Primary Actor: Registered Parent Use Case Type: Detail, Real			
Stakeholders and Interests:			
Registered Parent – wants to enroll their child in a selected activity.			
Brief Description: This use case describes how the registered parent en	oll		
their children in an activity by securing a spot for participation.			
Trigger: The registered parent decides to enroll their child after view	ing		
detailed information about the activity.			
Relationships:			
Association : Registered Parent			
Include : View Enrolment History			
Extend : Rate and Review			
Generalization : N/A			
Normal Flow of Events:			
1. The registered parent browses through the activity details a	ind		
decides to enroll their child.			
2. The registered parent can select what time they wanted and clicks	on		
the "Enroll" button associated with the activity.			
	,		
3. The system prompts the parent to provide necessary enrollm	ent		
details such as the child's name, age, and gender required by	the		
service provider. (S1)	.1		
4. The system verifies the enrollment information to ensure all	the		
Fequired miormation. (E1)	, da		
5. The registered parent confirms the enrollment details and procee	eas		
to payment.			
6. The system processes the enrollment and confirms the booking.			
7. Perform View Enrolment History use case.			
Sub-flows: {optional section}			
S1:			
3.1: The registered parent enters the child's name.			

Table 4.14: Use Case Description of Enrol Activity

3.2: The registered parent enters the child's age.

3.3: The registered parent enters the child's gender.

Alternate/Exceptional Flows:

E1 - If the registered parent does not provide all the required information for the enrollment information, the system will display an error message prompting the registered parent to enter the missing information.

Table 4.15: Use Case Description of View Enrolment History

Use Case Name: View E	nrolment	ID: UC15	Importance Level:
History			Moderate
Primary Actor: Registere	d Parent	Use Case 7	ype: Detail, Real
Stakeholders and Interest	ts:		
Registered Parent – want	s to view the enro	lment histor	y of their child.
Brief Description: This u	use case describes	how the reg	gistered parent views
the enrolment history of	their child's partic	ipation in ac	ctivities.
Trigger: The registered pa	arent decides to ch	eck the enro	lment history of their
child after previous activ	ity enrolments.		
Relationships:			
Association	: Registered Pare	ent	
Include	: N/A		
Extend	: N/A		
Generalization	: N/A		
Normal Flow of Events:			
1. The registered parent navigates to the "Enrolment History" section			
within the system.			
2. The system retrieves and displays a list of past enrolments, including			
details such as activity name, activity provider, transaction ID,			
amount paid and payment date.			

3. The registered parent reviews the enrolment history and associated details.

Use Case Name: Rate and Review	ID: UC16	Importance Level:	
		Moderate	
	ист		
Primary Actor: Registered Parent	Use Case T	ype: Detail, Real	
Stakeholders and Interests:			
Registered Parent – wants to provide feed	lback by ratin	g and reviewing the	
activity.			
Brief Description: This use case describes	how the regis	stered parent provide	
feedback by rating and reviewing the acti	vity after the	ir children attending	
the class.			
Trigger: The registered parent wants to pro-	ovide feedbac	k after enrolled their	
child in activity			
Relationships:			
Association : Registered Par	ent		
Include : N/A	Include : N/A		
Extend : N/A			
Generalization : N/A			
Normal Flow of Events:			
1. After children enrolled in a activ	ity, registered	l parents access the	
"Rate and Review History".			
2. The system retrieves and displays a list of past enrolments.			
3. The registered parent selects the ac	tivity their chi	ild attended from the	
list.			
A. It will pavigate to activity page thay find an option to "Date and			
4. It will havigate to activity page, they find an option to Kate and Review?			
Review .			
5. The system verifies that the parent's child is enrolled in the selected			
activity. If not, an error message is displayed. (E1)			
6. The registered parent provides a rating for the activity based on their			
child's experience. (S1)			

Table 4.16:	Use Case Desc	cription of Ra	te and Review

- 7. The registered parent submits their rating and review. (E2)
- 8. The system saves the rating and review into the database.
- 9. Use case ends.

Sub-flows: *{optional section}*

S1:

6.1: The registered parent rate on a scale of 1 to 5 stars for a specific activity.

6.2: The registered parent has the option to write a detailed review by sharing their thoughts about the activity, the instructor/learning platform, and any other relevant information.

Alternate/Exceptional Flows:

E1- If the registered parent submits the review and rating that their child is not enrolled in, the system will display an error message "You cannot review and rate this activity because you have not enrolled your child in it.".

E2 – If the registered parent does not provide rating and submit it. The system will display an error message and prompt the parent to rate before submission.

Table 4.17: Use Case Description	n of Manage A	Activity	
Use Case Name: Manage Activity	ID: UC17	Importance	
		Level: High	
Primary Actor: Registered Service	Use Case Ty	pe: Detail, Real	
Provider			
Stakeholders and Interests:			
Registered Service Provider – wants to manage their listings for enrichment			
or sport activities.			
Brief Description: This use case describes how the registered service provider			
manage their activity listing which includes creating new activity, editing			
existing ones, deleting activity and view activity list			
Trigger: The service provider is logged in to their registered account and			
wants to manage activity.			
Relationships:			

Association	: Registered Service Provider
Include	: N/A
Extend	: N/A
Generalization	: N/A
Normal Flow of Events:	
1. The registered ser	vice provider logs in to their account on the system.
2. The registered ser- activity listings.	vice provider press "Activity" section for managing
3. The system displa listings.	ays a list of the service provider's current activity
4. The service provid (S1)	der has several options for managing their activity.
5. Use case ends.	
Sub-flows: {optional sect	ion}
S1:	
Create New Activity:	
4.1: If the registered	service provider wants to add a new activity, they
select the "Create" bu	tton.
4.2: The registered set	rvice provider provides all necessary details for the
new activity including	g its name, description, schedule, pricing, location,
and any additional inf	ormation.
4.3: The registered set	vice provider upload images related to the activity.
4.4: After entering the	e information, the registered service provider save
the new activity for p	ublication.
Edit Existing Activity	:
4.5: If the registered	service provider wants to make changes to an
existing activity, they	select the specific activity from their list.
4.6: The registered se	rvice provider can edit any information related to
the activity such as up	dating the schedule, description or pricing.
4.7: After making edit	ts, they save the changes.

Delete Activity:

4.8: If the service provider wishes to remove an activity, they select the specific activity from their list.

4.9: The registered service provider confirms their intent to delete the listing.

4.10: The system removes the activity listing from the platform.

Alternate/Exceptional Flows: -

Table 4.18	: Use Case Description	on of Manage	Enrolment	
Use Case Name: M	anage Enrolment	ID: UC18	Importance Level:	
			High	
Primary Actor: Reg	istered Service	Use Case 7	Type: Detail, Real	
Provider				
Stakeholders and In	terests:			
Registered Service	Provider – wants to m	anage enrolme	ents for their activities	
and classes.				
Brief Description: 7	his use case describes	how the regis	tered service provider	
track and manage enrollments for their activities and classes				
Trigger: The service provider is logged in to their registered account and				
wants to manage enrolments.				
Relationships:				
Associatio	n : Registered Se	ervice Provide	or	
Include	: N/A			
Extend	Extend : N/A			
Generalization : N/A				
Normal Flow of Ev	ents:			
1. The registe	red service provider	r press "Enro	ollment" section for	
managing en	rolments.			

TT 1 1 4 10 TT ... C N /

- 2. The system displays a list of all activities and classes offered by the service provider along with details about the class schedules and all enrolled learners.
- 3. Within the enrollment details for the selected activity or class, the service provider can perform the several actions. (S1)
- 4. Use case ends.

Sub-flows: *{optional section}* S1:

View Enrolled Participants:

3.1: The system provides a list of learners/participants who have enrolled in the activity or class.

Update Enrollment Information:

3.2: If necessary, the service provider can update enrollment information for specific participants.

3.3: This may include making changes to participant details such as contact information or special requirements.

3.4: The service provider saves the updated enrollment information.

Delete Enrollment:

3.5: If a participant needs to be removed from the activity, the service provider can select the specific enrollment.

3.6: The system delete the participant from the activity's enrollment list.

Use Case Name: Manage Rate and	ID: UC19	Importance Level:	
Review		High	
Primary Actor: Registered Service	Use Case T	'ype: Detail, Real	
Provider			
Stakeholders and Interests:			
Registered Service Provider - wants to n	nanage revie	ew and rate for their	
activities and classes.			
Brief Description: This use case describes h	ow the regist	tered service provider	
manages the ratings and reviews provided	by parents fo	or their activities.	
Trigger: The registered service provider wa	ants to view	or update ratings and	
reviews submitted by parents.			
Relationships:			
Association : Registered Service Provider			
Include : N/A	Include : N/A		
Extend : N/A			
Generalization : N/A			
Normal Flow of Events:			
1. The registered service provider	navigates t	o the "Ratings and	
Reviews" page.			
2. The system displays a list of all rational system.	ngs and revi	ews received for their	
activities.			
3. The registered service provider car	n view each	review including the	
associated activity and parent's comments.			
4. The registered service provider has the option to publish or unpublish			
the specific parent's rate and review to public.			
5. Use case ends.			
Sub-flows: {optional section}			
Sub-nows. Jopnonia section			
Alternate/Exceptional Flows: -			

Table 4.19: Use Case Description of Manage Rate and Review

Use Case Name: View Ca	alendar	ID: UC20	Importance Level:
			Moderate
Primary Actor: Registered	d Service	Use Case T	ype: Detail, Real
Provider			
Stakeholders and Interest	s:		
Registered Service Provid	ler – wants to view	vs the own so	cheduled activities on
the calendar			
Brief Description: This us	se case describes h	ow the regist	tered service provider
views the calendar of scheduled activities and events.			
Trigger: The registered se	ervice provider to	check the s	chedule of upcoming
activities and events.			
Relationships:			
Association	: Registered Serv	vice Provide	r
Include	: N/A		
Extend	: N/A		
Generalization	: N/A		
Normal Flow of Events:			
1. The registered service provider navigates to the "My Calendar" page.			
2. The system displays a calendar view with scheduled activities and			
events marked.			
3. Use case ends.			

Table 4.20: Use Case Description of View Calendar

Table 1 21. Use	Casa Dasarin	tion of Monog	Transaction
1 able 4.21. Use	Case Descrip	non or manage	

Use Case Name: Manage Transaction	ID: UC21	Importance Level:
		Moderate
Primary Actor: Registered Service	Use Case Type: Detail, Real	
Provider		
Stakeholders and Interests:		
Registered Service Provider – wants to manage the parent transaction		

Brief Description: This use case describes how the registered service provider views and searches the transaction history of parents who have enrolled in their activities.

Trigger: The registered service provider wants to view and search the transaction history of parents who have enrolled in their activities.

Relationships:

Association	: Registered Service Provider
Include	: N/A
Extend	: N/A
Generalization	: N/A

Normal Flow of Events:

- 1. The service provider navigates to the "Transaction" page.
- 2. The system displays a list of transactions related to parents who have enrolled in the service provider's activities.
- 3. Each transaction entry includes details such as the transaction ID, user (parent), activity, transaction amount, payment method, payment date, and status.
- 4. The service provider can review the transaction history and related information.
- 5. The service provider also can search a parent by using any specific criteria.
- 6. Use case ends.

Sub-flows: *{optional section}*

Table 4.22: User Case Description for Manage User		
Use Case Name: Manage User	ID: UC22	Importance Level:
		Moderate
Primary Actor: Registered Service	Use Case 7	Type: Detail, Real
Provider		
Stakeholders and Interests:		
Registered Service Provider – wants to manage the parent account		
Brief Description: This use case describes how the registered service provide	er	
---	----	
manages parent accounts.		

Trigger: The registered service provider wants to view or add parent into system.

Relationships:

Association	: Registered Service Provider
Include	: N/A
Extend	: N/A
Generalization	: N/A

Normal Flow of Events:

- 1. The service provider navigates to the "User" page.
- 2. The system displays a list of parents' accounts who have enrolled in the service provider's activities.
- 3. The service provider can view a list of parent details.
- 4. The service provider also can search for a specific parent by using any specific criteria.
- 5. Use case ends.

Sub-flows: {optional section}

Table 4.23:	Use Case	Description	for Manage	Learner
-------------	----------	-------------	------------	---------

Use Case Name: Manage Learner	ID: UC23	Importance Level:			
		Moderate			
Primary Actor: Registered Service	Use Case T	ype: Detail, Real			
Provider					
Stakeholders and Interests:					
Registered Service Provider – wants to man	nage the lear	mer			
Brief Description: This use case describes h	ow the regis	tered service provider			
manages learner.					
Trigger: The registered service provider	wants to vi	ew, add, update and			
search and delete the learner (student) from the activity.					
Relationships:					

Association	: Registered Service Provider
Include	: N/A
Extend	: N/A
Generalization	: N/A

Normal Flow of Events:

- 1. The service provider navigates to the "Student" page.
- 2. The system displays a list of students' who have enrolled in the their activities.
- 3. The service provider can view a list of student details.
- 4. The service provider also can search for a specific student by using any specific criteria.
- 5. The service provider has several options for managing the learner. (S1)
- 6. Use case ends.

Sub-flows: {optional section}

S1:

Create New Learner:

4.1: If the registered service provider wants to add a new learner, they select the "Create" button.

4.2: The registered service provider provides all necessary details for the new learner including name, age, gender, parent name, activity name, and status.

Edit Existing Student:

4.5: If the registered service provider wants to make changes to an existing learner detail, they select the specific learner from their list.

4.6: The registered service provider can edit any information related to the student.

4.7: After making edits, they save the changes.

Delete Student:

4.8: If the learner wishes to cancelled an activity, service provider will remove the learner from learner list.

4.9: The registered service provider confirms their intent to delete the learner.

4.10: The system removes the learner from the activity.

Table 4.24: Use Case Description IC	or view Sche	source History				
Use Case Name: View Schedule History	ID: UC24	Importance Level:				
		Moderate				
Primary Actor: Registered Parent	Use Case 7	Type: Detail, Real				
Stakeholders and Interests:						
Registered Parent – wants to view their chi	Idren's activ	vity schedule				
Brief Description: This use case describes	how the re	gistered parent view				
the activity schedule of learner						
Trigger: The registered parent wants to ch	eck the sche	dule history of their				
children's activities for planning purposes	or reference.					
Relationships:						
Association : Registered Par	ent					
Include : N/A						
Extend : N/A						
Generalization : N/A						
Normal Flow of Events:						
1. The parent navigates to the "My Sc	hedule" pag	e.				
2. The system displays a list of pas	t schedules	for their children's				
activities.						
3. The parent can:						
3.1 View details of each past schedu	le, including	g activity name, date,				
time, duration, day and location.						
3.2 Filter and sort the schedule histor	ory based on	criteria such as date				
or activity name.						
4. Use case ends.						
Sub-flows: {optional section}						

Table 4.24: Use Case Description for View Schedule History

Use Case Name: View Transaction History	ID: UC25	Importance
		Level: Moderate
Primary Actor: Registered Parent	Use Case T	ype: Detail, Real
Stakeholders and Interests:		
Registered Parent - wants to view transact	ction histor	y related to their
children's activities.		
Brief Description: This use case describes he	ow the regist	tered parent views
the transaction history related to their children	n's activities	
Trigger: The registered parent wants to revi	iew past trai	nsactions for their
children activities such as payment details or	enrollment s	tatus.
Relationships:		
Association : Registered Parent		
Include : N/A		
Extend : N/A		
Generalization : N/A		
Normal Flow of Events:		
1. The parent navigates to the "Transaction	on" page.	
2. The system displays a list of past	transaction	s related to their
children's activities.		
3. The parent can:		
3.1 View details of each transaction inc	luding activ	ity name, payment
amount, date and status.		
3.2 Filter and sort the transaction histor	y based on c	riteria such as date
or activity name.		
4. The parents complete their transaction	history revi	ew.
5. Use case ends.		
Sub-flows: {optional section}		

Table 4.25: Use Case Description of View Transaction History

4.4 Prototype Screen

A prototype screen is a visual representation of how the system will look and function. It serves as a blueprint for the user interface and user experience to allow stakeholders to visualize the final product before development begins.



Figure 4.2: UI - Home Page

Find Lesson	Find Learning Centre	About Us	Contact		Login	sign up
	Get Star	rted!		LOG IN WITH FACEBOOK Sign in with Google		
E		5		Email Password		
			(Log In		

Figure 4.3: UI - User Sign Up

Log in to Facebook	
singcheekang@gmail.com	
Log in	
Forgotten account?	
or	
Create new account	
Not now	

Figure 4.4: UI - Sign In by using Fb SSO

	Find Lesson	Find Learning Centre	About Us	Contact	SingChee
Set L Let kids' curic on	Earn osity run wild any topic you	ing F1 with classes and can imagine	ree groups		
Art and Design	 ✓ Draw 	ing	٩	1	
Computer and Tech Cooking and Baking Sport and Fitness	hnology g				
Art and Design					
Music and Dance					

Figure 4.5: UI - Browse Activity



Figure 4.6: UI - Filter and Activity Listing Page

Find Lesson	Find Learning About Us Centre	Contact	SingChee
Malaysia Art Clas In Kuchai Lama	s For Kids/childrer	n - Junior Level (core	Program)
LESSON BY Globart KuCh	aiLama *****	Age 3 - 5	1 - 6 learners per class
About This Class In this art class, learners will with step by step instruction.	draw a cartoon animal They will practice their	Level - Beginner	
artistic and social skills while will be proud of.	creating a drawing they	RM 170	1 hour per class
Available Time			Meets 1x per week
Fridays 10am - 11am	Next Class: Aug 28	2 seats filled	Book
Wednesday 11am - 12 pm	Next Class: Sep 1	5 seats filled	Book

Figure 4.7: UI - Activity Detail Page

	Find Lesson	Find Learning Centre	About Us	Contact		-	SingChee
glo	balant Turk Creative	Globalart Ku © 110 Views Nurturing young mir enriching their lives	i chai Lama nds to be Imagina	tive, Creative and Inno	ہ ovative unlocking their creative potentials an	€ f	
PR	EFERRED	Category Art and Design Subjects Craft Drawing Other Art & Desi Painting	gn		Location Kuchai Lama , KL / Selangor		
Introduct Founded and in Malaysia known for it	ion d created by Te with one learn rs innovative a	eacher and Design hing center. Today nd effective art er	ner Mr. Mahain y, Globalart is nrichment pro	Goh, Globalart an internationa gram learning s	started its journey al franchise brand ystem for children		
aged 3 to 17.	sk a Questia	pn			OPERATIONAL HOURS : 1. WEDNESDAY TO FRIDAY 2. SATURDAY : 8 :45 AM - 5 I 3. SUNDAY : 9 AM - 1 PM	: 2 PM PM	- 5 PM

Figure 4.8: UI - Service Provider Profile



Figure 4.9: UI - Ask a Question to Service Provide

Find Lesson Find Learning About Us Centre	Contact SingChee
Reviews 32 total reviews	Write a Review
Sep 6, 2023 Class size is small with a lot of individualized instruction. My daughter's favorite part is the show and tell at the end of the lesson.	Sep 4, 2023 My daughter had a good time drawing in this class. She enjoyed it a lot!
Sep 6, 2023 We love this class so much. It will be a staple in our 2023-24	★★★★★ Sep 4, 2023 This is a very fun class and my daughter (7 1/2) has really enjoyed it and has created some really fun drawings!
animation, and the teacher worked so hard to keep all of the kids communicating and engaged. Highly recommended.	Show All Reviews





Figure 4.11: UI - Rating and Reviewing an Activity

*	ind Lesson Fir	id Learning Centre	About Us	Contact	🕞 🌎 Sing	gChee
Messages						
Globalart Thanks for rea	aching out!			Hi, May i ask will you be holding one-to-one ter	aching?	
		globalart Nortees	Yes			
		globalatt Per Lens	But if your ch company	ild is interested, we can arrange another child for		
		giobalant	Will go the w	ay your child is interested :)		
		Biopaint	Thanks for re	aching out		
		Write	a message		Send	

Figure 4.12: UI - Chat Box with Service Provider

<u>مە</u>			Login	register
Service Provid Fill out the form and our Admin w contact you	er m	Business Name Email Phone		
		Street		
Huge Target Audience Our platform covers classes for all ages from toddlers, kids, teenagers to working adults.	Get the most out of digital marketing Where you will be able to reach out	State Zip Country	•	
	work and you focus on the teaching.	Website First Name Last Name		
		SIGN UP		

Figure 4.13: UI - Service Provider Registration Form

*	Login register
Service Pro	ovider
kangsc@gmail.com	
•••••	
Login	
forgot password?	



Last 30 Days Performance	4,487 1 Device all reads	
Last 12 months: 203,642 Last 12 months: 56,9 See defailed analytics	77 Last 12 months 33,615 Last 12 months 3	
Average Enrollment © Semeriter Select Year 14 2022 V	Average Enrollment Camp Select Year N 12922 V	%
11,995 1,757 Total Capacity Total Enveloed	2,335 503 Total Capacity Total Ervolled	
Activity Performance Schedule Type Sort By Sol All V Streams V		23 Activities 3633 Enrolled
1 Art Camp! Al Summer Camp The Studie Addedys introduces (1974) Addedys introduces (1974)		

Figure 4.15:UI - Service Provider Dashboard

Profile					
fields marked with * are required			Select Ne		
ichool name *			Select logo imag	e from your computer ((max 1MB)
This first of the same should		-			
nis nela is requirea. Netailis					
treet address "	City*	-			
his field is required.	This field is required.				
tate/Province *	Zip/Postal code *				
	•				
This field is required.	This field is required.				
Phone					
Website					
Contact email					
Authorized users, who can edit this	s school's information				
email addresses					
Viewer users, who can only view th	his school's information				

Figure 4.16: UI - Service Provider Manage Profile Page

4	Dashboard	Profile User Li	st A	ctivity Listing	Schedule Cl	hat User R	eview 🕞	Logout
Us	er List			Q	Search		T	
+ A	dd New							1
ID	Parent Name	Child Name	Age	Email	Phone Num	Acc Status	Action	
1	Vanessa Chen	Lason Tan Lu	10	vanessa@gmail.com	012-4591236	Active	C 🛍	
2	Jose Chua	Roberts Seng	12	jose@gmail.com	010-7789451	Active	20	
3	Lim Kok Wei	Keebler Lim	9	kw@gmail.com	017-4156315	Active	20	
4	Mary	Jason Kong	15	mary@gmail.com	012-7132419	Active	20	
5	Selena	Chua Yin Hen	6	selena@gmail.com	010-8154697	Pending	20	

Figure 4.17: UI - Manage User List

*	Dashboard	Profile User Li	ist Activity Listing	Schedule	Chat	User Review	🕞 Logout
Ad	ctivity List	ing					
1) Details Set up the bas	ic details for your acti	vīty				
A	activity	Select Activity					
C	Category	Select Category					
C	Description			*			
L	ocation	Location					
2	Set up the time	g e for your activity					
E	Days of the We	sun	MON TUE	WED THU	FR	NI SAT	
Т	īme	Start Time	End Time	am *			
3) Pricing Set up the price	e for your activity					
F	Price	RM					
	Discount (Optional)	Discount Code					
			CREATE				

Figure 4.18: UI - Manage Activity Listing

4	Dashboard	Profile	User List	Activity Listing	Schedule Cł	nat User Re	eview 🕞	Log
Sc	hedule							
							_	
					Q Search		T	
+ #	dd New				Q Search		τ	
+ A ID	Add New	10	Session Date	Session Time	Q Search Participants Enrolled	Status	Action	
+ A ID 1	Activity Name	ne i	Session Date	Session Time 9 am	Q Search Participants Enrolled 20	Status	Action	
+ /	Add New Activity Nam Ballet		Session Date 10/9/2023 14/9/2023	Session Time 9 am 5 pm	Q Search Participants Enrolled 20 7	Status Ended Ongoing	Action	
+ /	Add New Activity Nam Ballot Drum Guitar		Session Date 10/9/2023 14/9/2023 15/9/2023	Session Time 9 am 5 pm 1 pm	Q Search Participants Enrolled 20 7 12	Status Ended Ongoing Upcoming	Action	
+ A ID 1 2 3 4	Activity Nam Ballet Drum Guitar Piano		Session Date 10/9/2023 14/9/2023 15/9/2023 18/9/2023	Session Time 9 am 5 pm 1 pm 10 am	Q Search Participants Enrolled 20 7 12 21	Status Ended Ongoing Upcoming	Action	

About	Learn	Partner	Join Us Now
🏄 E&School	Enrichment	Service Provider	6 🕞 😒
	Sport		Contact Us info@E&School.com

Figure 4.19: UI - Manage Activity Schedule

	Dashboard	Profile	User List	Activity Listing	Schedule	Chat	User Review	Cogout
M	essage		-					
	User 1							
	👰 User 2							
			Write a	Message			SEND	

Figure 4.20: UI - Chat Box of Service Provider

Ashb Dashb	oard Profile	User List	Activity Listing	Schedule (Chat User Re	view	🗭 Logout
Review	& Rating			Q Search			
Showing 1 to 3 of 20	entries						
Review Date	Name 🝸	F	Review	Rating T	Status	Act	ion
9/9/2023	Stella Lim	lovely	class, good!	****	Published	Unpublish	Edit
29/8/2023	Jason Wen	enviro	nment good	****	Published	Unpublish	Edit
26/8/2023	Yanish Tan	overa	Il satisfied!	*****	Published	Unpublish	Edit
				1			
					Previous	1	Next

Figure 4.21: UI - Manage Reviews and Ratings

CHAPTER 5

SYSTEM DESIGN

5.1 Introduction

This chapter outlines the system design from frontend to backend. It begins with an overview of the system architecture that illustrates the flow of data and interactions between different layers such as frontend, backend and database. The data flow is presented with diagram such as context diagram and level 0 data flow diagram to showcase the high-level and detailed data interactions with the system. Following this, the data model design is discussed such as logical data model and physical data model to outline the structure and types of data stored in the database. Besides, the data dictionary is outlined to provide detailed descriptions of all tables within the system.

5.2 System Architecture Design

The key components and structure of the system architecture is discussed in this section. The concept of three-tier architecture outlines the foundational structure of the system and emphasizes the importance of a robust architecture in supporting the system functionality and scalability. One-stop child enrichment and sport centre system adopt a three-tier architecture model which consists of distinct layers such as the presentation layer, application layer and data layer. The system architecture diagram is provided visually represents the three-tier architecture implemented in my system.

5.2.1 Three-tier Architecture

The three-tier architecture is a client-server architecture where the functionality of an application is logically distributed across three separate layers such as the presentation layer, the application layer, and the data layer (Matina, 2023).



Figure 5.1: Three-tier Architecture

In the Figure 5.1, the presentation layer also known as the user interface layer. It is responsible for presenting information to the user and collecting user inputs. This layer typically consists of user interfaces such as web browsers, mobile apps or desktop applications. Besides, the application layer also called the business logic layer that contains the core functionality of the application. It processes user inputs from the presentation layer, performs computations and interacts with the data layer to retrieve or manipulate data. The application tier can also add, delete, or modify data in the data tier. Lastly, the data layer which is also often referred to as the storage layer or database layer. It stores and retrieves data from a database or other data storage systems. It manages the storage and retrieval of data requested by the application layer. This architecture promotes modularity, scalability and maintainability by separating concerns and allowing each layer to be developed, modified and scaled independently.



Figure 5.2: System Architecture Diagram

Figure 5.2 above shows that the web-based system architecture implemented in this project. A three-tier approach has been adopted to efficiently manage the system's presentation, application, and data layers. The presentation layer is the first tier that serves as the interface through users interact with the system. It includes HTML, CSS, JavaScript, Vue.js, Blade (a templating engine for Laravel), and Bootstrap (a front-end framework). These technologies collectively provide the visual layout, styling, interactivity, and responsiveness of the front-end of the system. Users include parents, service providers, and admin who are engaged with the features and functionalities of system through this intuitive interface, navigating via various pages and components seamlessly.

Next, the application layer is the second tier that acts as the intermediary between the presentation layer and data layer. It contains the logic and processing functionalities of the system. In this project, Laravel (PHP framework) is utilized for backend development. Laravel facilitates routing, middleware, authentication, authorization and database interactions. Besides, Pusher, a real-time messaging service integrated into this layer. This enables instantaneous communication and updates between users, fostering real-time collaboration and interaction within the system.

Single Sign-On (SSO) functionality is integrated in my project which enhances user convenience and streamlines the registration and login process. SSO allows users to authenticate themselves by using their existing social media accounts. In this project, SSO functionality is integrated into the Laravel backend using OAuth 2.0 protocol specifically for the "parent" user role. When parents opt to login or register using their social media accounts, they are redirected to the respective social media authentication servers. After authenticating their identity on the social media platform, parents authorize the system to access their basic profile information. Upon authorization, the social media authentication server issues an access token. This access token securely passed back to the application layer. The application layer then validates the token and retrieves the necessary user information. Laravel application sends the access token along with parent info to database to store user-related data (e.g., user profiles). MySQL database returns requested data (user profiles) to the application layer. The application layer formats and sends the retrieved data to the frontend interface for display to the parent.

Lastly, the third tier encounters the data layer which serves as the backbone of the system to store and manage all pertinent data. In this project, MySQL is used as the relational database management system (RDBMS). MySQL stores various types of data including parents and activity provider profiles, activity details, enrollment records, transaction information and so on. The data in the MySQL database is accessed and manipulated by the application layer through queries and transactions to ensure the data integrity and consistency.

The three-tier architecture of the web-based system consists of a presentation layer for user interaction, an application layer for processing logic and functionalities and a data layer for storing and managing data. This architecture is laying a solid foundation for the effective operation of the web-based system. It also ensures separation of concerns, scalability, maintainability, and robustness of the system.

5.3 Data Flow Diagram

In this section of data flow diagram, the context diagram and level 0 data flow diagram provide a concise overview of the system data flow and main components. The context diagram provides a high-level overview of our system interactions with external entities. It depicts our system as a single process and illustrates the connections to external actors such as users, external databases and third-party services. The level 0 DFD provides a detailed overview of the core processes and data flows within our system. It decomposes the system into high-level processes which include user authentication, data retrieval and data storage.

5.3.1 Context Diagram

The context diagram provides an overview of the system and its interactions with external entities. The main system is represented as a single process. External entities such as parent, service provider, admin and external SSO provider service are depicted as squares outside the main system.



Figure 5.3: Context Diagram

5.3.2 Level 0 Data Flow Diagram

The Level 0 DFD elaborates on the processes within the main system outlined in the context diagram. It breaks down the main system into major processes and illustrates their interactions with each other and with data stores.



Figure 5.4: Level 0 Data Flow Diagram

5.4 Data Model Design

The data model design section outlines the structure and organization of the system data including both logical data model and physical data model.

5.4.1 Logical Data Model (LDM)

The logical data model represents the structure of the data independent of any specific database management system or physical implementation details. It provides a high-level overview of how data is organized and related within the system which is serving as a blueprint for database design and development.



Figure 5.5: Logical Data Model Diagram

5.4.2 Physical Data Model (PDM)

The physical data model is a detailed representation of how the logical data model will be implemented within a specific database management system. It specifies the physical storage structures, data types, indexing, partitioning and other technical aspects required to store and manipulate data efficiently.



Figure 5.6: Physical Data Model Diagram

5.5 Data Dictionary

In this section, the data dictionary provides a comprehensive reference detailing the structure and attributes of each table within the system database. It serves as an important resource for understanding the organization and storage of data by offering insights into the fields and their respective data types, constraints and relationships.

5.5.1 User

This user table is storing the information about registered users of the system.

Field Name	Data	Description	Key	FK	Null
	Туре			Reference	able
				Table	
id	bigint	unique identifier for	РК	-	No
		each user			
username	string	username of the parent	_	-	No
email	string	email address of parent	-	-	No
password	string	hashed password of the	-	-	No
		parent			
google_id	string	unique identifier	-	-	Yes
		provided by Google for			
		users who authenticate			
		using Google's Single			
		Sign-On (SSO) service			
facebook_id	string	unique identifier	-	-	Yes
		provided by Facebook			
		for users who			
		authenticate using			
		Facebook's Single Sign-			
		On (SSO) service			
phone_num	string	phone number of parent	_	-	Yes

Table 5.1: User Table

5.5.2 Activity Provider

The activityprovider table is storing the information about registered service providers of the system.

Field Name	Data	Description	Key	FK	Null
	Туре			Reference	able
				Table	
id	bigint	unique identifier for	РК	_	No
		each activity provider			
username	string	username of activity	-	-	No
		provider			
email	string	email address of	-	-	No
		activity provider			
password	string	hashed password of	-	-	No
		the activity provider			
school_name	string	name of the school or	-	-	No
		organization of			
		activity provider			
address	string	address of the activity	-	-	No
		provider's school			
		location			
details	string	information about the	-	-	No
		activity			
		provider/school			
status	enum	status of the activity	-	-	No
		provider account such			
		as "pending",			
		"approved" or			
		"rejected"			
registration_date	time	date and time when the	-	-	No
	stamp	activity provider's			
		account was registered			

Table 5.2: Activity Provider Table

5.5.3 Admin

The admin table stores information about system administrator. In this system, it will only have one admin account to allow admin to manage the service provider by verifying their application/account status.

Field Name	Data	Description	Key	FK	Null
	Туре			Reference	able
				Table	
id	bigint	unique identifier for	PK	-	No
		admin			
username	string	username of admin	-	-	No
email	string	email address of	-	-	No
		admin			
password	string	hashed password of	-	-	No
		admin			

5.5.4 Category

The category table represents a taxonomy or classification system used to categorize activities. This table help organize activities into logical groupings so that making it easier for users to browse and discover relevant activities.

Table 5.4: Category Table

Field Name	Data	Description	Key	FK	Null
	Туре			Reference	able
				Table	
id	int	unique identifier for	PK	-	No
		each activity category			
name	string	name of the activity	-	-	No
		category			

5.5.5 Subcategory

The subcategory table stores subcategories that are nested within categories. Subcategory also can be referred as activity subject in this system. Subcategories provide further granularity within categories that allowing for more specific classification of activities.

Field Name	Data	Description	Key	FK	Null
	Туре			Reference	able
				Table	
id	int	unique identifier for	PK	-	No
		each subcategory			
name	string	name of the activity	-	-	No
		subcategory			
category_id	string	foreign key	FK	categories	No
		referencing the "id" of			
		the category to which			
		the subcategory			
		belongs			

Table 5.5: Subcategory Table

5.5.6 Activity

This table serves as a central repository for storing information about various activities offered by providers. Users can view details of activities, while activity providers can create, update and delete activity listings based on their offerings and availability.

Table	5.6:	Activity	Table

Field Name	Data	Description	Key	FK	Null
	Туре			Reference	able
				Table	
id	bigint	unique identifier for	PK	-	No
		each activity			
name	string	name of the activity	-	-	No

category_id	int	foreign key	FK	categories	No
		referencing the "id"			
		of the category to			
		which the activity			
		belongs			
subcategory	int	foreign key	FK	subcategories	No
_id		referencing the "id"			
		of the subcategory			
		to which the activity			
		belongs			
activityprovider	int	foreign key	FK	activity	No
_id		referencing the "id"		providers	
		of the activity			
		provider offering			
		the activity			
description	text	description of the	-	-	No
		activity			
min_age	int	minimum age	-	-	No
		requirement for			
		participants/learners			
max_age	int	maximum age	-	-	No
		requirement for			
		participants/learners			
class_size	int	maximum number	-	-	No
		of participants			
		allowed in the class			
price	deci	price of the activity	-	-	No
	mal				
discount	string	any discounts or	-	-	No
		special offers			
		applicable to the			
		activity			

address	string	address where the activity takes place	-	-	No
state	string	state where the	-	-	No
		activity is located			
city	string	city where the	-	-	No
		activity is located			
postcode	string	postal code of the	-	-	No
		location where the			
		activity is held			
image	string	image represents the	-	-	No
		activity			
status	boole	status of the activity	-	-	No
	an	(e.g., active or			
		inactive)			

5.5.7 Schedule

These fields collectively define the scheduling details for each activity including its start and end dates, time, duration, day of week and frequency.

Field	Data	Description	Key	FK	Null
Name	Туре			Reference	able
				Table	
id	bigint	unique identifier for each	PK	-	No
		activity schedule			
activity_id	int	foreign key referencing the	FK	activities	No
		"id" of the activity to which			
		this schedule belongs.			
start_date	date	date when the activity	-	-	No
		schedule begins			
end_date	date	date when the activity	-	-	No
		schedule ends			

Table 5.7: Schedule Table

time	time	time of day when the	-	-	No
		activity takes place			
duration	int	duration of each session of	-	-	No
		the activity			
day	string	day of the week when the	-	-	No
		activity occurs			
frequency	string	frequency of the activity	-	-	No
		sessions (e.g., daily or			
		monthly)			

5.5.8 Learner

These fields collectively store information about learners who are enrolled in activities including their personal details, enrolment status and the activities they are participating in.

Table 5.8: Learner Table

Field Name	Data	Description	Key	FK	Null
	Туре			Reference	able
				Table	
id	bigint	unique identifier for	PK	-	No
		each learner record			
user_id	inr	foreign key referencing	FK	users	No
		the "id" of the user			
		(parent) associated with			
		this learner			
activity_id	int	foreign key referencing	FK	activities	No
		the "id" of the activity in			
		which this learner is			
		enrolled			
name	string	name of the learner	-	-	No
age	int	age of the learner	-	-	No
gender	string	gender of the learner	-	-	No
		(e.g., girl or boy)			

status	enum	status of the learner's	-	-	No
		enrollment in the activity			
		(e.g., "pending",			
		"confirmed",			
		"cancelled",			
		"completed")			

5.5.9 Transaction

These fields collectively store information about transactions made by users for activities provided by activity providers. It includes details such as the user involved, the activity, transaction status, amount, payment method and payment date.

Field Name	Data	Description	Key	FK	Null
	Туре			Reference	able
				Table	
id	bigint	unique identifier for	PK	-	No
		each transaction			
		record			
transaction_id	string	identifier for the	-	-	No
		transaction			
user_id	int	foreign key	FK	users	No
		referencing the "id"			
		of the user (parent)			
		who made the			
		transaction			
activityprovider	int	foreign key	FK	activity	No
_id		referencing the "id"		providers	
		of the activity			
		provider associated			
		with this transaction			

Table 5.9: Transaction Table

activity_id	int	foreign key	FK	activities	No
		referencing the "id"			
		of the activity			
		involved in the			
		transaction			
status	string	Status of the	-	-	No
		transaction (e.g.,			
		"paid" or "unpaid")			
amount	double	total amount of	-	-	No
		money involved in			
		the transaction			
payment_method	string	payment method	-	-	No
		used for the			
		transaction			
payment_date	time	date and time when	-	-	No
	stamp	the transaction was			
		completed.			

5.5.10 Rating

These fields collectively store information about ratings submitted by users for activities. It includes details such as the user who submitted the rating, the activity being rated, the comment or review, the numeric rating value, the submission date and the status of the rating.

Table 5.10: Rating Table

Field Name	Data	Description	Key	FK	Null
	Туре			Reference	able
				Table	
id	bigint	unique identifier for	PK	-	No
		each rating record			
user_id	int	foreign key referencing	FK	users	No
		the "id" of the user			

		(parent) who submitted			
		the rating			
activity_id	int	foreign key referencing	FK	activities	No
		the "id" of the activity			
		being rated			
comment	string	comment or review	-	-	No
		provided by the user			
rating	int	numeric value	-	-	No
		representing the rating			
		given by the user for the			
		activity			
date	time	date and time when the	-	-	No
	stamp	rating was submitted			
status	boolean	status of the rating (e.g.,	-	-	No
		"publish" or			
		"unpublish")			

5.5.11 Wishlist

These fields collectively store information about activities that users (parents) have added to their wishlist. It includes details such as the user who added the activity and the corresponding activity id.

Table 5.11: Wishlist Table

Field Name	Data	Description	Key	FK	Null
	Туре			Reference	able
				Table	
id	int	unique identifier for	РК	-	No
		each wishlist activity			
user_id	int	foreign key referencing the "id" of the user (parent) who added the	FK	users	No
		activity to their wishlist			

activity_id	int	foreign key referencing	FK	activities	No
		the "id" of the activity			
		added to the wishlist			

CHAPTER 6

SYSTEM IMPLEMENTATION

6.1 Introduction

In this chapter, we delve into the crucial phase of system implementation, where the theoretical framework and planning transition into practical system. With a comprehensive understanding of the system requirements and functionalities established in the previous chapters, the focus now shifts towards bringing the envisioned system to life. Throughout this chapter, we explore the intricate process of turning designs and specifications into functional software components. From developing user interfaces to integrating backend functionalities, each step in the implementation process plays a vital role in realizing the envisioned system capabilities.

6.2 System Modules

There are three types of users in the system such as parent, service provider and admin. While all users interact with the system, the primary targeted users are parents and service providers in this system. Parents utilize the system to enrol their children in various activities, whereas service providers offer these activities for enrolment and manage activity.

Role of	Modules	Features
User		
Parent	Manual Authentication	Register new account
		Login
	SSO Authentication	Register new account by using
		SSO service such as Google or
		Facebook
		Login directly by using SSO
		service
	Profile management	View and Update profile

Table 6.1: System modules and Features

Search	Search activities by keyword		
	Display search results		
Advanced Filter	Sort by date new to old and sort		
	price low to high		
	Filter by activity category,		
	class size, frequency, state and		
	price		
Activity	View activity details		
	View service provider profile		
	View all user review and rate		
	for a specific activity		
	View preferred activities that		
	recommended by system		
Enrolment	Add a child/more than one		
	child in an activity		
	View total amount of activity		
	View all enrolments history		
	Search enrolment history based		
	on criteria		
Transaction	Make payment		
	View receipt after payment		
	View all transactions history		
	Search transaction history		
	based on criteria		
Schedule	View enrolled activity		
	schedules		
	Search activity schedule based		
	on criteria		
	Receive email notification		
	from service provider for		
	upcoming activities		
Wishlist	Add favourite activities into		
	wishlist		
		Remove activity from wishlist	
----------	----------------------	------------------------------------	
	Rate and Review	Comment and Rating for	
		enrolled activity	
		View review and rate history	
	Chat	View conversation history	
		Chat with service provider	
		Receive notifications	
Service	Account management	Register new account	
Provider		Login after verified by admin	
		Receive email notification of	
		account verification status	
	Profile management	Add new profile	
		Update, View and Delete	
		profile	
	Dashboard management	View reports, sales, revenue,	
		customer, recent sales and	
		activities provided	
		Search recent sales	
	Activity management	Add new activity such as	
		activity details, schedule details	
		and pricing details	
		Update, Delete and View	
		activity details	
		Filter and Search for specific	
		activity by entering relevant	
		activity details	
	Calendar management	View all events/activities	
	Enrolment management	View learner list in each	
		activity/class	
		Notify all learners in specific	
		activity/class	
	User management	Add new parent	

		Update, Delete and View
		parents
		View children belonging to
		parent
		Search specific parent based on
		criteria
	Learner management	Add new learner
		Enrol learner into an activity
		Update, Delete and View
		learners
		Search specific learner based
		on criteria
	Transaction management	View all transactions of parents
		Search and Filter
	Review and Rate	View parent rate and review
	management	Publish/Unpublish rate and
		review
	Chat Management	View conversation history
		Chat with parents
		Receive notifications
Admin	Service provider	View service provider
	management	Update and Delete service
		provider
		Verify status of service
		provider
		Notify service provider

6.2.1 Authentication

In this project, the auth.php configuration file plays a crucial role in defining how user authentication is handled throughout the application. This configuration file leverages Laravel built-in authentication package to streamline the authentication process. The configuration file defines various authentication guards, each tailored to a specific type of user within the system. There are 3 defined guards: "user", "activityprovider" and "admin". These guards serve distinct purposes in managing user authentication.



Figure 6.1: Define 3 Users Guards

The "user" guard is customized specifically for authenticating regular users who are typically parents using the system to enroll their children in activities. This guard is configured to authenticate users based on their credentials stored in the "users" provider.

Similarly, the "activityprovider" guard is designed for authenticating service providers who offer activities within the system. Service providers use this guard to access their dedicated dashboard and manage their activities. Authentication for service providers is also based on credentials stored in the "activityproviders" provider.

Lastly, the "admin" guard is dedicated to authenticating administrators who verify the application of service provider. Admin has access to administrative features and privileges and their authentication is managed using credentials stored in the "admins" provider.

Each guard specified in the auth.php configuration file defines a driver, which determines the underlying authentication mechanism. In this project, the driver for each guard is set to "session" which indicates that session-based authentication is utilized.

6.2.1.1 Middleware for Role-Based Authentication

The middleware logic is used in this system to authenticate users based on their roles and account statuses. The "RedirectIfAuthenticated" middleware class redirects authenticated users to their respective dashboard pages or login pages based on their role and account status. Route groups are utilized to restrict access to specific routes based on user roles to provide enhanced security and access control.



Figure 6.2: Middleware Logic for Role-Based Authentication

In the "handle" method of the "RedirectIfAuthenticated" middleware class, the logic first checks the "\$guard" parameter which represents the user role (admin, user or activity provider). If the user is authenticated and belongs to a specific role, they are redirected to the corresponding dashboard page.

 If the authenticated user is an admin (\$guard == "admin"), they are redirected to /admin/home.

- If the authenticated user is a regular user (parent) (\$guard == "user"), they are redirected to /user/home.
- If the authenticated user is an activity provider (\$guard == "activityprovider"), further checks are performed based on their account status. If their status is "approved", they are redirected to their own dashboard. If their status is "pending", they are redirected to login page with an error message indicating that their account is pending approval. If their status is "rejected", they are also redirected to login page with a message informing them that their account has been rejected.

6.2.1.2 Route Middleware

These middleware routes are applied to specific routes in this system using route groups. For example, routes within the Route::group(["middleware" => "auth:user"], function () { ... }) group are accessible only to authenticated users. Similarly, routes within the auth:activityprovider and auth:admin groups are accessible only to authenticated activity providers and admin respectively. This is to ensure that only authenticated users of the correct role can access the routes defined within each group. Therefore, providing a level of access control and security to the system.

```
> Route::group(['middleware' => 'auth:user'], function () { ...
});
> Route::group(['middleware' => 'auth:activityprovider'], function () { ...
});
> Route::group(['middleware' => 'auth:admin'], function () { ...
});
```

Figure 6.3: Three Middleware Routes

6.2.2 SSO Authentication Integration

Social SSO Authentication Integration is a feature that allows users to sign in the system using their existing social media accounts such as Google or Facebook instead of creating a new account specific to this system. This feature enhances user convenience and simplifies the registration and login process. It involves configuring the system to interact with the OAuth authentication systems provided by social media platforms, handling the authentication callbacks, retrieving user information and creating or logging in users based on that information.

User Sign In

Welcome back to ESchool

E-Mail Address
Password
Not a member? Remember Me
Login
— or login with —
G Login with Google

Figure 6.4: The Login Buttons of SSO



Figure 6.5: Configuration Settings for Integrating with OAuth services

This section of the code defines the social authentication configurations for Google and Facebook. These configurations include the client ID, client secret, and redirect URI for each social media platform. The "client_id" and "client_secret" are unique identifiers provided by Google and Facebook when I register this system with their respective developer platforms. These identifiers authenticate my system when it interacts with the social media platform's OAuth authentication system. The "redirect" URI is the endpoint in this system where the social media platform redirects users after they have authenticated. This URI must match one of the URIs specified when registering the system with Google or Facebook.

Additionally, the values for "client_id" and "client_secret" are fetched from environment variables using the env() function. This ensures that sensitive information such as API keys and secrets are not hard-coded into my system code. This is to enhance the security and facilitating environment-specific configurations.

Overall, these configurations enable the system to integrate seamlessly with the social media platforms' authentication systems so users can sign in using their Google or Facebook accounts.

6.2.2.1 Google and Facebook Authentication

In the Figure 6.5 and Figure 6.6 show that the SSO authentication using Google and Facebook OAuth APIs is implemented in this system.

The "redirectToGoogle()" and "redirectToFacebook()" methods initiate the authentication process by redirecting users(parents) to the respective social media platforms for authentication. Upon successful authentication, the user is redirected back to the application with an authentication token.

Furthermore, the "handleGoogleCallback()" and "handleFacebookCallback()" methods handle the callback from Google and Facebook respectively, after the user has authenticated. These methods retrieve the user's information from the social media platform's API such as their name, email and unique identifier.

If the user is already registered with the system, their details are updated with the respective social media ID. If user haven't register, a new user account is created with the retrieved information. Subsequently, the user is logged in and redirected to the home page.

```
public function redirectToGoogle()
    return Socialite::driver('google')->redirect();
public function handleGoogleCallback()
         $googleUser = Socialite::driver('google')->stateless()->user();
         $user = User::where('google_id', $googleUser->getId())->first();
         if(!$user)
              $existingUser = User::where('email', $googleUser->getEmail())->first();
              if ($existingUser) {
                  // If the user exists, update the google_id field
$existingUser->google_id = $googleUser->getId();
                  $existingUser->save();
                  Auth::guard('user')->login($existingUser);
                  session()->flash('success', 'Login successfully.');
return redirect()->intended('/user/home');
              $new_user = User::create([
                   'username' => $googleUser->getName(),
                   'email' => $googleUser->getEmail(),
                   'google_id' => $googleUser->getId()
                  Auth::guard('user')->login($new_user);
                  session()->flash('success', 'Login successfully.');
return redirect()->intended('/user/home');
             Auth::guard('user')->login($user);
             session()->flash('success', 'Login successfully.');
return redirect()->intended('/user/home');
         }
    } catch (QueryException $e) {
         dd('Query Exception: ' . $e->getMessage());
      catch(\Exception $e){
         dd('something went wrong!'. $e->getMessage());
```

Figure 6.6: Google Authentication Code Implementation

```
public function redirectToFacebook()
    return Socialite::driver('facebook')->redirect();
public function handleFacebookCallback()
         $facebookUser = Socialite::driver('facebook')->stateless()->user();
         $user = User::where('facebook_id', $facebookUser->getId())->first();
         if(!$user)
             $existingUser = User::where('email', $facebookUser->getEmail())->first();
             if ($existingUser) {
                  $existingUser->facebook_id = $facebookUser->getId();
                  $existingUser->save();
                  Auth::guard('user')->login($existingUser);
                 session()->flash('success', 'Login successfully.');
return redirect()->intended('/user/home');
             $new_user = User::create([
                  'username' => $facebookUser->getName(),
                  'email' => $facebookUser->getEmail(),
                  'facebook_id' => $facebookUser->getId()
                 Auth::guard('user')->login($new_user);
                 session()->flash('success', 'Login successfully.');
return redirect()->intended('/user/home');
             Auth::guard('user')->login($user);
             session()->flash('success', 'Login successfully.');
return redirect()->intended('/user/home');
    } catch (QueryException $e) {
        dd('Query Exception: ' . $e->getMessage());
    } catch(\Exception $e){
         dd('something went wrong!'. $e->getMessage());
```

Figure 6.7: Facebook Authentication Code Implementation



Figure 6.8: Google SSO Login

facebook	Sign Up
	Log in to Facebook
	Email address or phone number
	Password
	Log in
	Forgotten account? - Sign up for Facebook Not now

Figure 6.9: Facebook Login SSO

6.2.3 Manual Authentication

Manual authentication is users registering and logging un using traditional methods such as provides an email address and password. In this system, users can choose to manually register and login if they prefer not to user SSO.

User Sign In Welcome back to ESchool	User Sign Up Please fill up your information			
E-Mail Address	Usemame			
	Email			
Password	Phone Number			
Not a member?	Password			
Login	Confirm Password			
— or login with —				
G Login with Google	Sign Up			
	Have account already? Login			

Figure 6.10: Manual Login and Registration Form of User (Parent)



Figure 6.11: Code Implementation of User Manual Login Authentication

In the case of service providers and admins, they share the same login form ("showActivityproviderLoginForm"), but their roles are determined based on the selected role during login ("activityprovider" or "admin").

		Service Provider Sign Please fill up your information	ı Up
		Full Name	
		Email	
Activityprovider Sign	In	Phone Number	
Get's started now		School Name	
User Type Service Provider		Address	
E-Mail Address		Details	
		Password	۵
Password Remember Me	Not a member?	Confirm Password	۵
Login		Sign Up	
		Have account already?	2 Login

Figure 6.12: Login and Registration Form of Service Provider



Figure 6.13: Code Implementation of User and Service Provider Manual

Registration Authentication



Figure 6.14: Code Implementation of Service Provider Manual Login

Authentication

6.2.4 User (Parent)

The user (parent) section of the system implementation provides a comprehensive set of features tailored to the needs of parents using the platform. Parents can seamlessly manage their accounts, enrol their children in various activities offered by service providers, view transaction histories, leave reviews and ratings based on their experiences and so on. The system ensures ease of use with intuitive interfaces for browsing activities, enrolling children and managing account preferences and so on. Additionally, parents can stay informed with automated notifications regarding upcoming activities and important updates. Overall, the user section enhances parent engagement and satisfaction that fostering a positive experience within the platform.

6.2.4.1 Search Features

Users can easily search for activities by entering keywords such as activity names, categories or subcategories at the home page. Upon clicking the search button, the system navigates to the viewActivity page, where users can view the matched results related to the entered keyword. This feature enables users to quickly find relevant activities based on their interests and preferences.



Figure 6.15: Keyword Search Functionality in the Homepage



This is the matched result of the entered keyword of "swimming".

Figure 6.16: The Matched Results of Entered Keyword

6.2.4.2 Advanced Filtering Options

This is the filtering page that provides the advanced filtering options to enhance the user experience. Users can filter activities based on various criteria such as date (from old to new or new to old), price (low to high or high to low). Besides, there is one more advanced filter is available on the left side of the filtering page such as category, class size, frequency, state, dynamically pricing and so on. These advanced filters are allowing users to refine their search results according to specific criteria and preferences.



Figure 6.17: Advanced Sorting with Price and Date



State –				
Johor	HTML and CSS	Piano Grade1	Piano Grade 2	Academy Tuition
Kedah Kuala Lumpur Malacca	⊶I Coding RM 420 오 Kedah ▲ Age 3-9	. il Piano RM 50 오 Kedah 온 Age 4-10	. al Piano RM 465 오 Kedah 온 Age 8-12	all Economics RM 80 옷 Selangor 온 Age 16-17
Pahang Penang Perlis Selangor Terengganu				
Frice -		\checkmark	- Company	
50 5600	Happy Fish	Drawing Acumen	Baking Academy	Colouring Acumen
	제 Swimming RM 380 요 Perlis	세 Drawing RM 50 옾 Pahang	All Baking RM 40 Classes	-II Colouring RM 200 옾 Johor
Discount Range -	ă Age 4-18	△ Age 4-12	طے Terengganu	ă Age 3-10
5% and above 10% and above 20% and above		< 1	≗ Age 6-15	

Figure 6.19: Advanced Filtering with Pagination (Part B)

Moreover, the filtering page is also included a special feature that allows users to customize their viewing preferences based on their preferences. Users can choose between different viewing options such as viewing two, three or four activities per row, or opting for a list view.



Figure 6.20: The View of Two Activities Per Row



Figure 6.21: The View of Four Activities Per Row



Figure 6.22: The List View of Activities

The "viewAllProduct" function in the Figure 6.23 and Figure 6.24 are displaying all products (activities) to the user. It begins by determining the sorting order based on the user's query parameters. The sorting order can be based on creation date (ascending or descending) or price (ascending or descending).

Next, it fetches various filtering options such as categories, class sizes, states and frequencies to populate filter dropdowns on the UI. It also sets default values for filtering such as a default price range if none is provided.

The function then processes the user filtering criteria. It retrieves activities from the database based on selected categories, class sizes, states, frequencies and price range. It also supports keyword-based search, allowing users to search for activities by name, category name or subcategory name.

Finally, it paginates the results and passes the necessary data to the of product page to render the products page with the filtered and sorted activities, along with the filtering options for the user to further refine their search. This function essentially handles the backend logic for fetching, sorting and filtering activities based on user preferences and provides the necessary data to render the frontend view for displaying the products (activities).



Figure 6.23: Code Implementation of Search and Advanced Filtering (Part A)



Figure 6.24: Code Implementation of Search and Advanced Filtering (Part B)

6.2.4.3 Activity Details

When user click the "eye" button, it will navigate user to view specific activity details page.



Figure 6.25: Navigate to Activity Details Page

View Activity Details

The activity details page offers users an in-depth look at specific activity details that providing comprehensive information to help them make informed decisions. Upon navigating to this page, users encounter various sections designed to enhance their browsing experience and facilitate interaction with the platform's features.

At the top of the page, users can immediately access essential details about the activity including its address and schedule specifics such as date and time for user enrol in this activity. Additionally, users have the option to add the activity to their wishlist history by clicking on the "bookmark" button, which is allowing them to save activities for future reference. In the Figure 6.26, the activity is displaying with discounted price that showcase the special discount that offered by this service provider. It communicates the discounted rate prominently through visual cues such as strikethrough pricing and highlighted discount percentages. Therefore, users can easily identify the discounted price so making it an attractive option for budget-conscious individuals seeking costeffective activities.



💧 15 purchases in	last 24 hours 👳 44 active view th	IS
Happy Fish		Kishli Wishli
#1 Best seller In Sports	Category	
RM 323 RM-380 15	% off	
PT 209, Jalan F	anglima, Pusat Bandar Kangar, I	Kangar, Perlis, 01000
	Age 4-18	10 learners per class
	x1 per month	() 1 hour 30 minute
2024-05-10	10.30 AM	F Enroll Now
Hurry Up! Left 9 In Sea	s	
20		

Figure 6.26: Activity Details with Essential Details (Part A)

This is another example of activity with regular or standard price without any discount applied. This is providing them with a clear understanding of the standard cost associated with participation.



Figure 6.27: Activity with Normal Price

As users scroll down the page, they encounter three different tabs such as "Description", "Location" and "Reviews". Each offering unique insights into the activity:

1. Description Tab:

In this tab, users can delve into the activity's description which providing them with a comprehensive overview of what the activity entails. Additionally, users can view the school name associated with the activity. When user is clicking on the school name, it will redirect user to the activity provider's profile, fostering seamless navigation and exploration of related content. Moreover, users can initiate communication with the service provider by clicking on the "Ask a Question" button that enabling them to seek clarifications or gather additional information directly from the provider.



Figure 6.28: Activity Details with Description Tab (Part B)

When users click on the school name "Little Pools" of service provider, they are redirected to the profile page of that service provider. On this specific profile page, users can access detailed information such as the email address, phone number, and physical address. Besides, users can explore the categories and subjects offered by the service provider, along with pertinent details about their educational institution. Moreover, users have the opportunity to view the operation hours of the school or learning centre to allow them to plan and schedule accordingly.

∳ ESch⊷l	Find Lesson	Popular F4	AQ Contact	Kang Sing Chee \vee	ø	€ Logout
	Little Pools					
Ask A Question	Little Pools Email: lohyongbin0819@gmail.com Phone: 0124587996 Location: No 45, Jalan Gopeng, 31350 Website: - © Category: Sports © Subject: Swimming ABOUT 2 swimming pools: a 30m & 50m pool fo	r kids and a jacu	izzi pool			
	OPERATION 1. Thursday-Friday : 8ar 2. Saturday : 8am-3pm 3. Sunday : 8am-5pm	N HOURS	5:			

Figure 6.29: View Service Provider Profile

After users clicks the "Ask a Question" button, it will navigate users to chat box and they can start to chat with service provider by asking a question.

Cititle Pool Offline		
Heyl What's upl You can start to ask nowl		
	Hi, may I ask ur instructor will guide kids protice in what exercise and obstacles that includes on and off pool activities?	NINNI NINNI
Enter message		

Figure 6.30: User Chat with Service Provider by Asking Question

2. Location Tab:

In the second tab, users gain access to detailed location information, including the complete address of the school or learning centre hosting the activity. Furthermore, users can visualize the precise location on a map view which can enhance their understanding of the activity's geographical context and facilitate easier navigation.



Figure 6.31: Activity Details with Location Tab (Part C)

3. Review Tab:

In this tab, users can explore customer reviews and ratings associated with the activity. Parents can gain valuable insights into the activity's quality and suitability for their child. It also has displayed the total ratings and count of reviews. Additionally, users have the opportunity to contribute to the platform's community by leaving their own comments and ratings after their child has enrolled in the activity.

Description	Location	Review		
0 Ratings 5 Star			0%	Review $\star \star \star \star$
4 Star			0%	
3 Star			0%	Comment
2 Star			0%	
1 Star			0%	
				Submit

No review and rating yet

Figure 6.32: Activity Details with Review Tab (Part D)

Towards the end of the page, users are presented with a curated selection of activities that align with their preferences, leveraging personalized recommendations to enhance user engagement and satisfaction. By showcasing relevant activities based on user behaviour and preferences, the platform strives to cater to the individual needs and interests of the users for further enriching their browsing experience.



Figure 6.33: Personalized Recommendations Activities to Users (Part E)

Overall, the Activity Details page serves as a comprehensive resource for users, offering detailed insights, interactive features and personalized recommendations to support their decision-making process and enhance their overall user experience.

6.2.4.4 Learner Enrolment

When users click the "Enrol Now" button, they are redirected to a page where they need to provide details about their children (learners). Users are required to fill in their child's name, age and gender. Additionally, there is an "Add Learner" button that allows users to add more than one child to the activity simultaneously to streamline the enrolment process. This is reducing troublesome and saving user time without any separate to enrol their children in same activity.

On the right side of the page, users can view the details of the activity, including its name, date, time and address. The total amount to be paid is automatically calculated based on the number of learners enrolled and is displayed alongside the activity details.

差 ESch⊷l		Find Lesson	Popular	FAQ	Contact	Kang Sing Chee \vee	Ø	€ Logout
		Enrollment Back / Enrollment						
Learner Details		2- Add Learner	Ha The refu	appy F ere is no inds for p Frie	Fish refund polic payments al day, 2024-0	y for this class so the ready made. 5-10	users v	vill not get
Anthene Yong Li Wei	10 Girl	B	4	PT Ka	209, Jalan ngar, Kanga VI 380.00	Panglima, Pusat Ban ar, Perlis, 01000	dar	

Figure 6.34: Enrolling One Child in an Activity

		Enrollment Back / Enrollment	t
Learner Details		≜ ∗ Add Lean	Happy Fish There is no refund policy for this class so the users will not get refunds for payments already made.
Anthene Yong Li Wei	10	Girl	PT 209, Jalan Panglima, Pusat Bandar Kangar, Kangar, Peris, 01000
Othene Yong Wei Heng	12	Boy	留 (1) RM 760.00

Figure 6.35: Adding Another Child to Activity and Total Amount Calculation

If users click the "Next" button, they are redirected to the payment page to complete the enrolment process.

		Payment	
Credit Card		VISA stripe	
Card Number			Happy Fish There is no refund policy for this class so the users will not get
Expiry Date	cvcicvv		refunds for payments already made.
	Pay Now		
A Your transaction is secured with ssl ce	rtificate		

Figure 6.36: Processing Payment

After the user successfully makes a payment, an alert message will be displayed confirming that the payment was successful. Additionally, a receipt will be generated containing important details such as the transaction ID, the name of the school or learning center, the name of the activity, the payment amount, the status of the transaction and the payment date and time. This receipt serves as a confirmation of the completed transaction and provides users with essential information regarding their payment.

≸ ESch⊷l	Payment made successfully.						×	Chee ∨	ø	G>Logout	
		Ва		ot lecelpt							
	Your D			Curr							
	four P	aymer Th	is is your re	eceipt.	Jessi	uliy!					
			Recei	pt							
	Transaction ID	Activity Provider	Activity Name	Amount (RM)	Status	Payment Date					
	ac2f5fa5-c468- 44d4-bf92- daf10f1ae22e	Little Pools	Happy Fish	760.00	paid	2024-04- 23 19:50:33					

Figure 6.37: Payment Confirmation with Receipt and Alert Message

6.2.4.5 Enrolment History

After successfully enrolling, users can access their enrolment history on the enrolment history page. This page provides users with a comprehensive record of their past enrolments, which is allowing them to review and track their participation in various activities over time.

Enroll History Home / History							
Enrollment History							
10 🕶 entries per page						Search	
ID Activity Name	Activity Provider	Transaction ID	- *	Amount	Payment Date	÷ ()	Status 🗍
1 Happy Fish	Little Pools	ac2f5fa5-c468-44d4-bf92-daf10f1ae22e		RM 760.00	2024-04-23 19:50	:33	paid
Showing 1 to 1 of 1 entries							

Figure 6.38: Enrolment History

6.2.4.6 Learner Schedule

In the learner schedule page, users can view the schedules for each enrolled learner. This feature provides a convenient overview of the activities and classes that each learner is enrolled in, including details such as date, time, location and any other relevant scheduling information. Users will also receive the email notification that notified by service provider when the activity is around the corner.

Schedule

arner Schedule										
10 👻 entries per	page								Searc	h
Activity Name	Subcategory	Location	Date	Time	Duration	Day	Frequency	Learner Name		Learner Status
Happy Fish	Swimming	PT 209, Jalan Panglima, Pusat Bandar Kangar	2024-05-10	10:30:00	1 hour 30 minutes	Friday	per month	Anthene Yong Li We	6	confirmed
lappy Fish	Swimming	PT 209, Jalan Panglima, Pusat Bandar Kangar	2024-05-10	10:30:00	1 hour 30 minutes	Friday	per month	Othene Yong Wei H	eng	confirmed

Figure 6.39: Learner Schedule List

Eschool 434AM () min.	sago) \$	☆	٢	ور	I
Hellol Reminder: Your child Antherne Yong Li Weit is enrolled in the activity					
Hello! Reminder: Your child Anthene Yong Li Wells enrolled in the activity					
Happy Fish: Activity Schedule: Start Date: 2024-05-10 End Date: 2024-05-31 Time: 10:30:00 Duration: 1 hour 30 minutes Day: Friday Frequency: per month Best regards, br- Eschool					

Figure 6.40: Email notification for Upcoming Class (Child 1)



Figure 6.41: Email notification for Upcoming Class (Child 2)

6.2.4.7 Activity Wishlist

Users have the option to add activities to their wishlist by clicking the love button in the view product section or the bookmark button on the activity detail



Figure 6.42: Add Activity to Wishlist (Part A)

the state of the	👗 15 purchases in last 24 hours 🛛 🙅 44 active view this
	Pool World
	#1 Best seller In Sports Category
	RM 320
	🔏 Jalan Perwira, Kampung Pandan, Kuala Lumpur, Kuala Lumpur, 61200
	Age I learners per class

Figure 6.43: Add Activity to Wishlist (Part B)

Upon successful addition, a confirmation message alerts the user of the successful addition. If the user attempts to add an activity already in the wishlist, a prompt notifies them that the activity is already saved.



Figure 6.44: Alert Message Prompt Users that Activity is Successful Added



Figure 6.45: Alert Message Prompt Users that Activity is Already Added

Furthermore, users can access their wishlist page to view all their favourite activities. When user is clicking the eye button redirects users to the activity detail page for further information, while clicking the remove button triggers a confirmation message to confirm the removal from the wishlist.

	My	Wishlist / Wishlist			
ACTIVITY NAME	ADDRESS	STATE	AGE GROUP	PRICE	ACTION
Pool World	Jalan Perwira, Kampung Pandan	Kuala Lumpur	5 - 15	RM 320	⊘ ×

Figure 6.46: View Wishlist



Figure 6.47: Confirmation Message before Remove an Activity Item

6.2.4.8 Review and Rating

Users have the ability to access their own review and rating history, which includes details such as the activity name, rating, comment and date of submission. Users can click on the activity name to navigate to the activity details page for further information.



Figure 6.48: Review and Rating History

Additionally, in the review and rating section of activities, users can view statistics such as the total rating, the percentage of star ratings and other rating distribution metrics.

Descri	ption	Location	Review	
1 Rating	6			Review
5 Star			100%	$\star \star \star \star$
4 Star			0%	
3 Star			0%	Comment
2 Star			0%	
1 Star			0%	
				Submit
Custom	ner Revi	ews		
	DBAdmi	nistrator		
NO PLACE	**	***		
	fun and tea	cher are nice and p	atient.	
	2024-04-16	12:29:44		

Figure 6.49: User Review and Rating

However, users are only permitted to comment and rate activities in which their child is enrolled. If the user attempts to rate or comment on other activities will result in an error message prompt.

You cannot review and rate this activity because you have not enrolled your child in it.

Figure 6.50: Prompting an Error Message

6.2.5 Admin

In the system, there exists a single administrator role responsible for managing service providers. The admin has exclusive authority to oversee various aspects related to service providers which is including verifying their applications, viewing their details, updating their information and deleting service provider accounts as necessary. This centralized role ensures effective management and governance of service provider activities within the system.

6.2.5.1 Service Provider Management

Admin can view a comprehensive list of registered service providers to gain insights into their profiles. Besides, admin has the authority to update service provider information or remove accounts entirely. This capability ensures that the system database remains accurate and up-to-date.

ctiv	ity Provider	Profile Table						+ Crea	ate Activity
10	← entries pe	r page						Search	
ID	Name	Email	Phone Number	School Name	Address	Details	Registration Date	Status	Action
	sc	sc1@gmail.com	0107788178	Little Garden School	157, Taman Desa Sentosa, Jalan Sentosa	tuition centre for all subjects and provide to all primary school student	2024-03-28 00:00:00	approved	2
	singchee	singcheekang@gmail.com	0107708145	Little Small School	157, Taman Desa Sentosa, Jalan Sentosa	tuition centre for all subjects and provide to all primary school student	2024-03-30 00:00:00	approved	2
	Loh Yong Bin	Iohyongbin0819@gmail.com	0124587996	Little Pools	No 45, Jalan Gopeng, 31350	2 swimming pools: a 30m & 50m pool for kids and a jacuzzi pool	2024-04-22 00:00:00	pending	2

Figure 6.51: View All Registered Service Provider

Admin can review/update/verify the status of service provider accounts including whether they are "pending", "approved" or "rejected".

stra

 \times

Update Service Provider Home / Activity Provider / Update	
ID	3
Username	Loh Yong Bin
Email	lohyongbin0819@gmail.com
Phone Number	0124587996
School Name	Little Pools
Address	No 45, Jalan Gopeng, 31350
Description	2 swimming pools: a 30m & 50m pool for kids and a jacuzzi pool
Registration Date	2024-04-22 00:00:00
Status	Pending ~
	Rejected Pending
	Approved

Figure 6.52: Verify Service Provider Status

There are three scenarios of service provider status account:

1) Pending Status

After the service provider is registered an account, they will be prompted an alert message notify them registered successfully and need to wait admin to approve their account. The account will be in "pending" status.

≸ ESch⊷l	Register successfully. You need to wait admin to approve your patience!	application. Thank you for your $\qquad imes$ Lo	igin Get Started
		Activityprovider Sign In	
	3	User Type Service Provider	
		E-Mail Address	
		Password	
		Remember Me <u>Not a me</u>	mber?
		Login	

Figure 6.53: Alert Message Prompt Service Providers that their Account is Successful Registered

If the service provider attempts to login with a pending status, they will be prompted an alert message "Your account is pending approval. Please wait

≜ ESch⊷l	Your account is pending approval. Please wait patiently.	:	Login	Get Started
		Activityprovider Sign	ı In	
		User Type Service Provider		
		E-Mail Address		
		Password		
		Remember Me	Not a member?	
		Login		

patiently" to notify them their account is pending approval and they cannot login until it's approved.

Figure 6.54: Alert Message Prompt Service Providers that their Account is Pending Approval

2) Rejected Status

In case the admin rejects a service provider's account, its status is updated to "rejected". If a service provider attempts to login with a rejected status, they will be prompted an alert message "Your account have been rejected. Please contact admin for further assistance." to notify them their account is rejected and need to contact with admin. At the same time, they will receive an email notification to inform that their account has been rejected, and they should contact the admin for further information or assistance.

Update Service Provider Home / Activity Provider / Update			
ID	3		
Username	Loh Yong Bin		
Email	lohyongbin0819@gmail.com		
Phone Number	0124587996		
School Name	Little Pools		
Address	No 45, Jalan Gopeng, 31350		
Description	2 swimming pools: a 30m & 50m pool for kids and a jacuzzi pool		
Registration Date	2024-04-22 00:00:00		
Status	Rejected		
Save Changes			

Figure 6.55: Rejected Status of Service Provider is Updated by Admin
≸ ESch •• I	Your account has been rejected. Please contact ac	min for further information.	X Login Get Started
		Activityprovider 5 Get's started now	Sign In
	3	User Type Service Provider	
		E-Mail Address	
		Password Remember Me	Not a member?
		Lo	bgin

Figure 6.56: Alert Message Prompt Service Providers that their Account is Rejected if they are attempting to Login

≡	M Gmail		Q Sea	irch mail		幸	() \$		
1	Compose		÷		G 🗈 D :		1 of 6,826 < >	拼 -	
	Inbox	5,641	9	Eschool <eschoolmailing@gmail.com> to me -</eschoolmailing@gmail.com>		19:24 (1	minute ago) 🛧 🙂 🕤	:	
☆	Starred								~
0	Snoozed								S S
Σ	Important								1
⊳	Sent								-
۵	Drafts	1							
	Categories				Hollo Joh Yong Bin				+
8	Social	321			Helo Lon Tong bin				
0	Updates	5,465			Your status has been updated to rejected				
	Forums	1			Thank you for using our application!				
Ð	Promotions	8,690			Best regards, Eschool				
v	More								
Lab	els	+			© 2024 Larmed All rights researed				
	[Imap]/Sent				e sour brown partigra rearred				
	[Imap]/Trash								
	Junk			\frown	\sim				
	Notes			(← Reply) (→ Forward)	٢				

Figure 6.57: Service Providers Received Email Notification from Admin with Rejected Status

3) Approved Status

If the admin approves a service provider's account, its status changes to "approved". Service providers with an approved status can log in successfully and access their dashboard or relevant features within the system. Besides, the service provider will be received an email notification to inform their account is approved.

10									
D	Name	Email	Phone Number	School Name	Address	Details	Registration Date	Search	Action
	sc	sc1@gmail.com	0107788178	Little Garden School	157, Taman Desa Sentosa, Jalan Sentosa	tuition centre for all subjects and provide to all primary school student	2024-03-28 00:00:00	approved	2
	singchee	singcheekang@gmail.com	0107708145	Little Small School	157, Taman Desa Sentosa, Jalan Sentosa	tuition centre for all subjects and provide to all primary school student.	2024-03-30 00:00:00	approved	<mark>2</mark> 冠
	Loh Yong Bin	lohyongbin0819@gmail.com	0124587996	Little Pools	No 45, Jalan Gopeng, 31350	2 swimming pools: a 30m & 50m pool for kids and a jacuzzi pool	2024-04-22 00:00:00	approved	

Figure 6.58: Approved Status of Service Provider is Updated by Admin

= M	Gmail		Q Sea	arch mail			幸		0	۲		
0 Con	npose		÷	+ 0 î 🖆 🔇	04 b D	:		1 of 6,826	< >	拼	•	Ð
🖬 Inbo	х	5,641		Eschool Activity Provide	r Account Act	ivation Status 🄉 Inbox 🛪				8	Z	
☆ Star ① Sno	red ozed			Eschool <eschoolmailing@gmail.com> to me +</eschoolmailing@gmail.com>			19:18 (2 n	ninutes ago) 🎄	٢	€	:	ø
∑ Imp ⊳ Sent	ortant t											*
Drat	fts agories	1										+
음, So (j Uj	ocial pdates	321 5,465			Hello Loh Yon	ng Bin						
Pi Fo	romotions	1 8,690			Your status has b Thank you for us	been updated to approved sing our application!						
✓ More	e	1			Best regards, <b< th=""><th>or>Eschool</th><th></th><th></th><th></th><th></th><th></th><th></th></b<>	or>Eschool						
Labels	ap]/Sent	÷										
 [Ima Juni 	ap]/Trash k					© 2024 Laravel. All rights reserver						
Note	85											

Figure 6.59: Service Providers Received Email Notification from Admin with

Approved Status

és ESch⊷l	Search	Q		🤌 🔎 🧈 Profile Loh Yong Bin -
S Dashboard A Profile Activity My Calendar E Enrollment Transaction	Dashboard Home / Dashboard Sales I This Week ***	Revenue i This Month *** \$ 0	Customers i This Week "" 0	Activity Provided Month ***
★ Review & Rating	Non-sector Non-sec	Login successfully. X		

Figure 6.60: Service Provider Login their Dashboard Successfully

6.2.5.2 Service Provider

In the service provider section, service providers have comprehensive control over their activities within the system. They can create, manage, and update activity details, including scheduling, pricing, and descriptions. Service providers can also interact with enrolled users, communicate important information, and manage enrolments. Additionally, they have access to features such as viewing enrolment history, managing learners and notify users. The service provider section empowers providers to efficiently administer their offerings and engage with users to deliver quality services.

6.2.5.3 Profile Management

Profile management for service providers enables them to maintain accurate and up-to-date information about themselves. Service providers can access their profile which contains various details such as personal information, contact details and other relevant information. This view allows them to review the information currently associated with their profile.

Profile Home / Activity Provider / Profile		
Loh Yong Bin Service Provider Learning Centre	Overview Edit Profile About 2 swimming pools: a 30m & 50m Profile Details Name	Settings
	School Name Address Phone Email	Little Pools No 45, Jalan Gopeng, 31350 0124587996 Johyongbin0819@gmail.com

Figure 6.61: View Profile

Service providers have the capability to update their profile information as needed. This includes modifying personal details like name, contact number, email address and professional information such as name of learning centre, business address, profile picture and so on. The update feature ensures that service providers can keep their profile information current and accurate.

.ft	Overview Edit Profile	Settings
Loh Yong Bin Service Provider Learning Centre	Profile Image	Choose File No file chosen
	Full Name	Loh Yong Bin
	School Name	Little Pools
	About	2 swimming pools: a 30m & 50m pool for kids and a jacuzzi pool
	Address	No 45, Jalan Gopeng, 31350
	Phone	0124587996
	Email	lohyongbin0819@gmail.com
	Password	
	Website	
		Save Changes

Figure 6.62: Update Profile

6.2.5.4 Activity Management

Service providers can efficiently manage their activities through the following functionalities such as create new activity, view activity created, update activity, delete activity, search activity and some validation in the activity management module.

Create New Activity

If the service provider does not have any existing activity records, a prompt will appear to encourage them to add a new activity. This ensures that providers are aware of the necessity to input activity details and facilitates the process of adding new activities to their profile.

೫ Dashboard ዶ Profile	Activity Tables		
E Activity	Activity Table		
My Calendar			+ Create Activity
Enrollment		Add Vour Now Activity Now	
% Transaction		Add Your New Activity Now!	
🖶 Review & Rating			

Figure 6.63: Prompt to Add New Activity for Service Providers with No Existing Records

In the "Create Activity" section, service providers are prompted to input information across three main sections such as activity details, scheduling details and pricing details.

Create Activity			
Details Set up the basic details for your activity			
Image			
Choose File swimming kid.jpg			
Category	Activity		
Sports v	Swimming	~	
Activity Name			
Happy Fish			
Description			
Normal + BIU + IE II Ix			
WE promise a fun and safe environment to learn and grow through various athletic activities. We strive to enric fundamentals of good sportsmanship.	ch each child's life with a love of sports. We encourage	our students to try all sports and will teach them the	
Our experienced, patient, and passionate coaching staff will divide the campers into balanced teams that will t volleyball, soccer, lacrosse, and more!!	hen learn about and compete in a wide variety of sports	including: swimming, basketball, baseball, football,	
			4
Minimum Age	Maximum Age		ŕ

Figure 6.64: Create New Activity (Part A)

	Maximum Age
4	18
lass Size	
10	
ddress	City
PT 209, Jalan Panglima, Pusat Bandar Kangar	Kangar
tate	Postal Code
Perlis ×	01000
Frequency ① per month Start Date ① 05/10/2024 Day	 End Date 05/31/2024
Friday	~
Friday Time	~ Duration
Friday Time Figure 6.65: Create	Duration New Activity (Part B) Duration
Friday Time Figure 6.65: Create Ime 10:30 AM ©	Vuration New Activity (Part B) Duration 1 hour 30 minutes
Friday Time Figure 6.65: Create Ime 10:30 AM O Pricing et up the price for your activity rice RM 380 iscount	Duration New Activity (Part B) Duration 1 hour 30 minutes
Friday Friday Friday Friday Friday Friday Second Content of the second s	Duration New Activity (Part B) Duration 1 hour 30 minutes
Friday Friday Friday Friday Friday Friday Friday Frigure 6.65: Create Friday Friday Friday Friday Friday State Friday Fri	Uuration New Activity (Part B) Duration 1 hour 30 minutes

Figure 6.66: Create New Activity (Part C)

View Activity Created

After service provider create a new activity successfully. They can view detailed information in this view list table. This includes viewing all activity details and pricing details. Activity with an "active" status will be visible to users in the view, while "inactive" activities will no longer be displayed.

tivity	Table								
									+ Create Activi
0 ~ 0	entries per	page						Search.	
DĴ	Name 🗍	Category	Subcategory	Age Group	Class Size	Address	Price	Status	Action
		C	Swimming	4 . 18	10	PT 209 Jalan Panglima, Pusat Bandar Kangar	380	active	

Figure 6.67: View Activity Details (Activity Information)

When service provider clicks the "clock" button, it will pop a modal to display all activity schedules.

Bearch	Activity Schodulo	~			4 12	Lon rong bin
	Activity Schedule	^				
Activity Tables	Start Date: 2024-05-10					
Home / Activity	End Date: 2024-05-31					
Activity Table	Time: 10:30:00					
	Day: Friday				-	reste Activity
	Duration: 1 hour 30 minutes					
10 👻 entries per page	Frequency: per month				Search	
ID Name Category		_	Address	Price	Status	Action
1 Happy Fish Sports		Close	nglima, Pusat Bandar Kangar	380	active	
Showing 1 to 1 of 1 entries						

Figure 6.68: View Activity Details (Schedules Details)

Update Activity

Service providers can modify existing activity details as needed. This includes editing information such as the activity name, description, date, time, location, and any other attributes associated with the activity.

Update Activity Details			
1 Details Set up the basic details for your activity			
ID			
16			
Image			
A The			
Choose File No file chosen			
Category		Activity	
Sports	~	Swimming	~
Activity Name			
Happy Fish			
Description			
WE promise a fun and safe environment to learn and grou students to try all sports and will teach them the fundame	w through various atl entals of good sports	hletic activities. We strive to enrich each child's life with manship.	a love of sports. We encourage our

Figure 6.69: Update Existing Activity (Part A)

Our experienced, patient, and passionate coaching staff will div including: swimming, basketball, baseball, football, volleyball, so	ide the campers into balanced teams that will then learn about and compete in a wide variety uccer, lacrosse, and more!!	of sports
Minimum Age	Maximum Age	/
4	\$ 18	
Class Size		
10		
Address	City	
PT 209, Jalan Panglima, Pusat Bandar Kangar	Kangar	
State	Postal Code	
Perlis	♥ 01000	
Status		
Active	~	
2 Scheduling Set up the time for your activity		
Frequency		
per month		~

Figure 6.70: Update Existing Activity (Part B)

Start Date		End Date	
05/10/2024		05/31/2024	
Day			
Friday			~
īme		Duration	
10:30 AM	0	1 hour 30 minutes	
RM 380			
Discount			
Discount 15			96
Discount 15			96
Discount 15		•	96

Figure 6.71: Update Existing Activity (Part C)

Delete Activity

Service provider have the ability to remove activities from the system. When they click the "trash" button, it will prompt out the confirmation message before deleting an activity permanently.



Figure 6.72: Confirmation Message before Delete an Activity Record

Search Activity

Service provider can search for specific activities by entering keywords or criteria into a search bar. The search functionality will find and matching activity records to display the results to them. This feature helps them quickly locate activities based on specific criteria.

Activit	ty Tables								
Activi	ty Table								+ Create Activity
10	 entries per page 							Searc	h
ID	Name 🗍	Category	Subcategory	Age Group	Class Size	Address	Price	Status	Action
1	NRX Drawing Class	Art and Design	Drawing	3 - 13	15	157, Taman Desa Sentosa, Jalan Sentosa	300	active	0 2 8
2	Mandarin Tuition Class	Tuition	Chinese	7 - 17	30	157, Taman Desa Sentosa, Jalan Sentosa	80	active	0 2 1
3	Zumba	Exercise and Fitness	Zumba	0 - 0	12	156,Jalan AK ,Blovk123	50	active	0 2 8
4	HTML and CSS	STEM	Coding	3 - 9	25	153, Block C, Street PJ 2, 1/3 Permai	420	active	0 2 1
5	Piano Grade1	Music and Dance	Piano	4 - 10	2	157, Taman Desa Sentosa, Jalan Sentosa	50	inactive	0 2 8
6	Piano Grade 2	Music and Dance	Piano	8 - 12	2	157, Taman Desa Sentosa, Jalan Sentosa	465	active	0 2 1
Show	ing 1 to 6 of 6 entries								

Figure 6.73: Activity List Table without Search and Sort

When service provider searches using the keyword "piano" in the search bar, the system will filter all activities that match the keyword and display the results containing the "piano" keyword.

										· · · · ·
10	entries per page								piano	
ID)	Name	Category	Subcategory	Age Group	Class Size	Address	÷	Price	Status	Action
5	Piano Grade1	Music and Dance	Piano	4 - 10	2	157, Taman Desa Sentosa, Jalan Sentosa		50	inactive	<mark>© ∠</mark> 🗊
6	Piano Grade 2	Music and Dance	Piano	8 - 12	2	157, Taman Desa Sentosa, Jalan Sentosa		465	active	<u>C</u> 2 🗊
Showi	ing 1 to 2 of 2 entries									

Figure 6.74: Search by using Keyword

Additionally, they can sort the results by clicking the button next to each attribute which allowing them to sort in either descending or ascending order. They have option to sort the list of activities based on all the criteria. In the figure below, service provider is filtered the class size with ascending order.

10	← entries per page								Search
ID)	Name	Category	Subcategory	Age Group	Class S ze	Address) Pr	ice Stat	us Action
5	Piano Grade1	Music and Dance	Piano	4 - 10	2	157, Taman Desa Sentosa, Jalan Sentosa	5	50 inact	ive 🕓 🖉
6	Piano Grade 2	Music and Dance	Piano	8 - 12	2	157, Taman Desa Sentosa, Jalan Sentosa	4	65 activ	re) 🚺 🖉
3	Zumba	Exercise and Fitness	Zumba	0 - 0	12	156,Jalan AK ,Blovk123	5	50 activ	re) 🔼 😰
1	NRX Drawing Class	Art and Design	Drawing	3 - 13	15	157, Taman Desa Sentosa, Jalan Sentosa	3	00 activ	re) 🚺 🖉 🗊
4	HTML and CSS	STEM	Coding	3 - 9	25	153, Block C, Street PJ 2, 1/3 Permai	4	20 activ	re) 🚺 🖉
2	Mandarin Tuition Class	Tuition	Chinese	7 - 17	30	157, Taman Desa Sentosa, Jalan Sentosa	8	30 activ	re) 🚺 🖉

Showing 1 to 6 of 6 entries

Figure 6.75: Sorting Activities in a Preferred Order

Category and Subcategory Validation Rule

In Figure 6.76, when a service provider accesses the activity creation page, the subcategory dropdown is visually disabled which indicating that it is inactive and cannot be interacted with. The subcategory dropdown is disabled by default is preventing service providers from selecting any options until they choose a category. The design illustrated in Figure 6.77, where selecting a category enables the subcategory dropdown, allowing the user to proceed with their selection. This approach ensures that service providers follow the intended sequence of selections, choosing a category before selecting a subcategory, thereby improving the overall user experience and data consistency.

Cate	egory		Activity		
Se	lect a category	~	Select a subcategory	~	

Figure 6.76: Subcategory Activity Dropdown is Disabled

Category		Activity	
Sports	~	Select Subcategory	~
Activity Name Description Normal ♀ B I U ♥ I I I X_x		Select Subcategory Basketball Badminton Swimming Soccer Tennis Gymnastics Volleyball Karate Taekwondo KungFu Baseball Football Hockey Golf	

Figure 6.77: Subcategory Activity is Enabled when Category is chosen



Figure 6.78: Code Implementation of Category and Subcategory

Upon selecting a category from the category dropdown, an AJAX request is triggered to fetch the relevant subcategories for that specific category. Once the subcategories are retrieved from the server and populated in the dropdown, the subcategory dropdown becomes enabled, allowing users to select from the available options.

When a user selects a category such as "Sports" from the category dropdown, the subcategory dropdown dynamically updates to display only the subcategories associated with the chosen category. For instance, if a user selects the "Sports" category, the subcategory dropdown will populate with options like "Basketball" "Badminton" "Swimming" and other sports-related activities. This filtering mechanism ensures that users only see subcategories that align with their selected category to streamline the activity selection process and enhance user experience.

Behind the scenes, this functionality is achieved through AJAX requests that fetch subcategory data from the server based on the chosen

category. The server-side logic retrieves and provides only the relevant subcategory information associated with the selected category, which is then dynamically populated into the subcategory dropdown on the user interface.

Besides, an event listener is attached to the dropdown menu with the ID "category". This event listener listens for changes in the selected option of the category dropdown. When a change occurs, the associated callback function is triggering.

Within this function, the selected category's value is extracted, initiating an AJAX request to the server's /subcategories/{categoryId} endpoint via the fetch API. This endpoint corresponds to the "getSubcategories" method in the ActivityController that shows in Figure. As the request is processed, the subcategory dropdown menu is disabled to prevent user interaction.

Upon receiving a response from the server, the JSON data containing subcategory information related to the selected category is parsed and used to dynamically populate the subcategory dropdown menu. Each retrieved subcategory is appended as an option to the dropdown, with its name displayed and its ID assigned as the option value. Once all subcategories are added, the dropdown menu is re-enabled for user interaction.



Figure 6.79: Code Implementation of Handle Retrieval of Subcategories

In this Figure 6.79, the "getSubcategories" method handles the retrieval of subcategories associated with a given category ID. It interacts with the database

to fetch relevant subcategory data based on the provided category ID and responds with the retrieved subcategories as a JSON object. Additionally, the "getSchedulesByActivity" method facilitates the retrieval of schedules linked to a specific activity ID. By querying the database for schedules associated with the provided activity ID, it returns the fetched schedules as a JSON response.

6.2.5.5 Calendar Management

After a service provider creates an activity, it will be displayed all activity created on the calendar to allow them to manage their schedule effectively. In the calendar display, each activity created is represented by its name along with the corresponding time slot. For example, if an activity is scheduled monthly from the 10th to the 31st of May with classes every Friday, this recurring event will be visible on the calendar accordingly.

Start Date	End Date
05/10/2024	05/31/2024
Day	
Friday	v

Figure 6.80: The Start Date, End Date and Day are Inputted in the Create Activity Form



Figure 6.81: Calendar of Scheduled Activity

Besides, the calendar provides various viewing options such as month, week, day or list view which catering to different preferences.

My Cale Home / Cale	ndar ndar						
< >	today		Apr 21 –	27, 2024		month	week day list
	Sun 4/21	Mon 4/22	Tue 4/23	Wed 4/24	Thu 4/25	Fri 4/26	Sat 4/27 🇘
all-day							÷
6am							^
7am							
8am							
9am		9:00 Piano Grade 2					
10am		_					
11am							
12pm							
1pm							
2pm 2:01							
3pm							
4pm							
							*





Figure 6.83: Calendar with List View



Figure 6.84: Code Implementation of Calendar Event Logic

This section of code represents the backend logic for generating events to populate a calendar view in the system. The "viewCalendar" function retrieves activity data associated with the currently authenticated activity provider. It then iterates through each activity's schedules to determine the events to be displayed on the calendar. For schedules with a frequency of "per day", it checks if the start date's day matches the current schedule's day and adds the event accordingly. While for schedules with a frequency of "per month", it iterates through each week between the start date and end date. If the current day matches the specified day of the week, it will add the event in the calendar.

6.2.5.6 Enrolment Management

Service providers have access to view activities they have created along with their schedules and a list of enrolled learners. If no learners are enrolled in a particular activity, a message will be displayed indicating that no learners are currently enrolled.

88 Dashboard		Enrollment Lists	
Activity		Enrolled Learners Table	
💽 My Calendar			
Enrollment		Happy Fish	Notify All
% Transaction		Schedule	
* Review & Rating		Start Date: 2024-05-10	Duration: 1 hour 30 minutes
🕮 User	~	End Date: 2024-05-31	Day: Friday
		Frequency: per month	Time: 10:30:00
		Learners Enrolled:	
		No learners enrolled.	
		No learners enrolled.	

Figure 6.85: Enrolment List with one Activity

lled Learners Table				
	NRX Drawing Class	Notify	Mandarin Tuition Class	No
	Schedule		Schedule	
	Start Date: 2024-03-31	Duration: 2 hours	Start Date: 2024-05-01	Duration: 2 hours
	End Date: 2024-04-28	Day: Sunday	End Date: 2024-05-22	Day: Wednesday
	Frequency: per month	Time: 14:01:00	Frequency: per month	Time: 18:30:00
	Learners Enrolled:		Learners Enrolled:	
	No learners enrolled.		syok shua	
			halo	
			hiiiii	
			Celine Thong	
	Zumba	Notify	All HTML and CSS	No
	Schedule		Schedule	
	Start Date: 2024-04-30	Duration: 1 hour 30 minutes	Start Date: 2024-05-04	Duration: 1 hour 30 minutes
	End Date: 2024-04-30	Day: Tuesday	End Date: 2024-05-25	Day: Saturday
	Frequency: per day	Time: 10:00:00	Frequency: per month	Time: 16:30:00
	Learners Enrolled:		Learners Enrolled:	

Figure 6.86: Enrolment List with a lot of Activities

Additionally, service providers have the option to notify all enrolled learners' parents automatically by clicking the "Notify All" button. This action triggers an automated process where email notifications are sent to all parents to inform them about the upcoming class.

Schedule		Schedule	
start Date: 2024-04-30	Duration: 1 hour 30 minutes	Start Date: 2024-05-04	Duration: 1 hour 30 minutes
End Date: 2024-04-30	Day: Tuesday	End Date: 2024-05-25	Day: Saturday
Frequency: per day	Time: 10:00:00	Frequency: per month	Time: 16:30:00
earners Enrolled:		Learners Enrolled:	
sy		No learners enrolled.	
sk			
hey			
hey iano Grade1	Notify All	Piano Grade 2	Notify All
hey iano Grade1 ichedule	Notify All	Piano Grade 2 Schedule	Notify All
hey iano Grade1 ichedule tart Date: 2024-04-06	Notify All	Piano Grade 2 Schedule Start Date: 2024-04-08	Notify All
hey iano Grade1 ischedule itart Date: 2024-04-06 ind Date: 2024-04-06	Notify All Duration: 1 hour 30 minutes Day: Saturday	Piano Grade 2 Schedule Start Date: 2024-04-08 End Date: 2024-04-29	Notify All Duration: 1 hour 30 minutes Day: Monday
hey ano Grade1 ichedule tart Date: 2024-04-06 ind Date: 2024-04-06 irequency: per day	Duration: 1 hour 30 minutes Day: Saturday Time: 15:30:00	Piano Grade 2 Schedule Start Date: 2024-04-08 End Date: 2024-04-29 Frequency: per month	Notify All Duration: 1 hour 30 minutes Day: Monday Time: 09:00:00
hey iano Grade1 ischedule itart Date: 2024-04-06 ind Date: 2024-04-06 irequency: per day eorners Enrolled:	Notify All Duration: 1 hour 30 minutes Day: Saturday Time: 15:30:00	Piano Grade 2 Schedule Start Date: 2024-04-08 End Date: 2024-04-29 Frequency: per month Learners Enrolled:	Notify All Duration: 1 hour 30 minutes Day: Monday Time: 09:00:00

Figure 6.87: Automated Notification Process: Service providers can notify all enrolled learners' parents with a single click

	Notification: Upcoming Activity					ð	Ľ
÷	Eschool <eschoolmailing@gmail.com> to me v</eschoolmailing@gmail.com>		4:07AM (O minutes ago)	☆	٢	¢	:
imail.	OK No thanks X	Hello! Reminder: Your child, singchee, is enrolled in the activity 'Piano Grade1'. Activity Schedule: Start Date: 2024-04-06 End Date: 2024-04-06 Time: 15:30:00 Duration: 1 hour 30 minutes Day: Saturday Frequency: per day Best regards, br>Eschool					

Figure 6.88: Email Notification Received by User about the Upcoming Class

6.2.5.7 Transaction Management

Service provider can view all transaction that learner enrolments in their activities and made payment successfully. They also have the ability to search and sort transactions.

88 Dashboard & Profile	Trans Home / 1	saction Lists Transactions						
Activity	Trans	nsaction Table						
My Calendar	10	• entries per page					Search	
🖻 Enrollment	ID,	Transaction ID	User	Activity	Amount	Payment Method	Payment Date	Status
Transaction	1	90366532-5297-4bde-bbdb-aa68b93cbfd0	DBAdministrator	Piano Grade 2	465.00	MasterCard	2024-04-07 02:21:35	paid
★ Review & Rating	2	b8acff46-756f-437f-a845-7696249f5a5c	DBAdministrator	Piano Grade 2	465.00	MasterCard	2024-04-07 02:39:25	paid
🕺 User 🗸 🗸	3	9e27ea87-54c7-4abf-8921-a948906c8fa3	DBAdministrator	Zumba	50.00	MasterCard	2024-04-08 11:14:12	paid
	4	4c507db6-dd49-491d-94da-d7da6c1569f5	DBAdministrator	Zumba	50.00	MasterCard	2024-04-08 11:16:05	paid
	5	b1cc9631-ee8a-474a-ac18-d522ba5f9a16	DBAdministrator	Mandarin Tuition Class	160.00	MasterCard	2024-04-09 10:58:08	paid
	6	75c72288-5481-4638-b747-78b5782e7ba9	DBAdministrator	Zumba	50.00	MasterCard	2024-04-09 17:14:31	paid
	7	6ce9125e-adab-4747-848a-25d37c9c8eab	DBAdministrator	Piano Grade1	50.00	MasterCard	2024-04-09 22:10:29	paid
	8	fcc00bb1-53c8-4ac7-bc58-21530db34b1d	DBAdministrator	Piano Grade 2	465.00	MasterCard	2024-04-16 12:28:46	paid
	Show	wing 1 to 8 of 8 entries						

Figure 6.89: View Transactions List

6.2.5.8 Review and Rating Management

Service providers can view ratings and comments from users (parents) who have enrolled in their activities. They have the option to update the status of reviews and ratings by publishing or unpublishing the specific review and rating to the public. Service provider can click the "eye" icon to publish or unpublish. When reviews and ratings are published, they are visible to all users, whereas unpublished reviews and ratings remain hidden from view.

Reviews and Ratings Home / Reviews and Ratings	Table									
Reviews and Ratings										
10 👻 entries per page									Search	
ID Û Activity Û	User	÷	Comment	÷	Rating		Date	÷	Status 🗍	Action
2 Piano Grade 2	DBAdministrat	or	fun and teacher are nice and patient.		5	2024-0	04-16 12:29	:44	Unpublished	۲

Figure 6.90: Review and Rate List Table

views	and Ratings T aws and Ratings	able					
Reviews	and Ratings						
10 👻	entries per page					Search	
ID Ĵ	Activity	User	Comment	Rating	Date	Status 🗍	Action
2	Piano Grade 2	DBAdministrator	fun and teacher are nice and patient.	5	2024-04-16 12:29:44	Published	ø
Showing	g 1 to 1 of 1 entries						

Figure 6.91: Update the Review and Rate by Publishing to Public

6.2.5.9 User (Parent) Management

Service providers can efficiently manage parent information through the following functionalities:

View User List

Service provider can view a list of parents and identify which children belong to each parent, but this view is limited to parents whose children are enrolled in their activities only. They also can search and sort user records for efficient management.

Parent Home / Par	Tables rent				
Parent	t Table				+ Create
10 ~	entries per page				Search
ID Ĵ	Parent	Email	Phone Number 🗍	Child Name	្ជុំ Login Method ្៌
ID _	Parent (DBAdministrator	Email Ĵ dbakang1119@gmail.com	Phone Number 0 0107708144	Child Name syok shua, halo, hiiiiii, sy, sk, hey, singchee, Jason Ta	Login Method [^] n, Google
ID 1 2	Parent0DBAdministratoryb	Email (dbakang1119@gmail.com lohyongbin666@gmail.com	Phone Number 0 0107708144 0 0107708146 0	Child Name syok shua, halo, hiiiiii, sy, sk, hey, singchee, Jason Ta Celine Thong	Login Method n, Google Manual

Figure 6.92: View User List

Add New User

Service providers have the ability to add parents into the system, particularly useful for cases where parents physically visit their learning centre.

Create Home / Parent					
Add Parent Details					
Parent Name					
Eric Kang Zhui Sin					
Email	Phone Number				
erickang@gmail.com	0178852231				
Password					
Add					

Figure 6.93: Add New Parent into System

6.2.5.10 Learner Management

In this learner management module, Service providers have the ability to manage learners efficiently through the following functionalities:

View Learner List

Service providers can see a comprehensive list of all learners who have enrolled in their activities. They have the flexibility to search for specific learners and sort the list based on various criteria such as learner name, age or enrolment status. Service provider can manage large datasets efficiently by implementing the pagination to ensure that only a limited number of entries (e.g., 10) are displayed per page.

88 Dashboard	Student Lists Home / Student					
& Profile	Student Table					
Activity						+ Create
 My Calendar 	10					Count
Enrollment	entries per page					search
S Transaction	Name	Age	Gender	Parent	Status	Action
* Review & Rating	syok shua	10	Girl	DBAdministrator	pending	2 🗑
® User ^	halo	15	Girl	DBAdministrator	confirmed	2 🗑
Student	hiiiiii	14	Boy	DBAdministrator	confirmed	2 8
· Parent	Celine Thong	12	Girl	yb	confirmed	2 8
	sy	13	Girl	DBAdministrator	pending	2
	sk	12	Boy	DBAdministrator	pending	2
	hey	12	Girl	DBAdministrator	confirmed	2
	singchee	12	Girl	DBAdministrator	completed	2 🗑
	Jason Tan	12	Boy	DBAdministrator	confirmed	2

Figure 6.94: View Learner List

Add New Learner

Service providers have the capability to add new learners to their activities. When adding a new learner, service providers are required to input essential details such as the learner name, age, gender, parent name and the specific activity they are enrolling in.

When selecting the parent's name, service providers can choose from a dropdown list that contains all available parents registered within the system. This dropdown ensures that service providers can easily associate learners with their respective parents or guardians.

Gender	
Girl	~
Activity	
NRX Drawing Class	~
	~
	Gender Girl Activity NRX Drawing Class

Figure 6.95: Dropdown Selection: Available Parent Names

For selecting the activity in which the learner is enrolling, service providers are presented with a dropdown list that includes only the activities created by that specific service provider. This tailored dropdown ensures that service providers can only assign learners to activities that they have created, maintaining control and organization within their own offerings.

Create ome / Student			
Add Student Details			
Student Name			
Age		Gender	
		Girl	~
Parent		Activity	
Eric Kang Zhui Sin	~	NRX Drawing Class	~
Status		NRX Drawing Class Mandarin Tuition Class	
Pending		Zumba	
		Piano Grade1	
		Piano Grade 2	
	Add		
	-		

Figure 6.96: Dropdown Selection: Provider's Activities

There are 4 statuses to indicate the learner's participation such as "pending", "completed", "confirmed" or "cancelled".

- Pending: Learners who have initiated the enrolment process but have not yet completed it or whose enrolment is awaiting confirmation fall under this status. This status indicates that the enrolment process is in progress and pending further action.
- Completed: Learners who have successfully completed the enrolment process and are confirmed participants in the activity are marked as completed. This status signifies that the enrolment process has been finalized and the learner is ready to participate.
- Confirmed: Learners whose enrolment has been confirmed by the service provider are categorized under this status. Confirmation typically indicates that all necessary steps such as payment or documentation have been completed, and the learner's participation in the activity is confirmed.
- Cancelled: Learners who have withdrawn from the activity or whose enrolment has been cancelled by the service provider are designated as cancelled. This status indicates that the learner's participation in the activity has been terminated before completion.

Update Home / Student	
Update Student Details	
ID	
94	
Student Name	
syok shua	
Age	Gender
10	Girl v
Parent	Activity
DBAdministrator ×	Mandarin Tuition Class v
Status	
Pending	×)
Pending Confirmed	
Cancelled Completed	

Figure 6.97: Dropdown Selection: Learner's Status

Delete Learner

It will prompt out a confirmation message before deleting a learner record.



Figure 6.98: Confirmation Message before Delete a Learner Record

6.2.5.11 Dashboard Service Provider

This is a new Service Provider Dashboard provides a clean interface with no data populated yet. It awaits input from the service provider to start managing activities, sales, and revenue effectively.

Dashboard Home / Dashboard			
Sales I This Week	Revenue This Month	Customers This Week -	Activity Provided Month
Reports /foday			
3 2			
10 ♥ entries per page # [Customer	Product Price	Serch	

Figure 6.99: New Service Provider Dashboard

The service provider dashboard offers a concise overview of key metrics and performance indicators. Service providers can track their weekly sales, monthly revenue, and weekly customer enrolments. A line chart provides a visual representation of sales, revenue, and customer enrolments for the current day. Additionally, a doughnut chart categorizes different activities offered by the service provider. This graphical representation helps to understand the



distribution of activities and their respective contributions to overall sales and revenue.

Figure 6.100: Service Provider Dashboard (Part A)

Furthermore, the dashboard displays recent sales data for the current month, including transaction IDs, customer names, activity details, prices and status. This comprehensive snapshot enables service providers to monitor their business performance effectively and make informed decisions to optimize operations and enhance customer satisfaction.

Recent Sales This Month					
10 🗸 entries per page			Searc	:h	
#	Customer	Product		Price	Statuş
90366532-5297-4bde-bbdb- aa68b93cbfd0	DBAdministrator	Piano Grade 2		\$465.00	paid
b8acff46-756f-437f-a845-7696249f5a5c	DBAdministrator	Piano Grade 2		\$465.00	paid
9e27ea87-54c7-4abf-8921- a948906c8fa3	DBAdministrator	Zumba		\$50.00	paid
4c507db6-dd49-491d-94da- d7da6c1569f5	DBAdministrator	Zumba		\$50.00	paid
b1cc9631-ee8a-474a-ac18- d522ba5f9a16	DBAdministrator	Mandarin Tuition Class	ו	\$160.00	paid
75c72288-5481-4638-b747- 78b5782e7ba9	DBAdministrator	Zumba		\$50.00	paid
6ce9125e-adab-4747-848a- 25d37c9c8eab	DBAdministrator	Piano Grade1		\$50.00	paid
fcc00bb1-53c8-4ac7-bc58- 21530db34b1d	DBAdministrator	Piano Grade 2		\$465.00	paid

Figure 6.101: Service Provider Dashboard (Part B)

CHAPTER 7

SYSTEM TESTING

7.1 Introduction

In Chapter 7, the focus shifts to the critical phase of system testing, where the functionality, usability and overall performance of the developed system are rigorously evaluated. There are three main types of testing covered in this chapter such as unit testing, usability testing and user acceptance testing. This is to ensure that all the project scopes are met with all requirements such as functional requirement and non-functional requirements.

7.2 Unit Test

Unit testing serves as the foundation of the testing process that focusing on testing individual components or units of the system in isolation. Through meticulously designed test cases, unit testing aims to validate the correctness and reliability of each unit and ensure that they perform as expected according to the specified requirements.

7.2.1 Unit Test Case for User Side Module

In this section, the testing is focusing on the functionalities of the user (parent) side module to ensure its reliability, accuracy and user-friendliness. These tests aim to validate various user interactions such as registration, login, activity search, enrolment, wishlist management, review and rating, chat with service provider and profile management from the perspective of a user (parent) utilizing the platform. Each test case is designed to simulate real user scenarios and verify that the system behaves as expected which providing a seamless and satisfying experience for users interacting with the system.

Test Case I	D	TC-001		Designed By		Kang Sing Chee	
Module		User Registration		Designed Date		20 April 2024	
Test Case 7	litle	User Account Registra	tion	Executed By		Kang Sing Chee	
Pre-conditi	on	-		Execution Date		21 April 2024	
Test	Test Scenario	Test Steps	Test Data	Expected Result	Post Condition	Actual Result	Pass/
Case #							Fail
TC_REG	Register an	1. Enter the	1. Username: Ali	Account is	The user account	Account is	Pass
ISTER_01	account with	username, phone	2. Phone	registered	will be created	registered	
	valid	number, email,	Number:	successfully. An	and navigated to	successfully. An	
	username,	password and	0124561239	account	the login page.	account	
	email, phone	confirm	3. Email:	registered		registered	
	number,	password	<u>ali@gmail.com</u>	successful		successful	
	password and	2. Click on the	4. Password:	message is		message is	
	confirm	"Sign Up" button	123456	prompted.		prompted.	
	password		5. Confirm				
			Password:				
			123456				
TC_REG	Register an	1. Enter the	1. Username: Ali	An error message	User remains on	Error message is	Pass
ISTER_02	account with	username, phone		is displayed under	the registration	displayed under	
	valid	number, email,		the email input	page without		

Table 7.1: Unit Test Case for User Registration

	username,	password and	2.	Phone	field "Please	creating an	the email input	
	phone number,	confirm		Number:	include an '@' in	account.	field.	
	password and	password		0124561239	the email address.			
	confirm	2. Click on the	3.	Email:	The email is			
	password but	"Sign Up" button		aligmail.com	missing an '@'."			
	invalid email		4.	Password:	which indicating			
	format			123456	the validation			
			5.	Confirm	error.			
				Password:				
				123456				
TC_REG	Register an	1. Click on the	1.	Username: null	The error	User remains on	Error message is	Pass
ISTER_03	account with	"Sign Up" button	2.	Phone	message is	the registration	displayed under	
	empty input			Number: null	displayed under	page without	each input field	
	fields		3.	Email: null	each input field	creating an	accordingly.	
			4.	Password: null	"Please fill out	account.		
			5.	Confirm	this field." which			
				Password: null	indicating the			
					validation error.			
TC_REG	Register an	1. Enter the	1.	Username: Ali	An error message	User remains on	Error message is	Pass
ISTER_04	account with	username, phone			displayed under	the registration	displayed under	
	valid	number, email,			the password	page without		

	username,	password and	2	Phone	input field	creating an	the password	
	phone number,	confirm		Number:	indicating that the	account.	input field.	
	email, but	password		0124561239	password must be			
	password and	2. Click on the	3	Email:	at least 6			
	confirm	"Sign Up" button		<u>ali@gmail.com</u>	characters long.			
	password with		4	Password: 123				
	less than 6		5	Confirm				
	characters			Password: 123				
TC_REG	Register an	1. Enter the	1	Username: Ali	An error message	User remains on	Error message is	Pass
ISTER_05	account with	username, phone	2	Phone	displayed under	the registration	displayed under	
	valid	number, email		Number:	the confirm	page without	the confirm	
	username,	password and		0124561239	password input	creating an	password input	
	phone number,	confirm	3	Email:	field indicating	account.	field.	
	email, but	password		<u>aligmail.com</u>	the validation			
	password does	2. Click on the	4	Password:	error.			
	not match the	"Sign Up" button		12345678				
	confirm		5	Confirm				
	password			Password:				
				12345679				

Table 7.2: Unit Test Case for User Login

Test Case	ID	TC-002		Designed By		Kang Sing Chee	
Module		User Login		Designed Date		20 April 2024	
Test Case	Title	User Account Login		Executed By		Kang Sing Chee	
Pre-condit	ion	- User need a regist	ered account in the	Execution Date		21 April 2024	
		system					
		- User has a valid Goo	gle Gmail account or				
		Facebook account.					
Test	Test Scenario	Test Steps	Test Data	Expected Result	Post Condition	Actual Result	Pass/
Case #							Fail
TC_LOG	Login an	1. Enter the email	1. Email:	User is login	The user account	User is login	Pass
IN_01	account	and password	<u>ali@gmail.com</u>	successfully. A	is created and	successfully. A	
	manually with	2. Click on the	2. Password:	login successful	redirected to the	login successful	
	valid email and	"Login" button	123456	message is	user home page.	message is	
	password			prompted.		prompted.	
TC_LOG	Login an	1. Enter the email	1. Email:	An error message	User remains on	Error message is	Pass
IN_02	account	and password	<u>aligmail.com</u>	is displayed under	the login page	displayed under	
	manually with	2. Click on the	2. Password:	the email input	without access to	the email input	
	invalid email	"Login" button	123456	field "Please	the account.	field.	
	format and valid			include an '@' in			
	password			the email address.			

				The email is			
				missing an '@'."			
				which indicating			
				the validation			
				error.			
TC_LOG	Login an	1. Enter the email	1. Email:	An error message	User remains on	Error message is	Pass
IN_03	account	and password	<u>ali@gmail.com</u>	displayed under the	the login page	displayed under	
	manually with	2. Click on the	2. Password:	password input	without access to	the password	
	valid email but	"Login" button	111111	field indicating the	the account.	input field.	
	incorrect			entered password			
	password that			is incorrect.			
	does not match						
	the registered						
	password						
TC_LOG	Login an	1. Click on the	1. Email: <u>null</u>	The error message	User remains on	Error message is	Pass
IN_04	account	"Login" button	2. Password: null	is displayed under	the login page	displayed under	
	manually with			each input field	without access to	each input field	
	empty email and			"Please fill out this	the account.	accordingly.	
	password			field." which			
				indicating the			
				validation error.			

TC_LOG	Login	an	1.	Click	on the	1.	Email:	The system	The user account	User is	Pass
IN_05	account	using		"Login	with		kangsingchee12	redirects the user to	is saved into	successfully	
	Google	SSO		Google	" button		<u>3@gmail.com</u>	the ESchool	database and	logged in via	
	with a	valid	2.	Enter	Google	2.	Password:	platform after	redirected to the	Google SSO and	
	Google	Gmail		email a	ddress		kangsingchee12	successful	user home page.	redirected to the	
	account		3.	Click	on the		345	authentication via		user home page.	
				"Next"	button			Google SSO.			
			4.	Enter	the						
				passwor	rd						
				associat	ted with						
				the	Google						
				account	-						
			5.	Click	on the						
				"Next"	button						
TC_LOG	Login	an	1.	Click	on the	1.	Email:	The system	User remains on	Error message	Pass
IN_06	account	using		"Login	with		kangsingchee@	displays an error	the Google email	"Couldn't find	
	Google	SSO		Google	" button		gmail.com	message under the	page without	your Google	
	with an	invalid	2.	Enter a	an invalid			email input field	access to next	Account" is	
	Google	email		Google	email			"Could't find your	page (password	displayed and	
				address				Google Account"	page).	user remains on	

	address	that	3.	Click	on the			which indicating		the entering	
	does not e	exist		"Next"	button			that the provided		Google email	
								Google account		page.	
								does not exist.			
TC_LOG	Login	an	1.	Click	on the	1.	Email:	The system	User remains on	Error message	Pass
IN_07	account	using		"Login	with		kangsingchee12	displays an error	the Google	"Wrong	
	Google	SSO		Google	" button		<u>3@gmail.com</u>	message under the	password page	password. Try	
	with a	valid	2.	Enter	a valid	2.	Password:	password input	without access to	again or click	
	Google	email		Google	emai		124454445545	field "Wrong	the platform.	Forgot password	
	address	but		address				password. Try		to reset it." is	
	invalid		3.	Click	on the			again or click		displayed and	
	password			"Next"	button			Forgot password to		user remains on	
			4.	Enter an	n incorrect			reset it." which		the entering	
				passwor	rd			indicating that the		Google password	
			5.	Click	on the			provided Google		page.	
				"Next"	button			account's			
								password is			
								incorrect.			
TC_LOG	Login	an	1.	Click	on the	-		User is	User is logged in	User is	Pass
IN_08	account	using		"Login	with			successfully login	successfully and	successfully	
	Google	SSO		Google	" button			without requiring a		logged in without	

	with G	imail	2.	Choose	a Gmail			password	and	redirected to the	requiring a	
	History			account	from the			redirects then	m to	home page.	password and is	
				history				the user h	home		redirected to the	
								page. A	login		home page. A	
								successful mes	ssage		login successful	
								is prompted.			message is	
											prompted.	
TC_LOG	Login	an	1.	Click	on the	1.	Email:	User is redire	rected	User is logged in	User is	Pass
IN_09	account u	using		"Login	with		kangsingchee12	to a	page	successfully and	successfully	
	Facebook	SSO		Faceboo	k" button		<u>3@gmail.com</u>	requesting		redirected to the	logged in via	
	with a v	valid	2.	Enter	a valid	2.	Password:	permission to s	share	home page.	Facebook SSO	
	Facebook			Faceboo	k email		kangsingchee12	name, e	email		and redirected to	
	account			address	or phone		345	address, lang	guage		the user home	
				number				preference,	and		page.	
			3.	Enter	the valid			profile picture	e with			
				passwor	d			ESchool. U	Upon			
			4.	Click or	the "Log			granting				
				In" butto	on			permission,	the			
								system				
								successfully lo	og in			

			and redirects user	
			to the platform.	
TC_LOG	Login an	1. Click on the 1. Email:	The system User remains on	Error message Pass
IN_10	account using	"Login with <u>kangsi</u>	ngchee12 displays an error the Facebook SSO	"The password
	Facebook SSO	Facebook" button <u>3@gm</u>	ail.com message under the page without	that you're
	with a valid	2. Enter a valid 2. Passwe	ord: password input access to the	entered is
	email but	Facebook email 12345	78 field "The platform.	incorrect." is
	invalid	address or phone	password that	displayed and
	password	number	you're entered is	user remains on
		3. Enter the invalid	incorrect." which	the Facebook
		password	indicating that the	SSO page.
		4. Click on the "Log	provided Facebook	
		In" button	account's	
			password is	
			incorrect.	
TC_LOG	Login an	1. Click on the 1. Email:	<u>null</u> The system User remains on	Error message is Pass
IN_11	account using	"Login with 2. Passwe	ord: null displays an error the Facebook SSO	displayed under
	Facebook SSO	Facebook" button	message under the page without	each input field
	with empty	2. Click on the "Log	each input field access to the	accordingly
	email and	In" button	"The email address platform.	
	password		or mobile number	

		you entered isn't		
		connected to an		
		account." and "The		
		password that		
		you're entered is		
		incorrect.".		

Table 7.3: Unit Test Case for User Search Activity

Test Case I	D	TC-003		Designed By		Kang Sing Chee	
Module		Search Activity		Designed Date		20 April 2024	
Test Case 7	litle	User Search Activity		Executed By		Kang Sing Chee	
Pre-conditi	on	User is logged in to the	e system	Execution Date		21 April 2024	
Test	Test Scenario	Test Steps	Test Data	Expected Result	Post Condition	Actual Result	Pass/
Case #							Fail
TC_SEAR	Search activity	1. Enter the desired	1. Activity name:	A list of activities	User views the	A list of activities	Pass
CH_01	by activity	activity name in	"Piano Grade	matching the	search results for	matching the	
	name	the search input	1"	entered activity	the specified	entered activity	
		field		name "Piano	activity name in	name "Piano	
		2. Click on the		Grade 1" is	the filter page.	Grade 1" is	
		"Search" button					
			displayed in the	displayed in the			
---------	-----------------	----------------------------------	---------------------------------------	-------------------------------			
			filter page.	filter page.			
TC_SEAR	Search activity	1. Enter the desired 1. Category	A list of activities User views	the A list of activities Pass			
CH_02	by activity	activity category name: "sp	port" belonging to the search results	for belonging to the			
	category name	name in the	entered category specified	entered category			
		search input field	name "sport" is category name	e in name "sport" is			
		2. Click on the	displayed in the the filter page.	displayed in the			
		"Search" button	filter page.	filter page.			
TC_SEAR	Search activity	1. Enter the desired 1. Subcateg	ory A list of activities User views	the A list of activities Pass			
CH_03	by activity	activity subject name:	belonging to the search results	for belonging to the			
	subcategory	name in the "swimmi	ng" entered specified	entered			
	name	search input field	subcategory name subcategory	subcategory name			
		2. Click on the	"swimming" is name in the fi	lter "swimming" is			
		"Search" button	displayed in the page.	displayed in the			
			filter page.	filter page.			
TC_SEAR	Search an	1. Click on the 1. Activity	name: User is redirected User views	all User is redirected Pass			
CH_04	activity with	"Search" button null	to filter page to available	to filter page to			
	empty input	without entering	view all activities. activities.	view all activities.			
	field	any search					
		criteria					
L							

Test Case I	D	TC-004		Designed By		Kang Sing Chee			
Module		Filter Activity		Designed Date		20 April 2024			
Test Case	ſitle	Activity Advanced Filt	tering	Executed By		Kang Sing Chee			
Pre-conditi	ion	User is navigated to the	e filter page	Execution Date		21 April 2024			
Test	Test Scenario	Test Steps	Test Data	Expected Result	Post Condition	Actual Result	Pass/		
Case #							Fail		
TC_FIL	Filter activities	1. Select the date	-	Activities are	The system	Activities are	Pass		
TER_01	by date (from	option "From Old		displayed in	automatically	displayed in			
	Old to New)	to New" in the		chronological	sorts all activities	chronological			
		date and price		order from old to	from old to new	order from old to			
		filter dropdown		new.	based on their	new.			
					dates.				
TC_FIL	Filter activities	1. Select the date	-	Activities are	The system	Activities are	Pass		
TER_02	by date (from	option "From		displayed in	automatically	displayed in			
	New to Old)	New to Old" in		reverse	sorts all activities	reverse			
		the date and price		chronological	from new to old	chronological			
		filter dropdown		order from new to	based on their	order from new to			
				old.	dates.	old.			

Table 7.4: Unit Test Case for Activity Advanced Filtering

TC_FIL	Filter activities	1.	Select t	he price	-			Activities	are	The	system	Activities	are	Pass
TER_03	by price (Low		option	"From				displayed	in	automatic	ally	displayed	in	
	to High)		Low to	High" in				ascending	order	displays	all	ascending	order	
			the date	and price				of prices.		activities	sorted	of prices.		
			filter dro	pdown						from low	to high			
										based o	n their			
										prices.				
TC_FIL	Filter activities	1.	Select t	he price	-			Activities	are	The	system	Activities	are	Pass
TER_04	by price (High		option	"From				displayed	in	automatic	ally	displayed	in	
	to Low)		High to	Low" in				descending	order	displays	all	descending	g order	
			the date	and price				of prices.		activities	sorted	of prices.		
			filter dro	pdown						from high	n to low			
										based o	n their			
										prices.				
TC_FIL	Filter activities	1.	Select	the	1.	Selected		Activities	related	The	system	Activities	related	Pass
TER_05	by category		checkboy	x		checkbox	of	to the "A	rt and	automatic	ally	to the "A	rt and	
			correspon	nding to		"Art	and	Design" ca	ategory	filters a	ctivities	Design" ca	ategory	
			the	desired		Design"		are displaye	ed.	based o	on the	are display	ed.	
			category			category				selected c	ategory.			

TC_FIL	Filter activities	1.	Select the	1.	Selected	Activities	The system	Activities	Pass
TER_06	by class size		checkbox		checkbox of	matching the	automatically	matching the	
			corresponding to		"10" class size	selected class size	filters activities	selected class size	
			the desired class			range are	based selected	range are	
			size range			displayed.	class size range.	displayed.	
TC_FIL	Filter activities	1.	Select the	1.	Selected	Activities with	The system	Activities with	Pass
TER_07	by frequency		checkbox		checkbox of	"per day"	automatically	"per day"	
			corresponding to		"per day"	frequency are	filters activities	frequency are	
			the desired class		frequency	displayed.	based on the	displayed.	
			frequency				selected		
							frequency.		
TC_FIL	Filter activities	1.	Select the	1.	Selected	Activities located	The system	Activities located	Pass
TER_08	by state		checkbox		checkbox of	in Penang are	automatically	in Penang are	
			corresponding to		"Penang" state	displayed.	filters activities	displayed.	
			the desired state				based on the		
							selected state.		
TC_FIL	Filter activities	1.	Adjust the slider	1.	Adjust the	Activities within	The system	Activities within	Pass
TER_09	by price range		to set the price		slider from	the price range of	automatically	the price range of	
			range from a		RM50 to	RM50 to RM100	filters activities	RM50 to RM100	
					RM100	are displayed.	based on the	are displayed.	

			lower value to a				specified price		
			higher value.				range.		
TC_FIL	Filter activities	1.	Select more	1.	Select "Art	Activities	The system filters	Activities	Pass
TER_10	by multiple		checkboxes of the		and	meeting all	activities based	meeting all	
	criteria		category		Design"	selected criteria	on all selected	selected criteria	
		2.	Select the desired		and "Music	are displayed.	criteria, showing	are displayed.	
			class size		and Dance"		only activities		
		3.	Select the desired	2.	Select		categorized under		
			state		checkbox		"Art and Design"		
		4.	Adjust the slider		of "5" class		and "Music and		
			to set the price		size		Dance", with a		
			range	3.	Select		class size of "5",		
					checkbox		located in "Kuala		
					of "Kuala		Lumpur", and		
					Lumpur"		priced between		
				4.	Select the		RM100 and		
					price from		RM200.		
					RM100 to				
					RM200				

TC_FIL	Filter activities	1. Set the price filter	1.	Set the	price	A m	essage	is	No activities are	A mes	sage is	Pass
TER_11	with no results	to a specific range		filter	range	display	ved '	"No	displayed.	displaye	d "No	
	found			from RM	480 to	Results	s Found	l.		Results I	Found.	
				RM500		Try	diffe	rent		Try	different	
						keywoi	rds	or		keyword	s or	
						remove	e sea	arch		remove	search	
						filters"	' wł	hich		filters"	which	
						indicat	ing th	here		indicatin	g there	
						are no	o activi	ities		are no	activities	
						availab	ole wi	thin		available	e within	
						the	speci	fied		the	specified	
						price ra	ange.			price ran	ge.	

Table 7.5: Unit Test Case for View Activity Details

Test Case ID	TC-005	Designed By	Kang Sing Chee
Module	View Activity	Designed Date	20 April 2024
Test Case Title	View Activity Details	Executed By	Kang Sing Chee
Pre-condition	User is logged in to the system and	Execution Date	21 April 2024
	navigated to the specific activity details		
	page		

Test	Test Scenario	Test Steps	Test Data	Expected Result	Post Condition	Actual Result	Pass/
Case #							Fail
TC_VIEW	View specific	1. Navigate to the	-	The detailed	Activity details	All detailed	Pass
_ACTIVI	activity details	activity details		information is	are displayed.	information is	
TY_01		page by clicking		displayed about		displayed about	
		on a specific		the selected		the selected	
		activity		activity including		activity including	
				activity name,		activity name,	
				activity category,		activity category,	
				location, pricing,		location, pricing,	
				age group, class		age group, class	
				size, duration,		size, duration,	
				activity schedule		activity schedule	
				and time, as well		and time, as well	
				as any available		as any available	
				discount.		discount.	
TC_VIEW	View activity	1. Click on the	-	A comprehensive	Activity	Activity	Pass
_ACTIVI	description in	"Description" tab		activity	description,	description,	
TY_02	the description	2. Read through the		description is	school name are	service provider	
	tab	activity		displayed	displayed.	details are	
		description and		including the	Service provider	displayed and	

		note the details	school/learning	profile, and	communication	
		provided	centre name and	communication	options are	
			enables user-	options are	accessible.	
			initiated	accessible.		
			communication			
			with the service			
			provider via the			
			"Ask a Question"			
			button.			
TC_VIEW	View activity	1. Click on the -	The system	Location details	Location details	Pass
_ACTIVI	location in the	"Location" tab	provides detailed	and map view are	and map view are	
TY_03	location tab	2. Review the	location	visible.	visible as	
		complete address	information and		expected.	
		of the school or	displays the			
		learning centre	activity location			
		3. View the location	on a map view.			
		on a map view.				
TC_VIEW	View activity	1. Click on the -	The system	Customer reviews	Customer reviews	Pass
_ACTIVI	review and	"Review" tab	presents customer	and ratings are	and ratings are	
TY_04	rating in the	2. Explore customer	reviews and	visible.	visible as	
	review tab	reviews and	ratings including		expected.	

			national appropriate d		the total national			
			ratings associated		the total ratings			
			with the activity		and count of			
		3.	Note the total		reviews. User			
			ratings and count		only can			
			of reviews		contribute their			
			displayed		own comments			
		4.	Leave a comment		and ratings after			
			and rating (after		enrolled their			
			enrolled in the		activity in the			
			activity)		activity.			
TC_VIEW	View activity	1.	Click on the	-	If there are no	A message is	A message is	Pass
_ACTIVI	review and		"Review" tab		reviews and	displayed to	displayed which	
TY_05	rating with no	2.	Observe if there		ratings for the	indicate there are	indicating there	
	reviews in the		are any customer		activity, the	no reviews and	are no reviews	
	review tab		reviews and		system is	ratings.	and ratings yet.	
			ratings displayed		displayed the			
					message "No			
					reviews and			
					ratings yet."			

Test Case	ID	TC-006		Designed By		Kang Sing Chee		
Module		Activity Enrolment		Designed Date		20 April 2024		
Test Case	Title	User enrol children in	an activity	Executed By		Kang Sing Chee		
Pre-condi	tion	User is logged in	to the system and	Execution Date		21 April 2024		
		navigated to the spec	cific activity details					
		page and navigated to	enrolment page					
Test	Test Scenario	Test Steps	Test Data	Expected Result	Post Condition	Actual Result	Pass/	
Case #							Fail	
TC_ENR	Enrol a child in	1. Click on the	1. Child name:	The child is	The child details	The child is	Pass	
OL _01	activity	"Enrol Now"	Celine	successfully	are added to	successfully		
		button in the	2. Age: 10	enrolled in the	enrolment list	enrolled in the		
		activity detail	3. Gender: Girl	activity and user	with "pending"	activity and user		
		page		is redirected to	status. The total	is redirected to		
		2. Enter valid name,		payment page.	amount is	payment page.		
		age and select			updated.			
		gender for the						
		child						
		3. Click on the						
		"Next" button						

Table 7.6: Unit Test Case for Learner Enrolment

TC_ENR	Enrol	multiple	1.	Click	on	the	1.	Child	name:	All	childre	en are	The cl	hild de	tails	All chi	ldren are	Pass
OL _02	children	n in		"Enrol	1	Now"		Celine		succ	cessfull	y	are	added	to	success	fully	
	activity			button	in	the	2.	Age: 10)	enro	olled i	n the	enrolm	nent	list	enrolled	in the	
				activity	7 (detail	3.	Gender	Girl	acti	vity an	d user	with	"pend	ing"	activity	and user	
				page			4.	Child	name:	is	redirect	ed to	status.	The t	total	is redi	rected to	
			2.	Enter	the	first		Jason		pay	ment pa	ge.	amoun	ıt	is	paymen	t page.	
				child's		valid	5.	Age: 11					update	ed y	with			
				name,	age	and	6.	Gender	Boy				double	price.				
				select	gende	er for												
				the chil	ld													
			3.	Click	the	"Add												
				Learne	r"b	utton												
				to add	one	more												
				child de	etails													
			4.	Enter t	he se	econd												
				child's		valid												
				name,	age	and												
				select	gende	er for												
				the chil	d													
			5.	Click	on	the												
				"Next"	butto	n												

TC_ENR	Enrol child with	1.	Click	on	the	1.	Child	name:	The	system	Error me	essage is	Error message	is	Pass
OL _03	empty value		"Enrol]	Now"		null		displays	an error	displays	and no	displayed	as	
			button	in	the	2.	Age: nu	ıll	message	"Please	child is	enrolled	expected.		
			activity		detail	3.	Gender	: null	add at le	east one	in the act	ivity.			
			page						learner	before					
		2.	Click	on	the				enrolling.	" which					
			"Next"	butto	on				indicating	g that at					
									least fill u	p a child					
									details.						
TC_ENR	Enrol child with	1.	Click	on	the	1.	Child	name:	The	system	Error me	essage is	Error message	is	Pass
OL _04	empty name but		"Enrol]	Now"		null		displays	an error	displays	and no	displayed	as	
	valid age and		button	in	the	2.	Age: 10)	message	under	child is	enrolled	expected.		
	gender		activity		detail	3.	Gender	: Girl	the nam	e input	in the act	ivity.			
			page						field "Thi	is field is					
		2.	Enter	valid	age				required"	which					
			and sele	ect g	ender				indicating	g the					
			but em	pty	input				name f	ield is					
			field of	nam	e				required.						
		3.	Click	on	the										
			"Next"	butto	on										

TC_ENR	Enrol child with	1.	Click	on	the	1.	Child	name:	The	system	Error me	essage is	Error message	e is	Pass
OL _05	empty age but		"Enrol	•	Now"		Celine		displays	an error	displays	and no	displayed	as	
	valid name and		button	in	the	2.	Age: nt	ıll	message	under	child is	enrolled	expected.		
	gender		activity		detail	3.	Gender	: Girl	the age i	nput field	in the act	tivity.			
			page						"This	field is					
		2.	Enter v	alid	name				required	" which					
			and sele	ect g	ender				indicatin	ng the age					
			but em	pty	input				field is r	equired.					
			field of	age											
		3.	Click	on	the										
			"Next"	butte	on										

Test Case	ID	TC-007		Designed By		Kang Sing Chee		
Module		Activity Enrolment		Designed Date		20 April 2024		
Test Case	Title	View activity details,	schedule details and	Executed By		Kang Sing Chee		
		total amount during lea	arner enrolment					
Pre-condi	tion	User is on the learner	enrolment page and	Execution Date		21 April 2024		
		fill up their child detail	s like name, age and					
		gender						
Test	Test Scenario	Test Steps	Test Data	Expected Result	Post Condition	Actual Result	Pass/	
Case #							Fail	
TC_VIE	View activity	1. Enter a child	1. Activity name:	The section	The section	The section	Pass	
W_ENR	name, schedule	details: name, age	Happy Fish	displays accurate	accurately	accurately		
OL _DE	details and total	and gender	2. Schedule:	information about	displays the	displays the		
TAIL_01	amount for	2. View the section	Friday, 2024-	the activity,	activity details,	activity details,		
	enrolled child	at the right side of	05-10	including the total	especially for the	including the total		
		the learner	3. Location: PT	amount, activity	total amount,	amount		
		enrolment which	209, Jalan	name, location	based on the	"RM380.00"		
		is displaying the	Panglima,	and schedule	enrolment of a	based on the		
		activity name,	Pusat Bandar	details for the	child. The	enrolment of a		
		schedule details	Kangar,	enrolled child.	displayed activity	child.		
		and total amount		The total amount	details, schedule			

Table 7.7: Unit Test Case for View Activity Details During Learner Enrolment

				Kangar, Perlis,	is correctly	details, location		
				01000	updated with only	and total amount		
			4.	Total amount:	one child.	are accurate and		
				RM 380.00		consistent.		
TC_VIE	View activity	1. Enter the first	1.	Activity name:	The section	The section	The section	Pass
W_ENR	name, schedule	child details:		Happy Fish	displays accurate	accurately	accurately	
OL _DE	details and total	name, age and	2.	Schedule:	information about	displays the	displays the	
TAIL_02	amount for	gender		Friday, 2024-	the activity,	activity details,	activity details,	
	multiple	2. Enter the second		05-10	including the total	especially for the	including the total	
	enrolled child	child details:	3.	Location: PT	amount, activity	total amount,	amount	
		name, age and		209, Jalan	name, location	based on the	"RM760.00"	
		gender		Panglima,	and schedule	enrolment of two	based on the	
		3. View the section		Pusat Bandar	details for the	children. The	enrolment of two	
		at the right side of		Kangar,	enrolled child.	displayed activity	children.	
		the learner		Kangar, Perlis,	The total amount	details, schedule		
		enrolment which		01000	is correctly	details, location		
		is displaying the	4.	Total amount:	updated with two	and total amount		
		activity name,		RM 760.00	children.	are accurate and		
		schedule details				consistent.		
		and total amount						

Test Case	ID	TC-008		Designed By		Kang Sing Chee	
Module		Activity Payment		Designed Date		20 April 2024	
Test Case	Title	Make payment for activ	vity enrolment	Executed By		Kang Sing Chee	
Pre-condi	tion	User required to enrol a	at least a child in the	Execution Date		21 April 2024	
		activity					
Test	Test Scenario	Test Steps	Test Data	Expected Result	Post Condition	Actual Result	Pass/
Case #							Fail
TC_MA	Make payment	1. Navigate to the	1. Card number:	A successful	The learner's	A successful	Pass
KE_PAY	with valid input	payment page	1234 5678	message "Your	enrolment status	message "Your	
MENT_	fields	after filled in	9012 3456	payment made	for the activity is	payment made	
01		learner	2. Expiry date:	successfully!" is	updated to	successfully!" is	
		information	05/26	prompted and	"confirmed" in	prompted and	
		2. Enter valid	3. CVV: 158	navigated to the	the system. The	navigated to the	
		payment details		confirmation	user's transaction	confirmation	
		including card		page to view the	status is updated	page to view the	
		number, expiry		receipt. The	to "paid".	receipt. The	
		date and cvv		receipt details is		receipt details is	
		3. Click on the		including the		including the	
		"Pay" button to		transaction ID,		transaction ID,	
				school name,		school name,	

 Table 7.8: Unit Test Case for User Make Payment for Activity Enrolment

		preceed with the		activity name,		activity name,	
		transaction		total amount,		total amount,	
				status and		status and	
				payment date.		payment date.	
TC_MA	Make payment	1. Navigate to	1. Card number:	An error message	User is prevented	An error message	Pass
KE_PAY	with empty input	the payment	null	displayed under	from completing	displayed "This	
MENT_	fields	page after	2. Expiry date:	each input field	the payment	field is required."	
02		filled in	null	indicating the	process until all	under each input	
		learner	3. CVV: null	validation error.	required payment	field accordingly.	
		information			details are		
		2. Leave blank			provided. The		
		for all input			learner's		
		fields			enrolment status		
		3. Click on the			for the activity is		
		"Pay" button			still in "pending"		
		to preceed			in the system. The		
		with the			user remains on		
		transaction			the payment		
					page.		

TC_MA	Make payment	1.	Navigate to the	1.	Card number:	An error message	User is prevented	An error message Pass
KE_PAY	with expired		payment page		1234 5678	displayed under	from completing	displayed under
MENT _	expiry date		after filled in		9012 3456	the cvv input field	the payment	the cvv input field
03			learner	2.	Expiry date:	indicating the	process until the	indicating the
			information		05/22	expiry date is	valid cvv is	expiry date is
		2.	Enter valid card	3.	CVV: 158	expired.	provided. The	expired.
			number and cvv				learner's	
			but invalid expiry				enrolment status	
			date				for the activity is	
		3.	Click on the				still in "pending"	
			"Pay" button to				in the system. The	
			preceed with the				user remains on	
			transaction				the payment	
							page.	

Table 7.9: Unit Test Case for Manage Profile

Test Case ID	TC-009	Designed By	Kang Sing Chee
Module	User Profile	Designed Date	20 April 2024
Test Case Title	Manage profile	Executed By	Kang Sing Chee
Pre-condition	User is logged in to the system	Execution Date	21 April 2024

Test	Test Scenario	Test Steps	Test Data	Expected Result	Post Condition	Actual Result	Pass/
Case #							Fail
TC_US	View their own	1. Log in to the	-	User profile page	User remains on	User profile page	Pass
ER_PRO	profile	system using		displays their	the user profile	displays their	
FILE		valid credentials		email, name and	page with their	email, name and	
_01		2. Navigate to the		phone number	details visible.	phone number	
		user profile page		accurately.		accurately.	
		3. View the user					
		profile details					
		including email,					
		name and phone					
		number					
TC_US	Update the	1. Log in to the	1. Name: Ali	The system	User's profile	The system	Pass
ER_PRO	profile details	system using	2. Email:	successfully	details is updated	successfully	
FILE		valid credentials	ali@gmail.com	updates the user's	with the new	updates the user's	
_02		2. Navigate to the	3. Updated phone	profile details as	phone number	profile details as	
		user profile page	number:	the new phone	provided.	the new phone	
		3. Click on the edit	0102235467	number is		number is	
		icon to navigate	4. Password:	provided. A		provided. A	
		to edit page	123456	successful		successful	
				message "Profile		message "Profile	

			4.	Update the phone			is updated		is updated	
				number			successfully" is		successfully" is	
			5.	Click on the			prompted.		prompted.	
				"Update" button						
TC_US	Update	the	1.	Navigate to the	1.	Name: Ali	An error message	User remains on	Error message is	Pass
ER_PRO	profile	details		user profile page	2.	Email:	is prompted "The	the update profile	prompted "The	
FILE	with	invalid	2.	Click on the edit		ali@gmail.com	password must at	page.	password must at	
_03	password			icon to navigate	3.	Phone number:	least 6		least 6	
				to edit page		0102235467	characters" which		characters".	
			3.	Update the	4.	Updated	indicating the			
				password field		Password:	validation error.			
				with less than 6		12345				
				character						
			4.	Click on the						
				"Update" button						

Table 7.10: Unit Test Case for Manage Wishlist

Test Case ID	TC-010	Designed By	Kang Sing Chee
Module	User Wishlist	Designed Date	20 April 2024
Test Case Title	Manage wishlist	Executed By	Kang Sing Chee

Pre-cond	lition	User is logged in to the	e system	Execution Date		21 April 2024	
Test	Test Scenario	Test Steps	Test Data	Expected Result	Post Condition	Actual Result	Pass/
Case #							Fail
TC_W	Add a favourite	1. Navigate to the	-	A successful	Activity is added	The activity is	Pass
ISHLI	activity to wishlist	view all activity		message	to the user's	successfully	
ST_01	from view all	page.		"Activity is	wishlist.	added to the	
	activities page	2. Click on the		successfully		wishlist, and the	
		"love" icon		added to your		successful	
		button which is		wishlist." is		message	
		representing		prompted which		"Activity is	
		adding to the		indicating		successfully	
		wishlist		successful		added to your	
				addition into user		wishlist." is	
				wishlist.		displayed.	
TC_W	Add a favourite	1. Navigate to a	-	A successful	Activity is added	The activity is	Pass
ISHLI	activity to wishlist	specific activity		message	to the user's	successfully	
ST_02	from a specific	details page		"Activity is	wishlist	added to the	
	activity details	2. Click on the		successfully		wishlist, and the	
	page	"bookmark" icon		added to your		successful	
		button which is		wishlist." is		message	
		representing		prompted which		"Activity is	

		adding to the	indicating	successfully
		wishlist	successful	added to your
			addition into user	wishlist." is
			wishlist.	displayed.
TC_W	Add duplicate	1. Navigate to the -	The system Activity remains	The system Pass
ISHLI	favourite activity	view all activities	detects that the in the wishlist	detects that the
ST_03	to wishlist	page or a specific	activity is already without	activity is already
		activity page to	in the wishlist. An duplicates.	in the wishlist and
		add the activity	error message	displays the error
		into wishlist by	"Activity is	message
		clicking the	already in your	"Activity is
		"love" or	wishlist." is	already in your
		"bookmark" icon	prompted.	wishlist.".
TC_W	View wishlist	1. Navigate to -	User can view a Wishlist history	The user can view Pass
ISHLI	history	wishlist history	chronological list is displayed.	their wishlist
ST_04		page	of activities they	history as
		2. View the list of	have added to	expected.
		activities	their wishlist.	
		previously added	Each activity is	
		to the wishlist	displayed with	
			activity name,	

			addre	ss, state, age			
			group	and price.			
TC_W	View specific	1. Navigate to	- User	is redirected A	Activity details	User is redirected	Pass
ISHLI	activity details	wishlist history	to t	he activity pa	age is displayed.	to the activity	
ST_05	from wishlist	page	detail	s page of the		details page and	
		2. Click on the	select	ed activity.		can view detailed	
		"Eye" icon next	The	detailed		information.	
		to a wishlist item	inform	nation about			
		3. View the detailed	the	activity is			
		information of	displa	yed.			
		the selected					
		activity					
TC_W	Remove an	1. Navigate to	- A	confirmation U	Jser click the	A confirmation	Pass
ISHLI	activity from their	wishlist history	messa	nge is "c	ok" button then	message is	
ST_06	wishlist	page	prom	pted before th	hen activity is	prompted before	
		2. Click on the "X"	remo	ve the re	emoved from the	remove the	
		icon next to a	activi	ty from the w	vishlist.	activity from the	
		wishlist item.	wishl	ist history.		wishlist history.	
		3. Confirm the				The selected	
		action in the				activity is	
		prompted				successfully	

confirmation	removed from the
message.	wishlist after
	click "ok" button
	and successful
	message is
	displayed.

Table 7.11: Unit Test Case for Learner Enrolment History

Test Cas	e ID	TC-011		Designed By		Kang Sing Chee	
Module		Activity Enrolment		Designed Date		20 April 2024	
Test Cas	e Title	Learner enrolment hist	ory	Executed By		Kang Sing Chee	
Pre-cond	lition	User is need to enrol	an activity for their	Execution Date		21 April 2024	
child							
Test	Test Scenario	Test Steps	Test Data	Expected Result	Post Condition	Actual Result	Pass/
Case #							Fail
TC_EN	View their	1. Navigates to the	-	User can view a	Enrolment	The user can view	Pass
ROL_H	enrolment history	enrolment history		list of enrolment	history is	their enrolment	
ISTOR		page		records including	displayed.	history as	
Y_01		2. Access the list of		details such as		expected.	
		enrolment		activity name,			

		records		enrolment date,			
		previously made		transaction ID,			
		by the user		amount and			
				status. Each			
				enrolment record			
				is displayed with			
				relevant			
				information.			
TC_EN	Searches for	1. Navigates to	1. Search any	The system filters	Filtered	The system	Pass
ROL_H	specific enrolment	the enrolment	criteria: Little	the enrolment	enrolment	successfully	
ISTOR	records in their	history page	Piano School	records based on	records are	filters enrolment	
Y_02	history	2. Locate the		the provided	displayed based	records based on	
		search bar for		search criteria.	on the search	the provided	
		searching		Only enrolment	criteria.	search criteria,	
		enrolment		records matching		displaying only	
		records		the search criteria		matching records.	
		3. Enter relevant		are displayed.			
		search criteria					
		such as					
		activity name,					
		enrolment					

date or status	
and so on	
4. Initiate the	
search action	

Table 7.12: Unit Test Case for User Schedules

Test Cas	e ID	TC-012		Designed By		Kang Sing Chee	
Module		Activity Schedule		Designed Date		20 April 2024	
Test Cas	e Title	Learner schedule histo	ry	Executed By		Kang Sing Chee	
Pre-condition		User is need to enrol	an activity for their	Execution Date		21 April 2024	
		child					
Test	Test Scenario	Test Steps	Test Data	Expected Result	Post Condition	Actual Result	Pass/
Case #							Fail
TC_SC	User view the	1. Navigate to	-	User can view	Activity schedule	The user can view	Pass
HEDU	learner's schedule	schedule		detailed	is displayed.	their child's	
LE_HI	of a specific	history page		information about		schedule details	
STOR	activity	2. Review the		the activity's		accurately.	
Y_01		displayed		schedule.			
		schedule					
		details					

			i	ncluding										
			a	activity name,										
			d	date, time,										
			d	duration and										
			10	earner details.										
TC_SC	Searches	for	1.	Navigates to	2.	Search	any	The sys	stem filters	Filtered se	chedule	The	system	Pass
HEDU	specific	schedule		the scehdule		criteria:	2024-	the	schedule	records	are	success	fully	
LE_HI	records	in their		history page		05-03		records	based on	displayed	based	filters	schedule	
STOR	history		2.	Locate the				the	provided	on the	search	records	based on	
Y_02				search bar for				search	criteria.	criteria.		the	provided	
				searching				Only	schedule			search	criteria,	
				schedule				records	matching			displayi	ing only	
				records				the sear	ch criteria			matchir	ng records.	
			3.	Enter relevant				are disp	olayed.					
				search criteria					-					
				such as										
				activity name,										
				date, time and										
				so on										
			4.	Initiate the										
				search action										

TT 11 7 12		
Table /.13:	Unit Test C	ase for Chat

Test Cas	e ID	TC-013		Designed By		Kang Sing Chee	
Module		Chat		Designed Date		20 April 2024	
Test Cas	e Title	Communication chann	nel	Executed By		Kang Sing Chee	
Pre-condition		User is logged in to the	e system	Execution Date		21 April 2024	
Test	Test Scenario Test Steps		Test Data	Expected Result	Post Condition	Actual Result	Pass/
Case #							Fail
TC_CH	User can chat with	1. Click on the "Ask	1. Message:	The system will	User is	A message is	Pass
AT_01	service provider	a Question"	"Hi!"	display the	successfully sent	successfully sent	
		button in activity		message is sent to	a message.	to the service	
		details page or		service provider.		provider in real	
		service				time.	
		provider's profile					
		page					
		2. Initiate a chat					
		with them					

Test Cas	e ID	TC-014		Designed By		Kang Sing Chee	
Module		Rate and Review		Designed Date		20 April 2024	
Test Cas	e Title	User rate and review		Executed By		Kang Sing Chee	
Pre-cond	lition	User is logged in to the	e system	Execution Date		21 April 2024	
Test	Test Scenario	Test Steps	Test Data	Expected Result	Post Condition	Actual Result	Pass/
Case #							Fail
TC_US	User view the	1. Navigate to a	-	Reviews	Reviews and	The reviews and	Pass
ER_RE	reviews and rates	specific activity		displayed include	ratings are	ratings section	
VIEW	from other	page		text comments	displayed on the	accurately	
_01	customer on a	2. Locate the		from customers,	activity details	presents reviews	
	specific activity	reviews and		along with	page.	and ratings from	
	page	ratings section		numerical ratings.		other customers.	
		3. View the		The total ratings			
		displayed		are displayed			
		reviews and		visually such as			
		ratings from		numerical values,			
		other customers		indicating the			
				overall rating for			
				the activity			

Table 7.14: Unit Test Case for User Review and Rate

TC_US	User rates and	1.	Enrol a child in	1.	Rating: 5 stars	The rating and	User's rating and	A successful	Pass
ER_RE	reviews an activity		the desired	2.	Comment:	review are	review are stored	message "Review	
VIEW	after the child is		activity		"Good	successfully	and displayed on	and rating are	
_02	enrolled in it	2.	Navigate to the		activity"	submitted and	the activity	submitted	
			activity details			stored in the	details page.	successfully." is	
			page of the			system database.		prompted.	
			enrolled activity			The review and			
		3.	Locate the option			rating are display			
			to rate and review			with default			
			the activity			"active" status. A			
		4.	Provide a			successful			
			numerical rating			message "Review			
			and written			and rating are			
			review in the			submitted			
			designated fields			successfully." is			
		5.	Submit the rating			prompted.			
			and review						
TC_US	User rates and	1.	Navigate to the	1.	Rating: 5 stars	The system	Rating and	An alert message	Pass
ER_RE	reviews an activity		activity details	2.	Comment:	detects that the	review	"You cannot	
VIEW	without enrolling		page of a specific		"Good	user has not	submission is	review and rate	
_03	the child in it		activity		activity"	enrolled a child in	prevented	this activity	

		2.	Attempt to locate	the activity an	nd	without	because you have	
			the option to rate	prevents th	he	enrollment.	not enrolled your	
			and review the	rating and revie	ew		child in it." is	
			activity	submission. A	An		prompted.	
		3.	Provide a	alert messag	ge			
			numerical rating	"You cann	ot			
			and written	review and ra	ate			
			review in the	this activi	ity			
			designated fields	because you have	ve			
		4.	Submit the rating	not enrolled yo	ur			
			and review	child in it."	is			
				prompted.				
TC_US	User views their	1.	Navigate to the -	The syste	em	User's rating and	The system	Pass
ER_RE	rating and review		review and rating	displays	a	review history is	accurately	
VIEW	history		history	comprehensive		displayed.	presents the user's	
_04		2.	View all rating	list of the user	r's		rating and review	
			and review	past ratings a	nd		history.	
			history	reviews.				

7.2.2 Unit Test Case for Admin and Service Provider Side Modules

This section covers the unit test cases for the admin and service provider modules. The admin module involves functionalities related to managing service providers such as approving or rejecting their applications, viewing their details and updating their status. On the other hand, the service provider module includes actions like logging in, registering, managing profiles, managing activities, managing learners, managing enrolments, replying chat and managing user reviews and ratings. These unit test cases ensure the correctness and robustness of these modules. It is also validating their functionalities and verifying that they operate as intended.

Test Cas	e ID	TC-015		Designed By		Kang Sing Chee	
Module		Login		Designed Date		20 April 2024	
Test Cas	e Title	Admin and Service Pr	oviders login an account	Executed By		Kang Sing Chee	
Pre-cond	lition	Service provider has a	an registered account and	Execution Date		21 April 2024	
		approved by admin					
Test	Test Scenario	Test Steps	Test Data	Expected Result	Post Condition	Actual Result	Pass/
Case #							Fail
TC_LO	Service provider	1. Navigate to	1. Select "Service	The system	The service	Service provider	Pass
GIN_01	login with valid	service	Provider" role	redirects them to	provider is	is log in into their	
	credentials	provider and	2. Email:	the service	logged into their	dashboard and a	
		admin login	<u>sc@gmail.com</u>	provider	account.	successful	
		form	3. Password: 123456	dashboard upon		message "Login	
				successful login.			

Table 7.15: Unit Test Case for Admin and Service Providers Login

		2.	Select the				A suc	cessful		successful	ly" is	
			service				message	"Login		prompted.		
			provider role				successful	ly" is				
		3.	Enter a valid				prompted.					
			email and									
			password									
		4.	Click on the									
			"Login"									
			button									
TC_LO	Service provider	1.	Navigate to	1.	Select	"Admin"	The	system	Service provider	The	system	Pass
GIN_02	login with valid		service provider		role		displays a	n error	remains on the	displays a	n error	
	email and		and admin login	2.	Email:		message		login page.	message		
	password but		form		sc@gm	ail.com	indicating	the		indicating	the	
	selects admin role	2.	Select the admin	3.	Passwor	rd: 123456	incorrect	role		incorrect	role	
			role				selection.			selection.		
		3.	Enter a valid									
			email and									
			password									
		4.	Click on the									
			"Login" button									

TC_LO	Service provider	1. Navigate to	1. Email: null	The system	Service provider	The system	Pass
GIN_03	login with empty	service provider	2. Password: null	displays error	remains on the	displays error	
	input fields	and admin login		messages for	login page.	messages "This	
		form		each empty input		field is required."	
		2. Leave the email		field.		for each empty	
		and password				input field.	
		fields empty and					
		without any role					
		selection					
		3. Click on the					
		"Login" button					
TC_LO	Admin login with	1. Navigate to	1. Select "Admin"	The system	The admin is	Admin is log in	Pass
GIN_04	valid credentials	service provider	role	redirects the	logged into their	into their	
		and admin login	2. Email:	admin to the	account.	dashboard and a	
		form	admin@gmail.com	admin dashboard		successful	
		2. Select the admin	3. Password: 123456	upon successful		message "Login	
		role		login. A		successfully" is	
		3. Enter a valid		successful		prompted.	
		email and		message "Login			
		password		successfully" is			
				prompted.			

		4. Click on the	;					
		"Login" button						
TC_LO	Admin login with	1. Navigate to	1.	Select "Service	The system	Admin remains	The system	Pass
GIN_05	valid email and	service provider		Provider" role	displays an error	on the login	displays an error	
	password but	and admin login	2.	Email:	message	page.	message	
	selects service	form		admin@gmail.com	indicating the		indicating the	
	provider role	2. Select the	3.	Password: 123456	incorrect role		incorrect role	
		service provider			selection.		selection.	
		role						
		3. Enter a valid						
		email and						
		password						
		4. Click on the	:					
		"Login" button						
TC_LO	Admin login with	1. Navigate to	1.	Email: null	The system	Admin remains	The system	Pass
GIN_06	empty input fields	service provider	2.	Password: null	displays error	on the login	displays error	
		and admin login			messages for	page.	messages "This	
		form			each empty input		field is required."	
		2. Leave the email			field.		for each empty	
		and password					input field.	
		fields empty and						

without any role			
selection			
3. Click on the			
"Login" button			

Table 7.16: Unit Test Case for Service Provider Registration

Test Cas	se ID	TC-016		Designed By	Kang Sing Chee										
Module		Service provider regi	stration	Designed Date	20 April 2024										
Test Cas	se Title	Account registration		Executed By	Kang Sing Chee										
Pre-con	dition	-		Execution Date	21 April 2024										
Test	Test Scenario	Test Steps	Test Data	Expected Post Condition	Actual Result Pass/										
Case #				Result	Fail										
TC_RE	Service provider	1. Navigate to the	1. Username: JohnDoe	The system The service	A success Pass										
GIST	register an	registration page	2. Email:	successfully provider	message										
ER_01	account with valid	for service	johndoe@gmail.com	registers the account is	"Register										
	information	providers	3. Password: 123456	service provider created in the	successfully.										
		2. Fill in all	4. Phone Number:	account. A system with a	You need to wait										
		required fields	0105564125	success message pending	admin to										
		with valid	5. School Name: ABC	"Register approval status.	approve your										
		information such	Learning Center	successfully. It redirects	application.										
				as	username,	6.	Address:	123 Main	You need	to wait	service	provider	Thank yo	u for	
-------	----------	----------	----	----------	------------	----	-------------	--------------	------------	----------	----------	----------	-------------	--------	------
				email,	password,		Street,	43000,	admin	to	and rer	nains to	your patie	ence!"	
				phone	number,		Kajang, S	elangor	approve	your	the logi	n page.	is displaye	d.	
				school	learning	7.	Details:	Children	applicatio	on.					
				centre	name,		ballet cla	sses bring	Thank y	ou for					
				address	s and		the joy of	dance from	your pat	ience!"					
				details			small. It's	s never too	is display	ed.					
			3.	Click	the		late to exp	perience the							
				"Regis	ter"		beauty,	creativity							
				button			and inspi	ration that							
							ballet brir	ngs.							
TC_RE	Service	provider	1.	Naviga	te to the	1.	Username	: JohnDoe	The	system	The	service	An	error	Pass
GIST	register	an		registra	ation page	2.	Email:		displays	error	provide	r	message	is	
ER_02	account	with		for	service		johndoeg	mail.com	messages	under	account	is not	displayed	for	
				provide	ers	3.	Password	: 123456	email inp	ut field	register	ed.	invalid	email	

invalid	2.	Leave	one	or	4.	Phone	Number:	"Plea	ase include	format	and	
information		more	requi	red		01055641	25	an	a, in the	empty	details	
		fields	empty	or	5.	School N	ame: ABC	emai	address.	field.		
		provide	e inva	alid		Learning	Center	The	email is			
		informa	ation		6.	Address:	123 Main	miss	ing an '@'."			
	3.	Click		the		Street,	43000,	and	"This field			
		"Regist	er"			Kajang, S	elangor	is	required"			
		button			7.	Details: n	ull	unde	er the details			
								in pu	ıt field.			

Table 7.17: Unit Test Case for Status of Service Provider after Registration

Test Cas	se ID	TC-017		Designed By		Kang Sing Chee		
Module		Status registration of s	service provider	Designed Date		20 April 2024		
Test Cas	se Title	Status of service prov	ider	Executed By		Kang Sing Chee		
Pre-con	dition	Service provider is	need to register an	Execution Date		21 April 2024		
		account						
Test	Test Scenario	Test Steps	Test Data	Expected Result	Post Condition	Actual Result	Pass/	
Case #							Fail	

TC_ST	Pending approval	1.	Select	the	1.	Select	"Service	The		system	The	service	A mes	sage '	"Your	Pass
ATUS	status login attempt		service pr	rovider		provide	r" role	displa	ys	a	provide	r is	accour	nt	is	
_01			role		2.	Email:		messa	ge	"Your	unable	to log in	pendir	ıg		
		2.	Enter	the		sc@gm	ail.com	accour	nt	is	and is	informed	approv	val. I	Please	
			registered	email	3.	Passwo	rd:	pendir	ng		about	the	wait	patie	ently."	
			and passw	ord.		123456		approv	val.	Please	pending	5	Is disp	olayed	l.	
		3.	Click	the				wait p	atier	ntly."	approva	al status				
			"Login" b	utton.							and rea	mains on				
											the logi	n page.				
TC_ST	Email notification	1.	Check	the	-			The		service	The	service	The	S	ervice	Pass
ATUS	of approval status		registered	email				provid	er r	eceives	provide	r is able	provic	ler rec	ceives	
_02			inbox					an		email	to log	in the	an		email	
		2.	Open the	email				notific	atio	n that	system.		notific	cation	that	
			from the a	dmin				inform	ned	by			inform	ned	by	
								admin	the	e status			admin	the	status	
								is appr	rove	d.			is app	roved	•	
TC_ST	Rejected status	1.	Select	the	1.	Select	"Service	The		system	The	service	Ames	sage '	"Your	Pass
ATUS	login attempt		service pr	rovider		provide	r" role	displa	ys	a	provide	r is	accour	nt has	been	
_03			role		2.	Email:		messa	ge	"Your	unable	to log in	rejecte	ed. I	Please	
						sc@gm	ail.com	accour	nt ha	as been	and is	informed	contac	et adm	in for	
								rejecte	ed.	Please	about	the	furthe	r		

		2.	Enter	the	3.	Password:	contact admin for	rejected status	assistance." is	
			registered	email		123456	further	and remains on	displayed.	
			and passwo	ord.			assistance.".	the login page.		
		3.	Click	the						
			"Login" bu	itton.						
TC_ST	Email notification	1.	Check	the	-		The service	The service	The service	Pass
ATUS	of rejected status		registered	email			provider receives	provider is	provider receives	
_04			inbox				an email	unable to log in	an email	
		2.	Open the	email			notification that	the system.	notification that	
			from the ac	lmin			informed by		informed by	
							admin the status		admin the status	
							is rejected.		is rejected.	

Table 7.18: Unit Test Case for Manage Service Provider

Test Case	e ID	TC-018		Designed By		Kang Sing Chee	
Module		Verify application		Designed Date		20 April 2024	
Test Case	e Title	Admin manage servic	e provider	Executed By		Kang Sing Chee	
Pre-cond	ition	Admin is logged in to	the system	Execution Date		21 April 2024	
Test	Test Scenario	Test Steps	Test Data	Expected Result	Post Condition	Actual Result	Pass/
Case #							Fail

TC_MA	Update service	1.	Log in to the	1.	Service		The	system	The s	ervice	The	system	Pass
NAGE_	provider status		admin dashboard		Provider:	John	successfu	lly	provider's	status	successf	ully	
PROVI		2.	Navigate to the		Doe		updates	the	is u	odated	updates	the	
DER_01			Service	2.	New S	Status:	service		accordingly	in in	service		
			Providers section		Approved		provider'	s status.	the system	and it	provider	's status	
		3.	Find the service				A i	message	will		and a	message	
			provider whose				"Updated	l	automatica	lly	"Update	d	
			status needs to be				successfu	lly" is	send a rea	l time	successf	ully" is	
			updated				displayed	l.	email		displaye	d.	
		4.	Select the						notificatior	n to			
			service						service pr	ovider			
			provider's						to inform	the			
			profile						status	is			
		5.	Update the status						approved.				
			field to either										
			"Approved",										
			"Pending" or										
			"Rejected"										
		6.	Save the changes										
TC_MA	View service	1.	Log in to the	-			The	system	The admin	n can	The	system	Pass
NAGE_	provider details		admin dashboard				displays	all	view the s	ervice	displays	all	

PROVI		2.	Navigate to the		relevant	details	provider's details	relevant details	
DER_02			Service		of the	service	without any	of the service	
			Providers section		provider	in the	errors.	provider in the	
		3.	View all service		list			list	
			provider from						
			the list						
TC_MA	Delete a service	1.	Log in to the	-	The	system	The service	An alert message	Pass
NAGE_	provider		admin dashboard		successfu	ully	provider's	"This service	
PROVI		2.	Navigate to the		deletes	the	account and	provider is	
DER_03			Service		selected	service	associated data	deleted	
			Providers section		provider	's	are removed	successfully" is	
		3.	Find the service		account.		from the system.	displayed.	
			provider to be						
			deleted						
		4.	Click on the						
			"trash" icon						
		5.	Confirm the						
			deletion action						
TC_MA	Search a service	1.	Log in to the	1. Search Criteria:	The	system	The admin can	The system	Pass
NAGE_	provider		admin dashboard	John	displays	a list of	efficiently find	displays a list of	

PROVI	2. Navigate to the	service providers	and access the	service providers	
DER_04	Service	matching the	desired service	matching the	
	Providers section	search criteria.	provider's	search criteria.	
	3. Enter the search		profile based on		
	criteria (e.g.,		the search input.		
	username, email,				
	or status) into the				
	search bar				

Table 7.19: Unit Test Case for Manage Service Provider Profile

Test Case	e ID	TC-019		Designed B	By			Kang Sir	Kang Sing Chee		
Module		Service provider pro	file	Designed D	Date			20 April	2024		
Test Case	e Title	Service provider ma	nage profile	Executed B	By			Kang Sir	ng Chee		
Pre-cond	ition	Service provider is le	ogged in to the system	Execution	Date			21 April 2024			
Test	Test Scenario	Test Steps	Test Data	Expected	Expected		ndition	Actual F	Result	Pass/	
Case #				Result						Fail	
TC_MA	View their own	1. Navigate to	-	The sy	ystem	The	service	The	system	Pass	
NAGE_	profile	"Profile" page		displays	all	provider	can	displays	all		
PROFI				relevant de	letails	view	their	relevant	details		

LE_01		2.	View	the				of the service	profile	of the service	
			details of	the				provider's	information	provider's	
			service					profile	without any	profile	
			provider					accurately.	errors.	accurately.	
			profile,								
			including th	neir							
			name, ema	ail,							
			phone numb	ber,							
			school nar	me,							
			address a	and							
			details								
TC_MA	Update service	1.	Navigate	to	1.	Updated image: url o	of	The system	The service	A successful	Pass
NAGE_	provider profile		"Profile" pag	ge		image		successfully	provider's	message	
PROFI		2.	Click on	the	2.	Updated website	e:	updates the	profile	"Updated	
LE_02			"Edit Profi	ile"		www.littleschool.com	n	service provider	information is	successfully" is	
			tab					profile with the	updated in the	displayed	
		3.	Modify	the				new	system and		
			desired fie	elds				information.	reflecting the		
			or add an ima	age					changes made		
			profile						by the service		
									provider		

	4. Save the			
	changes			

Test Case	e ID	TC-020	Designed By		Kang Sing Chee	
Module		Activity	Designed Date		20 April 2024	
Test Case	e Title	Service provider manage activ	ivity Executed By		Kang Sing Chee	
Pre-cond	ition	Service provider is logged in t	to the system Execution Date		21 April 2024	
Test Test Scenario		Test Steps Test D	Data Expected Result	Post Condition	Actual Result	Pass/
Case #						Fail
TC_MA	Add new activity	1. Navigate to 1. Ima	nage: url The system	The newly added	A successful	Pass
NAGE_		"Activity" page ima	nage successfully adds	activity is visible	message	
ACTIVI		2. Click on the 2. Cat	ategory: Sports the new activity	in the list of	"Activity is	
TY_01		"Add Activity" 3. Act	ctivity: with the provided	activities in the	created	
		button Sw	wimming details.	activity view list.	successfully" is	
		3. Fill in the 4. Act	ctivity name:		displayed.	
		activity details, Sw	wimming			
		schedule details Les	esson			
		and pricing 5. De	escription:			
		details XX	XX			

Table 7.20: Unit Test Case for Manage Activity

	4 (Tlick	on the	6	Minimum age: 4	5		
		Save" l	button	0. 7	Maximum ager			
		Save	Jution	/.	Maximum age			
					15			
				8.	Class size: 3			
				9.	Address: 123	,		
					Adam Street			
				10	. City: Kajang			
				11	. State: Selangor			
				12	. Postal code	:		
					43000			
				13	. Frequency: pe	r		
					day			
				14	. Start date	:		
					5/5/2024			
				15	. End date	:		
					5/5/2024			
				16	. Day: Sunday			
				17	. Time: 8.00 AM			
				18	. Duaration:			
					hour 15 minutes			
				19	. Price: RM100			

				20. Discount				
				(optional): 5%				
TC_MA	View acti	ivity	1. Navigate to	-	The system	The service	The system	Pass
NAGE_	details		"Activity" page		displays all	provider can	displays all	
ACTIVI			2. View activity		relevant details	view their	relevant details	
TY_02			details		of the activity	activity and	of the service	
			3. Click on the		and schedule	schedule details	provider's	
			"clock" icon, a		details	without any	activity and	
			model is pop up		accurately.	errors.	schedule details	
			to view the				accurately.	
			schedule details					
TC_MA	Update acti	ivity	1. Navigate to	1. Updated time:	The system	The changes	A successful	Pass
NAGE_	details		"Activity" page	10.00 AM	successfully	made to the	message	
ACTIVI			2. Click on the		updates the	activity details is	"Updated	
TY_03			"edit" button		details of the	saved in the	successfully" is	
			3. Modify the		selected activity	system. The	displayed.	
			necessary details		with the provided	status of activity		
			such as activity		modification.	"active" is saved		
			name, schedule,			into database.		
			price and so on.					

		4.	Click on the					
			"Save changes"					
			button					
TC_MA	Delete an activity	1.	Navigate to	-	The system	The deleted	An alert message	Pass
NAGE_			"Activity" page		successfully	activity is	"The activity is	
ACTIVI		2.	Find the activity		deletes the	removed from	deleted	
TY_04			to be deleted		selected activity	the list of	successfully" is	
			from the list		from the list.	activities in the	displayed.	
		3.	Click on the			system.		
			"trash" icon					
		4.	Confirm the					
			deletion action					
TC_MA	Search an activity	1.	Navigate to	1. Search criteria:	The system	Service provider	The system	Pass
NAGE_			"Activity" page	Drawing	displays a list of	can efficiently	displays a list of	
ACTIVI		2.	Enter the search		activity matching	find an activity	activity matching	
TY_05			criteria such as		the search result.	based on the	the search result	
			activity name,			search input.		
			category,					
			subcategory and					
			so on.					

Test Case	e ID	TC-021		Designed By		Kang Sing Chee	
Module		Learner		Designed Date		20 April 2024	
Test Case	e Title	Service provider manage stu	ıdent	Executed By		Kang Sing Chee	
Pre-cond	ition	Service provider is logged in	n to the system	Execution Date		21 April 2024	
Test	Test Scenario	Test Steps Test	Data	Expected Result	Post Condition	Actual Result	Pass/
Case #							Fail
TC_MA	Add new learner	1. Navigate to 1. L	earner name:	The system	The newly added	A successful	Pass
NAGE_	into an activity	"Student" page Jo	ohn Doe	successfully adds	student is visible	message	
LEAR		2. Click on the 2. A	.ge: 8	the new learner	in the list of	"Student is added	
NER_01		"Add New 3. G	ender: Boy	with the provided	students. The	successfully" is	
		Learner" button 4. Pa	arent name:	details.	pending status of	displayed.	
		3. Fill in the Ja	ane Doe		learner is saved		
		student details 5. A	ctivity name:		in the system and		
		such as name, S	wimming		awaiting their		
		age, gender, L	esson		parent to make		
		parent name, 6. St	tatus: Pending		payment.		
		activity name					
		and status.					
		4. Click on the					
		"Add" button					

Table 7.21: Unit Test Case for Manage Learner

TC_MA	View learner	1.	Navigate to	-		The system	The service	The system	Pass
NAGE_	details		"Learner" page			displays all	provider can	displays all	
LEAR		2.	View learner			relevant details	view their	relevant details	
NER_02			details			of the learner	student that	of the student	
						details	enrolled in their	details	
						accurately.	activity in the	accurately.	
							student view list.		
TC_MA	Update learner	1.	Navigate to	2.	Updated activity	The system	The changes	A successful	Pass
NAGE_	details		"Learner" page		name: NRX	successfully	made to the	message	
LEAR		2.	Click on the		Badminton	updates the	student details is	"Updated	
NER_03			"edit" button		Class	details of the	saved in the	successfully" is	
		3.	Modify the			selected learner	system.	displayed.	
			necessary details			with the provided			
			such as change			modification.			
			the activity.						
		4.	Click on the						
			"Save changes"						
			button						
TC_MA	Delete a learner if	1.	Navigate to	-		The system	The deleted	An alert message	Pass
NAGE_	he/she want to		"Learner" page			successfully	student is	"The student is	
LEAR						deletes the	removed from	deleted	

NER_04	cancelled	the	2. Find the learner	selected learner	the list of	successfully" is
	activity		to be deleted	from the list.	learners in the	displayed.
			from the list		system.	
			3. Click on the			
			"trash" icon			
			4. Confirm the			
			deletion action			

Table 7.22: Unit Test Case for Manage User

Test Case	ID	TC-022		Designed By		Kang Sing Chee	
Module		User		Designed Date		20 April 2024	
Test Case	Title	Service provider man	nage parent	Executed By		Kang Sing Chee	
Pre-conditionService provid		Service provider is le	ogged in to the system	Execution Date		21 April 2024	
Test	Test Scenario	Test Steps	Test Data	Expected	Post Condition	Actual Result	Pass/
Case #				Result			Fail
TC_MA	Add new parent	1. Navigate to	1. User name: Abu	The system	The user can log	A successful	Pass
NAGE_	into the system,	"Parent" page	2. Email:	successfully	in to the system.	message "User	
USER_01	not in their	2. Click on the	<u>abu@gmail.com</u>	adds the new		is created	
	activity	"Create" button	3. Phone number:	user in the		successfully" is	
			0185521314	system		displayed.	

		3	Fill in the	Δ	Password					
		5.		- т.	10015					
			parent details		12345					
			such as name,							
			email, phone							
			number and							
			password							
TC_MA	View parent	1.	Navigate to	-		The	system	The service	The system	Pass
NAGE_	details who are		"Parent" page			displays	all	provider can	displays all	
USER_02	enrolled their	2.	View parent			relevant	details	view the parent	relevant details	
	child in the		details such as			of the	parent	details in case	of the parent	
	activity		name, email,			details		can contact the	details	
			phone number,			accurate	ely.	learner's parent	accurately.	
			child name and					easily.		
			login method							
TC_MA	Search for a	1.	Navigate to	1. P	arent name: abu	The	system	Service	The system	Pass
NAGE_	parent		"Parent" page			displays	a list of	provider can	displays a list of	
USER_03		2.	Enter the search			user n	natching	efficiently find	user matching	
			criteria such as			the searc	ch result.	a parent based	the search result	
			parent name					on the search		
								input.		

Test Cas	e ID	TC-023		Designed By		Kang Sing Chee	
Module		Chat		Designed Date		20 April 2024	
Test Case Title		Service provider mana	ge transaction	Executed By	Kang Sing Chee		
Pre-condition		Service provider is logged in to the system		Execution Date		21 April 2024	
Test	Test Scenario	Test Steps	Test Data	Expected Result Post Condition		Actual Result	
Case #							
TC_RE	Service provider	1. Click on the	1. Reply	The system will	Service provider	A message is	
PLY_	can reply chat to	"message" icon	message:	display the	is successfully	successfully sent	
CHAT	user	on the navigation	"Hi!"	message is sent to	reply a message.	to the user in real	

user.

bar

2. Navigate to user

3. Reply a chat to

chat box

user

_01

Table 7.23: Unit Test Case for Reply Chat

Pass/

Fail

Pass

time.

Test Cas	e ID	TC-024		Designed By		Kang Sing Chee	
Module		Transaction		Designed Date	20 April 2024		
Test Cas	e Title	Service provider mana	ge user transaction	Executed By		Kang Sing Chee	
Pre-cond	lition	Service provider is log	ged in to the system	Execution Date		21 April 2024	
Test	Test Scenario	Test Steps	Test Data	Expected Result	Post Condition	Actual Result	Pass/
Case #							Fail
TC_MA	View the	1. Navigate to	-	The system	The service	The system	Pass
NAGE_	transaction	"Transaction"		displays all	provider can	displays all	
TRAN		page		relevant details of	view the	relevant details of	
SACTI		2. View transaction		the user	transaction	the user	
ON_01		details such as		transaction	details.	transaction	
		user transaction		details		details	
		ID, user name,		accurately.		accurately.	
		activity name,					
		amount, payment					
		method and					
		payment date					
TC_MA	Search for a	1. Navigate to	1. Transaction	The system	Service provider	The system	Pass
NAGE_	transaction	"Transaction"	ID: b1cc9631-	displays the	can efficiently	displays the	
TRAN		page	ee8a-474a-	specific	find a transaction	specific	

Table 7.24: Unit Test Case for Manage Transaction

SACTI	2. Enter the search	ac18-	transaction	id	of	parent	based	transaction	id	
ON_02	criteria such as	d522ba5f9a16	matching	the	on	the	search	matching	the	
	transaction ID		search result	•	inp	ut.		search result	•	

Table 7.25: Unit Test Case for Manage Review and Rate

Test Case ID		TC-025		Designed By		Kang Sing Chee		
Module		Review and Rate		Designed Date		20 April 2024		
Test Case	e Title	Service provider mana	age user review and	Executed By		Kang Sing Chee		
		rating						
Pre-cond	ition	Service provider is log	ged in to the system	Execution Date		21 April 2024		
Test	Test Scenario	Test Steps	Test Data	Expected Result Post Condition		Actual Result	Pass/	
Case #							Fail	
TC_MA	View the user	1. Navigate to	-	The system	The service	The system	Pass	
NAGE_	reviews and	"Review and		displays a list of	provider can	displays a list of		
REVI	ratings	Rating" page		user reviews and	view the user	user reviews and		
EW_01		2. View the list of		ratings including	review and rating	ratings including		
		user review and		the activity	details.	the activity		
		rating after the		details, user		details, user		
		user enrolled		comments,		comments,		
				ratings and status.		ratings and status.		

		t	their childre	n in											
		t	the activity												
TC_MA	Search for a user's	1. ľ	Navigate	to	1.	Parent	name:	The	system	Servi	ice pro	ovider	The	system	Pass
NAGE_	review and rating	6	"Review	and		Abu		displays	the	can	effici	iently	display	the	
REVI		I	Rating" page	;				specific	parent's	find	a pa	rent's	specifi	c parent's	
EW_02		2. H	Enter the se	earch				name	matching	revie	w or i	rating	review	and rating	
		c	criteria	such				the searce	ch result.	based	d on	the	matchi	ng the	
		ľ	parent name							searc	h input		search	result.	
TC_MA	Update user	1. ľ	Navigate	to	1.	Unpubli	shed	The	system	The	other	user	The	successful	Pass
NAGE_	review and rating	6	"Review	and		Abu's	review	updates	the status	cann	ot viev	v the	messag	ge "Status	
REVI	status with	I	Rating" page	;		and ratir	ng	of the us	ser review	Abu'	s review	w and	is	updated	
EW_03	inactive status	2. F	Find the spe	cific				and	rating	rating	g		succes	sfully" is	
		r	review and ra	ating				accordin	ng to the				display	ved.	
		t	to update					action	taken by						
		3. (Click on	the				the	service						
		6	"eye-slash"	icon				provider	by						
		t	to unpublish	the				unpublis	shing it.						
		r	review and ra	ating											
TC_MA	Update user	1. ľ	Navigate	to	1.	Publishe	ed	The	system	The	other	user	The	successful	Pass
NAGE_	review and rating	6	"Review	and		Abu's	review	updates	the status	can	view	the	messag	ge "Status	
REVI		I	Rating" page	;		and ratir	ng	of the us	ser review				is	updated	

EW_04	status with active	2.	Find the specific	and	rating	Abu's review and	successfully"	is	
	status		review and rating	according	to the	rating	displayed.		
			to update	action tak	ken by				
		3.	Click on the	the	service				
			"eye" icon to	provider	by				
			publish the	publishing	it.				
			review and rating						

7.3 User Acceptance Test

User Acceptance Testing (UAT) is the final phase that performed by end-user or target audience to ensure that the system meets the project requirements (Setter, 2023). During UAT, users validate the system functionality, usability and overall performance based on predefined acceptance criteria. This testing phase focuses on confirming that the system meets the user expectations that aligns with their needs and delivers the intended value. In this project, there are 8 individuals have been selected to conduct UAT for the user, service provider and admin modules. Three individuals will perform the user acceptance test for user modules, while three individuals will perform the user acceptance test for service provider and two individuals will perform the user acceptance test for admin modules.

7.3.1 User Acceptance Test for User Side Modules

User Acceptance Testing (UAT) for User Side Modules involves testing various functionalities and features from the perspective of end-users to ensure they meet their requirements and expectations. Test scenarios include logging in, registering new accounts, searching for activities, viewing activity details, enrolling children in activities, making payments, managing user profiles, reviewing and rating activities, chatting with service provider, managing wishlists, and accessing enrolment history. The aim is to validate that users can seamlessly navigate the platform, access relevant information, perform desired actions, and have a positive experience overall. UAT ensures that the system meets user needs effectively and efficiently.

Test Case ID	UAT-U-001
Module	User Login
Executed By	
Execution Date	

Test Scenario	Status	Comment
Able to log in with registered account		
Able to log in with valid email and password		
Able to log in with Google SSO credentials		
Able to log in with Facebook SSO credentials		
Able to log in with remembered credentials		

Table 7.27: User Acceptance Test for User Registration

Test Case ID	UAT-U-002					
Module	User Registration					
Executed By						
Execution Date						
Test Scenario		Status	Comment			
Able to register a new accou	nt with valid username, email, phone					
number, password and confirm password						
Able to register a new account with unique email						
Able to register a new account with Google SSO credentials						
Able to register a new account	Able to register a new account with Facebook SSO credentials					

Test Case ID	UAT-U-003				
Module	User Profile				
Executed By					
Execution Date	Execution Date				
Test Scenario		Status	Comment		
Able to view own profile details					
Able to update own profile details					
Able to change password					
Able to change phone number					

Table 7.29: User Acceptance Test for Search Activity

Test Case ID	UAT-U-004					
Module	Activity Search	Activity Search				
Executed By						
Execution Date	Execution Date					
Test Scenario		Status	Comment			
Able to search an activity by activity name						
Able to search an activity by ca	itegory name					
Able to search an activity by su	bcategory name					

Able to view the search results in filter page	
Able to view "No results found" message when search results is does	
not have matching activities	

Table 7.30: User Acceptance Test for Activity Advanced Filtering

Test Case ID	UAT-U-005					
Module	Activity Advanced Filtering					
Executed By						
Execution Date						
Test Scenario	•	Status	Comment			
Able to filter activities by date	(from Old to New)					
Able to filter activities by date	(from New to Old)					
Able to filter activities by price	e (from Low to High)					
Able to filter activities by price	e (from High to Low)					
Able to filter activities by categories	gory					
Able to filter activities by class size						
Able to filter activities by frequency						
Able to filter activities by state						
Able to filter activities by price	erange					

Able to drag the slider handles to adjust the minimum and maximum	
price values	
Able to see the price range values update dynamically as the slider	
handles are moved	
Able to set a specific price range by clicking on a point along the slider	
track	
Able to observe the corresponding activities update based on the	
selected price range	
Able to filter activities with multiple criteria such as category, class size	
and frequency	
Able to view the instant filter result without needing to click any button	
Able to see the activities dynamically update based on the selected	
criteria	
Able to deselect checkboxes to refine the filter criteria and observe the	
updated activity list accordingly	
Able to view "No results found" message when filter results is does not	
have matched activities	

Table 7.31: User Acceptance Test for View Activity Details

Test Case ID	UAT-U-006

Module	Activity Details			
Executed By				
Execution Date				
Test Scenario		Status	Comment	
Able to navigate to the activity	y details page by clicking on a specific			
activity				
Able to view comprehensive de	tails about the selected activity including			
its name, category, location, p	pricing, age group, class size, duration,			
activity schedule, and time				
Able to see additional information such as activity description and the				
name of the school hosting the activity in the description tab				
Able to click on the school name to redirect to the activity provider's				
profile for more information				
Able to initiate communication with the service provider by clicking on				
the "Ask a Question" button				
Able to access detailed location information including the complete				
address of the school or learning centre hosting the activity in the				
location tab				
Able to view a map view that displays the precise location of the activity				
Able to view user reviews and ratings for the activity				
Able to see the total rating for the activity				

Able to view the percentage breakdown of ratings for each star rating	
category	
Able to view "No reviews and ratings yet" message if there are no	
reviews and ratings	
Able to switch between different tabs (Description, Location, Review)	
to explore different aspects of the activity	
Able to add the activity in the wishlist by clicking the "bookmark" icon	
Able to enrol in the activity by clicking the "Enrol Now" button	

Table 7.32: User Acceptance Test for Learner Enrolment

Test Case ID	UAT-U-007		
Module	Learner Enrolment	Learner Enrolment	
Executed By			
Execution Date			
Test Scenario		Status	Comment
Able to enrol a child in activity			
Able to enrol multiple children in activity simultaneously			
Able to view correct activity information including activity name, day,			
date, location and total amount			
Able to view accurate schedule details for the activity			

Able to view the total amount correctly updated when enrolling two or	
more children	
Able to add new learner by clicking the "Add Learner button"	
Able to fill in all learner information such as name, age and gender	
Able to remove the learner by clicking the "trash" icon next to their	
information	
Able to click the "Next" button to proceed payment	

Table 7.33: User Acceptance Test for Make Payment

Test Case ID	UAT-U-008		
Module	Activity Payment	Activity Payment	
Executed By			
Execution Date			
Test Scenario		Status	Comment
Able to make payment			
Able to view the activity name and total amount again			
Able to confirm the payment by clicking the "Pay" button to make			
payment			
Able to receive a confirmation message after successful payment			

Able to view the receipt after completing the payment process	
Able to view the correct receipt details including transaction ID, activity	
name, total amount, payment date and status	

Table 7.34: User Acceptance Test for Chat

Test Case ID	UAT-U-009		
Module	Chat		
Executed By			
Execution Date			
Test Scenario		Status	Comment
Able to chat with service provider			
Able to view the chat history			
Able to receive notification			

Table 7.35: User Acceptance Test for Manage Wishlist

Test Case ID	UAT-U-010
Module	Wishlist
Executed By	
Execution Date	

Test Scenario	Status	Comment
Able to add activity to wishlist		
Able to view wishlist		
Able to remove activity from wishlist		

Table 7.36: User Acceptance Test for Learner Enrolment History

Test Case ID	UAT-U-011		
Module	Learner Enrolment		
Executed By			
Execution Date			
Test Scenario		Status	Comment
Able to view enrolled activities			
Able to search enrolment history based on the criteria such as activity			
name, activity provider, transaction Id, amount, payment date and status			
Able to receive email notifications for upcoming activities			

Table 7.37: User Acceptance Test for Learner Schedule History

Test Case ID	UAT-U-012
Module	Learner Schedule

Executed By		
Execution Date		
Test Scenario	Status	Comment
Able to view schedule details of enrolled activities		
Able to search schedule based on the criteria such as activity name,		
subcategory, location, date, time, duration, day, frequency, learner name		
and learner status		

Table 7.38: User Acceptance Test for Manage Review and Rating

Test Case ID	UAT-U-013		
Module	User Review and Rating		
Executed By			
Execution Date			
Test Scenario		Status	Comment
Able to view reviews and rating	gs for activities		
Able to submit review and rating after enrolment			
Able to view own review and rating history			

7.3.2 User Acceptance Test for Admin Side Modules

User Acceptance Testing (UAT) for Admin Modules involves testing the functionalities and features specific to administrator. Test scenarios include logging in, approving or rejecting service provider registrations and so on.

Test Case ID	UAT-A-014		
Module	Admin Login		
Executed By			
Execution Date			
Test Scenario		Status	Comment
Able to log in with correct admin role and, valid email and password			

Table 7.39: User Acceptance Test for Admin Login

Table 7.40: User Acceptance Test for Manage Service Provider

Test Case ID	UAT-A-015		
Module	Manage Service Provider		
Executed By			
Execution Date			
Test Scenario		Status	Comment
Able to view the list of service provider registration requests			

Able to approve a service provider registration request and email is	
automatically sent to service provider	
Able to reject a service provider registration request and email is	
automatically sent to service provider	
Able to views the details of a specific service provider	
Able to search for a specific service provider	
Able to sort the criteria by ascending or descending order	
Able to delete a service provider	

7.3.3 User Acceptance Test for Service Provider Side Modules

User Acceptance Testing (UAT) for Service Provider Side Modules involves testing the functionalities and features specific service providers. Test scenarios include logging in, managing user profiles, managing activities, viewing enrolment lists, sending notifications to users, managing reviews and ratings, replying chat and so on. The goal is to ensure that service providers can effectively perform their roles within the system, access necessary information, and execute required actions accurately and efficiently. UAT helps validate that the system meets the needs of service providers.

Test Case ID	UAT-S-016		
Module	Service Provider Login		
Executed By			
Execution Date			
Test Scenario		Status	Comment
Able to log in with correct ser	vice provider role and, valid email and		
password			

 Table 7.41: User Acceptance Test for Service Provider Login

Table 7.42: User Acceptance Test for Service Provider Registration

Test Case ID	UAT-S-017
Module	Service Provider Registration
Executed By	

Execution Date		
Test Scenario	Status	Comment
Able to fill up the registration form with valid details		
Able to receive an email notification about their account status is		
approved or rejected		

 Table 7.43: User Acceptance Test for Manage Profile

Test Case ID	UAT-S-018		
Module	Manage Profile		
Executed By			
Execution Date			
Test Scenario		Status	Comment
Able to view own profile			
Able to update own profile info	ormation		

Table 7.44: User Acceptance Test for Manage Activity

Test Case ID	UAT-S-019	
Module	Manage Activity	
Executed By		
Execution Date		
--	--------	---------
Test Scenario	Status	Comment
Able to view activity list		
Able to create new activity		
Able to update specific activity information		
Able to delete an activity		
Able to search an activity		
Able to sort the criteria by ascending or descending order		

Table 7.45: User Acceptance Test for Manage Calendar

Test Case ID	UAT-S-020		
Module	Manage Calendar		
Executed By			
Execution Date			
Test Scenario	Status Comment		
Able to view the activity/event name and time for an activity in the			
alendar			
Able to view calendar in different view options			
Able to change the month			

 Table 7.46: User Acceptance Test for Manage Enrolment

Test Case ID	UAT-S-021		
Module	Manage Enrolment		
Executed By			
Execution Date			
Test Scenario		Status	Comment
Able to view the activity with enrolled learner list			
Able to notify all learner's parent by clicking on the "Notify All" button			
for a specific activity			

Table 7.47: User Acceptance Test for Manage Transaction

Test Case ID	UAT-S-022			
Module	Manage Transaction	Manage Transaction		
Executed By				
Execution Date				
Test Scenario	Status Comment		Comment	
Able to view the user transaction list				
Able to view specific user transaction details				
Able to search the transaction				

Able to sort the criteria with ascending or descending order	

Test Case ID	UAT-S-023			
Module	Manage Review and Rating			
Executed By				
Execution Date				
Test Scenario	rio Status Comment			
Able to view the user review and rating list				
Able to update the user review and rating by publishing it to user				
Able to update the user review and rating by unpublishing it				
Able to search the review and rating				
Able to sort the criteria with ascending or descending order				

Table 7.48: User Acceptance Test for Manage Review and Rating

Table 7.49: User Acceptance Test for Manage Learner

Test Case ID	UAT-S-024
Module	Manage Learner
Executed By	
Execution Date	

Test Scenario	Status	Comment
Able to view the learner list		
Able to add new learner		
Able to update the learner details		
Able to delete a learner from an activity		
Able to search the learner		
Able to sort the criteria with ascending or descending order		

Table 7.50: User Acceptance Test for Manage Parent

Test Case ID	UAT-S-025		
Module	Manage Parent		
Executed By			
Execution Date			
Test Scenario	Status Comment		
Able to view the parent list	ble to view the parent list		
Able to add new user in to the system			
Able to view specific parent details with their enrolled child			
Able to search for a specific parent			
Able to sort the criteria with ascending or descending order			

7.4 Usability Test

Usability testing is a method used to evaluate the ease of use and overall user experience of a system or application. One commonly used tool for measuring system usability is the System Usability Scale (SUS). SUS questionnaire that depicted in Figure 7.1 serves as a standardized tool to collect feedback on the usability of the system. The SUS questionnaire consists of 10 statements that participants rate on a scale of 1 to 5, representing their agreement with each statement. The responses are then used to calculate a SUS score which ranges from 0 to 100 (Betteridge, 2023).

The SUS score provides a quantifiable measure of a system perceived usability. A higher score indicates better usability and higher levels of customer satisfaction, while a lower score may indicate potential usability issues that need to be addressed. The SUS grading table, such as the one provided in Figure 7.2, helps interpret the SUS score and determine the overall system usability level based on the calculated score.

	Strongly disagree				Strongly agree
1. I think that I would like to					
use this system frequently	1	2	3	4	5
 I found the system unnecessarily complex 					
	1	2	3	4	,
3. I thought the system was easy					
to use	<u> </u>	<u> </u>			Ļ
4. I think that I would need the		2	3	4	3
support of a technical person to					
be able to use this system	1	2	3	4	i
5. I found the various functions in					
this system were well integrated	1	2	3	4	5
6. I thought there was too much					
inconsistency in this system	1	2	3	4	5
7. I would imagine that most people					
very quickly	1	Z	3	4	,
8. I found the system very					
compersone to use	1	2	3	4	5
9. I felt very confident using the					
ауынн	1	2	3	4	5
10. I needed to learn a lot of					
things before I could get going with this system	1	2	3	4	5

SUS Score	Grade	Adjective Rating
> 80.3	A	Excellent
68 - 80.3	В	Good
68	С	Okay
51 - 68	D	Poor
< 51	F	Awful

Figure 7.2: SUS Grading Table (Alathas, 2018)

The SUS questionnaire was given to eight participants who conducted the user acceptance test. They are using the standard template that show in Figure 7.1 to fill up regarding to the system on the test. In the table 7.51 below shows the summarized version of the result collected from each participant and the result of the usability test questionnaire are shown in the Appendix A.

Darticipanta		Scores					Total	Doncontogo				
rarticipants	1	2	3	4	5	6	7	8	9	10	Tuai	rercentage
1	5	1	5	1	5	1	5	1	5	1	40	100%
2	4	2	5	1	5	1	5	1	4	1	37	92.5%
3	5	1	5	1	5	1	4	1	5	2	38	95%
4	4	1	5	1	5	1	5	1	4	1	38	95%
5	5	2	5	1	5	1	5	1	5	1	39	97.5%
6	4	1	5	1	5	1	5	1	4	1	38	95%
7	5	1	5	1	5	1	4	1	4	1	38	95%
8	5	1	5	1	5	1	5	2	4	1	38	95%
Average SUS Score95.63%				95.63%								
Grade				A	4		Ad	lject	tive		E	xcellent
							Ra	ting	Ş			

Table 7.51: SUS Score Results for the System from Each Participant

7.5 Requirement Traceability Matrix

The requirement traceability matrix provides a comprehensive overview of the traceability between use cases, functional requirements, unit tests, and user acceptance tests which is ensuring that all aspects of the system are covered and tested effectively.

7.5.1 Use Case Table

Table 7.52 presents each use case alongside with respective ID and name.

Use Case ID	Use Case Name
UC001	Register New User Account
UC002	Register New Service Provider Account
UC003	User Login Account
UC004	Admin and Service Provider Login Account
UC005	Verify Application
UC006	Manage Service Provider
UC007	Manage Profile
UC008	Chat
UC009	Manage Wishlist
UC010	Search Activity
UC011	Filter Activity
UC012	View Activity Details
UC013	View Service Provider Profile
UC014	Enrol Activity
UC015	View Enrolment History
UC016	Rate and Review
UC017	Manage Activity
UC018	Manage Enrolment
UC019	Manage Rate and Review
UC020	View Calendar
UC021	Manage Transaction

Table 7.52: Use Case Table

UC022	Manage User
UC023	Manage Learner
UC024	View Schedule History
UC025	View Transaction History

7.5.2 Functional Requirements Table

Table 7.53 presents each functional requirement alongside with respective ID and description.

Functional	Functional Requirements	
Requirement	-	
ID		
FR001	The system shall allow parents to manually register new	
	user accounts.	
FR002	The system shall allow parents to login in to system after	
	successful registration.	
FR003	The system shall allow parents to login by using Google	
	SSO.	
FR004	The system shall allow parents to login by using	
	Facebook SSO.	
FR005	The system shall allow parents to manage their profiles	
	including view and update personal information.	
FR006	The system shall allow parents to search for child	
	enrichment and sports activities.	
FR007	The system shall allow parents to filter search results by	
	category, state, age group, class size, price and	
	frequency.	
FR008	The system shall allow parents to view detailed	
	information about each activity.	
FR009	The system shall allow parents to enrol their children in	
	the activity.	

Table 7.53: Functional Requirements Table

FR010	The system shall allow parents to make payment for an
	activity.
FR011	The system shall allow parents to view detailed profiles
	of service providers.
FR012	The system shall allow parents to chat with specific
	service provider.
FR013	The system shall allow parents to view enrolment
	history.
FR014	The system shall allow parents to view schedule history.
FR015	The system shall allow parents to rate and review service
	providers based on their experiences.
FR016	The system shall allow parents access to a repository of
	all activity ratings and reviews, along with the ability to
	view personal review history.
FR017	The system shall allow parents to view own transaction
	history after payment is made.
FR018	The system shall allow parents to receive email
	notification regarding the upcoming events.
FR019	The system shall allow parents to add favourite activity
	in their wishlist.
FR020	The system shall allow parents to view and remove the
	activity from wishlist.
FR021	The system shall allow service providers to register with
	information such as school name, contact details,
	address, description and so on.
FR022	The system shall allow service providers to receive
	email notification upon the account status is approved or
	rejected.
FR023	The system shall allow service providers to view and
	update their profiles.
FR024	The system shall allow service providers to login after
	their account is approved by admin.

FR025	The system shall allow service providers to view own
	dashboard.
FR026	The system shall allow service providers to manage their
	activity, including the ability to add new activities, edit
	existing activity and delete activity.
FR027	The system shall allow service providers to manage
	child enrolment records including view enrolment
	history, adding new students, editing existing details and
	deleting records as needed.
FR028	The system shall allow service providers to manually
	add parents to the system.
FR029	The system shall allow service providers to view all user
	(parent) list that enrolled their children in the activity.
FR030	The system shall allow service providers to view all
	learner (student) list.
FR031	The system shall allow service providers to view
	transactions for parents who have helped their child
	enrol successfully in their activities.
FR032	The system shall provide a messaging function for
	communication between parents and service providers.
FR033	The system shall allow service providers to monitor
	parents' feedback and ratings, allowing them to publish
	or unpublish the review and rating to parents.
FR034	The system shall allow service providers to notify all
	parents for an upcoming activity.
FR035	The system shall allow service providers to view their
	activities created is displayed on the calendar.
FR036	The system shall allow admin to login to the system.
FR037	The system shall allow admin to manage service
	provider by verifying their application including update
	service provider status, view their profile and delete
	service provider.

7.5.3 Traceability Matrix

Table 7.54 presents a traceability matrix detailing the relationships between Use Case IDs, Functional Requirement IDs, Unit Test Case IDs and User Acceptance Test Case IDs. This matrix helps ensure that each aspect of the system from requirements to testing is adequately covered and aligned throughout the development process.

Use Case ID	Functional Requirement ID	Unit Test Case ID	User Acceptance Test Case ID
UC001	FR001	TC-001	UAT-U-002
UC002	FR021, FR022	TC-016, TC-	UAT-S-017
		017	
UC003	FR002, FR003, FR004	TC-002	UAT-U-001
UC004	FR024, FR036	TC-015	UAT-A-014,
			UAT-S-016
UC005	FR037	TC-018	UAT-A-015
UC006	FR037	TC-018	UAT-A-015
UC007	FR005, FR023	TC-009, TC-	UAT-U-003,
		019	UAT-S-018
UC008	FR012, FR032	TC-013, TC-	UAT-U-009,
		023	
UC009	FR019, FR020	TC-010	UAT-U-010
UC010	FR006	TC-003	UAT-U-004
UC011	FR007	TC-004	UAT-U-005
UC012	FR008	TC-005	UAT-U-006
UC013	FR011	TC-005	UAT-U-006
UC014	FR009, FR010,	TC-006, TC-	UAT-U-007
		007	
UC015	FR013	TC-011	UAT-U-011
UC016	FR015, FR016	TC-014	UAT-U-013
UC017	FR026	TC-020	UAT-S-019

Table 7.54: Traceability Matrix

UC018	FR027, FR034	TC-021	UAT-S-021
UC019	FR033	TC-025	UAT-S-023
UC020	FR035	-	UAT-S-020
UC021	FR031	TC-024	UAT-S-022
UC022	FR028, FR029	TC-022	UAT-S-025
UC023	FR030	TC-021	UAT-S-024
UC024	FR014, FR018	TC-012	UAT-U-012
UC025	FR017	TC-008	UAT-U-008

CHAPTER 8

CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusion

In conclusion, the development of the One-Stop Child Enrichment and Sports Centre System has been a significant endeavour aimed at providing a comprehensive solution for parents and service providers in the management of child enrichment and sports activities. Through meticulous planning, analysis, design, implementation and testing phases, a robust and user-friendly system is successfully delivered that met all the specified requirements and objectives.

The system provided a wide range of functionalities for parents including user registration and login by using SSO, activity search and enrolment, profile management, communication with service providers, review and rating capabilities and more. Likewise, service providers have access to features such as dedicated dashboard, profile creation, activity management, communication with parents, email notification functionalities and so on.

The project has achieved the primary goal of developing a functional and efficient system that streamlines the process of discovering, enrolling in and managing child activities. The system served as a one-stop solution which is providing robust and user-friendly platform for parents and service providers to navigate the child enrichment and sports landscape effortlessly.

8.2 Achievement of Objectives

With completion of this project, all the specified objectives are successfully achieved. The first objective is studying the requirements of the child enrichment and sports centre system. This objective is achieved through a systematic approach that involved thorough research and gather insights from existing systems and literature reviews in Chapter 2. Therefore, it is provided valuable guidance in understanding the unique needs and preferences of parents and service providers.

The second objective is to develop a web-based One-Stop Child Enrichment and Sports Centre System that serves as a centralized platform. This objective is achieved through the iterative design and implementation processes, and then successfully developed a comprehensive system for targeted users. This system is not only streamlining the search and enrolment process for parents but also provides a valuable advertising and communication channel for service providers.

The last objective is to evaluate the application through a user acceptance test of the developed system. This objective also achieved through rigorous user acceptance testing with the participation of eight testers. This testing phase provided valuable feedback on the usability, functionality and overall satisfaction of the system to ensure that it meets the needs and expectations of the users.

In summary, the project has achieved all the objectives by delivering a user-centric and effective solution to address the challenges faced by parents and service providers in the child enrichment landscape.

8.3 Limitations and Recommendations

There are several limitations are encountered during the development of the system and provide corresponding recommendations for improvement in the future. Each recommendation aims to address the limitations and enhance the overall functionality and usability of the system.

No		Description
1	Limitation	The first limitation of the system is the
		dependency on the OpenAI API for generating
		activity descriptions so service provider no need
		thinks their activity description by themselves.
		While this API provides valuable functionality,

Table 8.1: Limitations of Project and Recommendations for Future Work

		but there is a risk associated with reaching the
		but there is a fisk associated with reaching the
		usage quota which may result in additional costs
		or interruptions in service. This limitation could
		potentially hinder the system ability to
		dynamically generate accurate and engaging
		descriptions for various activities.
	Recommendation	To explore alternative AI services or platforms
		that offer similar functionality but with free
		pricing options. Additionally, it may be beneficial
		to consider investing in a paid plan in the future
		for the OpenAI API to ensure consistent access
		and avoid unexpected disruptions due to usage
		limits.
2	Limitation	Another limitation of the current system is lack of
		integration with online classes. With the
		increasing popularity and efficiency of remote
		learning options, the absence of support for online
		classes could limit the system's appeal and
		relevance to both parents and service providers.
		This limitation may hinder the system ability to
		This minution may milder the system asing to
		actor to the evolving needs and preferences of
		cater to the evolving needs and preferences of
		cater to the evolving needs and preferences of users who seek flexible and convenient learning

	Recommendation	The integration of online classes into the system
		feature set. This could involve developing
		functionality that allows service providers to offer
		and manage virtual classes through the platform,
		as well as enabling parents to enrol their children
		in online activities seamlessly. By embracing
		online learning trends and adapting the system to
		accommodate remote education options, the
		platform can enhance the value proposition and
		better meet the diverse needs of its users.
3	Limitation	The current of the system may not be fully
		optimized for mobile devices which potentially
		limiting the accessibility and usability of the
		platform for users who prefer to interact with it on
		smartphones or tablets. This limitation could lead
		to suboptimal user experiences and may deter
		parents from effectively monitoring and managing
		their children's activities while on the go.
	Recommendation	Develop a dedicated mobile application for the
		system. A mobile app would offer a more tailored
		and intuitive user experience for parents to allow
		them to access key features and functionality
		seamlessly from their mobile devices.
4	Limitation	Absence of a group chat feature which could
		facilitate real-time communication among many
		parents and service providers at the same time.
		Users may experience difficulties coordinating
		group activities, discussing shared interests or
		seeking assistance from multiple parties
1	1	

Recommendation	Implementing a group chat functionality within
	the system. This feature would enable users to
	create or join chat groups based on common
	interests, activities or enrolled classes.

In summary, while the current system offers a comprehensive set of features for parents and service provider, there are areas where enhancements can further improve its functionality and user experience. In future work, the system can implement group chat feature, optimize mobile access, explore cost-effective solution for OpenAI integration and integrate online class. These recommendations will not only enhance user satisfaction but also contribute to the system long-term success.

REFERENCES

Adel Alshamrani & Abdullah Bahattab, 2015. A Comparison Between Three SDLC Models Waterfall. *International Journal of Computer Science Issues* (*IJCSI*), 12(1), p. 106.

Alathas, H., 2018. How to Measure Product Usability with the System UsabilityScale(SUS)Score.[Online]Available at:https://uxplanet.org/how-to-measure-product-usability-with-the-system-usability-scale-sus-score-69f3875b858f[Accessed 2024 April 2024].

Ali, A., 2021. *9 Easy ways to find students near me for tuition*. [Online] Available at: <u>https://www.linkedin.com/pulse/9-easy-ways-find-students-near-me-tuition-akbar-ali</u> [Accessed 26 July 2023].

Betteridge, K., 2023. *What Every UXC Client Should Know About SUS Scores*. [Online]

Available at: <u>https://www.bentley.edu/centers/user-experience-center/what-</u> every-client-should-know-about-sus-scores

[Accessed 22 April 2024].

Boehm, B. W., 1988. A Spiral Model of Software. *TRW Defense Systems Group*, 21(5), pp. 61-72.

Christian Mainka, Vladislav Mladenov, Tim Guenther and Jorg Schwenk, 2015. Automatic Recognition, Processing and Attacking of. *Open Identity Summit* 2015.

Craig Larman & Victor Basili, 2003. Iterative and incremental developments. a brief history. *Computer*, 36(6), pp. 47-56.

DESPA, M. L., 2014. Comparative study on software development methodologies. *Database Systems Journal*, 5(3), pp. 37-55.

Ellucian, 2020. *How to implement a modern one-stop student service center*. [Online]

Available at: <u>https://www.ellucian.com/blog/implementing-one-stop-student-</u> services-center

[Accessed 30 July 2023].

Jelle Kalkman and Alan Verresen, 2019. Shepherd: Enabling Large-Scale Scanning of Websites after Social Single Sign-on. *Open University of the Netherlands*, p. 11.

Kiddy123.com, 2023. 4 Benefits Of Sending Your Preschooler To EnrichmentClasses.[Online]Available at: https://www.kiddy123.com/article/4-benefits-of-sending-your-preschooler-to-enrichment-classes.html[Accessed 10 July 2023].

Kiddy123, 2023. *4 Benefits Of Sending Your Preschooler To Enrichment Classes.* [Online] Available at: <u>https://www.kiddy123.com/article/4-benefits-of-sending-your-preschooler-to-enrichment-classes.html</u> [Accessed 10 July 2023].

Kirsten K Davision, Jessica L. Werder & Catherine T Lawson, 2008. Children's Active Commuting to School: Current Knowledge and Future Directions. *Preventing chronic disease*, 5(3), p. 100.

Koo Lee Chun & Norliza Katuk, 2014. A Usability Study of Social Media Credentials As A Single-Sign-On Mechanism: Student Access to Online Teaching Materials. *Journal of Industrial and Intelligent Information*, 2(3), pp. 217-221. Koo Lee Chun and Norliza Katuk, 2014. A Usability Study of Social Media Credentials As. *Journal of Industrial and Intelligent Information*, 2(3), pp. 217-221.

Kumar, A., 2018. React vs. Angular vs. Vue. js: A Complete Comparison Guide.. *Consulté le juin*, Volume 28, p. 2019.

LeRoy, N., 2023. 3 Simple Steps to Improve Word-of-Mouth Marketing at Your School. [Online] Available at: <u>https://blog.schoolmint.com/3-simple-steps-to-improve-word-of-mouth-marketing-at-your-school</u> [Accessed 26 July 2023].

Lutkevich, B., 2019. *What is waterfall model?*. [Online] Available at: <u>https://www.techtarget.com/searchsoftwarequality/definition/waterfall-model</u> [Accessed 26 August 2023].

Matina, S., 2023. *What is the 3-Tier Architecture?*. [Online] Available at: <u>https://medium.com/@shrestha.matina.20/what-is-the-3-tier-architecture-4520522e0720</u>

[Accessed 12 April 2024].

Miller, G. A., 1955. The Magical Number Seven, Plus or Minus Two Some Limits on Our Capacity for Processing Information. *Harvard Psycho-Acoustic Laboratory under Contract N5ori-76 between Harvard University and the Office of Naval Research*, 101(2), pp. 343-352.

Mohammad Ghasemisharif, Amrutha Ramesh, Stephen Checkoway, Chris Kanich, and Jason Polakis, 2018. O Single Sign-Off, Where Art Thou? An Empirical Analysis of Single Sign-On Account Hijacking and Session Management on the Web. *In: 27th USENIX Security Symposium (USENIX Security 18)*, pp. 1475-1492.

Neha Yadav, Dharmveer Singh Rajpoot, Shri Krishna Dhakad, 2019. LARAVEL: A PHP Framework for E-Commerce Website. 2019 Fifth International Conference on Image Information Processing (ICIIP).

Newns, D., 2023. *Laravel Blade Components*. [Online] Available at: <u>https://dev.to/jump24/laravel-blade-components-3hbh</u> [Accessed 20 March 2024].

Nick V. Flor and Haile Shannon, 2011. Technology Corner: Brute Force Password Generation -- Basic Iterative and Recursive Algorithms. *Journal of Digital Forensics, Security and Law*, 6(3).

Psenak Peter and Szabo Tibor, 2020. The usage of Vue JS framework for web application. *Mesterséges intelligencia - interdiszciplináris folyóirat*, 2(2), pp. 61-72.

Ryan Hedstrom & Daniel Gould, 2004. Research in youth sports: Critical issues status. *Michigan: Michigan State University*, Volume 1, p. 42.

Setter, M., 2023. *What Is User Acceptance Testing (UAT): Meaning, Definition.* [Online]

Availableat:https://usersnap.com/blog/user-acceptance-testing-right/#:~:text=The%20purpose%20of%20User%20Acceptance,alignment%20with%20real%2Dworld%20scenarios.

[Accessed 22 April 2024].

Strauss, E., 2018. *Why extracurriculars make parents miserable*. [Online] Available at: <u>https://edition.cnn.com/2018/08/29/health/extracurriculars-happiness-parenting-strauss/index.html</u> [Accessed 28 July 2023].

Suhasinigadam, 2023. What is iterative and incremental development? Process,examples.[Online]

Available at: <u>https://blog.logrocket.com/product-management/what-is-</u> <u>iterative-incremental-development-process-examples/</u> [Accessed 4 August 2023].

T.Gross, 2003. Security analysis of the SAML single sign-on browser/artifact profile. *19th Annual Computer Security Applications Conference*.

Teleport, 2022. *How OAuth 2.0 Works*. [Online] Available at: <u>https://goteleport.com/blog/how-oauth-authentication-works/</u> [Accessed 25 August 2023].

Teleport, 2022. *What is OIDC / How OIDC Works*. [Online] Available at: <u>https://goteleport.com/blog/how-oidc-authentication-works/</u> [Accessed 25 August 2023].

Temi Bidjerano & Joan Newman, 2010. Autonomy in After-School Activity Choice Among Preadolescents From Taiwan and the United States. *The Journal of Early Adolescence*, 30(5), pp. 733-764.

Testbytes, 2019. What is Spiral Model? Advantages and Disadvantages. [Online]

Available at: <u>https://www.testbytes.net/blog/spiral-model-advantages-and-</u> <u>disadvantages/</u>

[Accessed 26 August 2022].

TheStar,2022.https://www.thestar.com.my/news/education/2022/12/18/starting-them-young.[Online]Available at: https://www.thestar.com.my/news/education/2022/12/18/starting-them-young[Accessed 25 July 2023].

TheStar, 2022. Why 'kiasu' Malaysian parents must not overdo enrichmentclassesforkids.[Online]Availableat:https://www.thestar.com.my/news/education/2022/12/18/an-enriching-experience[Accessed 7 July 2023].

Vaswani, V., 2010. MySQL Database Usage. s.l.:The McGraw-Hill Companies.Zola,A.,2022.Bootstrap.[Online]Availableat:https://www.techtarget.com/whatis/definition/bootstrap[Accessed 10 March 2024].

APPENDICES

Appendix A: System Usability Test Results











Participant: 5

Name: Lim Wei Heng

Age: 28

Occupation: Badminton Coach

User Satisfaction Survey

 I think that I would like to use this system frequently

 I found the system unnecessarily complex

3. I thought the system was easy to use

- I think that I would need the support of a technical person to be able to use this system
- I found the various functions in this system were well integrated
- I thought there was too much inconsistency in this system
- I would imagine that most people would learn to use this system very quickly
- 8. I found the system very cumbersome to use
- I felt very confident using the system
- I needed to learn a lot of things before I could get going with this system









Participant 1:

Test Case ID	UAT-U-001		
Module	User Login		
Executed By	Khoo Siew Im		
Execution Date	22/4/2024		
Test Scenario		Status	Comment
Able to log in with registered account		Pass	
Able to log in with valid email and password		Pass	
Able to log in with Google SSO credentials		Pass	
Able to log in with Facebook SSO credentials		Pass	
Able to log in with remembered credentials		Pass	

Test Case ID	UAT-U-002		
Module	User Registration		
Executed By	Khoo Siew Im		
Execution Date	22/4/2024		
Test Scenario		Status	Comment

Able to register a new account with valid username, email, phone	Pass	
number, password and confirm password		
Able to register a new account with unique email	Pass	
Able to register a new account with Google SSO credentials	Pass	
Able to register a new account with Facebook SSO credentials	Pass	

Test Case ID	UAT-U-003		
Module	User Profile		
Executed By	Khoo Siew Im		
Execution Date	22/4/2024		
Test Scenario		Status	Comment
Able to view own profile details		Pass	
Able to update own profile details		Pass	
Able to change password		Pass	
Able to change phone number		Pass	

Test Case ID	UAT-U-004
Module	Activity Search
Executed By	Khoo Siew Im

Execution Date	22/4/2024		
Test Scenario		Status	Comment
Able to search an activity with activity name		Pass	
Able to search an activity by category name		Pass	
Able to search an activity by subcategory name		Pass	
Able to view the search results in filter page		Pass	
Able to view "No results found" message when search results is does		Pass	
not have matching activities			

Test Case ID	UAT-U-005		
Module	Activity Advanced Filtering		
Executed By	Khoo Siew Im		
Execution Date	22/4/2024		
Test Scenario		Status	Comment
Able to filter activities by date (from Old to New)		Pass	
Able to filter activities by date (from New to Old)		Pass	
Able to filter activities by price (from Low to High)		Pass	
Able to filter activities by price (from High to Low)		Pass	
Able to filter activities by category		Pass	
Able to filter activities by class size		Pass	

Able to filter activities by frequency	Pass			
Able to filter activities by state	Pass			
Able to filter activities by price range	Pass			
Able to drag the slider handles to adjust the minimum and maximum	Pass			
price values				
Able to see the price range values update dynamically as the slider	Pass			
handles are moved				
Able to set a specific price range by clicking on a point along the slider	Pass			
track				
Able to observe the corresponding activities update based on the	Pass			
selected price range				
Able to filter activities with multiple criteria such as category, class size	Pass			
and frequency				
Able to view the instant filter result without needing to click any button	Pass			
Able to see the activities dynamically update based on the selected	Pass			
criteria				
Able to deselect checkboxes to refine the filter criteria and observe the	Pass			
updated activity list accordingly				
Able to view "No results found" message when filter results is does not	Pass			
have matched activities				
Test Case ID	UAT-U-006			
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Module	Activity Details			
Executed By	Khoo Siew Im	Khoo Siew Im		
Execution Date	22/4/2024			
Test Scenario	I	Status	Comment	
Able to navigate to the activity	y details page by clicking on a specific	Pass		
activity				
Able to view comprehensive de	tails about the selected activity including	Pass		
its name, category, location, p	pricing, age group, class size, duration,			
activity schedule, and time				
Able to see additional information such as activity description and the		Pass		
name of the school hosting the activity in the description tab				
Able to click on the school na	me to redirect to the activity provider's	Pass		
profile for more information				
Able to initiate communication	with the service provider by clicking on	Pass		
the "Ask a Question" button				
Able to access detailed location information including the complete		Pass		
address of the school or learning centre hosting the activity in the				
location tab				
Able to view a map view that di	splays the precise location of the activity	Pass		

Able to view user reviews and ratings for the activity	Pass	
Able to see the total rating for the activity	Pass	
Able to view the percentage breakdown of ratings for each star rating	Pass	
category		
Able to view "No reviews and ratings yet" message if there are no	Pass	
reviews and ratings		
Able to switch between different tabs (Description, Location, Review)	Pass	
to explore different aspects of the activity		
Able to add the activity in the wishlist by clicking the "bookmark" icon	Pass	
Able to enrol in the activity by clicking the "Enrol Now" button	Pass	

Test Case ID	UAT-U-007			
Module	Learner Enrolment	Learner Enrolment		
Executed By	Khoo Siew Im	Khoo Siew Im		
Execution Date	22/4/2024	22/4/2024		
Test Scenario		Status	Comment	
Able to enrol a child in activity		Pass		
Able to enrol multiple children in activity simultaneously		Pass		
Able to view correct activity information including activity name, day,		Pass		
date, location and total amount				

Able to view accurate schedule details for the activity	Pass	
Able to view the total amount correctly updated when enrolling two or	Pass	
more children		
Able to add new learner by clicking the "Add Learner button"	Pass	
Able to fill in all learner information such as name, age and gender	Pass	
Able to remove the learner by clicking the "trash" icon next to their	Pass	
information		
Able to click the "Next" button to proceed payment	Pass	

Test Case ID	UAT-U-008			
Module	Activity Payment	Activity Payment		
Executed By	Khoo Siew Im	Khoo Siew Im		
Execution Date	22/4/2024			
Test Scenario		Status	Comment	
Able to make payment		Pass		
Able to view the activity name and total amount again		Pass		
Able to confirm the payment by clicking the "Pay" button to make		Pass		
payment				
Able to receive a confirmation	message after successful payment	Pass		

Able to view the receipt after completing the payment process	Pass	
Able to view the correct receipt details including transaction ID, activity	Pass	
name, total amount, payment date and status		

Test Case ID	UAT-U-009		
Module	Chat		
Executed By	Khoo Siew Im		
Execution Date	22/4/2024		
Test Scenario	cenario Status Comment		Comment
Able to chat with service prov	ider	Pass	
Able to view the chat history	ble to view the chat history		
Able to receive notification		Pass	

Test Case ID	UAT-U-010		
Module	Wishlist		
Executed By	Khoo Siew Im		
Execution Date	22/4/2024		
Test Scenario		Status	Comment
Able to add activity to wishlist Pass		Pass	

Able to view wishlist	Pass	
Able to remove activity from wishlist	Pass	

Test Case ID	UAT-U-011			
Module	Learner Enrolment	Learner Enrolment		
Executed By	Khoo Siew Im	Khoo Siew Im		
Execution Date	22/4/2024			
Test Scenario		Status	Comment	
Able to view enrolled activities		Pass		
Able to search enrolment history based on the criteria such as activity		Pass		
name, activity provider, transaction Id, amount, payment date and status				
Able to receive email notification	ons for upcoming activities	Pass		

Test Case ID	UAT-U-012		
Module	Learner Schedule		
Executed By	Khoo Siew Im		
Execution Date	22/4/2024		
Test Scenario		Status	Comment
Able to view schedule details of enrolled activities Pass		Pass	

Able to search schedule based on the criteria such as activity name,	Pass	
subcategory, location, date, time, duration, day, frequency, learner name		
and learner status		

Test Case ID	UAT-U-013			
Module	User Review and Rating	User Review and Rating		
Executed By	Khoo Siew Im	Khoo Siew Im		
Execution Date	22/4/2024			
Test Scenario Status Comment			Comment	
Able to view reviews and rating	ratings for activities Pass			
Able to submit review and ratir	ating after enrolment Pass			
Able to view own review and r	ating history	Pass		

Participant 2:

Test Case ID	UAT-U-001		
Module	User Login		
Executed By	Eric Kang Zhui Xin		
Execution Date	22/4/2024		
Test Scenario	Status Comment		
Able to log in with registered a	ed account Pass		
Able to log in with valid email	e to log in with valid email and password Pass		
Able to log in with Google SSO credentials Pass			
Able to log in with Facebook S	zebook SSO credentials Pass		
Able to log in with remembered	d credentials	Pass	

Test Case ID	UAT-U-002			
Module	User Registration			
Executed By	Eric Kang Zhui Xin	Eric Kang Zhui Xin		
Execution Date	22/4/2024			
Test Scenario	Status Comment			
Able to register a new accou	Int with valid username, email, phone Pass			
number, password and confirm	password			

Able to register a new account with unique email	Pass	
Able to register a new account with Google SSO credentials	Pass	
Able to register a new account with Facebook SSO credentials	Pass	

Test Case ID	UAT-U-003			
Module	User Profile			
Executed By	Eric Kang Zhui Xin	Eric Kang Zhui Xin		
Execution Date	22/4/2024			
Test Scenario		Status	Comment	
Able to view own profile detail	etails Pass			
Able to update own profile deta	letails Pass			
Able to change password		Pass		
Able to change phone number		Pass		

Test Case ID	UAT-U-004		
Module	Activity Search		
Executed By	Eric Kang Zhui Xin		
Execution Date	22/4/2024		
Test Scenario	·	Status	Comment

Able to search an activity by activity name	Pass	
Able to search an activity by category name	Pass	
Able to search an activity by subcategory name	Pass	
Able to view the search results in filter page	Pass	
Able to view "No results found" message when search results is does	Pass	
not have matching activities		

Test Case ID	UAT-U-005		
Module	Activity Advanced Filtering		
Executed By	Eric Kang Zhui Xin		
Execution Date	22/4/2024		
Test Scenario	Status Comment		
Able to filter activities by date	to filter activities by date (from Old to New) Pass		
Able to filter activities by date	Filter activities by date (from New to Old) Pass		
Able to filter activities by price	Able to filter activities by price (from Low to High) Pass		
Able to filter activities by price (from High to Low)		Pass	
Able to filter activities by category		Pass	
Able to filter activities by class size		Pass	
Able to filter activities by frequ	iency	Pass	

Able to filter activities by state	Pass	
Able to filter activities by price range	Pass	
Able to drag the slider handles to adjust the minimum and maximum	Pass	
price values		
Able to see the price range values update dynamically as the slider	Pass	
handles are moved		
Able to set a specific price range by clicking on a point along the slider	Pass	
track		
Able to observe the corresponding activities update based on the	Pass	
selected price range		
Able to filter activities with multiple criteria such as category, class size	Pass	
and frequency		
Able to view the instant filter result without needing to click any button	Pass	
Able to see the activities dynamically update based on the selected	Pass	
criteria		
Able to deselect checkboxes to refine the filter criteria and observe the	Pass	
updated activity list accordingly		
Able to view "No results found" message when filter results is does not	Pass	
have matched activities		

Test Case ID	UAT-U-006		
Module	Activity Details		
Executed By	Eric Kang Zhui Xin		
Execution Date	22/4/2024		
Test Scenario		Status	Comment
Able to navigate to the activity	y details page by clicking on a specific	Pass	
activity			
Able to view comprehensive de	tails about the selected activity including	Pass	
its name, category, location, p	pricing, age group, class size, duration,		
activity schedule, and time			
Able to see additional information such as activity description and the		Pass	
name of the school hosting the activity in the description tab			
Able to click on the school na	me to redirect to the activity provider's	Pass	
profile for more information			
Able to initiate communication	with the service provider by clicking on	Pass	
the "Ask a Question" button			
Able to access detailed location information including the complete		Pass	
address of the school or learning centre hosting the activity in the			
location tab			
Able to view a map view that displays the precise location of the activity		Pass	
Able to view user reviews and	ratings for the activity	Pass	

Able to see the total rating for the activity	Pass	
Able to view the percentage breakdown of ratings for each star rating	Pass	
category		
Able to view "No reviews and ratings yet" message if there are no	Pass	
reviews and ratings		
Able to switch between different tabs (Description, Location, Review)	Pass	
to explore different aspects of the activity		
Able to add the activity in the wishlist by clicking the "bookmark" icon	Pass	
Able to enrol in the activity by clicking the "Enrol Now" button	Pass	

Test Case ID	UAT-U-007		
Module	Learner Enrolment		
Executed By	Eric Kang Zhui Xin		
Execution Date	22/4/2024		
Test Scenario	Status Comment		
Able to enrol a child in activity	vity Pass		
Able to enrol multiple children in activity simultaneously Pass			
Able to view correct activity information including activity name, day,		Pass	
date, location and total amount			
Able to view accurate schedule	details for the activity	Pass	

Able to view the total amount correctly updated when enrolling two or	Pass	
more children		
Able to add new learner by clicking the "Add Learner button"	Pass	
Able to fill in all learner information such as name, age and gender	Pass	
Able to remove the learner by clicking the "trash" icon next to their	Pass	
information		
Able to click the "Next" button to proceed payment	Pass	

Test Case ID	UAT-U-008			
Module	Activity Payment	Activity Payment		
Executed By	Eric Kang Zhui Xin			
Execution Date	22/4/2024			
Test Scenario		Status	Comment	
Able to make payment		Pass		
Able to view the activity name and total amount again		Pass		
Able to confirm the payment by clicking the "Pay" button to make		Pass		
payment				
Able to receive a confirmation message after successful payment		Pass		
Able to view the receipt after co	ompleting the payment process	Pass		

Able to view the correct receipt details including transaction ID, activity	Pass	
name, total amount, payment date and status		

Test Case ID	UAT-U-009			
Module	Chat	Chat		
Executed By	Eric Kang Zhui Xin	Eric Kang Zhui Xin		
Execution Date	22/4/2024			
Test Scenario	Status Comment		Comment	
Able to chat with service provi	der	Pass		
Able to view the chat history		Pass		
Able to receive notification		Pass		

Test Case ID	UAT-U-010		
Module	Wishlist		
Executed By	Eric Kang Zhui Xin		
Execution Date	22/4/2024		
Test Scenario		Status	Comment
Able to add activity to wishlist		Pass	
Able to view wishlist		Pass	

Able to remove activity from wishlist	Pass	
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Test Case ID	UAT-U-011			
Module	Learner Enrolment	Learner Enrolment		
Executed By	Eric Kang Zhui Xin	Eric Kang Zhui Xin		
Execution Date	22/4/2024			
Test Scenario	Status Comment		Comment	
Able to view enrolled activities	Able to view enrolled activities			
Able to search enrolment history based on the criteria such as activity		Pass		
name, activity provider, transaction Id, amount, payment date and status				
Able to receive email notification	ons for upcoming activities	Pass		

Test Case ID	UAT-U-012		
Module	Learner Schedule		
Executed By	Eric Kang Zhui Xin		
Execution Date	22/4/2024		
Test Scenario	Status Comment		
Able to view schedule details of	f enrolled activities	Pass	

Able to search schedule based on the criteria such as activity name,	Pass	
subcategory, location, date, time, duration, day, frequency, learner name		
and learner status		

Test Case ID	UAT-U-013			
Module	User Review and Rating	User Review and Rating		
Executed By	Eric Kang Zhui Xin			
Execution Date	22/4/2024			
Test Scenario	enario Status Comment			
Able to view reviews and rating	tings for activities Pass			
Able to submit review and ratir	ting after enrolment Pass			
Able to view own review and r	ating history	Pass		

Participant 3:

Test Case ID	UAT-U-001		
Module	User Login		
Executed By	Cheah Pei Shin		
Execution Date	22/4/2024		
Test Scenario	Status Comment		
Able to log in with registered a	A account Pass		
Able to log in with valid email	o log in with valid email and password Pass		
Able to log in with Google SSO credentials		Pass	
Able to log in with Facebook S	book SSO credentials Pass		
Able to log in with remembered	d credentials	Pass	

Test Case ID	UAT-U-002		
Module	User Registration		
Executed By	Cheah Pei Shin		
Execution Date	22/4/2024		
Test Scenario	Status Comment		
Able to register a new accou	int with valid username, email, phone Pass		
number, password and confirm	password		

Able to register a new account with unique email	Pass	
Able to register a new account with Google SSO credentials	Pass	
Able to register a new account with Facebook SSO credentials	Pass	

Test Case ID	UAT-U-003		
Module	User Profile		
Executed By	Cheah Pei Shin		
Execution Date	22/4/2024		
Test Scenario	-	Status	Comment
Able to view own profile deta	ils	Pass	
Able to update own profile de	tails	Pass	
Able to change password		Pass	
Able to change phone number	ſ	Pass	

Test Case ID	UAT-U-004		
Module	Activity Search		
Executed By	Cheah Pei Shin		
Execution Date	22/4/2024		
Test Scenario	·	Status	Comment

Able to search an activity by activity name	Pass	
Able to search an activity by category name	Pass	
Able to search an activity by subcategory name	Pass	
Able to view the search results in filter page	Pass	
Able to view "No results found" message when search results is does	Pass	
not have matching activities		

Test Case ID	UAT-U-005			
Module	Activity Advanced Filtering			
Executed By	Cheah Pei Shin	Cheah Pei Shin		
Execution Date	22/4/2024			
Test Scenario	Status Comment			
Able to filter activities by date	e (from Old to New) Pass			
Able to filter activities by date	e (from New to Old) Pass			
Able to filter activities by price	e (from Low to High) Pass			
Able to filter activities by price (from High to Low) Pass				
Able to filter activities by category		Pass		
Able to filter activities by class size		Pass		
Able to filter activities by frequ	iency	Pass		

Able to filter activities by state	Pass	
Able to filter activities by price range	Pass	
Able to drag the slider handles to adjust the minimum and maximum	Pass	
price values		
Able to see the price range values update dynamically as the slider	Pass	
handles are moved		
Able to set a specific price range by clicking on a point along the slider	Pass	
track		
Able to observe the corresponding activities update based on the	Pass	
selected price range		
Able to filter activities with multiple criteria such as category, class size	Pass	
and frequency		
Able to view the instant filter result without needing to click any button	Pass	
Able to see the activities dynamically update based on the selected	Pass	
criteria		
Able to deselect checkboxes to refine the filter criteria and observe the	Pass	
updated activity list accordingly		
Able to view "No results found" message when filter results is does not	Pass	
have matched activities		

Test Case ID	UAT-U-006			
Module	Activity Details			
Executed By	Cheah Pei Shin			
Execution Date	22/4/2024	22/4/2024		
Test Scenario		Status	Comment	
Able to navigate to the activity	y details page by clicking on a specific	Pass		
activity				
Able to view comprehensive de	tails about the selected activity including	Pass		
its name, category, location, p	pricing, age group, class size, duration,			
activity schedule, and time				
Able to see additional information such as activity description and the		Pass		
name of the school hosting the activity in the description tab				
Able to click on the school name to redirect to the activity provider's		Pass		
profile for more information				
Able to initiate communication	with the service provider by clicking on	Pass		
the "Ask a Question" button				
Able to access detailed location information including the complete		Pass		
address of the school or learning centre hosting the activity in the				
location tab				
Able to view a map view that di	splays the precise location of the activity	Pass		
Able to view user reviews and ratings for the activity		Pass		

Able to see the total rating for the activity	Pass	
Able to view the percentage breakdown of ratings for each star rating	Pass	
category		
Able to view "No reviews and ratings yet" message if there are no	Pass	
reviews and ratings		
Able to switch between different tabs (Description, Location, Review)	Pass	
to explore different aspects of the activity		
Able to add the activity in the wishlist by clicking the "bookmark" icon	Pass	
Able to enrol in the activity by clicking the "Enrol Now" button	Pass	

Test Case ID	UAT-U-007			
Module	Learner Enrolment	Learner Enrolment		
Executed By	Cheah Pei Shin	Cheah Pei Shin		
Execution Date	22/4/2024			
Test Scenario	Status Comment			
Able to enrol a child in activity	enrol a child in activity Pass			
Able to enrol multiple children in activity simultaneously P		Pass		
Able to view correct activity information including activity name, day,		Pass		
date, location and total amount				
Able to view accurate schedule	details for the activity	Pass		

Able to view the total amount correctly updated when enrolling two or	Pass	
more children		
Able to add new learner by clicking the "Add Learner button"	Pass	
Able to fill in all learner information such as name, age and gender	Pass	
Able to remove the learner by clicking the "trash" icon next to their	Pass	
information		
Able to click the "Next" button to proceed payment	Pass	

Test Case ID	UAT-U-008			
Module	Activity Payment	Activity Payment		
Executed By	Cheah Pei Shin	Cheah Pei Shin		
Execution Date	22/4/2024	22/4/2024		
Test Scenario	Status Comment		Comment	
Able to make payment		Pass		
Able to view the activity name and total amount again		Pass		
Able to confirm the payment by clicking the "Pay" button to make		Pass		
payment				
Able to receive a confirmation message after successful payment		Pass		
Able to view the receipt after co	ompleting the payment process	Pass		

Able to view the correct receipt details including transaction ID, activity	Pass	
name, total amount, payment date and status		

Test Case ID	UAT-U-009		
Module	Chat		
Executed By	Cheah Pei Shin		
Execution Date	22/4/2024		
Test Scenario		Status	Comment
Able to chat with service provide	to chat with service provider		
Able to view the chat history		Pass	
Able to receive notification		Pass	

Test Case ID	UAT-U-010		
Module	Wishlist		
Executed By	Cheah Pei Shin		
Execution Date	22/4/2024		
Test Scenario		Status	Comment
Able to add activity to wishlist	st Pass		
Able to view wishlist		Pass	

ble to remove activity from wishlist	Pass	
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Test Case ID	UAT-U-011			
Module	Learner Enrolment	Learner Enrolment		
Executed By	Cheah Pei Shin			
Execution Date	22/4/2024			
Test Scenario		Status		Comment
Able to view enrolled activities		Pass		
Able to search enrolment history based on the criteria such as activity		Pass		
name, activity provider, transaction Id, amount, payment date and status				
Able to receive email notification	ons for upcoming activities	Pass		

Test Case ID	UAT-U-012		
Module	Learner Schedule		
Executed By	Cheah Pei Shin		
Execution Date	22/4/2024		
Fest Scenario Status Comment		Comment	
Able to view schedule details of enrolled activities		Pass	

Able to search schedule based on the criteria such as activity name,	Pass	
subcategory, location, date, time, duration, day, frequency, learner name		
and learner status		

Test Case ID	UAT-U-013			
Module	User Review and Rating			
Executed By	Cheah Pei Shin	Cheah Pei Shin		
Execution Date	22/4/2024			
Test Scenario Status		Status	Comment	
Able to view reviews and rating	to view reviews and ratings for activities Pass			
Able to submit review and rating after enrolment		Pass		
Able to view own review and r	ating history	Pass		

Participant 4:

Test Case ID	UAT-S-016			
Module	Service Provider Login			
Executed By	Shery Lim			
Execution Date	22/4/2024			
Test Scenario	cenario Status Comment			Comment
Able to log in with correct service provider role and, valid email and		Pass		
password				

Test Case ID	UAT-S-017			
Module	Service Provider Registration	Service Provider Registration		
Executed By	Shery Lim	Shery Lim		
Execution Date	22/4/2024			
Test Scenario		Status	Comment	
Able to fill up the registration form with valid details		Pass		
Able to receive an email notification about their account status is		Pass		
approved or rejected				

Test Case ID	UAT-S-018		
Module	Manage Profile		
Executed By	Shery Lim		
Execution Date	22/4/2024		
Test Scenario		Status	Comment
Able to view own profile	Pass		
Able to update own profile info	ormation	Pass	

Test Case ID	UAT-S-019			
Module	Manage Activity	Manage Activity		
Executed By	Shery Lim			
Execution Date	22/4/2024	22/4/2024		
Test Scenario	Status Comment		Comment	
Able to view activity list	ble to view activity list			
Able to create new activity		Pass		
Able to update specific activity information		Pass		
Able to delete an activity		Pass		
Able to search an activity		Pass		
Able to sort the criteria by asce	ending or descending order	Pass		

Test Case ID	UAT-S-020			
Module	Manage Calendar	Manage Calendar		
Executed By	Shery Lim	Shery Lim		
Execution Date	22/4/2024			
Test Scenario		Status	Comment	
Able to view the activity/event name and time for an activity in the		Pass		
calendar				
Able to view calendar in different view options		Pass		
Able to change the month		Pass		

Test Case ID	UAT-S-021			
Module	Manage Enrolment			
Executed By	Shery Lim	Shery Lim		
Execution Date	22/4/2024	22/4/2024		
Test Scenario Status Comment		Comment		
Able to view the activity with e	<i>w</i> the activity with enrolled learner list Pass			
Able to notify all learner's paren	nt by clicking on the "Notify All" button Pass			
for a specific activity				

Test Case ID	UAT-S-022	UAT-S-022		
Module	Manage Transaction	Manage Transaction		
Executed By	Shery Lim	Shery Lim		
Execution Date	22/4/2024	22/4/2024		
Test Scenario		Status	Comment	
Able to view the user transact	ion list	Pass		
Able to view specific user tran	nsaction details Pass			
Able to search the transaction		Pass		
Able to sort the criteria with a	scending or descending order	Pass		

Test Case ID	UAT-S-023			
Module	Manage Review and Rating			
Executed By	Shery Lim	Shery Lim		
Execution Date	22/4/2024			
Test Scenario	Status Comment			
Able to view the user review an	nd rating list Pass			
Able to update the user review	aser review and rating by publishing it to user Pass			
Able to update the user review and rating by unpublishing it Pass				
Able to search the review and rating Pass				
Able to sort the criteria with as	cending or descending order	Pass		

Test Case ID	UAT-S-024			
Module	Manage Learner	Manage Learner		
Executed By	Shery Lim	Shery Lim		
Execution Date	22/4/2024	22/4/2024		
Test Scenario	Status Comment		Comment	
Able to view the learner list		Pass		
Able to add new learner		Pass		
Able to update the learner deta	ils	Pass		
Able to delete a learner from an activity		Pass		
Able to search the learner		Pass		
Able to sort the criteria with as	cending or descending order	Pass		

Test Case ID	UAT-S-025		
Module	Manage Parent		
Executed By	Shery Lim		
Execution Date	22/4/2024		
Test Scenario		Status	Comment
Able to view the parent list	Pass		
Able to add new user in to the s	system	Pass	

Able to view specific parent details with their enrolled child	Pass	
Able to search for a specific parent	Pass	
Able to sort the criteria with ascending or descending order	Pass	

Participant 5:

Test Case ID	UAT-S-016	UAT-S-016		
Module	Service Provider Login	Service Provider Login		
Executed By	Ong Han Yee	Ong Han Yee		
Execution Date	22/4/2024	22/4/2024		
Test Scenario	Status Comment			
Able to log in with correct s	rvice provider role and, valid email and Pass			
password				

Test Case ID	UAT-S-017			
Module	Service Provider Registration	Service Provider Registration		
Executed By	Ong Han Yee	Ong Han Yee		
Execution Date	22/4/2024			
Test Scenario		Status	Comment	
Able to fill up the registration form with valid details		Pass		
Able to receive an email not	receive an email notification about their account status is Pass			
approved or rejected				

Test Case ID	UAT-S-018			
Module	Manage Profile			
Executed By	Ong Han Yee	Ong Han Yee		
Execution Date	22/4/2024			
Test Scenario		Status	Comment	
Able to view own profile	Pass			
Able to update own profile info	file information Pass			

Test Case ID	UAT-S-019			
Module	Manage Activity			
Executed By	Ong Han Yee	Ong Han Yee		
Execution Date	22/4/2024			
Test Scenario	Status Comment		Comment	
Able to view activity list		Pass		
Able to create new activity		Pass		
Able to update specific activity	vity information Pass			
Able to delete an activity		Pass		
Able to search an activity		Pass		
Able to sort the criteria by asce	ending or descending order	Pass		

Test Case ID	UAT-S-020			
Module	Manage Calendar	Manage Calendar		
Executed By	Ong Han Yee			
Execution Date	22/4/2024			
Test Scenario	Status Comment		Comment	
Able to view the activity/event name and time for an activity in the		Pass		
calendar				
Able to view calendar in different view options		Pass		
Able to change the month		Pass		

Test Case ID	UAT-S-021		
Module	Manage Enrolment		
Executed By	Ong Han Yee		
Execution Date	22/4/2024		
Test Scenario Status Comment		Comment	
Able to view the activity with e	e activity with enrolled learner list Pass		
Able to notify all learner's paren	nt by clicking on the "Notify All" button Pass		
for a specific activity			

Test Case ID	UAT-S-022		
Module	Manage Transaction		
Executed By	Ong Han Yee		
Execution Date	22/4/2024		
Test Scenario		Status	Comment
Able to view the user transaction list		Pass	
Able to view specific user transaction details		Pass	
Able to search the transaction		Pass	
Able to sort the criteria with ascending or descending order		Pass	

Test Case ID	UAT-S-023			
Module	Manage Review and Rating			
Executed By	Ong Han Yee			
Execution Date	22/4/2024			
Test Scenario		Status	Comment	
Able to view the user review and rating list		Pass		
Able to update the user review and rating by publishing it to user		Pass		
Able to update the user review and rating by unpublishing it		Pass		
Able to search the review and rating		Pass		
Able to sort the criteria with ascending or descending order		Pass		
Test Case ID	UAT-S-024			
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Module	Manage Learner			
Executed By	Ong Han Yee	Ong Han Yee		
Execution Date	22/4/2024			
Test Scenario		Status	Comment	
Able to view the learner list		Pass		
Able to add new learner		Pass		
Able to update the learner details		Pass		
Able to delete a learner from an activity		Pass		
Able to search the learner		Pass		
Able to sort the criteria with ascending or descending order		Pass		

Test Case ID	UAT-S-025		
Module	Manage Parent		
Executed By	Ong Han Yee		
Execution Date	22/4/2024		
Test Scenario		Status	Comment
Able to view the parent list	Pass		
Able to add new user in to the system Pass			

Able to view specific parent details with their enrolled child	Pass	
Able to search for a specific parent	Pass	
Able to sort the criteria with ascending or descending order	Pass	

Participant 7:

Test Case ID	UAT-A-014			
Module	Admin Login			
Executed By	Loh Yong Bin			
Execution Date	22/4/2024			
Test Scenario		Status	Comment	
Able to log in with correct admin role and, valid email and password		Pass		

Test Case ID	UAT-A-015		
Module	Manage Service Provider		
Executed By	Loh Yong Bin		
Execution Date	22/4/2024		
Test Scenario		Status	Comment
Able to view the list of service provider registration requests		Pass	
Able to approve a service provider registration request and email is		Pass	
automatically sent to service provider			

Able to reject a service provider registration request and email is	Pass	
automatically sent to service provider		
Able to views the details of a specific service provider	Pass	
Able to search for a specific service provider	Pass	
Able to sort the criteria by ascending or descending order	Pass	
Able to delete a service provider	Pass	

Participant 8:

Test Case ID	UAT-A-014		
Module	Admin Login		
Executed By	Lim Yan Wen		
Execution Date	22/4/2024		
Test Scenario		Status	Comment
Able to log in with correct admin role and, valid email and password		Pass	

Test Case ID	UAT-A-015		
Module	Manage Service Provider		
Executed By	Lim Yan Wen		
Execution Date	22/4/2024		
Test Scenario		Status	Comment
Able to view the list of service provider registration requests		Pass	
Able to approve a service provider registration request and email is		Pass	
automatically sent to service provider			

Able to reject a service provider registration request and email is	Pass	
automatically sent to service provider		
Able to views the details of a specific service provider	Pass	
Able to search for a specific service provider	Pass	
Able to sort the criteria by ascending or descending order	Pass	
Able to delete a service provider	Pass	