

DEVELOPMENT OF WEBSITE RELATED TO BADMINTON

By

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ABSTRACT

Despite the government's announcement that all businesses can operate as normal, the government still encourages people and businesses to strictly follow SOP policies to prevent the spread of the virus and reduce the number of confirmed cases. However, it is still a disadvantage for traditional badminton stores because customers need to strictly abide by the SOP policy which they may not be able to view the badminton products, unable to purchase easily and can only attract customers who visit their stores. Besides, many badminton societies lack online platforms to post their events and watch events (and news) posted by others. Therefore, this project titled "Development of Website Related to Badminton", is being developed to create an effective and user-friendly online badminton website by providing a racket recommendation function to propose a few suitable rackets to customers according to their condition. The website not only provides shopping functions such as browsing products, adding them to the cart, and making checkout, but it also allows users to view recent news about badminton and be able to post badminton events on the website. For the admin part, the admin is able to view and manage products and manage the posting events by user. The project is carried out using the RAD (Rapid Application Development) methodology and consists of 4 phases: requirement planning, user design, rapid construction, and cutover. The front-end development of this project is mostly done with HTML, CSS, JavaScript, and jQuery, while the server-side development is done with PHP and MySQL.

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LIST OF ABBREVIATIONS

<i>SOP</i>	Standard Operating Procedure
<i>GUI</i>	Graphical User Interface
<i>CRUD</i>	Create, Retrieve, Update and Delete
<i>HTML</i>	Hypertext Markup Language
<i>CSS</i>	Cascading Style Sheet
<i>SCSS</i>	Syntactically Awesome Style Sheet
<i>PHP</i>	Hypertext Preprocessor
<i>MySQL</i>	My Structured Query Language
<i>MCO</i>	Movement Control Order
<i>SOP</i>	Standard Operating Procedure
<i>RAD</i>	Rapid Application Development

Chapter 1

Introduction

1.1 Background Information

Badminton is a popular sport among Malaysians. Since the Sidek Brother won Malaysia's first Olympic medal in the 1992 Summer Olympics [1], the Malaysian badminton sports organization has been trying to encourage badminton players to participate in the Olympics. So far, Malaysia has won nine badminton Olympic medals. Datuk Lee Chong Wei is the Malaysian player who contributed most of the Olympic medals in badminton. He has won silver medals in Olympic Beijing 2008, London 2012, and Rio de Janeiro 2016 [2]. He is also the pride of Malaysia and the idol of the people, which is also one of the important reasons badmintons gain more attention in Malaysia. Compared to football; badminton is still the number one sport in Malaysia due to its global appeal said by former Minister of Youth and Sports Khairy [3]. Another reason badminton is popular is it can improve people's fitness as the players will have to move, lunge, extend and jump regularly during the match. The sport offers the entire body a comprehensive workout [4].

With the striking of the pandemic (COVID-19) in 2020, business income in various fields has been greatly affected because the government officially announced Movement Control Order (MCO) which does not allow people to cross states and all the businesses must strictly abide by the Standard Operating Procedure (SOP) set by the government in order to prevent the spreading of the virus. So, customers are unable to visit the shop physically and it is difficult for the shop owner to sell their products face-to-face including badminton accessories leading to the revenue performance has been greatly reduced. According to Wan Junaid said, "Compared to MCO 2.0, MCO 1.0's restrictions affected 72% of corporate processes but MCO 2.0 online affected 35%" which can prove that MCO affected business operation seriously [5]. However, the government announced that it allows all businesses and any sports activities to gradually open but encourage social distancing and follow strict SOP. Most medium

or small private badminton societies are lacked an online platform to promote their upcoming badminton competition events.

With the advent of the information technology era, it is an opportunity to help badminton stores to improve their income and suggest suitable rackets based on the needs and conditions of badminton players. In addition, it can help the private society to have an online platform to promote their badminton competition events.

The online badminton website will improve the revenue of badminton stores during the pandemic period, and it is also considered another business opportunity for badminton store to promote their business on the internet. Users can purchase badminton items such as rackets, shuttlecock, badminton shoes, string, and other items. Besides, the customers can add the amount of the item based on their ability and demand by using the website. Users can use the search bar and filtering function to find out their preferred items. Later, they can add the items to the shopping cart to store their preferred items for later purchasing. The system also consists of recommendation function that recommends rackets to users based on their condition and requirement. The website will allow people to post and promote any badminton matches which allows anyone to join. Besides, it is also the providing latest news for its users to update on any latest information about badminton.

1.2 Problem Statement and Motivation

During the pandemic, people are not allowed to cross the state and prohibit to purchase any sports items physically. As a result, customers are unable to visit the store to buy the products and the shop owners are unable to introduce suitable badminton rackets to customers face to face. Later, though the government announces that people can literately cross states and perform any sports, the government encourages people to have less interaction and follow the SOP.

Most badminton websites did not provide a platform to let badminton lover or user post their upcoming activities to inform those who are interested to join their event and also only able to browse badminton items on the website. In other words, most badminton

websites are only existing business and marketing purposes. Therefore, most of them can only post their badminton events through social media or their own private social groups and even face-to-face communication. However, this is inefficient to attract people from different places who are interesting in badminton stuff to join. Moreover, less badminton websites have these platforms to provide the latest news about badminton on their website to let customers read the latest news related to badminton.

Besides that, most websites are lack of recommendation function to propose a few suitable rackets to users according to their conditions. Users are unable to determine the rackets that are suit their conditions since many websites only allow users to purchase the suitable racket according to price and brand. Therefore, they are unable to use a suitable racket while playing and eventually may decide to abandon it.

The motivation of this project is to develop a badminton website system that is more user-friendly in Malaysia to help nation's local badminton stores to adapt to the pandemic situations. Even though the government allows all businesses and activities to operate normally, the website will be useful in both situations. Other than that, the project is driven to provide a platform to let some of the private clubs or communities post their competition events and users can read the latest news on badminton. Lastly, the motivation of this project is to develop a platform to assist users in getting recommended suitable equipment based on their condition and requirement.

1.3 Project Objectives

The main objective of this project is to develop a user-friendly badminton website for users. Users can enjoy purchasing badminton products or get a few suitable rackets based on their condition.

i. Posting function to allow people to post their upcoming events to update the customers

The event page of the website allows user to post their poster or image of upcoming badminton events and also able to write down some related and detailed information such as the address and personal contact of the event on

the post. The post will be submitted and approved by the administrator. Moreover, the event page not only can view the events that are posted by others but also, can view the latest badminton news to know what happens in the badminton field.

ii. Recommendation function to the customers

The recommendation function will assist the users who have no idea or do not know how to select the suitable racket by suggesting a few suitable rackets according to their conditions. The recommendation will be based on the conditions such as skill level, game type, the weight of the racket, brand, and others to recommend a few rackets to the user.

1.4 Project Scope and Direction

The scope of the “Yu-Yi Badminton” website proposed in this project is to allow local badminton stores to have a more user-friendly online badminton platform to sell badminton items. There are some functions and features implemented into the website which will make the online badminton website to be more specialized and user-friendly. For example, some important features like create and login user account, Create, Retrieve, Update and Delete (CRUD) item to or from the shopping cart, recommendation racket feature, post badminton event function, search function, sorting and filtering badminton product function, outputs latest badminton news feature and checkout function and admin panel.

i. Register & Login Module

Users have to register their user account before access to the website shopping cart page. The registration page will require user to fill up their detailed information such as email address, username, and password. After doing the registration part, the user needs to enter their username and password on the login page for access to the website, but the admin has their own login page to access their administration webpage.

ii. Racket Recommendation Module

Racket recommendation will recommend a few rackets to the user according to what conditions are provided by the user. The condition consists of skill level, game type, the weight of the racket, balance point, and brand. It is a good thing that when users do not have an idea to choose which racket is suitable for them then the recommendation can effectively and efficiently to recommend several rackets to users.

iii. Add to Cart Module

The add to cart module allows the user to add different items to the cart and it will show the image, name, variation, unit price, quantity, and subtotal of the item to indicate what items are added by the user. Moreover, the user can edit the quantity by minus and plus of the item and then the system will calculate the subtotal of the product according to the quantity of the item. Additionally, the user can change the variation of the item such as color, cloth size or shoe size. The user can select all or one item by clicking on the checkbox button to checkout items.

iv. Checkout Module

After the user is determined what item is really to purchase and then the checkout module will get the subtotal of the item and finalize the total price of the item and proceed to make payment by selected payment method.

v. Post event module

Post event module allows the user to post coming badminton events or news of badminton by uploading some images and writing some information. After the user posts the event, the post will be submitted to the administration to get approval by validating the content of the post.

vi. Administration Module

Admin is able to CRUD (Create, View, Update and Delete) product, manage product variables such as color, size, and shoe size, manage racket condition,

manage events, manage order, manage customer, view user contact us and view dashboard.

1.5 Impact, significance, and contribution

Applying this project, it is providing some enhanced features if compared to some existing badminton websites and it is more user friendly for users as well as work efficient for admin. The recommendation feature can effectively and efficiently recommend a few suitable rackets to the users who have no idea or are immature to choose the suitable rackets for themselves according to various conditions such as skill levels, playing style, game types, and other conditions. It is allowing the users to sort the items by name and price in order to find out the racket that they want. In the item areas such as t-shirts, shorts, shoes and others, users can quickly use the sorting feature to sort out the items according to name, price, and popularity. It also allows users to filter the price, color, size, and brand to find the item exactly.

Posting events at the website can help users to promote their upcoming events since most websites do not have the feature to post and promote with images (or posters) and any related contents. Therefore, post event feature is an opportunity to user to promote their upcoming events on the website to let other users who registered on the website to know about the event.

The latest badminton news in the project can let users get the latest news about badminton and the news will keep update by the admin when anything related to badminton has happened, for example, who won the world championship and the performance of our national team in a match.

1.6 Report Organization

This paper is divided into six chapters: Introduction, Literature Review, System Design, Methodology Tools, System Implementation and Testing, and Conclusion.

The problem statement, project background and motivation, project scope, project objectives, project contribution, report organization, and summary are all included in the first chapter of this project's introduction. The second chapter is the literature review carried out on several existing badminton websites in the market to evaluate the strengths and weaknesses of each website. The use cases diagram for the whole system is shown in the third chapter. Each use-use case's case description is also provided. Additionally, a description of the website development's code is provided. The fourth chapter explains the construction process, materials, and specifications. A timeline for this project is also included in this chapter. The overview of the project's implementation is provided in the fifth chapter. Sixth chapter review of the project has completed. Additionally stated are the innovations and contributions provided to this project. The future works in this chapter provide a list of the improvements that can be implemented.

1.7 Chapter 1 Summary

This chapter briefly describes the background of the reason why badminton is very popular in Malaysia and how the traditional badminton store was affected by the COVID-19 pandemic. The problem statement stated several main problems to motivate the developer to implement this project such as traditional badminton stores suffering in the pandemic period since they do not have online badminton website to continue their business and most websites are lacking the important features to make the website to be more user-friendly. The main objective of this project is to build a user-friendly badminton website in order for users can easily operate and get their items. Therefore, this project has to include six modules to develop in order to achieve the objective, which are the register and login module, racket recommendation module, add to cart module, checkout module, post event module, and administration module. Each chapter completed for this project has an overview that is provided in the report organization.

Chapter 2

Literature Review

2.1 Previous works on badminton website

There are some searching online badminton websites systems exist nowadays such as “LI-NING”, “Vsmash Sport” and “SunriseClick”. This chapter reviews on the existing systems and features related to the online badminton website system and some comparisons among them.

2.1.1 LI-NING

LI-NING is the largest badminton business platform in Malaysia. The company’s mission is to supply high-quality sports clothing and equipment to customers who are enthusiastic about sports activities and want to maintain a healthy lifestyle [7]. It is a well-designed Graphical User Interface (GUI) website that has an attractive advertisement part about Li-Ning sports shoe and racket on the home page and the overall design of the website is clear and simple which let customers have a comfortable feel of the environment. There have different categories of products for customers to choose such as it has categorized men and women as well as including other sports products. It also provides a different view of patterns to customers to view the product in different ways such as content and small icon manner. The website is able to change currency based on what are customer choice and it provides English and Chinese languages on the website so that customer can choose their preferred language. There have different contact methods to communicate with them such as Facebook, Instagram, Facebook Messenger, and WhatsApp.

The Li-Ning provides an easy way to build an account which is the user can use their smartphone number or link with their Facebook account. But it is restricted to login methods such as Gmail account or their website user login account. The filtering feature of Li-Ning is provided more options for users to filter the item in order can get the item quickly and exactly.

Moreover, Li-Ning's checkout module will check whether users have included any discount coupons and the total price of item is fulfil the free shipping requirement and then finalize the total price to checkout. After the checkout module has finalized the total price, it will provide three payment methods which are Credit Card, Online Banking, and e-wallet to make payment, and before the user wants to make payment of it, it requires the user to fill out shipping information such as name, mobile number, and full address.

The main difference of the website is provided many different currencies on the website so that different customer who comes from a different country can easily know the price of the product and the login or sign-up module which only requires the customer to sign up with either their available phone number or Facebook account.

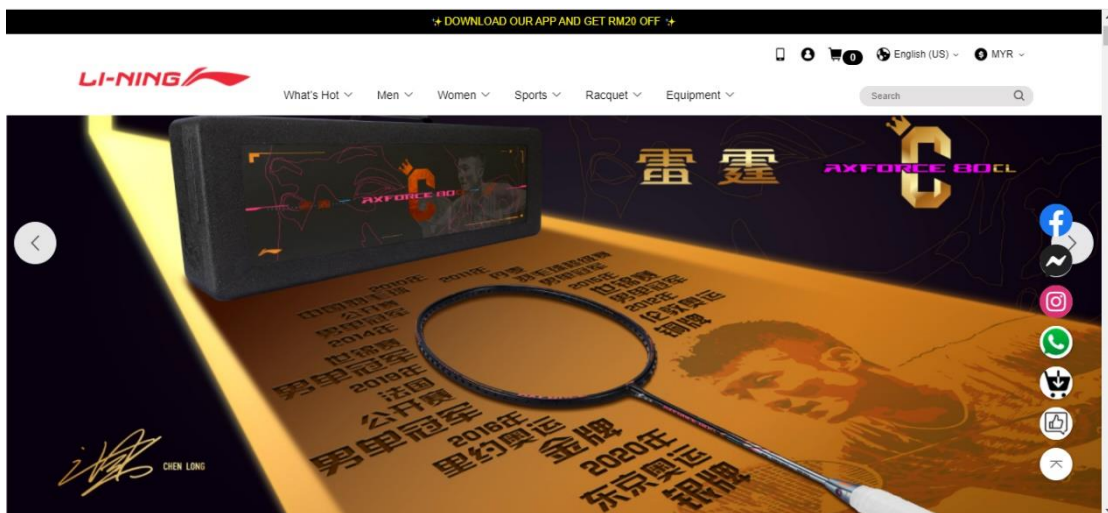


Figure 2.1.1.1 Homepage of LI-NING

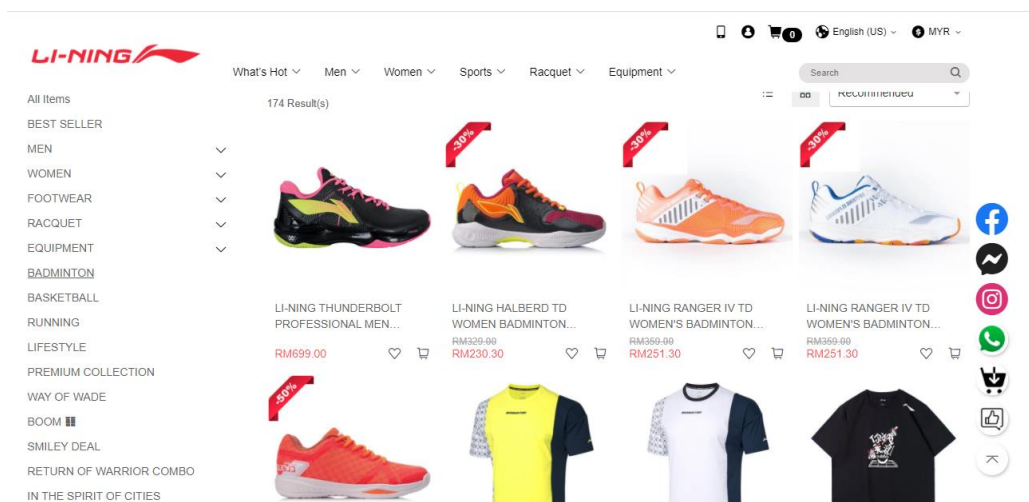


Figure 2.1.1.2 Shopping item of LI-NING

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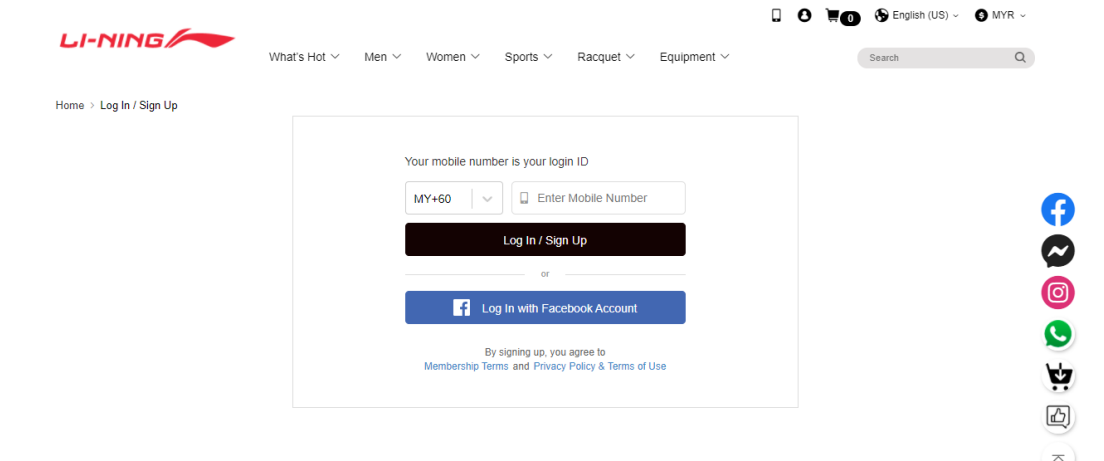


Figure 2.1.1.3 Login page of LI-NING

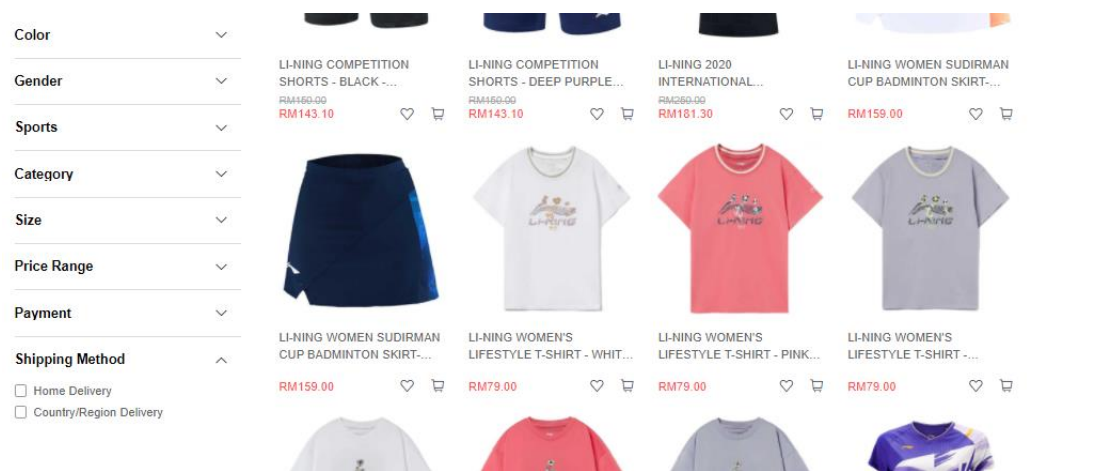


Figure 2.1.1.4 Filtering feature of LI-NING

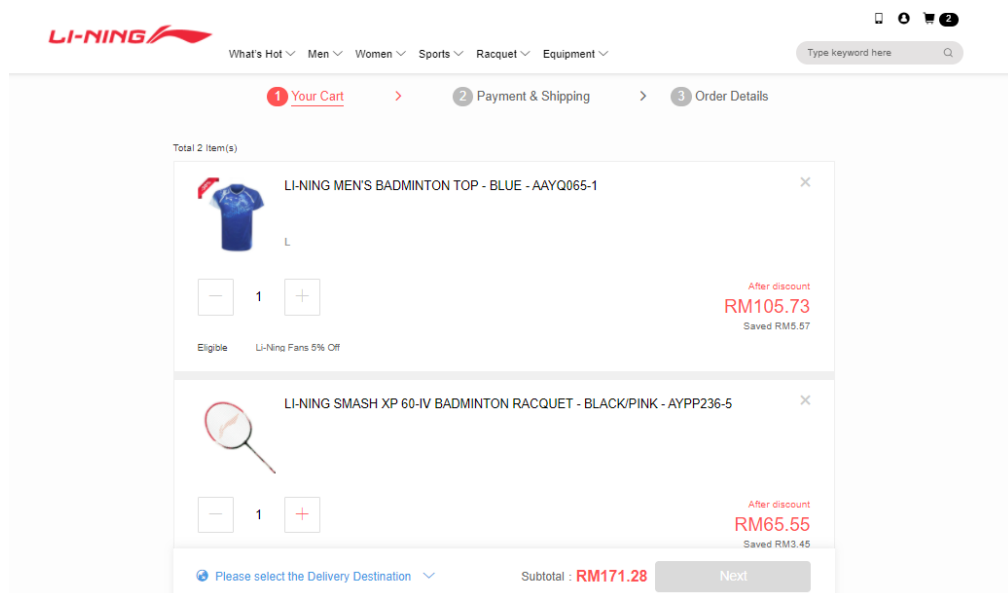


Figure 2.1.1.5 Add to Cart of LI-NING

The screenshot displays the LI-NING website's checkout interface. At the top, the LI-NING logo is on the left, and navigation menus for 'What's Hot', 'Men', 'Women', 'Sports', 'Racquet', and 'Equipment' are in the center. A search bar on the right contains the placeholder text 'Type keyword here'. Below the navigation is a 'Shipping Information' section with a red asterisk. It contains four input fields: 'Full Name' (placeholder: 'Enter Full Name'), 'Mobile Number' (placeholder: '0182064078'), 'Address' (placeholder: 'Please enter a Street Address'), and a location selection area with 'Kedah' selected and dropdowns for 'Please select a City/County' and 'Please select ZIP Code'. Below this is a 'Payment Method' section, also with a red asterisk. It features two main options: 'Online Banking' (selected with a blue checkmark and a blue border) and 'eWallet' (unselected). Underneath these are eight bank logos: Maybank, CIMB BANK, PUBLIC BANK, RHB Bank, Hong Leong Bank, BANK ISLAM, AmBank, and BSN.

Figure 2.1.1.6 Checkout page of LI-NING

Strength

- The overall design of the website is simplified. Users can easily know the purpose of the website and each module is easy to understand.
- Provided guidelines for badminton products. The website has provided guidelines for badminton products to users on how to measure their footwear size and provided size charts of different products for different gender such as cotton tee, jersey apparel, and others.
- Different contact methods. Users can optionally consult with them through different contact methods such as Facebook, Facebook Messenger, Instagram, and WhatsApp.
- Download the website system to smartphones in easy ways. It is available to download the website system in IOS and Android versions and also users can download it by entering their phone number and getting a download link in their message system or they scan the bar code to download it.
- Provide English and Chinese languages on the website. User can use their preferred language to browse the website.

- Provide different country currencies on the website. Users can change the different country currencies to review the price of the badminton product.
- Provide general pre-question topics optional to query them. Users can select a general question topic and fill in some question content to ask them and also can check the inquiry record.
- Can log in to the website in a few steps. The user only needs to log in to the website through a link to their Facebook account or phone number so the user can save some time in the login session.
- Provide more optional filtering features. Users have multiple options of filtering to filter the item such as color, gender, sports, category, size of the top, price range and others.

Weakness

- Restricted login method. Users cannot login to the website in different ways such as by email account or their own website login function.
- Do not have an edit function in the shopping cart. Users cannot edit the specification of the product in the shopping cart so led to delete it from the shopping cart and add again the correct specification of the product into the shopping cart.
- Do not have a product description of the product. Product description can provide more detailed information to users to know what the quality and specification of the product are.

2.1.2 Vsmash Sport

Vsmash Sport is a sports website to sells different kinds of brands of badminton, but the main focus is on selling Yonex brand company as well as there has various sports equipment. Therefore, users can browse different brands of rackets such as Li-Ning, Yonex and others. And there are many Yonex brands and other sports equipment for

users to browse. Besides, the overall design of the website is clear and simple, and also users can use the cursor to move on the picture of the product and zoom in on it which is convenient for to users further clearly see the items. The special way of this website is allowed users can use their vpoint after they have placed an order. The vpoint can treat as a discount point to let users use it to discount on their next purchase. Moreover, the search engine is only provided on the website, and it also provides a filtering feature to filter the name of the product. Other than that, the checkout module of Vsmash is allowed to run in two modes which are user mode, and guest mode. The Vsmash will select the default address as the shipping address, and it also allows the user to edit the default address but for the guest user who is not a register account on the website, the person needs to fill up their shipping address to proceed to place order action.

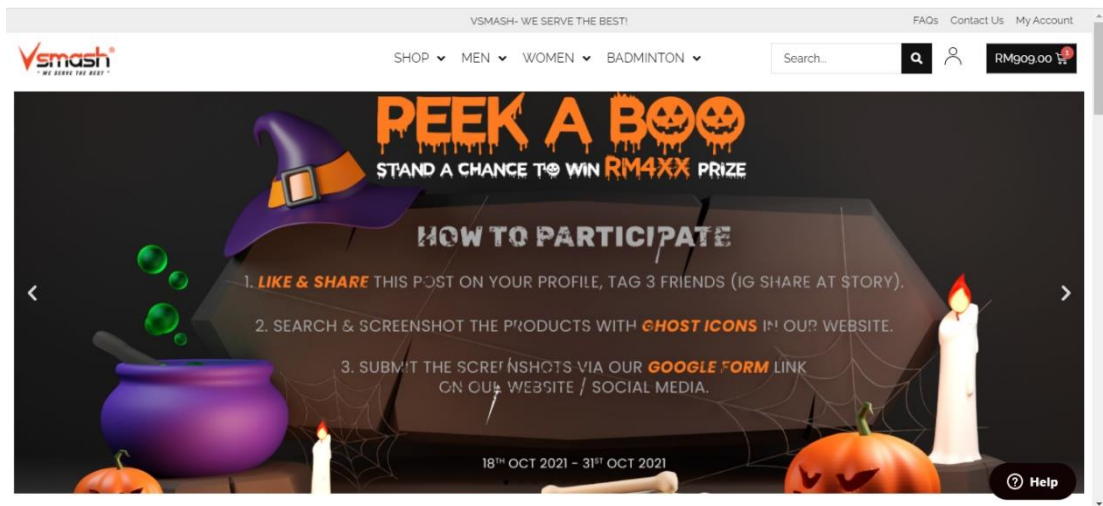


Figure 2.1.2.1 Homepage of Vsmash

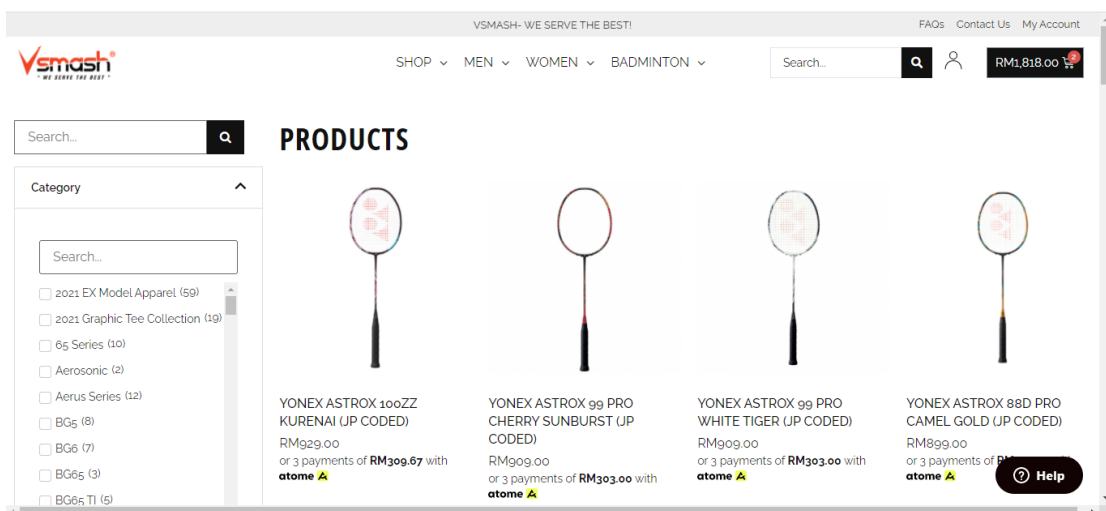


Figure 2.1.2.2 Shopping item of Vsmash

Login

Username or email address *

Password *

Log in

Remember me

[Lost your password?](#)

Figure 2.1.2.3 Login page of Vsmash

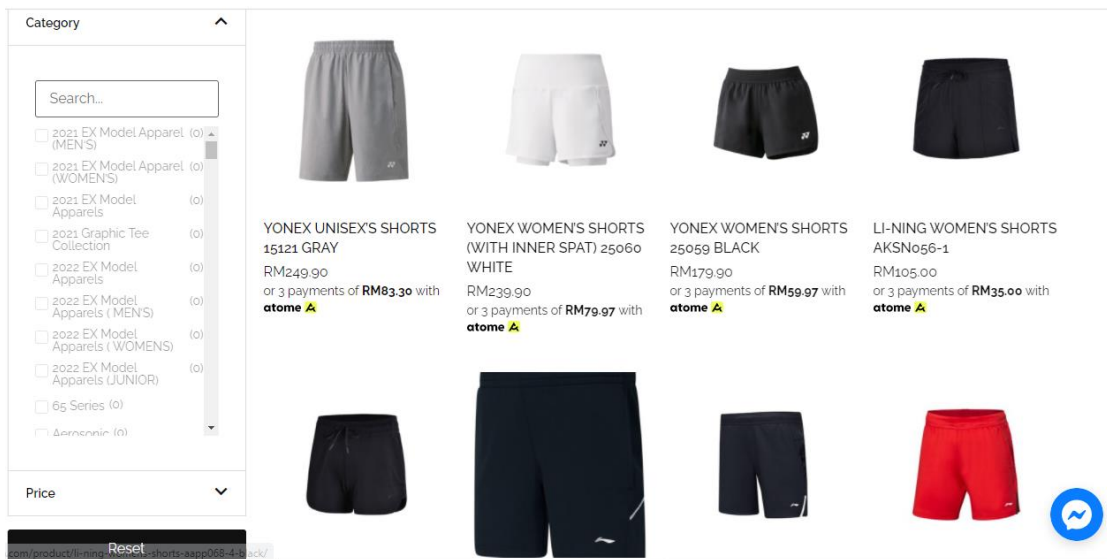


Figure 2.1.2.4 Filtering feature of Vsmash

CART

Remove	Thumbnail	Product Title	Price	Quantity	Total
		YONEX POWER CUSHION 88 DIAL 2 UNISEX TURQUOISE GRAY - UK 5/EUR 37.5/CM 23.5/US 5.5 Add on with Special Price (PWP) (RM49.00): YONEX JAPAN SOCKS 19120 - RUBY	RM568.90	<input type="text" value="1"/>	RM568.90
		LI-NING WOMEN'S SHORTS AAPP072-1 (V) BLACK - S(ASIA) / XS(EURO) / 2XS(US) Custom Printing (Embroidery)(Extra 7 days to process): None (RM0.00)	RM79.00	<input type="text" value="1"/>	RM79.00
<input type="text" value="Coupon Code"/> <input type="button" value="Apply Coupon"/>					<input type="button" value="Update Cart"/>

BASKET TOTALS

Subtotal	RM647.90
Total	RM664.90

[Proceed to checkout](#)

Figure 2.1.2.5 Add to Cart of Vsmash

BILLING DETAILS

First name * Last name *

Country/Region *

Street address *

Town / City *

State / County *

Postcode / ZIP *

Phone *

Email address *

YOUR ORDER

Product	Subtotal
YONEX ASTROX 99 PRO CHERRY SUNBURST (JAPAN) - 3UG6 × 1 Free Grip (Random Colour): AC103 Stringing Service: JAPAN STRING BG65 TITANIUM - YELLOW Tension: 19 Stencil Logo: Yonex Logo- Black	RM909.00
YONEX POWER CUSHION 88 DIAL 2 UNISEX TURQUOISE GRAY - UK 5/EUR 37.5/CM 23.5/US 5.5 × 1 Add on with Special Price (PWP) (RM49.00): YONEX JAPAN SOCKS 19120 - RUBY	RM568.90
LI-NING WOMEN'S SHORTS AAPP072-1 (V) BLACK - S(ASIA) / XS(EURO) / 2XS(US) × 1 Custom Printing (Embroidery)(Extra 7 days to process): None (RM0.00)	RM79.00
Subtotal	RM1,556.90

Figure 2.1.2.6 Checkout of Vsmash

Strength

- The overall design of the website is clear and simple. The color of the website uses brighter and clearer colors, so it makes users excited to browse their website and it is using an interesting font over the webpage.
- User will know how many are left for the particular model. It is displaying the number of how many are left of the particular model on the category session.

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- User can select the pre-listed product categories. It has listed all product categories on category sessions so that user can effectively find out their preferred category of products and also can select multiple kinds of products to see more different types of products.
- User can zoom in on the image of the product. When the user moves their mouse arrow to a certain particular product, it will dynamically change the image, or the user moves their mouse arrow on the picture of the product that will automatically zoom in and out of the picture.
- Provide live customer support. If users have any questions would like to ask, they can chat with a live customer chat to get from helping where they will have one agent to talk with them.
- Display the total price number on the shopping cart icon. Users can easily see the total price number and number of items is added to the shopping cart on the shopping cart icon.
- Provide many specifications of the product. Users have many options to choose different specifications of the product. In another word, different specifications of the product have many optional.
- It will estimate what product the user will like. The website will guess what products will like or used by customers and display the items at the bottom of the webpage.
- Can earn their website vpoint. After users are successfully placed an order for the product and it will automatically give users with equivalent vpoint to how many they are paid. So, users can use these vpoint to discount their next order.
- User can browse their badminton idol items. Users can see and buy what are the badminton equipment used by their badminton idols.
- Checkout module available running guest mode. The Vsmash is available for guest users to check out their items without creating an account of Vsmash.

- Search engine provided at filtering feature. Vsmash provided a search feature on filtering area to let user to search the name of the item in order can quickly and exactly find out the item.

Weakness

- Inconvenient Register and Login method. Users cannot use more convenient ways to register and login the website such as Gmail. Therefore, users need to take some time to key email and password to register and login.
- Don't have edit function on shopping cart session. Users cannot edit the specification of the product in the shopping cart area.
- Inefficient operation of Add to Cart. The Vsmash needs to take a few seconds to add an item into the cart, so it might lead users to lose their patience.

2.1.3 SunriseClick

SunriseClick is a badminton website to sells different kinds of sports equipment as well as sell kid products. It is simple and easy to add items to the shopping cart since just click add to cart button rather than open the item detail webpage and press add cart button. Besides, it provides many different categories of filter functions to find the items. Its shopping cart allows users to update the variable of the item. Users can check out the item as a guest which means users can pay for the item without registering or signing into their user account. However, it did not have live customer service to let users query some questions with customer service staff and it did not support third-party login methods such as Gmail account.

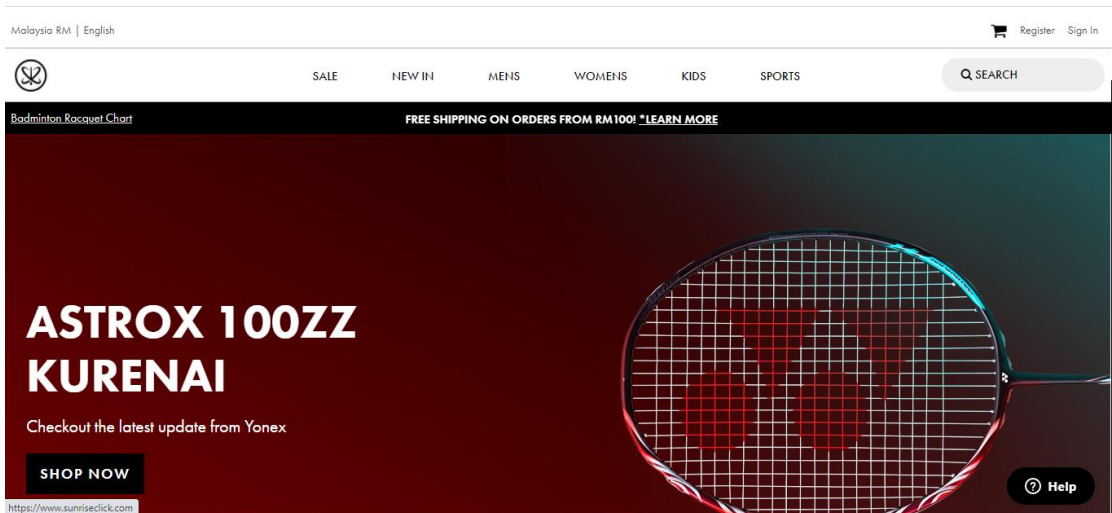


Figure 2.1.3.1 Homepage of SunriseClick

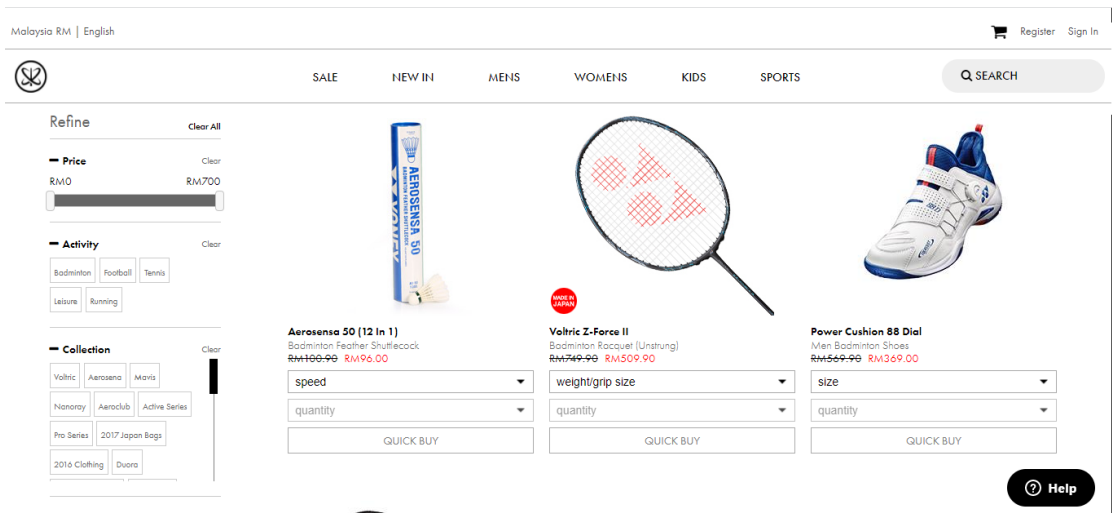


Figure 2.1.3.2 Shopping item of SunriseClick

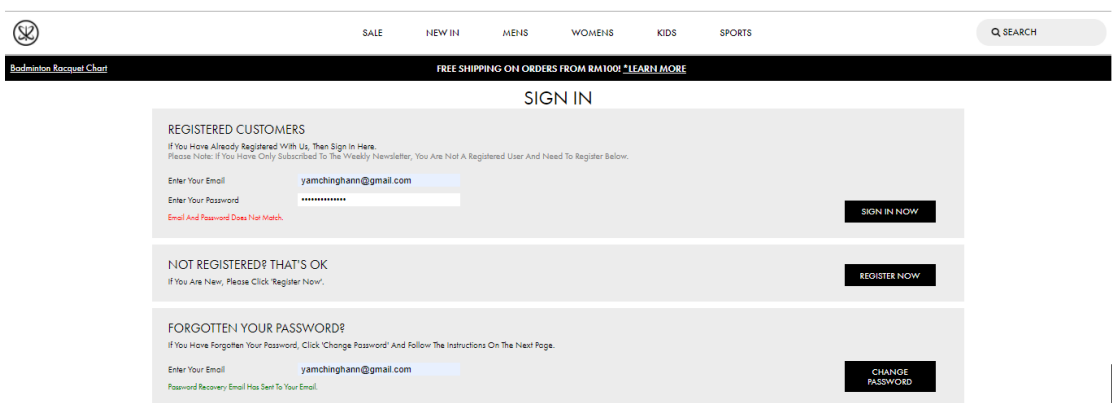


Figure 2.1.3.3 Login page of SunriseClick

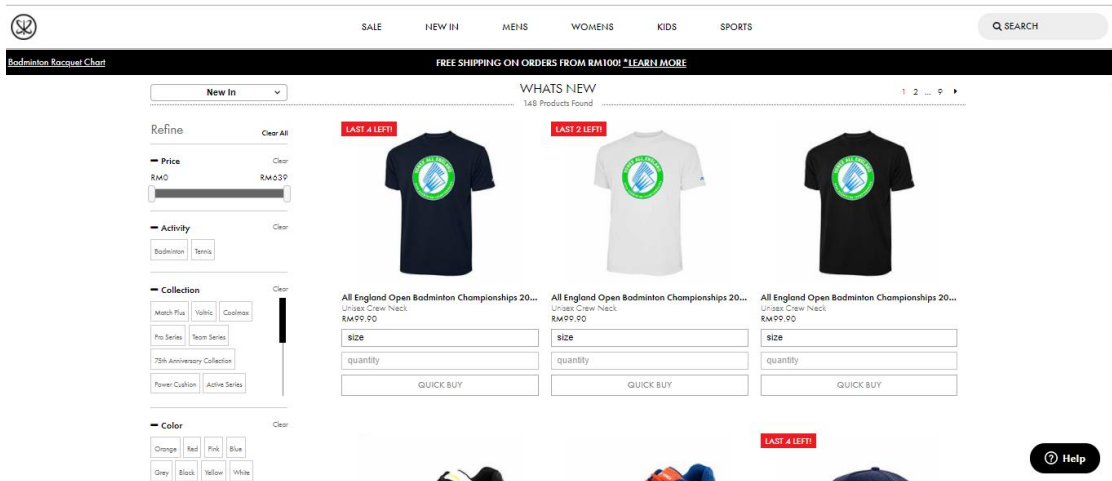


Figure 2.1.3.4 Filtering feature of SunriseClick

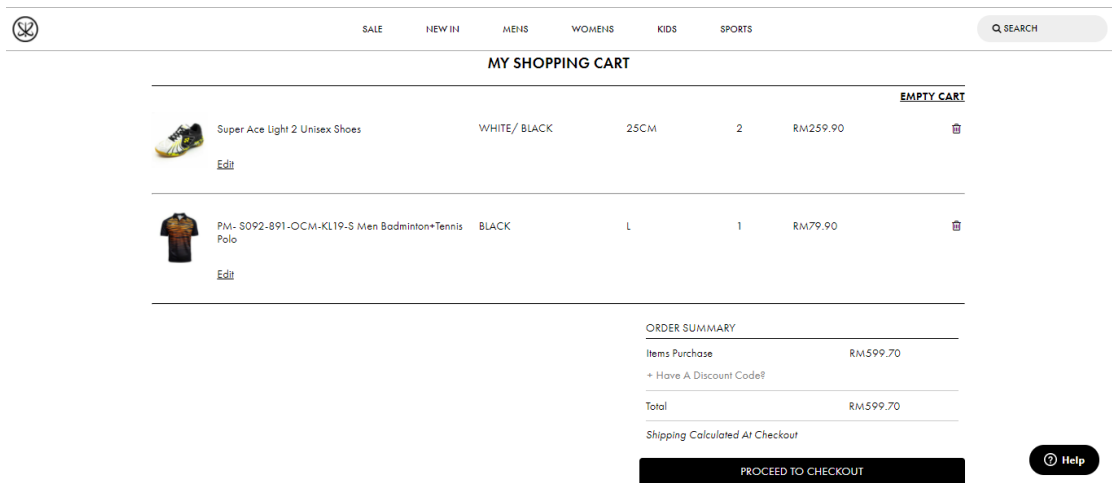


Figure 2.1.3.5 Shopping Cart of SunriseClick

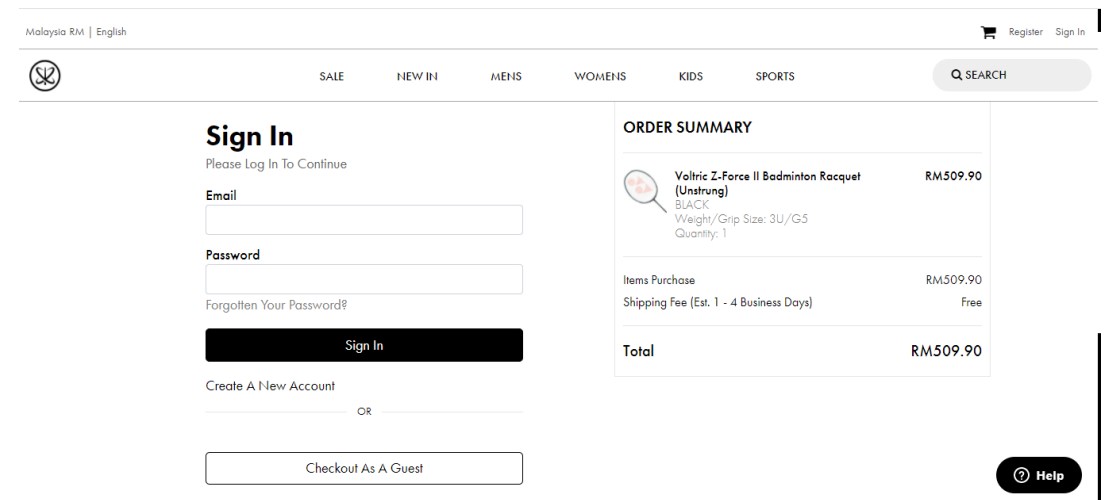


Figure 2.1.3.6 Checkout module of SunriseClick

Strength

- The overall design of the website is clear and simple. The color of the website is comfortable and light color. Most of the module is simple and understandable.
- User can see recently viewed items. The website system will store what items are recently viewed and display them. Therefore, users can solidly remember what products view are frequently.
- User can perform product reviews. Users can give a star rating, enter the review title, and comment to review the item but the review will submit to the administration to approve it.
- Notify when the item restocks feature. Users will receive notifications when the product is restocked so user can purchase that product for the first time.
- User can check out the item as a guest. Sometimes users would like to save time and quickly buy the item, so the feature will be helpful for them.
- Provided different categories of filtering functions. Users can perform further refine in searching the product such as price, weight, gender, and others.
- User is able to edit the specification of the item. Users can amend the specification of the item in the shopping cart session such as can edit color, size of the footwear and others.

Weakness

- Restricted register and login method. Users cannot use register and login the website through a link to their Gmail account or Facebook account so need takes some time in typing a username or password to register or login.
- Inconvenient to open the main page of the item. Users need to right click their mouse on the item to open the main page of the item and then be able to see the detail of the item.

2.2 Chapter 2 Summary

In this chapter, literature reviews of the comparable websites are conducted to assess the website's strengths and drawbacks. In the below, three (LI-NING, Vsmash Sport and SunriseClick) websites have been compared.

Table 2.2.1 Comparison of three badminton websites

	LI-NING	Vsmash Sport	SunriseClick
Overall design of website	Design of the website is simplified.	The design is clear and simple.	The color of website is comfort and simple.
Login and Registration	Yes, but more convenient by allowing third party login method	Yes	Yes
Recommended racket function	No	No	No
Badminton social function	No	No	No
Provide News function	No	No	No
Filtering function	Yes	Yes, but more detail	Yes, but more detail
Sorting function	Yes	Yes	Yes
Shopping Cart function	Yes	Yes	Yes, but more user friendly by available to edit the item's variable
Customer review function	No	No	Yes

Chapter 3

System Design

3.1 Overview

This chapter includes a use case diagram, a description of the system process, and a short explanation of the development process via the project's code.

3.2 Use-Case Diagram

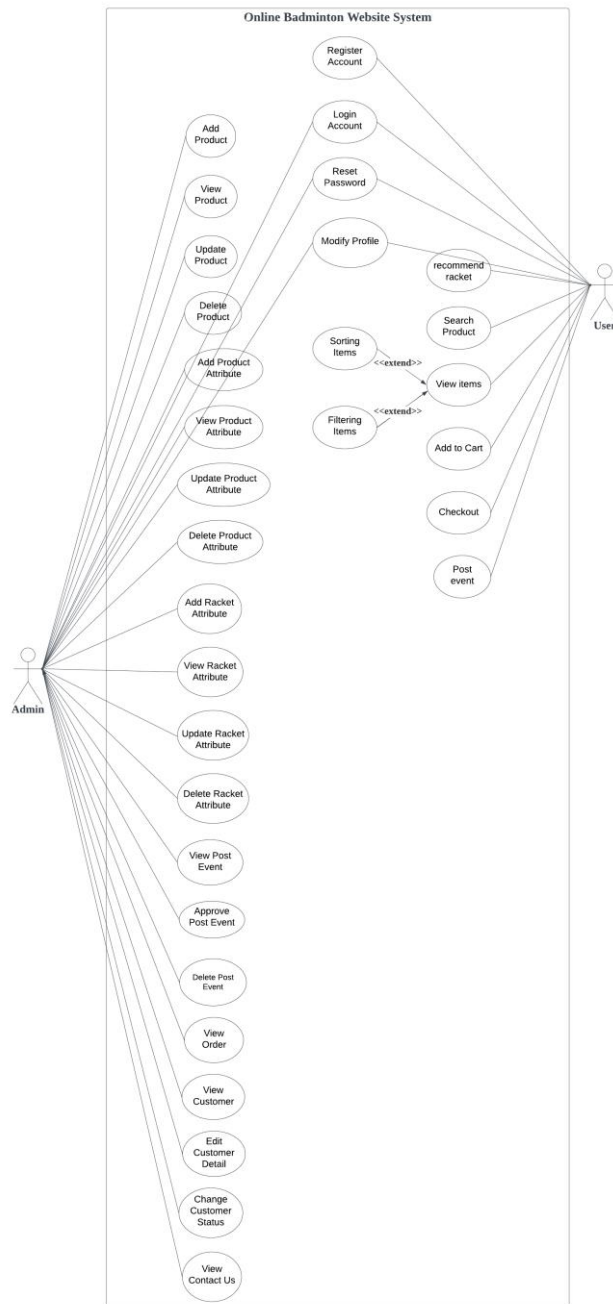


Figure 3.2.1 Use Case Diagram of Online Badminton Website System

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3.3 Use Case Description

Table 3.3.1 Registration Use Case Description

Use Case ID:	0001
Use Case Name:	Register Account
Important Level:	Low
Primary Actor:	User
Stakeholder and Interests:	User – needs to register an account to access the website.
Brief Description:	This use case describes how a user register an account to access the website.
Trigger:	Go to Registration Page of the website
Precondition:	Username or Email is not taken
Normal Flow of Event:	<ol style="list-style-type: none"> 1. Users fill in email address, shipping address, phone number, username, and password. 2. The system will validate whether the email address and username have already been registered. <ul style="list-style-type: none"> • If the account does not exist in the system, the system will create one in order for the user to be able to log in to the website. 3. The system will redirect to login page.
SubFlows:	-
Alternate/Exceptional Flow:	2a. If the account already existed in the system, then the system would pop out a warning message "This account is already existed".

Table 3.3.2 Login Use Case Description

Use Case ID:	0002
Use Case Name:	Login Account

Important Level:	Medium
Primary Actor:	User and Admin
Stakeholder and Interests:	User – needs to login his or her username and password to access the website. Admin – needs to login his or her username and password to access the administration website.
Brief Description:	This use case describes how user and admin can login to the website.
Trigger:	Go to Login Page of the website
Precondition:	An account must exist in the system.
Normal Flow of Event:	<ol style="list-style-type: none"> 1. User and Admin fill in their username and password. 2. The system will validate whether the account exists, and whether the username and password are correct. 3. If the account already exists and the username and password are correct, the system will redirect the admin panel website for the admin and the badminton shopping website for the user.
SubFlows:	-
Alternate/Exceptional Flow:	2a. If the account does not exist and the username and password are invalid, the system will pop out an error message to user and admin.

Table 3.3.3 Add Product Use Case Description

Use Case ID:	0003
Use Case Name:	Add Product
Important Level:	Important
Primary Actor:	Admin

Stakeholder and Interests:	Admin – add product on administration webpage.
Brief Description:	This use case describes how admin adds a product for badminton website.
Trigger:	Clicked on Add Product link in sidebar.
Precondition:	Admin account must be logged
Normal Flow of Event:	<ol style="list-style-type: none"> 1. Admin clicks on the “Add Product” link in the sidebar. 2. The system will redirect to the Add Product webpage where there will be a product detail form to let the admin fill in the product details. 3. After finishing filling in the product details, the admin clicks on the Add Product button to save it in the system.
SubFlows:	-
Alternate/Exceptional Flow:	<p>2a. if the required column is empty, the system will display an error message at the column to indicate empty column.</p> <p>2b. if the product code is duplicated, the system will pop up an alert message to inform the admin.</p>

Table 3.3.4 View Product Use Case Description

Use Case ID:	0004
Use Case Name:	View Product
Important Level:	Important
Primary Actor:	Admin
Stakeholder and Interests:	Admin – view existing product
Brief Description:	This use case describes how admin views existing product

Trigger:	Clicked on View Product link in sidebar.
Precondition:	Admin account must be logged, and product existed
Normal Flow of Event:	<ol style="list-style-type: none"> 1. Admin click on View Product link in sidebar. 2. The system will redirect to View Product webpage and list out all the existing products.
SubFlows:	-
Alternate/Exceptional Flow:	-

Table 3.3.5 Update Product Use Case Description

Use Case ID:	0005
Use Case Name:	Update Product
Important Level:	Important
Primary Actor:	Admin
Stakeholder and Interests:	Admin – update product detail
Brief Description:	This use case describes how admin updates the product detail
Trigger:	Clicked on the Edit button on product list of View Product
Precondition:	Admin account must be logged, and product existed
Normal Flow of Event:	<ol style="list-style-type: none"> 1. Admin click on Edit button on product list of the View Product. 2. The system will redirect to the Update Product webpage and display all the product's detail. 3. Admin can edit the detail information of the product. 4. After finishing the editing, the admin clicks on the Update button to update the product's details.
SubFlows:	-

Alternate/Exceptional Flow:	4a. if the required column is empty, the system will display an error message at the column to indicate empty column. 4b. if the product code is duplicated, the system will pop up an alert message to inform the admin.
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Table 3.3.6 Delete Product Use Case Description

Use Case ID:	0006
Use Case Name:	Delete Product
Important Level:	Important
Primary Actor:	Admin
Stakeholder and Interests:	Admin – delete existing product.
Brief Description:	This use case describes how admin deletes existing product.
Trigger:	Clicked on the Delete button on product list of View Product
Precondition:	Admin account must be logged, and product existed
Normal Flow of Event:	<ol style="list-style-type: none"> 1. Admin click on Delete button on product list of View Product. 2. The system will pop up a confirmation message to get confirmation to delete the product from the admin. 3. If the admin clicks on the OK button, the system will delete the product. Otherwise, just back to normal.
SubFlows:	-
Alternate/Exceptional Flow:	-

Table 3.3.7 Add Product Attribute Use Case Description

Use Case ID:	0007
Use Case Name:	Add Product Attribute
Important Level:	Important
Primary Actor:	Admin
Stakeholder and Interests:	Admin – add product attribute
Brief Description:	This use case describes how admin adds product attribute
Trigger:	Clicked on Add Variation button in an item
Precondition:	Admin account must be logged, and product existed
Normal Flow of Event:	<ol style="list-style-type: none"> 1. Admin click on Add Variation button in an item. 2. System will redirect to Product Attribute page of the item. 3. After that, select one item option such as color, size, and shoes size. 4. The system will list out the variation of the item option such as color: red, blue, green and others. 5. The admin clicks on the Add Attribute button to save the attribute to the product.
SubFlows:	-
Alternate/Exceptional Flow:	4a. if the attribute is duplicated in same the product, the system will pop up an alert message.

Table 3.3.8 View Product Attribute Use Case Description

Use Case ID:	0008
Use Case Name:	View Product Attribute
Important Level:	Important

Primary Actor:	Admin
Stakeholder and Interests:	Admin – view product attribute
Brief Description:	This use case describes how admin views product attribute
Trigger:	Clicked on Add Variation button in an item
Precondition:	Admin account must be logged, and product existed
Normal Flow of Event:	<ol style="list-style-type: none"> 1. Admin clicks on Add Variation button in an item. 2. System will redirect to Product Attribute page of the item. 3. The system will list all product attribute information about the product.
SubFlows:	-
Alternate/Exceptional Flow:	-

Table 3.3.9 Update Product Attribute Use Case Description

Use Case ID:	0009
Use Case Name:	Update Product Attribute
Important Level:	Important
Primary Actor:	Admin
Stakeholder and Interests:	Admin – update product attribute
Brief Description:	This use case describes how admin updates product attribute
Trigger:	Clicked on Add Variation button in an item
Precondition:	Admin account must be logged, and product existed
Normal Flow of Event:	<ol style="list-style-type: none"> 1. Admin clicks on the Edit button at the product attribute list of the product.

	<ol style="list-style-type: none"> 2. The system will redirect to Update Product Attribute webpage. 3. Admin edits the product attribute. 4. After finishing the editing, the admin clicks on the Update Attribute button to update the item's product attribute.
SubFlows:	-
Alternate/Exceptional Flow:	4a. if the attribute is duplicated in same the product, the system will pop up alert message.

Table 3.3.10 Delete Product Attribute Use Case Description

Use Case ID:	0010
Use Case Name:	Delete Product Attribute
Important Level:	Important
Primary Actor:	Admin
Stakeholder and Interests:	Admin – delete product attribute
Brief Description:	This use case describes how admin deletes product attribute
Trigger:	Clicked on Add Variation button in an item
Precondition:	Admin account must be logged, and product existed
Normal Flow of Event:	<ol style="list-style-type: none"> 1. Admin clicks on the Delete button at the product attribute list of the product. 2. The system will delete the product attribute of the product.
SubFlows:	-
Alternate/Exceptional Flow:	-

Table 3.3.11 Add Racket Attribute Use Case Description

Use Case ID:	0011
Use Case Name:	Add Racket Attribute
Important Level:	Important
Primary Actor:	Admin
Stakeholder and Interests:	Admin – add racket attribute
Brief Description:	This use case describes how admin adds racket attribute
Trigger:	Clicked on the Add Racket Attribute at sidebar
Precondition:	Admin account must be logged, and product existed
Normal Flow of Event:	<ol style="list-style-type: none"> 1. Admin selects one racket in the racket selection list. 2. After that, selects one racket attribute such as skill levels, game type, playing style and others. 3. The system will list out the condition of the racket attribute such as skill levels: beginner, intermediate and advanced. 4. The admin clicks on the Add Racket Attribute Condition button to save the attribute to the racket.
SubFlows:	-
Alternate/Exceptional Flow:	4a. if the attribute is duplicated in same the racket, the system will pop up alert message.

Table 3.3.12 View Racket Attribute Use Case Description

Use Case ID:	0012
Use Case Name:	View Racket Attribute
Important Level:	Important
Primary Actor:	Admin

Stakeholder and Interests:	Admin – view racket attribute
Brief Description:	This use case describes how admin views racket attribute
Trigger:	Select one racket in the racket selection list.
Precondition:	Admin account must be logged, and product existed
Normal Flow of Event:	<ol style="list-style-type: none"> 1. Admin selects one racket in the racket selection list. 2. The system will list out all racket attribute information about the racket.
SubFlows:	-
Alternate/Exceptional Flow:	-

Table 3.3.13 Update Racket Attribute Use Case Description

Use Case ID:	00013
Use Case Name:	Update Racket Attribute
Important Level:	Important
Primary Actor:	Admin
Stakeholder and Interests:	Admin – update racket attribute
Brief Description:	This use case describes how admin updates racket attribute
Trigger:	Clicked on the Edit button in the list of racket attributes
Precondition:	Admin account must be logged, and product existed
Normal Flow of Event:	<ol style="list-style-type: none"> 1. Admin clicks on the Edit Button at the racket attribute list of the racket. 2. The system will redirect to Update Racket Attribute webpage. 3. Admin edits the racket attribute.

	4. After finishing the editing, the admin clicks on Update Attribute button to update the racket attribute of the product.
SubFlows:	-
Alternate/Exceptional Flow:	4a. if the racket attribute is duplicated in same the racket, the system will pop up alert message.

Table 3.3.14 Delete Racket Attribute Use Case Description

Use Case ID:	0014
Use Case Name:	Delete Racket Attribute
Important Level:	Important
Primary Actor:	Admin
Stakeholder and Interests:	Admin – delete Racket attribute
Brief Description:	This use case describes how admin deletes racket attribute
Trigger:	Clicked on the Delete button in the list of racket attributes
Precondition:	Admin account must be logged, and product existed
Normal Flow of Event:	<ol style="list-style-type: none"> 1. Admin clicks on the Delete button at the racket attribute list of the racket. 2. The system will delete the racket attribute of the racket.
SubFlows:	-
Alternate/Exceptional Flow:	-

Table 3.3.15 View Post Event Use Case Description

Use Case ID:	0015
Use Case Name:	View Post Event
Important Level:	Important
Primary Actor:	Admin
Stakeholder and Interests:	Admin – view post event
Brief Description:	This use case describes how admin views post event
Trigger:	Clicked on View Post Event at sidebar
Precondition:	Admin account must be logged, and post event existed
Normal Flow of Event:	<ol style="list-style-type: none"> 1. Admin clicks on the View Post Event button in the sidebar. 2. The system will list out all posts submitted by users.
SubFlows:	-
Alternate/Exceptional Flow:	-

Table 3.316 Approve Post Event Use Case Description

Use Case ID:	0016
Use Case Name:	Approve Post Event
Important Level:	Important
Primary Actor:	Admin
Stakeholder and Interests:	Admin – approve post event
Brief Description:	This use case describes how admin approves post event
Trigger:	Clicked on Approve button in the detail post event webpage
Precondition:	Admin account must be logged, and post event existed
Normal Flow of Event:	<ol style="list-style-type: none"> 1. Admin clicks on the View Detail button in the list of post event. 2. The system will redirect to the detail post event webpage to see the detail of the event. 3. The admin can edit the post’s status either approve or reject. 4. The system will update the post status once admin determined the status of the post.
SubFlows:	-
Alternate/Exceptional Flow:	3a if the admin rejects the post and then needs to provide a reason for the rejection.

Table 3.3.17 Delete Post Event Use Case Description

Use Case ID:	0017
Use Case Name:	Delete Post Event
Important Level:	Important
Primary Actor:	Admin

Stakeholder and Interests:	Admin – delete post event
Brief Description:	This use case describes how admin delete post event
Trigger:	Clicked on delete button on a post event
Precondition:	Admin account must be logged, and post event existed
Normal Flow of Event:	<ol style="list-style-type: none"> 1. The admin can delete the post event by clicking on Delete button. 2. The system will remove the post event.
SubFlows:	-
Alternate/Exceptional Flow:	-

Table 3.3.18 View Order Use Case Description

Use Case ID:	0018
Use Case Name:	View Order
Important Level:	Important
Primary Actor:	Admin
Stakeholder and Interests:	Admin – view order
Brief Description:	This use case describes how admin views order
Trigger:	Clicked on View Order button in the sidebar
Precondition:	Admin account must be logged, and order existed
Normal Flow of Event:	<ol style="list-style-type: none"> 1. Admin clicks on the View Order button in the sidebar. 2. The system will list out all orders made by users.
SubFlows:	2a. the admin can click on Order Detail button to see the order detail of the order.

Alternate/Exceptional Flow:	-
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Table 3.3.19 View Customer Use Case Description

Use Case ID:	0019
Use Case Name:	View Customer
Important Level:	Important
Primary Actor:	Admin
Stakeholder and Interests:	Admin – view customer
Brief Description:	This use case describes how the admin views a list of customers.
Trigger:	Clicked on View Customer button in sidebar
Precondition:	Admin account must be logged, and customer account existed
Normal Flow of Event:	<ol style="list-style-type: none"> 1. Admin clicks on the View Customer button in the sidebar 2. The system will redirect to the customer webpage and list out all customer data who registered in this system.
SubFlows:	-
Alternate/Exceptional Flow:	-

Table 3.3.20 Edit Customer Detail Use Case Description

Use Case ID:	0020
Use Case Name:	Edit Customer Detail
Important Level:	Important

Primary Actor:	Admin
Stakeholder and Interests:	Admin – edit customer detail
Brief Description:	This use case describes how edit the customer detail
Trigger:	Clicked on Edit button in the customer data.
Precondition:	Admin account must be logged, and customer account existed
Normal Flow of Event:	<ol style="list-style-type: none"> 1. Admin clicks on the Edit button in the customer data. 2. The system will redirect to the customer detail page and display the customer detail. 3. Once the modification is done, the admin can click the Update button to let the system update the latest customer detail.
SubFlows:	-
Alternate/Exceptional Flow:	-

Table 3.3.21 Change Customer Status Use Case Description

Use Case ID:	0021
Use Case Name:	Change Customer Status
Important Level:	Important
Primary Actor:	Admin
Stakeholder and Interests:	Admin – change customer
Brief Description:	This use case describes how admin change customer status
Trigger:	Clicked on either Active or Deactivate button in the customer data.
Precondition:	Admin account must be logged, and customer account existed

Normal Flow of Event:	<ol style="list-style-type: none"> Admin clicks on the Active or Deactivate button on a customer data. The system will change the customer status.
SubFlows:	-
Alternate/Exceptional Flow:	-

Table 3.3.22 View Contact Us Use Case Description

Use Case ID:	0022
Use Case Name:	View Contact Us
Important Level:	Medium
Primary Actor:	Admin
Stakeholder and Interests:	Admin – view contact us
Brief Description:	This use case describes how admin views contact us
Trigger:	Clicked on View Contact Us button in the sidebar
Precondition:	Admin account must be logged, and contact us record existed
Normal Flow of Event:	<ol style="list-style-type: none"> Admin clicks on the View Contact Us button in the sidebar. The system will list out all Contact Us records made by users.
SubFlows:	-
Alternate/Exceptional Flow:	-

Table 3.3.23 Modify Profile Use Case Description

Use Case ID:	0023
Use Case Name:	Modify Profile
Important Level:	Low
Primary Actor:	Admin and User
Stakeholder and Interests:	Admin – change profile detail User – change profile detail
Brief Description:	This use case describes how admin and user modify his or her profile detail.
Trigger:	Clicked on Profile button
Precondition:	Admin and User account must be logged
Normal Flow of Event:	<ol style="list-style-type: none"> 1. Admin clicks on the Profile button. 2. The system will display the profile detail of the admin and customer. 3. Once the modification is done and then click on the Update button to update the latest data.
SubFlows:	-
Alternate/Exceptional Flow:	-

Table 3.3.24 Recommend Racket Use Case Description

Use Case ID:	0024
Use Case Name:	Recommend Racket
Important Level:	High
Primary Actor:	User
Stakeholder and Interests:	User – get recommend racket by the system

Brief Description:	This use case describes how the system recommend racket to the user.
Trigger:	Clicked on Get Recommendation button in the sidebar
Precondition:	User account must be logged, and racket attribute condition must be added to the racket.
Normal Flow of Event:	<ol style="list-style-type: none"> 1. Users selects the condition based on their badminton condition. 2. After the user has selected the condition, the system will be based on the condition selected by the user to match what are racket are match the user's condition. 3. If the condition is fulfilled, the system will list out a few rackets that have fulfilled the condition of the user. 4. If the condition is not fulfilled, the system will display a message "no data found".
SubFlows:	-
Alternate/Exceptional Flow:	-

Table 3.3.25 Search Product Use Case Description

Use Case ID:	0025
Use Case Name:	Search Product
Important Level:	High
Primary Actor:	User
Stakeholder and Interests:	User – search product
Brief Description:	This use case describes how user search a product by the name of the product.
Trigger:	Type on search bar on the website

Precondition:	-
Normal Flow of Event:	<ol style="list-style-type: none"> 1. User inputs some product name on the search bar. 2. The system will compare the words input by the user. 3. If the name is found in the system, the system will display the product. 4. If the name is not found in the system, the system displays a message” no data found”.
SubFlows:	-
Alternate/Exceptional Flow:	-

Table 3.3.26 View Items Use Case Description

Use Case ID:	0026
Use Case Name:	View item
Important Level:	High
Primary Actor:	User
Stakeholder and Interests:	User – views or brows items on the website
Brief Description:	This use case describes how user views item on the website.
Trigger:	Access to the website
Precondition:	-
Normal Flow of Event:	<ol style="list-style-type: none"> 1. The website will display items to let user to view. 2. Optionally can sorting the item by the item’s name and price. 3. Optionally can filtering the item by adjusting the item’s price, color of the item and brand of the item.
SubFlows:	-

Alternate/Exceptional Flow:	-
-----------------------------	---

Table 3.3.27 Add to Cart Use Case Description

Use Case ID:	0027
Use Case Name:	Add to Cart
Important Level:	High
Primary Actor:	User
Stakeholder and Interests:	User – add item to shopping cart
Brief Description:	This use case describes how users add item to the shopping cart.
Trigger:	Clicked on Add to Cart button
Precondition:	User account must be logged
Normal Flow of Event:	<ol style="list-style-type: none"> 1. Users can add items to the shopping cart. 2. After the user adds an item to the shopping cart, the shopping cart will list out what items are added. 3. User can update the variable and quantity of the item in the shopping cart. 4. User can remove the item from the shopping cart.
SubFlows:	-
Alternate/Exceptional Flow:	-

Table 3.3.28 Checkout Use Case Description

Use Case ID:	0028
Use Case Name:	Checkout
Important Level:	High

Primary Actor:	User
Stakeholder and Interests:	User – checkout item
Brief Description:	This use case describes how user checkout the item in the shopping cart.
Trigger:	Clicked on the Checkout button
Precondition:	User account must be logged, and the shopping cart must have some items.
Normal Flow of Event:	<ol style="list-style-type: none"> 1. Users added an item to the shopping cart. 2. Users press the checkout button. 3. The system proceeds to place an order and make a payment with a selected payment method.
SubFlows:	-
Alternate/Exceptional Flow:	2a. if the item was sold out, the system will require the user to remove the item from the shopping cart before proceeding to checkout.

Table 3.3.29 Post Event Use Case Description

Use Case ID:	0029
Use Case Name:	Post Event
Important Level:	High
Primary Actor:	User
Stakeholder and Interests:	User – post event on the website
Brief Description:	This use case describes how user posts an event on the website
Trigger:	Clicked on Post Event button
Precondition:	User account must be logged

Normal Flow of Event:	<ol style="list-style-type: none"> 1. User can create a post by uploading an image and writing some information. 2. Users can post the event on the website. 3. The system will send the post to the administrator to get approval from the admin. 4. Once the post is approved, then the system will display the post on the event webpage.
SubFlows:	-
Alternate/Exceptional Flow:	4a if the post is rejected, then the user can optionally modify the content of the post event and republish it again.

Table 3.3.30 Reset Password Use Case Description

Use Case ID:	0030
Use Case Name:	Reset Password
Important Level:	High
Primary Actor:	User and Admin
Stakeholder and Interests:	User – reset password Admin – reset password
Brief Description:	This use case describes how user and admin reset his or her password
Trigger:	Clicked reset password button in the Login Page
Precondition:	-
Normal Flow of Event:	<ol style="list-style-type: none"> 1. User and Admin need to enter their email address. 2. The system will validate whether the email exists and whether email is valid. 3. If the email is existing and valid, the system will send a reset password link to the user and admin's email account.

	<ol style="list-style-type: none"> 4. They can click on the reset password link and be redirected to the reset password webpage. 5. User and Admin are required to fill up a new password and confirm password. 6. The system will compare the new password and confirm password. 7. If both passwords are match, the system will update a new password to their account.
SubFlows:	-
Alternate/Exceptional Flow:	<ol style="list-style-type: none"> 3a. If the email is not existing and valid, the system will display an error message. 7a. If both password is not match, the system will display an error message.

3.4 Website Development

3.4.1 Server-Side Development

This website system needs to create a database connection from the MySQL database server in order can perform insert, read, update, and delete data.

```

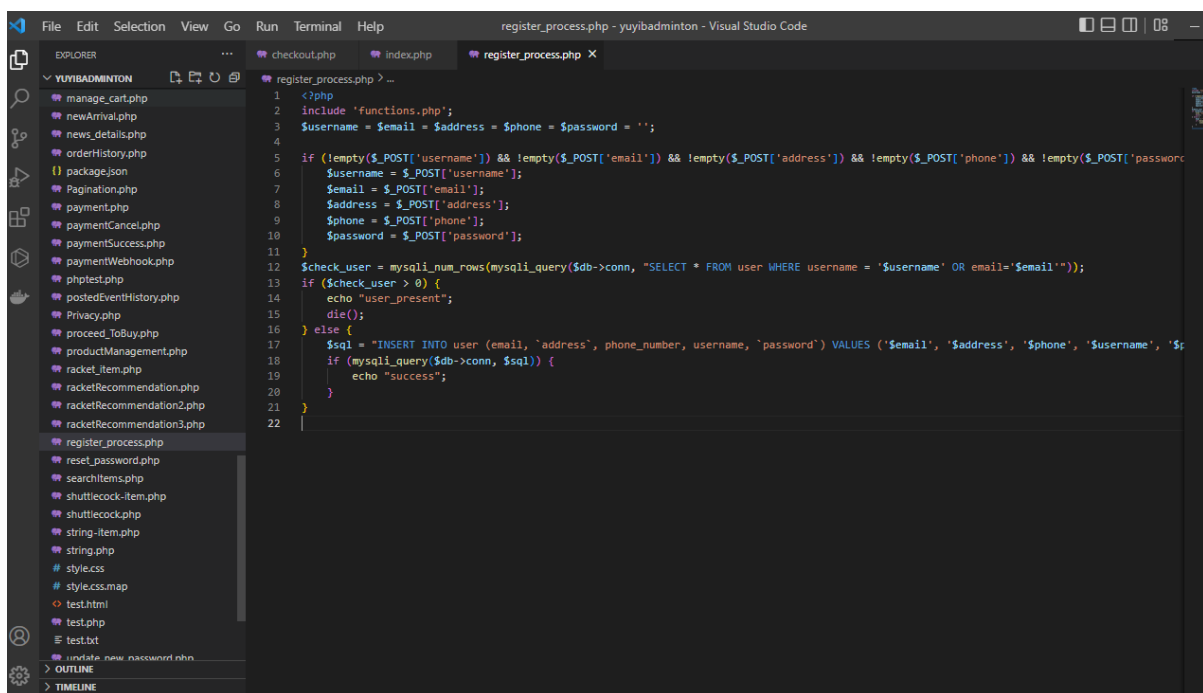
2
3 class DBController
4 {
5     //Database Connection Properties
6     // protected $host = 'localhost';
7     // protected $user = 'yuyi';
8     // protected $password = "yuyi@2022";
9     // protected $database = "badmintondb";
10
11     protected $host = 'localhost';
12     protected $user = 'yuyi';
13     protected $password = "yuyi@2022";
14     protected $database = "badmintondb";
15
16     public $conn = null;
17
18     public function __construct()
19     {
20         $this->conn = mysqli_connect($this->host, $this->user, $this->password, $this->database);
21         if($this->conn->connect_error){
22             echo "Fail" . $this->conn->connect_errno;
23         }
24     }
25
26     public function __destruct()
27     {
28         $this->closeConnection();
29     }
30
31     //for mysql closing connection
32     protected function closeConnection(){
33         if ($this->conn != null){
34             $this->conn->close();
35             $this->conn = null;
36         }
37     }
38 }
39

```

Figure 3.4.1.1 DBController.php

3.4.2 Registration Function Development

Once established a database connection to the project for the registration function. The function needs to read user data from the user table for verification purposes and insert a new user to the user table. When users are provided all required information data after submitting the registration form, the system will read all user information data from the user table database and compare the username and email id which provided by the user to verify whether the username or email id was already taken. If the username or email id was already taken or registered then the system will generate an error message to indicate that the account is already registered, otherwise, the system is just directly inserting new user data into the database to register an account successfully on the website.



```
1 <?php
2 include 'functions.php';
3 $username = $email = $address = $phone = $password = '';
4
5 if (!empty($_POST['username']) && !empty($_POST['email']) && !empty($_POST['address']) && !empty($_POST['phone']) && !empty($_POST['password'])) {
6     $username = $_POST['username'];
7     $email = $_POST['email'];
8     $address = $_POST['address'];
9     $phone = $_POST['phone'];
10    $password = $_POST['password'];
11 }
12 $check_user = mysqli_num_rows(mysqli_query($db->conn, "SELECT * FROM user WHERE username = '$username' OR email= '$email'"));
13 if ($check_user > 0) {
14     echo "user_present";
15     die();
16 } else {
17     $sql = "INSERT INTO user (email, `address`, phone_number, username, `password`) VALUES ('$email', '$address', '$phone', '$username', '$password')";
18     if (mysqli_query($db->conn, $sql)) {
19         echo "success";
20     }
21 }
22 }
```

Figure 3.4.2.1 register_process.php

3.4.3 Login Function Development

The login function will verify whether the username and password provided by the user are valid or not. So, the function will verify the user-provided username and password by putting username and password in the SELECT query to know whether any user data is match them. If the query row results in a return greater than one it means they are valid, and the user account is existing. Therefore, the system will allow the user to log in to the website, otherwise, it is not allowed to log in. After the user login successfully, the system will start a session method for storing user detail such as id and username.

```

1 <?php
2 include 'functions.php';
3 $username = $password = '';
4
5 if (!empty($_POST['username']) && !empty($_POST['password'])) {
6     $username = $_POST['username'];
7     $password = $_POST['password'];
8 }
9
10 $res = mysqli_query($db->conn, "select * from user where username='$username' and password='$password'");
11 $check_user = mysqli_num_rows($res);
12 if ($check_user > 0) {
13     $row = mysqli_fetch_assoc($res);
14     if ($row['status'] == '1') {
15         session_start();
16         $_SESSION['user_login'] = 'yes';
17         $_SESSION['user_id'] = $row['user_id'];
18         $_SESSION['user_name'] = $row['username'];
19         echo "valid";
20     } else {
21         echo "banned";
22     }
23 } else {
24     echo "wrong";
25 }
26

```

Figure 3.4.3.1 login_process.php

3.4.4 Recommendation Function Development

The recommendation function will recommend several suitable rackets to the user by selecting racket conditions such as kill level, game type, playing style, and others. The recommendation function will get all selected racket conditions once the user selected the racket condition, the system will find out which racket item is matching the selected racket condition. If any one of the racket items is matched then the system will return those racket items matched as a recommendation to the user, otherwise, the system will return empty data.

```

257 // normalFilter();
258 // });
259
260 function searchFilter(page_num) {
261     page_num = page_num ? page_num : 0;
262     let action = 'fetch_data';
263     let skill_level = $("input[name='group1']:checked").val();
264     let game_type = $("input[name='group2']:checked").val();
265     let playing_style = $("input[name='group3']:checked").val();
266     let balance_point = $("input[name='group4']:checked").val();
267     let weight = $("input[name='group5']:checked").val();
268     let trademark = get_filter('group6');
269     let filterBy = $('#filterBy').val();
270
271     let parameter = 'page=' + page_num + '&filterBy=' + filterBy + '&action=' + action + '&skill_level=' + skill_level + '&game_type=' +
272     console.log(parameter);
273
274     $.ajax({
275         type: 'POST',
276         url: 'getData2.php',
277         data: 'page=' + page_num + '&filterBy=' + filterBy + '&action=' + action + '&skill_level=' + skill_level + '&game_type=' + game_
278         success: function(html) {
279             $('#recommendation-rackets').html(html);
280         }
281     });
282 }
283
284 function get_filter(class_name) {
285     var filter = [];
286     $('#'+ class_name + ':checked').each(function() {
287         filter.push($(this).val());
288     });
289     return filter;
290 }
291
292 $('.common_selector').click(function() {
293     searchFilter();
294 });
295

```

3.4.4.1 racketRecommendation2.php Pass Racket Condition Data Function

```
if (isset($_POST['page'])) {  
    // Include pagination library file  
    include_once 'Pagination.php';  
  
    // Include database configuration file  
    include 'Functions.php';  
    $query_1 = "SELECT distinct ro.product_id FROM racket_option ro, product p WHERE ro.product_id = p.product_id AND p.category_id = '1'";  
    // $query_1 = "SELECT distinct p.* FROM racket_option ro, product p WHERE ro.product_id = p.product_id AND p.category_id = '1'";  
    $whereSQL = "";  
    $suitableRacket = "";  
  
    // echo "<br>Entering Sort Section";  
  
    if (isset($_POST['skill_level']) && empty($_POST['skill_level']) && $_POST['skill_level'] != 'undefined') {  
        $skill_level = $_POST['skill_level'];  
        //echo $skill_level;  
        // $query_3 = "AND r.skill_level = '" . $_POST['skill_level'] . "'";  
        $whereSQL .= " AND EXISTS (SELECT racketOption_id FROM racket_option ro1 WHERE ro.product_id = ro1.product_id AND ro1.racketCondition_id = '$skill_level')";  
    }  
  
    if (isset($_POST['game_type']) && empty($_POST['game_type']) && $_POST['game_type'] != 'undefined') {  
        $gameType = $_POST['game_type'];  
        // $query_3 .= "AND r.game_type = '" . $_POST['game_type'] . "'";  
        // $and = isset($skill_level) ? "AND" : "";  
        $whereSQL .= " AND EXISTS (SELECT racketOption_id FROM racket_option ro1 WHERE ro.product_id = ro1.product_id AND ro1.racketCondition_id = '$gameType')";  
    }  
  
    if (isset($_POST['playing_style']) && empty($_POST['playing_style']) && $_POST['playing_style'] != 'undefined') {  
        $style = $_POST['playing_style'];  
        // $query_3 .= "AND r.playing_style = '" . $_POST['playing_style'] . "'";  
        // $and = isset($gameType) ? "AND" : "";  
        $whereSQL .= " AND EXISTS (SELECT racketOption_id FROM racket_option ro1 WHERE ro.product_id = ro1.product_id AND ro1.racketCondition_id = '$style')";  
    }  
  
    if (isset($_POST['balance_point']) && empty($_POST['balance_point']) && $_POST['balance_point'] != 'undefined') {  
        $balance = $_POST['balance_point'];  
        // $query_3 .= "AND p.balance_point = '" . $_POST['balance_point'] . "'";  
        // $and = isset($style) ? "AND" : "";  
        $whereSQL .= " AND EXISTS (SELECT racketOption_id FROM racket_option ro1 WHERE ro.product_id = ro1.product_id AND ro1.racketCondition_id = '$balance')";  
    }  
  
    if (isset($_POST['weight']) && empty($_POST['weight']) && $_POST['weight'] != 'undefined') {  
        // $query_3 .= "AND r.weight = '" . $_POST['weight'] . "'";  
        $weight = $_POST['weight'];  
        //echo $weight;  
        // $and = isset($balance) ? "AND" : "";  
        $whereSQL .= " AND EXISTS (SELECT racketOption_id FROM racket_option ro1 WHERE ro.product_id = ro1.product_id AND ro1.racketCondition_id = '$weight')";  
    }  
}
```

3.4.4.2 getData2.php Get Recommendation Function

3.4.5 Post Event News Function Development

Users can publish event news on the website by putting event titles and event content. The system will insert the event detail into the database in order can show the event news on the website. If the administrator rejects their event news, they can edit the event detail and republish the event to the website.

```
if (isset($_SESSION)) {  
    session_start();  
}  
if (isset($_SESSION['user_id']) && $_SESSION['user_id'] != '') {  
    $user_id = (int)$_SESSION['user_id'];  
}  
require('functions.php');  
error_reporting(E_ALL);  
ini_set('display_errors', 1);  
  
if (isset($_POST['submit'])) {  
    $e_title = $_POST['EventTitle'];  
    $e_content = $_POST['editon'];  
    $event_status = 2;  
    $userID = $user_id;  
  
    // $sql = "INSERT INTO eventnews (event_title, event_content, event_status, user_id) VALUES ('$e_title', '$e_content', '$event_status', '$userID')";  
    $sql = "INSERT INTO eventnews (event_title, event_content, event_status, user_id) VALUES (?, ?, ?, ?)";  
    $stmt = $db->conn->prepare($sql);  
    $stmt->bind_param("ssii", $e_title, $e_content, $event_status, $userID);  
    // $result = mysqli_query($db->conn, $sql);  
    if ($stmt->execute()) {  
        echo "<script> alert('Uploaded Successfully');</script>";  
        redirect("event_news.php");  
    } else {  
        echo "Error: " . $sql . "<br> " . $db->conn->error;  
    }  
    // print_r(array($e_title, $e_content));  
}
```

3.4.5.1 insertEventNews.php Insert Event News

```

1 |<DOCTYPE html>
2 |<html lang="en">
3
4 |<head>
5 |<?php
6 |include "head.php";
7 |?>
8 |</head>
9
10 |<body>
11 |<!-- start #header -->
12 |<?php
13 |include "header.php";
14 |?>
15 |<?php
16 |if (isset($_GET['eventNews_id']) && $_GET['eventNews_id'] != '') {
17 |    $eventNewsID = $_GET['eventNews_id'];
18 |    $sql = "SELECT en.*, u.username FROM `eventnews` en, `user` u WHERE en.user_id = u.user_id AND en.eventNews_ID = ?";
19 |    $stmt = $db->conn->prepare($sql);
20 |    $stmt->bind_param("i", $eventNewsID);
21 |    $stmt->execute();
22 |    $result = $stmt->get_result();
23 |    $detail = $result->fetch_assoc();
24 |}
25
26 |if (isset($_POST['update'])) {
27 |    (int)$eventNews_ID = $_POST['eventNewsID'];
28 |    $event_title = $_POST['eventTitle'];
29 |    $event_content = $_POST['editor'];
30 |    $event_status = 2;
31 |    $reson = "";
32 |    //print_r(array($eventNews_ID, $event_title, $event_content, $event_status));
33 |    $sql = "UPDATE `eventnews` SET event_title = ?, event_content = ?, event_status = ? WHERE eventNews_ID = ?";
34 |    $stmt = $db->conn->prepare($sql);
35 |    $stmt->bind_param("ssisi", $event_title, $event_content, $event_status, $reson, $eventNews_ID);
36 |    if ($stmt->execute()) {
37 |        printAlert("Update Successfully");
38 |        $url = "postedEventHistory.php";
39 |        redirect($url);
40 |    }
41 |}
42 |?>
43 |<!-- !start #header -->
44
45 |<!-- start #main-site -->
46 |<main id="main-site">
47 |<div class="container mx-1 p-4">

```

3.4.5.2 editEventNews.php Edit Event News Detail

3.4.6 Cart Management Function Development

Users can add badminton items by selecting the quantity and variation of the item into the shopping cart. If the user adds the same variation and same product to the shopping cart, the system will only increase the quantity of the cart item by getting the quantity of the cart item and the quantity of the adding item, otherwise it just normally adds the item into the shopping cart. When the total quantity which is sum up the quantity of the cart item and the adding item is more than the quantity of the original product then the system will not allow adding the item into the shopping cart. Other than that, when customers modify the variation of the cart is similar to another similar item in the shopping cart. The system will merge them together into a single item and increase the quantity of the item. Additionally, users can modify the quantity and variation of the cart item and can remove the cart item.


```

1 <?php
2 include 'functions.php';
3
4 if (isset($_POST['customerID']) && isset($_POST['productID'])) {
5     $customer_id = $_POST['customerID'];
6     $product_id = $_POST['productID'];
7     $p_color = ($_POST['prodColor'] != 0) ? $_POST['prodColor'] : 0;
8     $p_clothesize = ($_POST['prodSize'] != 0) ? $_POST['prodSize'] : 0;
9     $p_shoesize = ($_POST['prodSize'] != 0) ? $_POST['prodSize'] : 0;
10    $p_quantity = $_POST['prodQuantity'];
11    $p_unitPrice = $_POST['prodPrice'];
12    $modified_at = NULL;
13
14    $sqlSumCartItemQuantity = "SELECT c.quantity AS sumCartItemQuantity FROM `cart` c WHERE c.customer_id = ? AND c.product_id = ?";
15    $stmt2 = $db->conn->prepare($sqlSumCartItemQuantity);
16    $stmt2->bind_param('ii', $customer_id, $product_id);
17    $stmt2->execute();
18    $resultQuantity = $stmt2->get_result()->fetch_assoc(); //return one row
19
20    $sumC_Quantity = ($resultQuantity == null ? 0 : $resultQuantity['sumCartItemQuantity']);
21
22    $sqlOriQuantity = "SELECT product_quantity AS oriQuantity FROM `product` WHERE product_id = ?";
23    $stmt3 = $db->conn->prepare($sqlOriQuantity);
24    $stmt3->bind_param('i', $product_id);
25    $stmt3->execute();
26    $resultOriQuantity = $stmt3->get_result()->fetch_assoc(); //return one row
27    $originalQuantity = $resultOriQuantity['oriQuantity'];
28
29    $totalQuantity = $sumC_Quantity + $p_quantity;
30
31    //echo $totalQuantity, $originalQuantity;
32
33    if (!($totalQuantity > $originalQuantity)) {
34        $duplicate_cartItem = checkDuplicateCartItem($db->conn, $customer_id, $product_id, $p_color, $p_shoesize, $p_clothesize, $p_unitPrice, $p_quantity);
35
36        if ($duplicate_cartItem == null) {
37            $subtotal = $p_unitPrice * $p_quantity;
38
39            $sqlInsert = "INSERT INTO cart (customer_id, product_id, attr_color, attr_shoes, attr_clothes, unit_price, quantity, subtotal, modified_at) VALUES (?, ?, ?, ?, ?, ?, ?, ?, ?)";
40            $stmt = $db->conn->prepare($sqlInsert);
41            $stmt->bind_param('iiiiiss', $customer_id, $product_id, $p_color, $p_shoesize, $p_clothesize, $p_unitPrice, $p_quantity, $subtotal, $modified_at);
42            if ($stmt->execute()) {
43                echo "Added to Cart Successfully";
44            } else {
45                echo "Error: " . $stmt->error . "<br>"; $db->conn->error;
46            }
47        } else {
48            echo $duplicate_cartItem["msg"] . "MaxQuantity";
49        }
50    }
51 }

```

3.4.6.1 manage_cart.php Adding Cart Management

```

1 <?php
2 require 'functions.php';
3
4 function checkExistingCartItem($db, $customer_id, $product_id, $attr_color, $attr_clothes, $attr_shoes)
5 {
6     $sql = "SELECT * FROM `cart` WHERE `customer_id` = '$customer_id'
7         AND `product_id` = '$product_id'
8         AND `attr_color` = '$attr_color'
9         AND `attr_clothes` = '$attr_clothes'
10        AND `attr_shoes` = '$attr_shoes'
11        LIMIT 1";
12    $statement = $db->prepare($sql);
13    $statement->execute();
14    $result = $statement->get_result()->fetch_assoc();
15    if($result != null)
16    {
17        return $result['cart_id'];
18    }
19    else
20    {
21        return "0";
22    }
23 }
24
25 function updateAttrColor($db, $color_id, $cart_id, $product_id, $customer_id)
26 {
27     $sql = "UPDATE `cart` SET attr_color = ? WHERE cart_id = ? AND product_id = ? AND customer_id = ?";
28     $stmt = $db->prepare($sql);
29     $stmt->bind_param('iiii', $color_id, $cart_id, $product_id, $customer_id);
30     if ($stmt->execute()) {
31         echo "Update Color Successfully";
32     } else {
33         echo $stmt->error;
34     }
35 }
36
37 function removeCartItem($db, $cart_id)
38 {
39     $sql = "DELETE FROM `cart` WHERE cart_id = $cart_id";
40     $statement = $db->prepare($sql);
41     return $statement->execute();
42 }
43
44 function getCurrentQuantity($db, $cart_id)
45 {
46     $sql = "SELECT * FROM `cart` WHERE cart_id = $cart_id";
47     $statement = $db->prepare($sql);
48     $statement->execute();
49 }

```

3.4.6.2 updateVariation.php Cart Variation Management

3.4.7 Checkout Function Development

Once the user was added one or more items to the shopping cart, the user can select which cart item wants to check out. After the customer is selected cart items to check out, the system will generate the order and order detail and then the system will pass the order id to the payment

page to get the total amount and create CheckoutSessionID and paymentIntentID to make a transaction.

```

9 $productId = $_POST['productId'];
10 $customerId = $_POST['customerId'];
11 $quantities = $_POST['quantity'];
12 $subtotals = $_POST['subtotal'];
13 $unitPrices = $_POST['unitPrice'];
14 $item_color = $_POST['item_color'];
15 $item_size = $_POST['item_size'];
16 $item_shoesSize = $_POST['item_shoesSize'];
17 $totalAmount = 0.00;
18 $delivery_charge = 0;
19
20 //print_r($selectedItems);
21 //print_r($quantities);
22 //print_r($subtotals);
23 // print_r($productId);
24 // print_r($customerId);
25
26
27 for ($i = 0; $i < count($items); $i++) {
28     if (is_int(array_search($item[$i], $selectedItems, true))) {
29         $totalAmount += $subtotals[$i]; //sum total amount for selected items
30     }
31 }
32
33 if($totalAmount < 100{
34     $totalAmount += 10;
35     $delivery_charge = 1;
36 }
37
38 $orderId = insertOrder($db->conn, (int)$customerId, (double)$totalAmount, (int)$delivery_charge);
39
40 for ($i = 0; $i < count($items); $i++) {
41     if (is_int(array_search($item[$i], $selectedItems, true))) {
42         $prodVariant = getVariations($db->conn, (int)$item_color[$i], (int)$item_size[$i], (int)$item_shoesSize[$i]);
43         insertOrderDetails($db->conn, (int)$orderId, (int)$productId[$i], (string)$prodVariant, (int)$quantities[$i], (double)$unitPrices[$i], (double)$subtotals[$i]);
44         removeCartItem($db->conn, (int)$item[$i], (int)$customerId);
45     }
46 }
47
48 // $SESSION['order_id'] = $orderId;
49 redirect("checkout.php?order_id=" . urlencode(base64_encode($orderId)));
50 // $SESSION['order_id'];
51 } else {
52     printAlert("Please check one of the cart items!");
53     redirect("cart.php");
54 }
55
56 } else if (isset($_POST['continueShopping'])) {
57     header('Location: ' . $_SERVER['HTTP_REFERER']);
58     exit;
59 }
60
61 }
62 } else if (isset($_POST['continueShopping'])) {
63     header('Location: ' . $_SERVER['HTTP_REFERER']);
64     exit;
65 }
66 }

```

Figure 3.4.7.1 Order Management Function

```

1 <?php
2 ini_set("display_errors", 1);
3 use Stripe\Stripe;
4
5 require __DIR__ . '/vendor/autoload.php';
6 include __DIR__ . '/functions.php';
7
8
9 \Stripe\Stripe::setApiKey("sk_test_51LWjABH1zQBEQw3nEYUv1yPOyAzr9B1VqC21BE3mdc2LQqn5Na2aQxMrYwOV5FPwUqF5P6tGkA6A71GJGocMzV80CcggnIle");
10
11
12 $orderId;
13 if(isset($_POST['order_id'])){
14     $orderId = $_POST['order_id'];
15 }else{
16     redirect("errorPage.php");
17 }
18
19 $amountToPay = getOrderAmount($db->conn, $orderId);
20
21 //print_r($amountToPay);
22
23
24 $session = \Stripe\Checkout\Session::create([
25     'payment_method_types' => ['card', 'fpv', 'grabpay'],
26     'line_items' => [ [
27         'price_data' => [
28             'currency' => 'myr',
29             'product_data' => [
30                 'name' => 'YUYI Badminton Store',
31             ],
32             'unit_amount' => $amountToPay[0]['total_amount']*100,
33         ],
34         'quantity' => 1,
35     ] ],
36     'mode' => 'payment',
37     'success_url' => 'https://'.$_SERVER['HTTP_HOST'].'/paymentSuccess.php?order_id=' . $orderId,
38     'cancel_url' => 'https://'.$_SERVER['HTTP_HOST'].'/paymentCancel.php?order_id=' . $orderId,
39 ]);
40
41 print_r(json_encode($session));
42
43 updateCheckoutSessionId($db->conn, $session->id, $orderId);
44
45 http_response_code(303);
46 header("Location: ".$session->url);

```

Figure 3.4.7.2 payment.php Payment Operation

```

1 <?php
2 use Stripe\Stripe;
3
4 require __DIR__ . '/vendor/autoload.php';
5 include "functions.php";
6
7 // Set your secret key. Remember to switch to your live secret key in production.
8 //https://dashboard.stripe.com/apikeys See your keys here: https://dashboard.stripe.com/apikeys
9 \Stripe\Stripe::setApiKey('sk_test_51LWjA8H1zQbEQEwJnEVUY1yPOyAzr9B1VqCZ1BE3MdcZLoq5Na2aQxMfYw0v5FPwBqF5P6tGKA6A71G0cMZV08CcgEn1le');
10
11 function print_log($val) {
12     return file_put_contents('php://stderr', print_r($val, TRUE));
13 }
14
15 // You can find your endpoint's secret in your webhook settings
16 $endpoint_secret = 'whsec_ych8FHWL3p3SY4Lz01nXJ2dN0yJcaBz';
17
18 $payload = @file_get_contents('php://input');
19 $sig_header = $_SERVER['HTTP_STRIPE_SIGNATURE'];
20 $event = null;
21
22 try {
23     $event = \Stripe\Webhook::constructEvent(
24         $payload, $sig_header, $endpoint_secret
25     );
26 } catch (\UnexpectedValueException $e) {
27     // Invalid payload
28     http_response_code(400);
29     exit();
30 } catch (\Stripe\Exception\SignatureVerificationException $e) {
31     // Invalid signature
32     http_response_code(400);
33     exit();
34 }
35
36 function fulfill_order($session) {
37     // TODO: fill me in
38     print_log("Fulfilling order...");
39     print_log($session);
40 }
41
42 // Handle the checkout.session.completed event
43 if ($event->type == 'checkout.session.completed') {
44     $session = $event->data->object;
45
46     //update payment status in database
47     updateCheckoutPaymentStatus($db->conn, $session->id, $session->payment_intent, ($session->payment_status == "paid"));
48 }

```

Figure 3.4.7.3 paymentWebhook.php make Stripe Payment Transaction

3.5 Chapter 3 Summary

This chapter is briefly describing the use case diagram for administrator and user by giving a clear view of all the functions that administrator and user can perform in this system. The development process of the system and the code of the function also are explained step by step.

Chapter 4

Methodology Tools

4.1 Overview

This chapter explains the project’s development methodology. The project’s development tools, including hardware and software, are mentioned here. In this chapter, the system’s use case and descriptions are laid out, and the code of the project provides a short explanation of the development process. It is important to arrange the project’s timeframe so that it may be delivered on time. Also included in this chapter are the difficulties encountered throughout the development process.

4.2 Design Specification

4.2.1 Methodology

This project is used the RAD (Rapid Application Development) methodology. RAD is the forerunner of agile project management, and it has grown in popularity among agile companies seeking methodologies that can keep pace with their expanding company and customer demands. Rather than relying only on careful planning and detailed documentation, fast application development makes advantage of user input to iterate, release quickly and iterate quickly again [6].

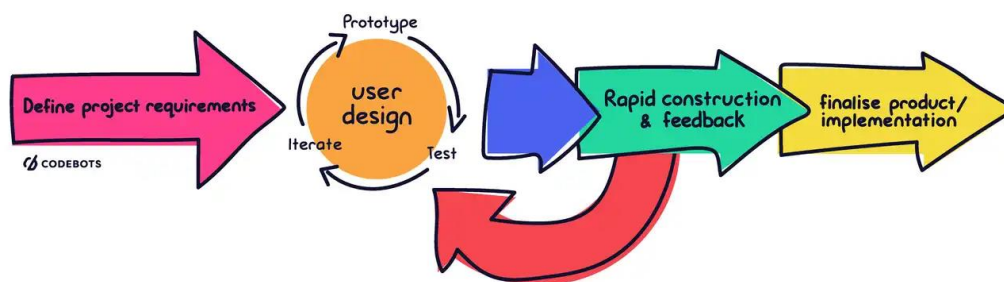


Figure 4.2.1.1 RAD Methodology

1. Requirement Planning Phase

The process begins with a step called requirements planning. It is suggested and intended to create an online badminton website for traditional badminton shop owners and badminton fans, and problem statements are drafted. In the planning and analysis phase, the project's goal is also stated. In order to determine what the website's visitors are needed, academic literature and existing systems are examined. To construct a well-built website, the strengths and limitations of the existing website are examined, and project needs are established. At this stage, the project's hardware and software tools are selected, and a timeframe are set.

2. User Design Phase

The prototypes for the project's modules, including the registration and login module, racket recommendation module, post event module, and administration module, are constructed during this phase. For the front-end design of the website, HTML, CSS, and SCSS are utilized. For the back-end functionality, PHP, JavaScript, jQuery, and JSON are used. MYSQL are used to store and retrieve data. If there are any changes or additional needs from the project owner, the application is tested, and the prototype only cover a few core functions and minimal UI design. The phase is continued until the project owner is satisfied that the prototype has accomplished what they wanted.

3. Rapid Construction

The construction phase is the third phase of the methodology, and it involves coding, testing, and integration to turn the prototypes into working models. The project owner is still can provide some feedback for the improvement of the project or suggest alternatives, and changes, and give new ideas to solve the problem as they discovered.

4. Cutover

There will be four types of testing in total for this project: two functional and two non-functional. Unit and System testing are examples of functional testing, whereas Performance and Usability testing are examples of non-functional testing. Each module on the website is put through this pace. This stage is critical for determining whether or not the website's operation is good and that no mistakes will occur throughout a user's usage of the site. After all stages of the project have finished, the project documentations are finalized. The system's design and

operation, database design, functionality, and system testing result are recorded. The project is now finished and ready to be released.

4.2.2 Tools to Use

I. Hardware Requirement

This project is developed by using Windows 10 the personal laptop operating system. Moreover, the personal laptop consists of Intel® Core™ i5-8250U 1.6GHz with Turbo Boost up to 3.4GHz processor and 8GB DDR4 RAM memory as well as 256GB SSD storage. Besides, Mouse will be used as the input for this project.

Table 4.2.2.1 Component and requirements for Hardware

Component	Requirements
Processor	Intel® Core™ i5-8250U 1.6GHz with Turbo Boost up to 3.4GHz
Operating System	Windows 10 Home Single Language
Memory	8GB DDR4 RAM
Storage	256GB SSD
Input Devices	Mouse

II. Software Requirement

For this website development project, some development software like Visual Studio Code and PhpStorm may be used to develop the project. For the coding part, this project uses front-end and back-end language to develop such as HTML, CSS, JavaScript, jQuery, and Bootstrap as the front-end of this project and the back end of this project are PHP and MYSQL. The Hypertext Markup Language (HTML) describes the structure of webpage such as use heading, text, table, list and other to describe the webpage and access it by hypertext link [9]; Cascading Style Sheet (CSS) uses to provide style to a webpage by specifying how well a website should presented in a browser; [10] SCSS is the CSS superset is known as Syntactically Awesome Style Sheet. The more sophisticated variant of CSS is SCSS. Hampton Catlin created SCSS, which Chris Eppstein and Natalie Weizenbaum later refined. It is often referred to as Sassy CSS because of its extensive capabilities.; JavaScript is a programming language that is used for generating dynamic and interactive online content, such as application and browser [11]; jQuery used to perform some event handling like submit button; Hypertext Preprocessor (PHP)

is used to handle dynamic content, database and other; MYSQL is used to store data on a database and communicate with the database.

Table 4.2.2.2 Components and requirement for Software

Components	Requirement
Front-end	HTML, CSS, SCSS, JavaScript, jQuery, Bootstrap
Back-end	PHP, MYSQL
Development Software	Visual Studio Code, PhpStorm
Interface	GUI

4.3 Timeline

4.3.1 Overview

The project's timeframe is set in accordance with the project methodology. The proposal for the project is first examined during the requirement planning phase. The project's problem statement and objective are defined, and the project scope is determined in order to meet the goals. Following an evaluation of a few existing websites, the strengths and weaknesses are identified. The project timeframe is created to ensure the project is completed on schedule. After doing research, the project's use case is defined, and database tables are established.

The register & login module is completed during the use design and construction phase since all administrators and users must have an account and be logged in to interact with the website. A few days spent looking for methods to interact with Gmail account for password recovery and what SQL query is suitable for doing the filtering feature. Next, the recommendation module is created, and the administration module is completed in half. In addition, the Final Year Project 1 Report is written and delivered.

The Administration, Add to Cart, Checkout and Post Event modules will be created in Final Year Project 2. Furthermore, throughout the finalizing product and implementation phase, all modules will be tested to verify that the project is running smoothly and that system faults are avoided. Final Year Project 2 Report also going to be written and shown to the supervisor and moderator.

4.3.2 Gantt Chart

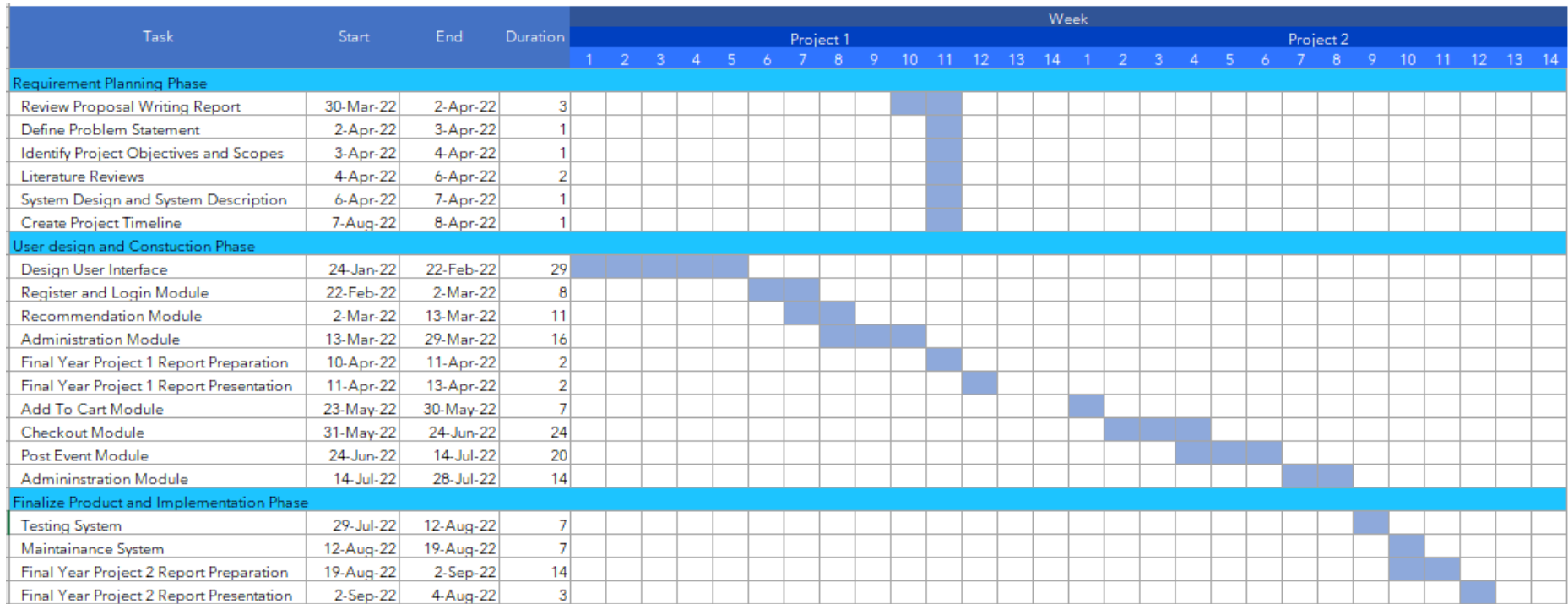


Figure 4.3.2.1 Gantt Chart of the Project Timeframe

4.4 Chapter 4 Summary

Short summary, the methodology of this project is using the Rapid Application Development methodology. RAD methodology assists in reducing the development time and the number of prototypes and iterations getting lesser because most of the issues are solved early in the user design phase. Additionally, it allows for the modification of requirements at any time since it welcomes and prioritises customer feedback [8]. This chapter also defines the hardware and software tools needed to create the system's front-end and back-end. To offer a clear perspective of all the functions that admin and user may conduct in this system, the use case diagram and explanation for admin and user are given. The project's timetable has been scheduled and displayed in a Gantt Chart for better-scheduled management and to ensure that the project is delivered on time.

Chapter 5

Implementation and Testing

5.1 Overview

Including the registration and login module, racket recommendation module, add-to-cart module, checkout module, post event news module, and administration module, all six modules of the project have been created. The website is named Yu-Yi Badminton and it has a dark and white theme, and it is fully mobile responsive. The main page is the home page of the website which consists of a two-level top navigation bar. On the first level users can see Admin and Login, but when users successfully log in to the website, the login navigation item will change to a personal dropdown list that includes My Account, Order History, Posted Event, and Logout. Continue, the second level which users see Home Page, Event News, Racket Recommendation, a dropdown list of Male and Female which have three categories dropdown list item such as T-shirt, short, and Footwear, Accessories dropdown list which listing 4 categories item like Bag, Shuttlecock, String, and Grip, Search Engine, and shopping cart navigation link item.

5.2 Registration and Login Page

When the user wants to proceed to buy button or add to cart button without login into the website, the system will require the user to log in or register an account on the website to log in. So, the user will be redirected to the registration and login page by the system. When coming to the login and registration page, the user can register an account on the website by filling up all required valid data and clicking on the register button. The system will validate all the user-provided data, if all the data is valid then the system will pop up a registration successful message to indicate the user has successfully registered an account on the system, otherwise, the system will not allow the user to register an account when he or she is providing invalid data. If register an account successfully, the user can go to the login form to log in to the website by providing a valid username and password but if the username and password are invalid, the system displays an error message to indicate the user enter a wrong username and password. If the user forgets his or her password, then click on forgot password button and enter an existing email id to send a reset password link to his or her email account to reset the password. If the user enters an email id is not exist in the system, the reset password link is would not send out.

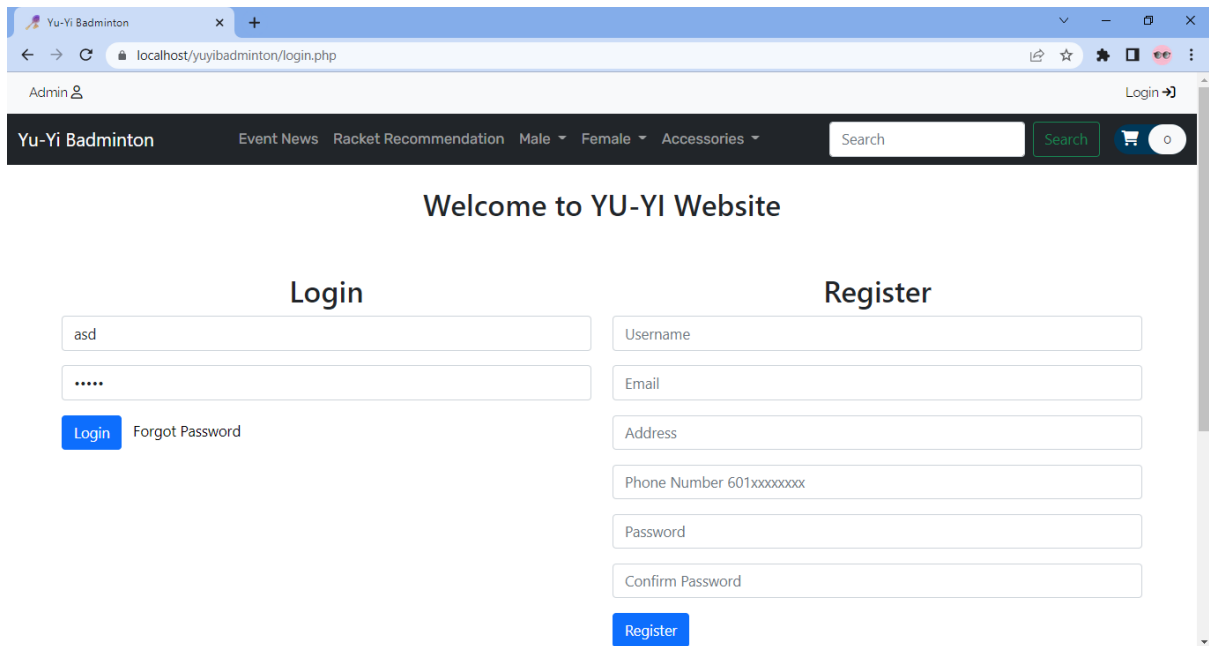


Figure 5.2.1 Registration and Login Page

5.3 Post Event News

Once the user login successfully, the user can post event news on the website by providing the event title and event content and then clicking on submit button to post the event news. Once the event news was approved by the administrator, the event news will publish on the website to let other users can view it. Besides, the user can check what event news had been posted by him or her on the posted event page and the user also can edit again on the content of the event news which rejected by the administrator and resubmits it to the system and wait for getting approval.

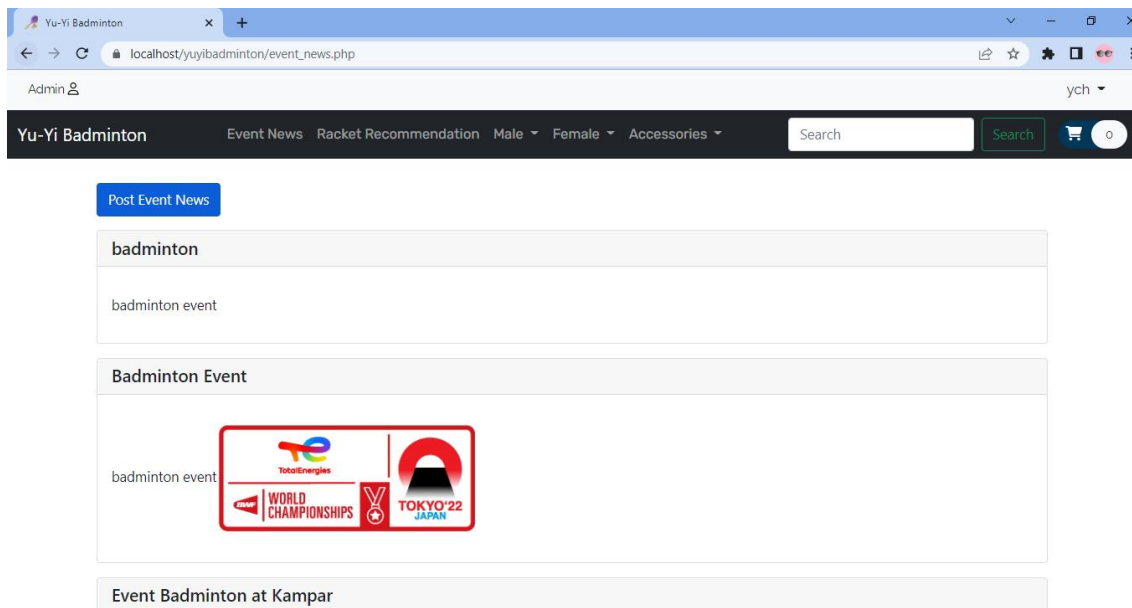


Figure 5.3.1 Post Event News

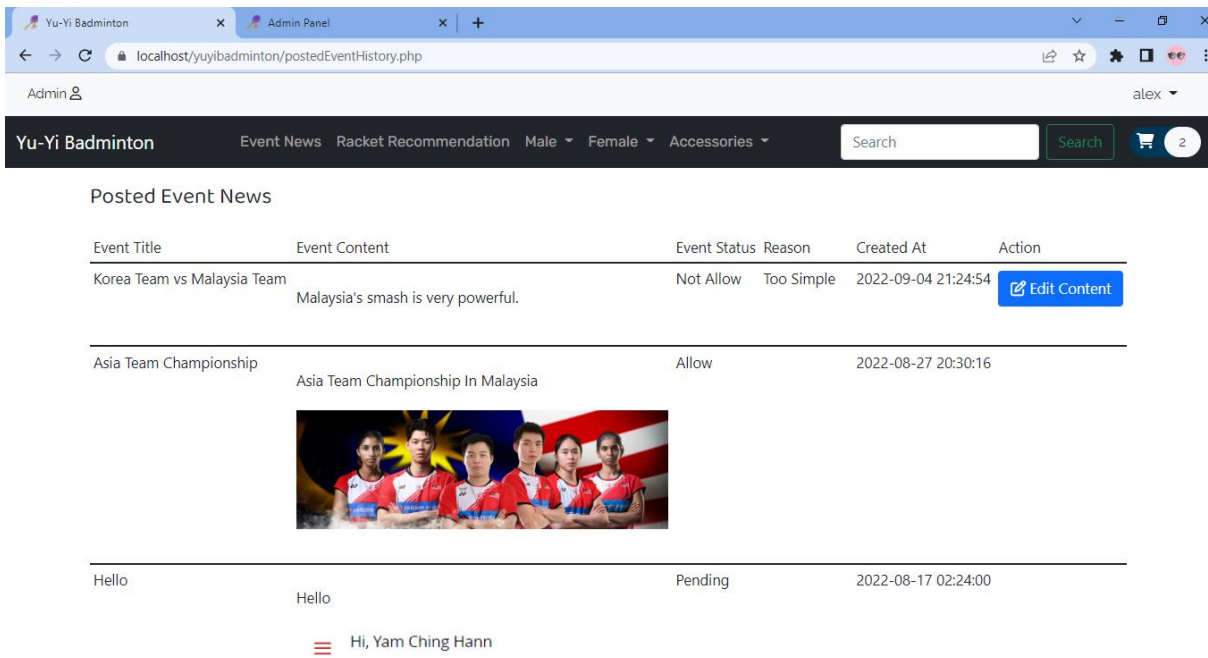


Figure 5.3.2 Posted Event History

5.4 Racket Recommendation

When the user does not have any idea about selecting a suitable racket item. He or she can get a few recommended rackets from the racket recommendation system. The racket recommendation system will be providing a few suitable rackets according to the selected racket condition by the user such as skill level, game type, playing style, product brand, and others. If the recommendation system did not find any racket item suitable for the selected racket condition, then it will display a no data found message to indicate no racket item is suitable for the currently user-selected condition.

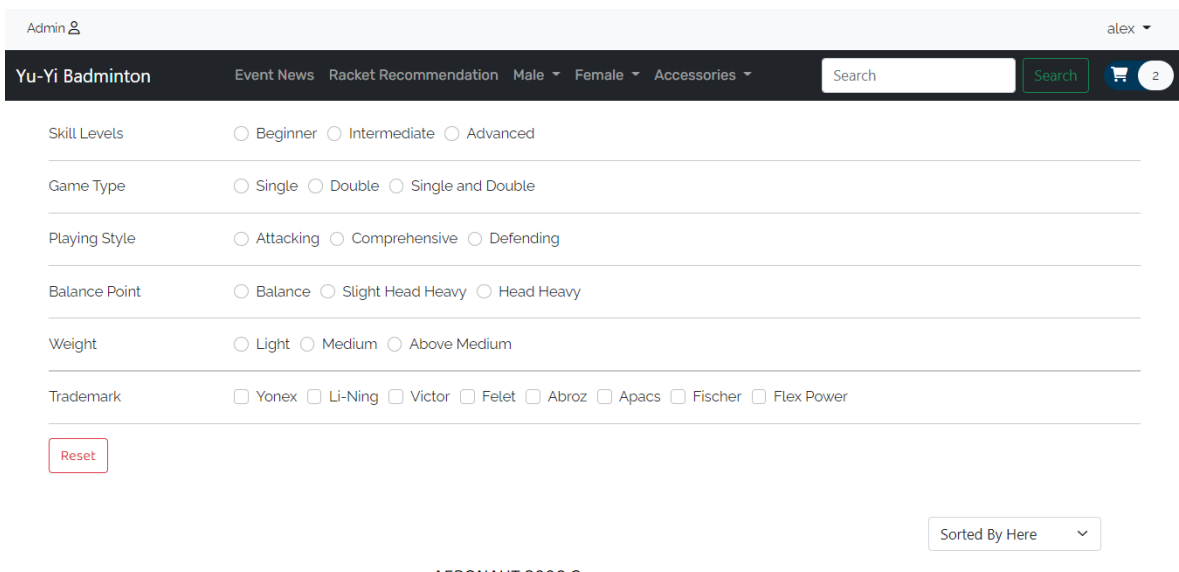


Figure 5.4.1 Racket Recommendation Page

5.5 Add to Cart

The user can add an item to his or her shopping cart by adding the quantity and variation of the item. However, if the user adds an item to his shopping cart without selecting the variation of the item, the system will pop up an error alert message to require the user to select the variation of the item before adding the item to the shopping cart. Once the user added an item to the shopping cart, he or she can modify the quantity and variation of the cart item and can remove the cart item from his or her shopping cart. Besides, the user can check out one or all cart items determined by the checkbox. Once clicked on the checkout button, it will proceed to the checkout page.

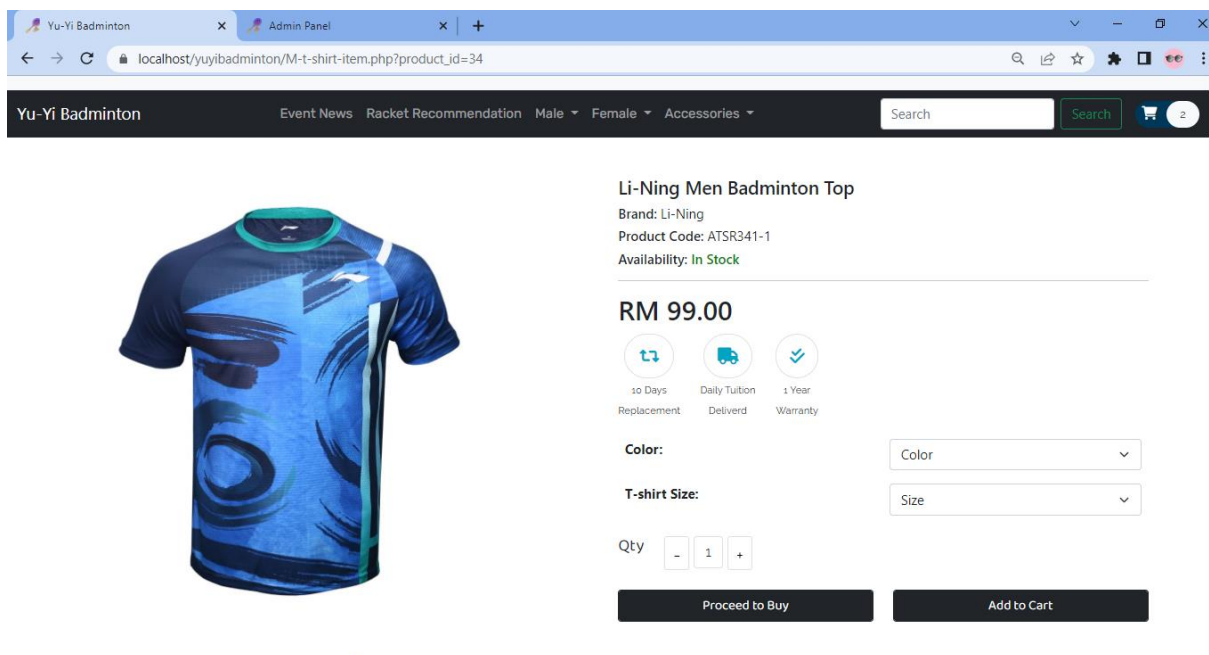


Figure 5.5.1 Add Item to Cart

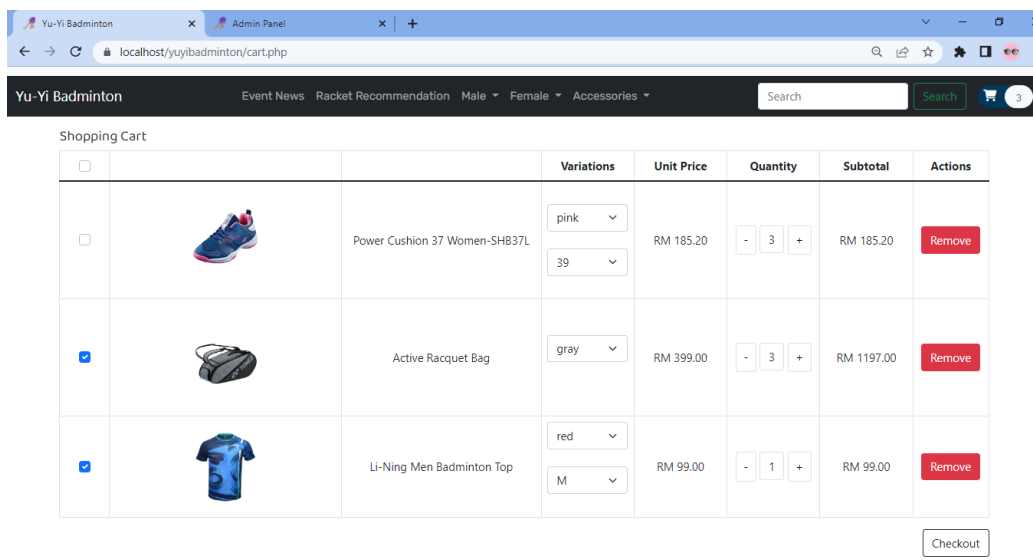
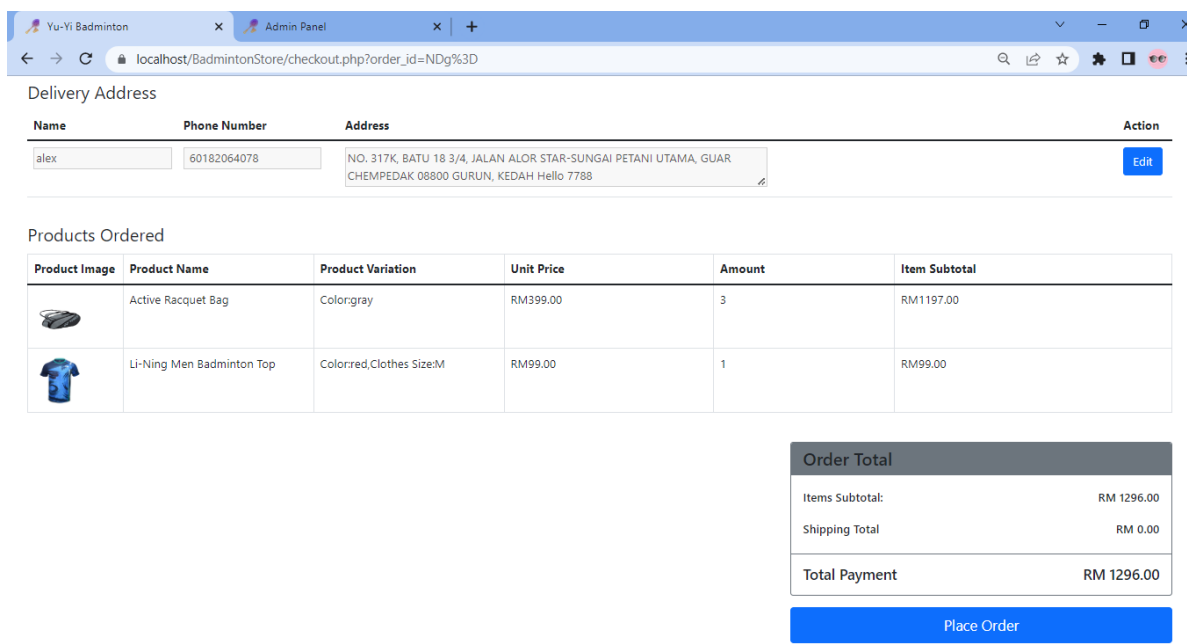


Figure 5.5.2 Add to Cart Page

5.6 Checkout and Payment



The checkout page will display all the selected checkout cart items and the customer's personal detail such as name, address, and phone number for shipping purposes. The user can optionally edit the personal detail for the item can ship correctly to the destination and personal. Once confirmed the checkout detail, then click on place order and proceed to the payment process. The payment process will let the user can select different payment methods to make payment. After selecting a payment method then click on the payment button to make a payment transaction. If payment is successful, the system will display a successful message and redirect to the order history of the user to let the user see what order was paid. But if the payment is unsuccessful, the system will let the user can optionally make the payment again to the order.



The screenshot shows a web browser window with the URL `localhost/BadmintonStore/checkout.php?order_id=NDg%3D`. The page is titled "Delivery Address" and contains a table with the following data:

Name	Phone Number	Address	Action
alex	60182064078	NO. 317K, BATU 18 3/4, JALAN ALOR STAR-SUNGAI PETANI UTAMA, GUAR CHEMPEDAK 08800 GURUN, KEDAH Hello 7788	Edit

Below the address table is a section titled "Products Ordered" with a table listing the items:

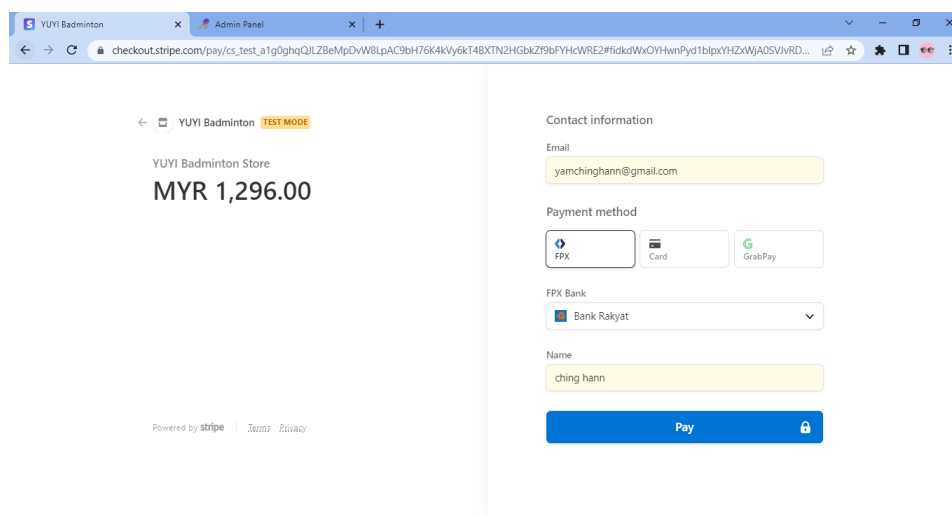
Product Image	Product Name	Product Variation	Unit Price	Amount	Item Subtotal
	Active Racquet Bag	Colorgray	RM399.00	3	RM1197.00
	Li-Ning Men Badminton Top	Color:red,Clothes Size:M	RM99.00	1	RM99.00

On the right side, there is an "Order Total" summary box:

Items Subtotal:	RM 1296.00
Shipping Total	RM 0.00
Total Payment	RM 1296.00

At the bottom right, there is a blue "Place Order" button.

Figure 5.6.1 Checkout Page



The screenshot shows a Stripe payment page for "YUYI Badminton Store" with a total amount of "MYR 1,296.00". The page is in "TEST MODE". The contact information is as follows:

Contact information
Email: yamchinghann@gmail.com

Payment method
Selected: FFX (Bank)
Bank: Bank Rakyat
Name: ching hann

At the bottom, there is a blue "Pay" button with a lock icon.

Figure 5.6.2 Payment Page

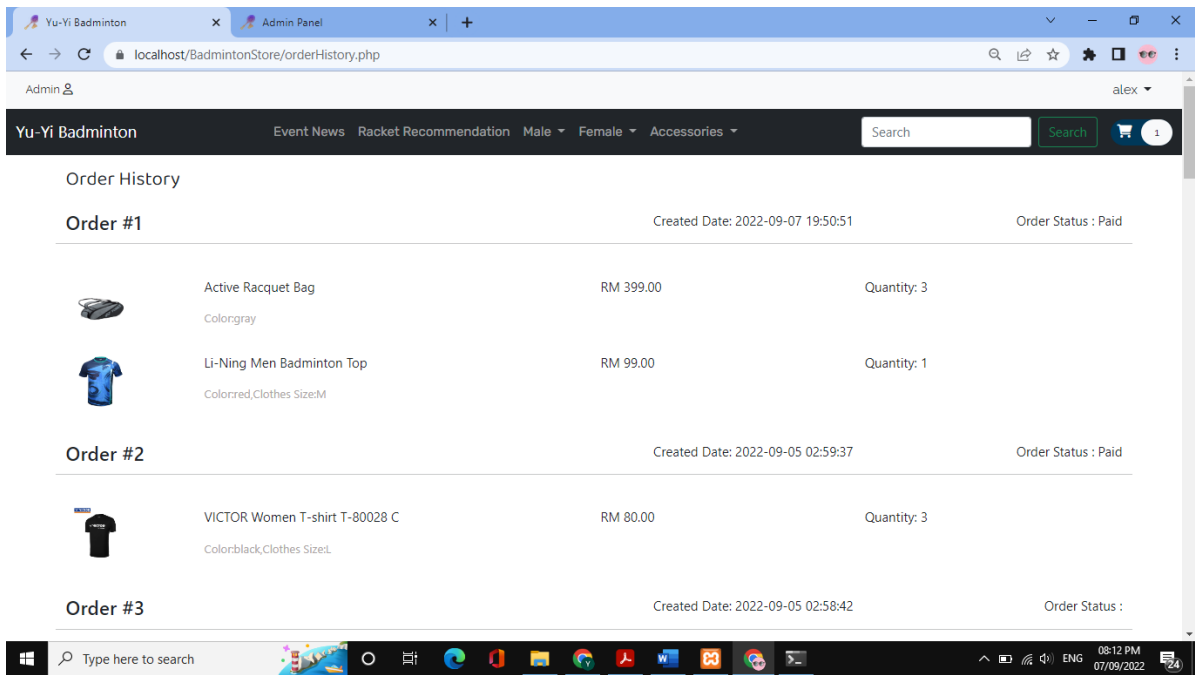


Figure 5.6.3 Order History Page

5.7 Dashboard of Administrator

The dashboard of the administrator is showing the number of created products, number of registered customers, number of contact us, number of generated orders, the total amount of earnings, number of pending orders, number of completed orders, and number of posted event views. Besides, the administrator can see the sales report and monthly report generated by Power BI. The Power BI will dynamically get the latest record from the database server and update a new analysis result to the report.

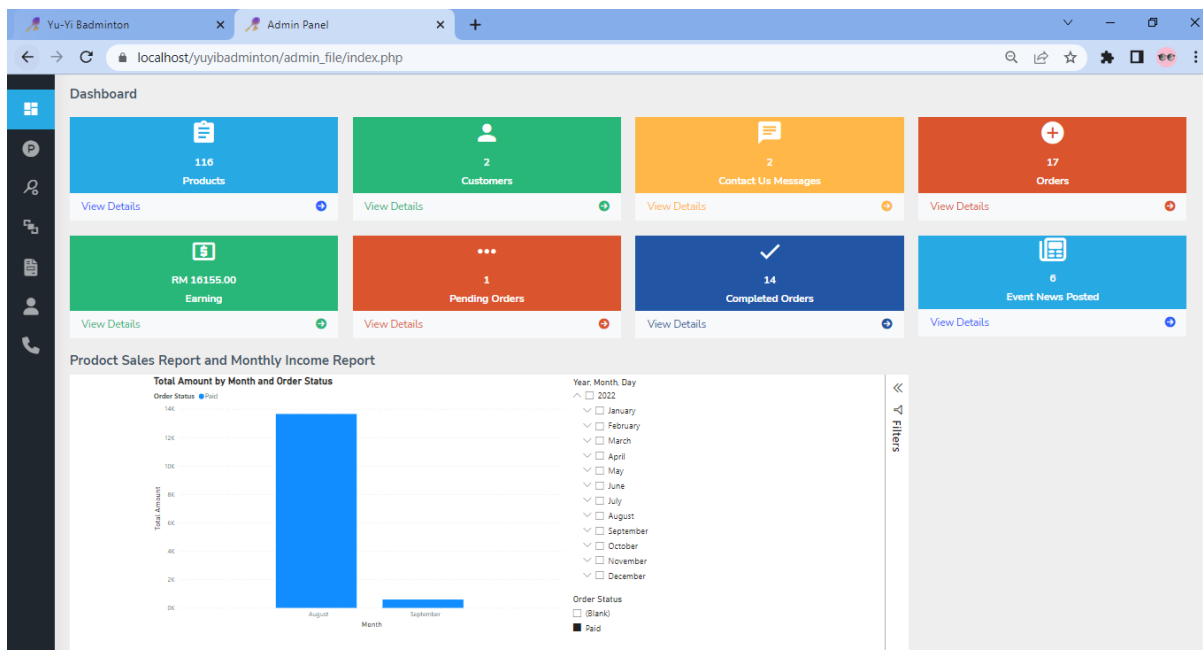


Figure 5.7.1 Dashboard of Administrator Page

5.8 Chapter 5 Summary

Overall, all the project's modules—including the registration and login, racket recommendation, add to cart, checkout, post event news, and administration modules—have been successfully constructed. This chapter illustrates each website page and explains the functionality that each one can perform.

Chapter 6

Conclusion

6.1 Project review, Discussion and Conclusion

Online Badminton Website is important, especially for those people who love to play badminton as it provides a sharing and posting information channel, a racket recommendation feature, and an effectively ordering feature. However, the traditional badminton store is not effective in order management, publishing events, and recommending racket items, so it will come out several issues such as inconvenient to order badminton items, inconvenient to query with the owner, buying the wrong racket problem, inconvenient in making the transaction and weak publish an event power. There is also no complete and effective analysis report to the physical badminton store.

This project aims to develop a user-friendly badminton website for users, and they can also enjoy purchasing badminton products as well as get a few suitable rackets based on their condition. Therefore, in this project, there have several modules are planned in order to achieve the objective. RAD methodology is used in the development of this project. According to the first objective which is to create a posting function to allow people to post their upcoming events to update the customers, the registration and login module, post event module are done. The post event news module is allowed the user to post their event activity or news onto the website to let others know. But the administrator will verify the post event content before publishing it on the website to have healthy event content on the website. If rejected post event, they can modify it and resubmit the post event. Besides, the second objective is to create a recommendation function for the customers, the racket recommendation module, add to cart module, the checkout module, and the administration module. Customers can select the racket condition according to their own conditions such as skill level, game type, playing style, weight of racket, and brand to get a few recommended rackets from the racket recommendation. Once the recommendation provided a few recommended racket items to them, they can add the item to their shopping cart. The shopping cart has allowed them to modify the quantity and variation of the item and remove the cart item. After adding an item to the shopping cart, they can check out their cart item and make a payment by selecting a payment method. In administration module, the owner can view sales and monthly income analysis reports in the dashboard and

can perform various management such as product, product attribute, racket condition, event, order, customer, and contact us management.

The problem encountered in this project is the sales and monthly income analysis report which need to connect to the online database server because Microsoft Power BI only supports connecting to the online database server to perform dynamically change analysis result for the report. Besides, there are also some problems faced during developing the recommendation module. The problem is a concurrency issue that will occur when the recommendation module did not find any racket item that meets the user's selected racket condition and display a message but at the same time, the user presses the reset button to restore back the normal racket item list, so it needs to take 0.5-second delay to solve this concurrency issue.

6.2 Novelties and Contribution

By applying this project to the badminton store owners, it definitely increases its effectiveness for both the badminton store owner and customers. Customers can easily buy a suitable racket by getting a recommendation from the racket recommendation module. Because it can according to the customer selected condition recommend the racket. Besides, customers can effectively handle their shopping cart since they are allowed to modify the quantity and variation of the cart item in the shopping cart and can also remove cart items from the shopping cart. After that, customers can select different payment methods such as online banking, Credit Card, and Grab Pay to make their payment and they also can view their order status on the order history page after completing their payment customers can also make the order payment again if the payment fails. Additionally, customers can post their event activity on the website to let others know.

The store owner can effectively manage product, product attribute, post event news, and customer and the owner can easily understand and analysis his to her product sales status and monthly income.

6.3 Future work

This project has various areas where improvement is possible. First, the registration and login module where is only allowed users able to register a local account. In the future, the

registration and login module can be allowed users to use their social accounts such as Google, Facebook, and Twitter accounts to register and log in to the website.

Second, this website can support social media interaction, which the website lack of. The post event news module is where users are only able to post event news activity on the website but lack more social interactive activity such as being able to share their or other post events onto their social media account. Thus, in the future, this share post or badminton item onto their social media account function can be added so that users can be more interactive between this website and their social media.

Furthermore, the racket recommendation module is lack of more intelligent recommendation function to recommend suitable rackets. Thus, this racket recommendation can be improved by using machine learning to more intelligence and accurately predict what rackets are more suitable for the customer condition.

Moreover, product variation management is lack more dynamic product variation such as this website of product variation is not able to add an image and quantity to the variation. Therefore, in the future, this function can be added so that the product variation of this website can be more dynamic and user-friendly.

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FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

Trimester, Year: 2.3	Study week no.: 5
Student Name & ID: Yam Ching Hann	
Supervisor: Dr Tan Joi San	
Project Title: Development of Website related to Badminton	

1. WORK DONE

[Please write the details of the work done in the last fortnight.]

Fixed some bugs in recommendation module and changed the query string method to prepared statement.

2. WORK TO BE DONE

Developing add to cart function and proceed to buy function.

3. PROBLEMS ENCOUNTERED

How to detect duplicate similar product and similar variation adding to the shopping cart.

4. SELF EVALUATION OF THE PROGRESS

45%



Supervisor's signature



Student's signature

FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

Trimester, Year: 2.3	Study week no.: 8
Student Name & ID: Yam Ching Hann	
Supervisor: Dr Tan Joi San	
Project Title: Development of Website related to Badminton	

1. WORK DONE

[Please write the details of the work done in the last fortnight.]

Completed add to cart module and proceed to buy function.

2. WORK TO BE DONE

Designing and developing checkout module.

3. PROBLEMS ENCOUNTERED

How to plugin third party online transaction institution to perform transaction.

4. SELF EVALUATION OF THE PROGRESS

65%



Supervisor's signature



Student's signature

FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

Trimester, Year: 2.3	Study week no.: 10
Student Name & ID: Yam Ching Hann	
Supervisor: Dr Tan Joi San	
Project Title: Development of Website related to Badminton	

1. WORK DONE

[Please write the details of the work done in the last fortnight.]

Completed the payment function where able to perform online transaction in demo version and users can see their order payment status in order history page and can pay order payment again if the payment fails.

2. WORK TO BE DONE

Designing and developing post event news module.

3. PROBLEMS ENCOUNTERED

How to plugin third party editor to write the event content.

4. SELF EVALUATION OF THE PROGRESS

80%



Supervisor's signature



Student's signature

FINAL YEAR PROJECT WEEKLY REPORT

(Project II)

Trimester, Year: 2.3	Study week no.: 12
Student Name & ID: Yam Ching Hann	
Supervisor: Dr Tan Joi San	
Project Title: Development of Website related to Badminton	

1. WORK DONE

[Please write the details of the work done in the last fortnight.]

Completed the post event news module where able to let users to post their event and can see what event have been posted by them in posted event history page.

2. WORK TO BE DONE

Designing and developing dashboard of administrator and generating product sales and monthly income report.

3. PROBLEMS ENCOUNTERED

How to put this whole project to run on online mode in order can generate dynamic analysis report with Power BI

4. SELF EVALUATION OF THE PROGRESS

95%



Supervisor's signature



Student's signature

POSTER

Development of Website Related to Badminton



Introduction

Badminton is a famous sport in Malaysia because Dato Lee Chong Wei won many matches for Malaysia. When Covid-19 comes into Malaysia, it leads to many offline badminton stores facing business income issues.



Problems

- Lacking recommendation
- Lacking Post Event
- Lacking Latest Badminton News

Motivation

- Develop racket recommendation
- Build Post Event feature
- Provide Latest News

Objectives

- allow people to post their upcoming events
- Recommendation function to the customers
- providing any latest news related to badminton



Methodology & Tools

- RAD Methodology (Requirement Planning, User Design, Construction, and Cutover)
- Development Language(HTML, CSS, PHP and MYSQL)
- Visual Code as IDE to develop the website

Functions

- Register and Login
- Racket Recommendation
- Add to Cart
- Checkout
- Post Upcoming Event
- Administration



Benefits

- Users can effectively and efficiently find their suitable racket.
- Users can easily operate the website.
- Admins can effectively manage products, orders, and events.



FACULTY OF INFORMATION
COMMUNICATION AND TECHNOLOGY

DONE BY: YAM CHING HANN
SUPERVISED BY: DR TAN JOI SAN

PLAGIARISM CHECK RESULT

Development of Website Related to Badminton			
ORIGINALITY REPORT			
2%	2%	0%	%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS
PRIMARY SOURCES			
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2	fict.utar.edu.my Internet Source	<1%	
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Full Name(s) of Candidate(s)	Yam Ching Hann
ID Number(s)	20ACB00133
Programme / Course	Bachelor of Information Systems Engineering
Title of Final Year Project	Development of Website related to Badminton

Similarity	Supervisor's Comments (Compulsory if parameters of originality exceeds the limits approved by UTAR)
Overall similarity index: <u> 2 </u> % Similarity by source Internet Sources: <u> 2 </u> % Publications: <u> 0 </u> % Student Papers: <u> 0 </u> %	No comment
Number of individual sources listed of more than 3% similarity: <u> 0 </u>	No comment
Parameters of originality required and limits approved by UTAR are as Follows: (i) Overall similarity index is 20% and below, and (ii) Matching of individual sources listed must be less than 3% each, and (iii) Matching texts in continuous block must not exceed 8 words <i>Note: Parameters (i) – (ii) shall exclude quotes, bibliography and text matches which are less than 8 words.</i>	

Note Supervisor/Candidate(s) is/are required to provide softcopy of full set of the originality report to Faculty/Institute

Based on the above results, I hereby declare that I am satisfied with the originality of the Final Year Project Report submitted by my student(s) as named above.

Signature of Supervisor

Name: Tan Joi San

Date: 9 Sep 2022

Signature of Co-Supervisor

Name: _____

Date: _____



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(KAMPAR CAMPUS)**

CHECKLIST FOR FYP2 THESIS SUBMISSION

Student Id	20ACB00133
Student Name	Yam Ching Hann
Supervisor Name	Dr Tan Joi San

TICK (√)	DOCUMENT ITEMS
	Your report must include all the items below. Put a tick on the left column after you have checked your report with respect to the corresponding item.
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√	Signed FYP Thesis Submission Form
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√	Table of Contents
√	List of Figures (if applicable)
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N/A	List of Symbols (if applicable)
√	List of Abbreviations (if applicable)
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√	Bibliography (or References)
√	All references in bibliography are cited in the thesis, especially in the chapter of literature review
√	Appendices (if applicable)
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I, the author, have checked and confirmed all the items listed in the table are included in my report.

(Signature of Student)

Date: 9 September 2022