

**WEB BASED INFORMATION SYSTEM FOR FISHERY INDUSTRY**

**BY**

**WONG JIE JING**

**A REPORT**

**SUBMITTED TO**

**Universiti Tunku Abdul Rahman**

**in partial fulfillment of the requirements**

**for the degree of**

**BACHELOR OF INFORMATION SYSTEMS (HONOURS) BUSINESS INFORMATION  
SYSTEMS**

**Faculty of Information and Communication Technology  
(Kampar Campus)**

**JAN 2022**

## REPORT STATUS DECLARATION FORM

**Title:** WEB BASED INFORMATION SYSTEM FOR FISHERY INDUSTRY

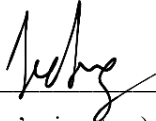
**Academic Session:** JAN 2022


I WONG JIE JING

declare that I allow this Final Year Project Report to be kept in  
Universiti Tunku Abdul Rahman Library subject to the regulations as follows:

1. The dissertation is a property of the Library.
2. The Library is allowed to make copies of this dissertation for academic purposes.

Verified by,

  
\_\_\_\_\_  
(Author's signature)

  
\_\_\_\_\_  
(Supervisor's signature)

**Address:**

No.4 Pekan Lama,  
Brinchang, 39100,  
Cameron Highlands, PAHANG

Ts Dr Anbuselvan a/l Sangodiah  
Supervisor's name

**Date:** 22 April 2022

**Date:** 22 April 2022

<b>Universiti Tunku Abdul Rahman</b>			
Form Title : <b>Sample of Submission Sheet for FYP/Dissertation/Thesis</b>			
Form Number: <b>FM-IAD-004</b>	Rev No.: <b>0</b>	Effective Date: <b>21 JUNE 2011</b>	Page No.: <b>1 of 1</b>

**FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY**  
**UNIVERSITI TUNKU ABDUL RAHMAN**

Date: 22 April 2022

**SUBMISSION OF FINAL YEAR PROJECT**


It is hereby certified that Wong Jie Jing (ID No: 18ACB05517) has completed this final year project entitled “Web Based Information System for Fishery Industry” under the supervision of Ts Dr Anbuselvan a/l Sangodiah from the Department of Information Systems, Faculty of Information and Communication.

I understand that University will upload softcopy of my final year project in pdf format into UTAR Institutional Repository, which may be made accessible to UTAR community and public.

Yours truly,  
WONG JIE JING

## DECLARATION OF ORIGINALITY

I declare that this report entitled “**Web Based Information System for Fishery Industry**” is my own work except as cited in the references. The report has not been accepted for any degree and is not being submitted concurrently in candidature for any degree or other award.

Signature :  \_\_\_\_\_

Name : Wong Jie Jing

Date : 22 April 2022

## **ACKNOWLEDGEMENTS**

I would like to express thanks and appreciation to my supervisor, Ts. Dr Anbuselvan a/l Sangodiah and my moderator, Mr. Tey Chee Chieh who have given me a golden opportunity to do my Final Year Project - Web based information system for fishery industry. It is a great opportunity for me to learn and explore in fishery industry business information. A million thanks to you. When I was facing problems in this project, the advice from them always assists me in overcoming the problems. Again, a million thanks to my supervisor and moderator.

A special thanks to Ts. Dr Anbuselvan a/l Sangodiah, for his patience, unconditional support to guide and encourage me during carrying out this Final Year Project. Finally, I must say thanks to my parents and my family for their love, support, and continuous encouragement throughout the course.

## **ABSTRACT**

This project is a case-study based project, which is specific to the XIAN Fishery company. XIAN Fishery company is a traditional company which they are still using a traditional method to manage and operate their business, with handwriting for recording and calculate all the business operations data. The day-to-day business operation of the company is covered storekeeping, daily income records, payments and others. Due to problems like overstock or understock, data inaccurate, human mistakes in calculation and difficulty to summarize data, it causes a loss in money, integrity, and customer loyalty to the company. Therefore, this project is intended to develop an information system for the company in order to address issues their facing. The proposed system is a web-based system which allow user to access anytime, at least they have an Internet.

The type of system development life cycle that used in this project is Rapid Application Development, this methodology enables the system to be developed in a systematic way. Besides, the expected benefits from this project are to allow company to manage the business information in a higher accuracy and efficiency way. The system will help the company to calculate and update the stock available amount on time. Thus, user can get the actual data. The company can manage customer or supplier information anytime whenever they needed, and all the order or purchase records can be linked to the specific supplier and customer. Furthermore, the system provides a reporting function in order to help the company to summarize the business information and generate different type of report base on their preference.

# TABLE OF CONTENTS

<b>TITLE PAGE</b>	<b>i</b>
<b>REPORT STATUS DECLARATION FORM</b>	<b>ii</b>
<b>FYP THESIS SUBMISSION FORM</b>	<b>iii</b>
<b>DECLARATION OF ORIGINALITY</b>	<b>iv</b>
<b>ACKNOWLEDGEMENTS</b>	<b>v</b>
<b>ABSTRACT</b>	<b>vi</b>
<b>TABLE OF CONTENTS</b>	<b>vii</b>
<b>LIST OF FIGURES</b>	<b>xii</b>
<b>LIST OF TABLES</b>	<b>xvi</b>
<b>LIST OF ABBREVIATIONS</b>	<b>xv</b>
<b>CHAPTER 1 INTRODUCTION</b>	<b>1</b>
1.1 Background Information	1
1.2 Problem Statement and Motivation	3
1.3 Project Objectives	5
1.4 Project Scope	6
1.5 Impacts	6
1.6 Contribution	6
1.7 Report Organization	7
<b>CHAPTER 2 LITERATURE REVIEW</b>	<b>8</b>
2.1 Theory Literature Review	8
2.2 Product Literature Review	9
2.2.1 Fisheries Information System	9
2.2.2 Inventory Management System	11
2.2.3 Fishbowl Inventory System VS ASAP System	14
2.3 Similarity and Differences Between the Reviewed System and Proposed System	15

<b>CHAPTER 3 SYSTEM METHODOLOGY/APPROACH</b>	<b>17</b>
3.1 Data Collection	17
3.2 System Analysis	18
3.2.1 Functional Requirements	18
3.2.2 Non-Functional Requirements	19
3.3 Hardware and Software Requirements	21
3.4 System Architecture Diagram	22
3.5 Use Case Diagram and Description	23
3.6 Class Diagram	25
3.6.1 Analysis Class Diagram	25
3.6.2 Design Class Diagram	27
<b>CHAPTER 4 SYSTEM DESIGN</b>	<b>28</b>
4.1 Use Case Specification	28
4.1.1 Use Case Specification (Add Product)	28
4.1.2 Use Case Specification (Update Product Detail)	31
4.1.3 Use Case Specification (Add Customer Order)	33
4.1.4 Use Case Specification (Add Stock Purchase Record)	35
4.1.5 Use Case Specification (Manage Customer Arrears Record)	37
4.1.6 Use Case Specification (Generate Report)	40
4.1.7 Use Case Specification (Login)	43
4.1.8 Use Case Specification (Register Account)	45
4.2 Design of Data Storage	47
4.2.4 ERD Diagram	47
4.3 Design of Graphical Interfaces	48
4.3.1 Graphical Interface for Login Page	48
4.3.2 Graphical Interface for Home Page (Manager)	49
4.3.3 Graphical Interface for Home Page (Staff)	51
4.3.4 Graphical Interface for Edit Profile Page	52
4.3.5 Graphical Interface for Account Registration Page	53
4.3.6 Graphical Interface for Account List Page	54



4.3.7	Graphical Interface for Add Stock Page	55
4.3.8	Graphical Interface for Stock Page	56
4.3.9	Graphical Interface for Edit Stock Page	57
4.3.10	Graphical Interface for Add Customer Order Record Page	58
4.3.11	Graphical Interface for Customer Order Information Page	59
4.3.12	Graphical Interface for Update Customer Order Status Page	60
4.3.13	Graphical Interface for View Completed Customer Order Page	62
4.3.14	Graphical Interface for View Cancelled Customer Order Page	66
4.3.15	Graphical Interface for Add Stock Purchase Record Information Page	67
4.3.16	Graphical Interface for Stock Purchase Record Page	68
4.3.17	Graphical Interface for Update Stock Purchase Order Status Page	69
4.3.18	Graphical Interface for View Completed Stock Purchase Order Page	70
4.3.19	Graphical Interface for View Cancelled Stock Purchase Order Page	71
4.3.20	Graphical Interface for Customer Arrears Information Page	72
4.3.21	Graphical Interface for Update Customer Arrears Record Page	73
4.3.22	Graphical Interface for View Customer Arrears Record Page	75
4.3.23	Graphical Interface for Add Supplier Page	77
4.3.24	Graphical Interface for Supplier Page	78
4.3.25	Graphical Interface for Edit Supplier Page	79
4.3.26	Graphical Interface for Add Customer Page	81
4.3.27	Graphical Interface for Customer Page	82
4.3.28	Graphical Interface for Edit Customer Page	83

4.3.29	Graphical Interface for Invoice Preview Page	85
4.3.30	Graphical Interface for Sales Report Preview Page	86
4.3.31	Graphical Interface for Purchase Report Preview Page	87
<b>CHAPTER 5 SYSTEM IMPLEMENTATION</b>		<b>88</b>
5.1	System Development Life Cycle (SDLC)	88
5.2	Project Timeline	92
5.3	Technologies and Tools Involved	94
5.3.1	Programming Language	94
5.3.2	Integrated Development Environment	95
5.3.3	Framework	96
5.3.4	Database Management System	96
5.4	Implementation Issues and Challenges	97
<b>CHAPTER 6 SYSTEM EVALUATION AND DISCUSSION</b>		<b>98</b>
6.1	System Testing and Performance Metrics	98
6.1.1	Test Case	98
6.2	Testing result	107
6.3	Objective Evaluation	108
<b>CHAPTER 7 CONCLUSION AND RECOMMENDATION</b>		<b>110</b>
7.1	Conclusion	110
7.2	Recommendations	111
7.2.1	Future Improvements	111
<b>REFERENCES</b>		<b>112</b>
<b>APPENDIX</b>		<b>115</b>
<b>QUESTIONNAIRE</b>		<b>115</b>
<b>QUESTIONNAIRE SUMMARY REPORT AND COMPANY</b>		<b>118</b>
<b>AGREEMENT</b>		
<b>WEEKLY REPORT</b>		<b>121</b>
<b>POSTER</b>		<b>128</b>

**PLAGUARISM CHECK RESULT**

**129**

**FYP2 CHECKLIST**

**129**

## LIST OF FIGURES

<b>Figure Number</b>	<b>Title</b>	<b>Page</b>
Figure 2-1	Key Functions of Fishbowl Inventory System	11
Figure 2-2	ASAP System	12
Figure 2-3	Flow chart Diagram for Web based Fishery Information System	15
Figure 3-1	System Architecture Diagram	22
Figure 3-2	Use-case Diagram	23
Figure 3-3	Analysis Class Diagram	25
Figure 3-4	Design Class Diagram	27
Figure 4-1	Activity Diagram of Add Product (Happy Path and Alternate Path Flow of Events)	29
Figure 4-2	Activity Diagram of Add Product (Exceptional Path Flow of Events)	30
Figure 4-3	Activity Diagram of Update Product Detail (Happy Path and Alternate Path Flow of Events)	32
Figure 4-4	Activity Diagram of Add Customer Order (Happy Path and Alternate Path Flow of Events)	34
Figure 4-5	Activity Diagram of Add Stock Purchase Record (Happy Path and Alternate Path Flow of Events)	36
Figure 4-6	Activity Diagram of Manage Customer Arrears Record (Happy Path and Alternate Path Flow of Events)	38
Figure 4-7	Activity Diagram of Manage Customer Arrears Record (Exceptional Path Flow of Event)	39
Figure 4-8	Activity Diagram of Generate Report (Happy Path and Alternate Path Flow of Events)	41
Figure 4-9	Activity Diagram of Generate Report (Exceptional Path Flow of Event)	42
Figure 4-10	Activity Diagram of Login (Happy Path and Alternate Path Flow of Events)	44

Figure 4-11	Activity Diagram of Register Account (Happy Path and Alternate Path Flow of Events)	46
Figure 4-12	ERD Diagram	47
Figure 4-13	Login Page Interface	48
Figure 4-14	Home Page (Manager) Page Interface – 1	49
Figure 4-15	Home Page (Manager) Page Interface – 2	50
Figure 4-16	Home Page (Staff) Page Interface	51
Figure 4-17	Edit Profile Page Interface	52
Figure 4-18	Account Registration Page Interface	53
Figure 4-19	Account List Page Interface	54
Figure 4-20	Add Stock Page Interface	55
Figure 4-21	Stock Page Interface	56
Figure 4-22	Edit Stock Page Interface	57
Figure 4-23	Add Customer Order Record Page Interface	58
Figure 4-24	Customer Order Information Page Interface	59
Figure 4-25	Update Customer Order Status Page Interface (Details tab)	60
Figure 4-26	Update Customer Order Status Page Interface (Customer Detail tab)	61
Figure 4-27	View Completed Customer Order Page Interface (Details tab)	62
Figure 4-28	View Completed Customer Order Page Interface (Arrears Haven't Settled)	63
Figure 4-29	View Completed Customer Order Page Interface (No Arrears)	64
Figure 4-30	View Completed Customer Order Page Interface (Arrears Settled)	65
Figure 4-31	View Completed Customer Order Page Interface (Customer Details tab)	65
Figure 4-32	View Cancelled Customer Order Page Interface (Details tab)	66
Figure 4-33	View Cancelled Customer Order Page Interface (Customer Details tab)	66
Figure 4-34	Add Stock Purchase Record Information Page Interface	67
Figure 4-35	Stock Purchase Record Page Interface	68

Figure 4-36	Update Stock Purchase Order Status Page Interface (Details tab)	69
Figure 4-37	Update Stock Purchase Order Status Page Interface (Supplier Detail tab)	69
Figure 4-38	View Completed Stock Purchase Order Page Interface (Details tab)	70
Figure 4-39	View Completed Stock Purchase Order Page Interface (Supplier Details tab)	70
Figure 4-40	View Cancelled Stock Purchase Order Page Interface (Details tab)	71
Figure 4-41	View Cancelled Stock Purchase Order Page Interface (Supplier Details tab)	71
Figure 4-42	Customer Arrears Information Page Interface	72
Figure 4-43	Update Customer Arrears Record Page Interface (Details tab)	73
Figure 4-44	Update Customer Arrears Record Page Interface (Order Details tab)	74
Figure 4-45	Update Customer Arrears Record Page Interface (Customer Details tab)	74
Figure 4-46	View Customer Arrears Record Page Interface (Detail tab)	75
Figure 4-47	View Customer Arrears Record Page Interface (Order Detail tab)	76
Figure 4-48	View Customer Arrears Record Page Interface (Customer Detail tab)	76
Figure 4-49	Add Supplier Page Interface	77
Figure 4-50	Supplier Page Interface	78
Figure 4-51	Edit Supplier Page Interface (Overview tab)	79
Figure 4-52	Edit Supplier Page Interface (Edit tab)	80
Figure 4-53	Add Customer Page Interface	81
Figure 4-54	Customer Page Interface	82
Figure 4-55	Edit Customer Page Interface (Overview tab)	83
Figure 4-56	Edit Customer Page Interface (Edit tab)	84
Figure 4-57	Edit Customer Page Interface (Remaining Arrears tab)	84

Figure 4-58	Invoice Preview Page Interface	85
Figure 4-59	Sales Report (Monthly) Preview Page Interface	86
Figure 4-60	Sales Report (Yearly) Preview Page Interface	86
Figure 4-61	Purchase Report (Monthly) Preview Page Interface	87
Figure 4-62	Purchase Report (Yearly) Preview Page Interface	87
Figure 5-1	Waterfall Model phases flow	88
Figure 5-2	Rapid Application Development (RAD) Model phases flow	89
Figure 5-3	Gantt Chart for FYP 1	92
Figure 5-4	Gantt Chart for FYP 2	93
Figure 5-5	Logo of PyCharm	95

## LIST OF TABLES

<b>Table Number</b>	<b>Title</b>	<b>Page</b>
Table 2-1	Fishbowl Inventory System and ASAP System	14
Table 3-1	Hardware requirement	21
Table 3-2	Software requirement	22
Table 5-1	Comparison between Waterfall model and Rapid Application Development Model	91
Table 6-1	Test the account registration and login function	98
Table 6-2	Test the add function	100
Table 6-3	Test the data modification	102
Table 6-4	Test the calculation of stock available	104
Table 6-5	Test the calculation of customer arrears	105
Table 6-6	Test the calculation of updated customer arrears and received amount	106
Table 6-7	Test the view and printing invoice	107
Table 6-8	Test the view and printing report	108
Table 6-9	Test Result Overview	108



## LIST OF ABBREVIATIONS

<i>BOM</i>	Bill of materials
<i>DBMS</i>	Database management system
<i>FAC</i>	Fish and Aquatic Conservation
<i>FIS</i>	Fisheries information system
<i>FAO</i>	Food and Agriculture Organization
<i>GDP</i>	Gross Domestic Product
<i>IDE</i>	Integrated development environment
<i>IS</i>	Information System
<i>MRP</i>	Material requirements planning
<i>NMFS</i>	National Marine Fisheries Service
<i>RAD</i>	Rapid application development
<i>SDLC</i>	System Development Life Cycle
<i>SSL</i>	Secure Sockets Layer
<i>WPACFIN</i>	Western Pacific Fisheries Information Network

## **CHAPTER 1: INTRODUCTION**

### **1.1. Background Information**

Fishery industry is one of the most important subsectors in Malaysia, it has three main subsectors which is marine capture fisheries, inland fisheries and aquaculture. Fishery industry also playing an important role in the national economy. The fishery industry has contributed about 1.07 - 1.73% to Gross Domestic Product (GDP) [1]. Besides than contributing to the national GDP, the fishery industry also provides job opportunity, foreign exchange and the main source of protein supply for the population in the country. Along with the development of the fishery industry, it has provided employment for more than 20,000 fish farmers and 79,000 fishermen [2]. Fish constitutes 60-70% of the national animal protein intake, with per capital consumption of 47.8kg per year. In addition, 150g of fish can provides 50 to 60% of adult's daily protein requirement [3].

An information system (IS) is a formal, organizational system that designed to collect, store, process and distribute information. Due to the keeping increasing of company data, the information system in Malaysia fishery industry is playing an important role which to provide support for better management. It aimed at making sure there are a correct balance between the fishery resource conservation and its economic benefits [4].

An information system in the fishery industry is playing a significant role in provides support for formulating and define the management strategies. The management strategies are designed for ensuring the relationship between the protection of fishery resources and the economic benefits derived from the development of the same resources are in an appropriate balance [5]. Spagnolo stated that, due to the increasing attention pay to management-related matters and to the number of members of the international community involved in the fisheries. It causes the demand for the fishery-related statistic to significantly increase in the past few years.

Using an effective information system could help the fishery company to make a better decision and better planning during the business operation. It can allow the company to choose the best course of action and carry out the task [6]. By making a wise decision could bring positive impact to the company such as improve the revenue of the company. At the same time, it could help to promote industry development in Malaysia. Nowadays, information systems can be viewed as a factor of production which could use to replace the traditional labour and capital

[7]. Through the information system, it able to perform most of the business operation of a company. IS could also affect the cost and quality of the information since the system may reduce the risk of losing data.

This project is case study based, which is specific to the XIAN Fishery company which allocate at Alor Setar, Kedah. This project is intended to develop an information system for the company. XIAN Fishery industry has operated for about 5 years, the day-to-day business operation of the company is covered storekeeping, daily income record, payment, update daily price, fishing, supply and export. The expected benefit of this project is the issue of the company could be addressed. At the same time, allow the company could operate the business operation with lower cost, fewer labour and better production.

## 1.2. Problem Statement and Motivation

After reviewing the data collected from the questionnaire which was answered by the key person of XIAN Fishery company, a set of the summary report is generated according to the received result (refer to Appendix- Summary report for questionnaire). It shows that all the business operation in the company is still doing in manually. They record their data in a physical document, for instance, stock in and stock out record, income report and so on. It causes the data recorded duplicate, wrong in detail, not accuracy and even sometimes will miss out some important data. All these problems have caused a lot of negative impact to the company and affects their business operation. The most serious consequences that lead by those issues is company loss in money, integrity and also customer loyalty. Loss in customers loyalty because they are disappointed to the company of its unable to fulfil the order on time. It is also one of the reasons that cause the company loss in integrity. Due to the inaccurate and missing of data, it has cause company unable to get back the arrear. Besides, company loss in money is also caused by the overstock problem.

The problem that faced by XIAN Fishery company are shown below:

- **Overstock and under stock problem**

The company is not very clear about how much of stock they have, this leading to they may ordered too much or too few of product. This is because the company do not have a system to notice them about which product have almost reached the maximum storage, and which product need replenishment. Therefore, the company may face the overstock and under stock problem. This is the main problem that will cause the company loss in money, integrity and customers.

- **Inaccurate data in daily income report**

The company will record their daily income and highlight the amount of money that customer arrears and information of customer. The company have hire staff to record the data. However, it may be some error in amount of money or missing some of the data. This is the main issue that cause the company can't get back the arrears.

- **Human error in calculation and record**

Human is easy to cause error because human is forgetfulness and easily distracted. It is very hard to us to always pay 100% attention to what we are doing. Hence, when the staff calculating the total stock or payment amount, they may be input a wrong value for calculation. Moreover, it is also possible that the staff recorded a wrong amount of total stock to the report.

- **Difficult to manage summary report**

Due to the company is still handwriting the record, therefore it is difficult for them to gathering the data and summarize it to generate a summary report. For instance, sales report, weekly income report and annual report. With using information system, the system can help company to summarize and generate various type of report with higher accuracy. The system allow user to generate different types of the report within few steps, it is more efficiency.

### 1.3. Project Objective

- **To develop a web-based information system for the company**

Ensure that the web-based information system can support the company to better perform the business operation, such as storekeeping and daily income recording. By perform storekeeping, the storekeepers can record the items, quantity and details of inbound and outbound from warehouse by using the system. By refer to the system, the company could directly know the quantity of inventory in the warehouse and which product in under stock or overstock. For the daily income recording, the clerk can record the daily income and highlight the amount of money that customer arrears. When the customer has paid back, the amount will count as the actual income of the company. This is the main objective of this project as it can address most of the facing problem of the company. It could address the problem of overstock and understock, ensure the daily income report accuracy and minimize the probability of human error in calculation and record.

- **To integrate reporting module in the web-based information system**

All the data and information of the company will be stored in the database. The reporting module could bring ease for the company to summarize their business information and provide accurate information for user to make decision. For example, user can decide whether to continue business with particular of customer by viewing the customer arrears report. This could solve the problem of the difficulty to summarize the data and manage or generate the summary report from the physical document.

- **To evaluate the web-based information system for the company**

Ensure the correctness of the information system is the main objective of this project. It is necessary to evaluate the outcome of the system, in order to make sure the system could provide a correct and accurate output. Testing the usability and complexity of the interface, to ensure that it could run smoothly and is not too complex for user to interact with the system. Testing all the feature and module in the system, make sure it is usable and error free.

#### **1.4. Project Scope**

The scope of this project is to develop an information system to the company in order to address the problem that stated in the problem statement. The targeted user of the system is the staff in the XIAN Fishery company which is storekeeper and the clerk. The information system will cover the business operation such as storekeeping and daily income recording. This project is a case study based project, which is specific to the XIAN Fishery company. Therefore, all the requirements, features and functions of the system are based on the requirement of the company.

#### **1.5. Impacts**

An information system (IS) could help the company in fishery industry to perform their business operation more effectively with better efficiency. It could enhance the accuracy and quality of the data output. Besides, it also supported for better information retrieval and could eliminate the paper works. A company with information system is having a competitive advantage and could make a better decision making.

On the other hand, information system also has some negative impact. The major negative impact is implementation cost in case of software, hardware and people. Then, unemployment since most of the paperwork could be done by the IS in a short time. Moreover, it is possible to have a security problem. The industry may need to spend more effort to beware the hacker in order to avoid any loss of critical business information and protect the customer privacy.

#### **1.6. Contributions**

As the information system is a very efficient tool to manage the company information. However, XIAN Fishery company is a traditional company that still using the physical way to record and manage their business information, which have high probability of causing error or problem. Therefore, the system in this project is developed in order to address the problem of the company.

Furthermore, the proposed project system could significantly boost the company's performance and productivity. The system can provide a more accurate and reliability information. So that it can reduce the operation cost and protect the company's integrity.

## **1.7. Report Organization**

This report is organised into 7 chapters, which is Chapter 1 Introduction, Chapter 2 Literature Review, Chapter 3 System Methodology/ Approach, Chapter 4 System Design, Chapter 5 System Implementation, Chapter 6 System Evaluation and Discussion and Chapter 7 Conclusion and Recommendation.

The chapter 1 provide an introduction of this project which explaining the background information, problem statement and motivation, project objectives, project scope, impact, significance and contributions and report organisation. The second chapter is the theory literature review and product literature review of the related existing systems in the market. This chapter is to identify the strengths and weaknesses of each product and find out the similarities and differences between the reviewed systems and the proposed system.

Moreover, chapter 3 is system methodology that used to plan, control and also structure the project development process. In this chapter will describe the requirements in terms of functional, non-functional, hardware and software. Besides, it will also contain the use-case diagram and class diagrams of the system. The chapter 4 is describing the overall system design of this project, which contain the use case specifications of every function and ERD diagram for system data storage.

Furthermore, the fifth chapter is discussing the details on how to implements the design of the system. It describes the system development life cycle in used, the project timeline, technologies and tools involved, the implementation issues or challenges and the system operation. The chapter 6 is the system evaluation and discussion, which contains the testing of system performance, setup and result and evaluation of project objectives and challenges. Last but not least, the last chapter of this report is describing the conclusion and the recommendation of this project.



## **CHAPTER 2: LITERATURE REVIEW**

### **2.1. Theory Literature Review**

According to the Food and Agriculture Organization (FAO), it defined a fishery is an activity that leading to harvesting of fish. It may involve capture of wild fish or raising of fish through aquaculture. However, all activities that concerned with catching, storing, processing, transporting or marketing fish or fish products is considered as fishery industry [8]. FOA has defined fishery industry as “includes both recreational, subsistence and commercial fishing and the harvesting, processing and marketing sectors.” Moreover, the commercial business of fishery industry is aimed to delivery fish or fish product for human consumption or as a raw material in other industrial processes [9]. There are more than 500 million of people in the developing countries are economically depend on the fishery and aquaculture [10].

A fishery company may work with a huge amount of data. Most of the people think that data is asynonymous of information. However, in the fact, information consists of data that has been organized to help answer questions and address problem [11]. An information system is a software that could help the company to organize and analyze data. The information system in the fishery industry is acting as a significant role in provide support to the company to define the management strategies [4]. There are several information systems that could use to help the business operation in the whole fishery industry. For example, fishery geographical information system and fishery information system.

## **2.2. Product Literature Review**

### **2.2.1. Fisheries Information System**

Fisheries information system (FIS) is an online database that used for collection and management of Fish and Aquatic Conservation (FAC) Program information. FIS is focusing on tracking the accomplishments of the program and operational needs for performance reporting and strategic planning [12]. FIS is playing a significant role in ensuring the correct balance between the fishery resource conversation and the economic benefits arising from exploiting these same resources [5].

In the following sub-section will discuss about the fisheries information system which is Western Pacific Fisheries Information Network (WPACFIN).

- **Western Pacific Fisheries Information Network (WPACFIN)**

The Western Pacific Fisheries Information Network (WPACFIN) system is a fisheries information system. It is established by the National Marine Fisheries Service (NMFS) in the year of 1981. WPACFIN is established in order to help the participating fisheries agency to carry out the data collection, analysis, reporting program and data management activity to better support fisheries management. The overall function goal of the system is to provide quality fisheries data needed to develop, implement, evaluate and amend Federal fishery management plans (FMPs) for the western Pacific region [13].

**Key Features:**

- **Collect and analysis data**

The system able to collect and analysis the data that collected from various fishery agency in order to provide a high-quality fishery data that could improve the fishery management.

- **Enable data and information sharing**

WPACFIN system able to share the fishery data and information among the fisheries agencies in order to support fishery management need through the email and direct telecommunication such as phone calling.

- **Support report generation**

The system able to analysis data and generate report such as annual effort and catch report.

- **High protection to confidential fishery data**

The confidential data in the system will have a highly confidential protect. The system will not release the confidential data in any format, unless have the specific written permission from the agency that contributing the data to system.

**Conclude:**

The WPACFIN system is a fishery information system that cover for worldwide fishery industry fishery management. The proposed system of this project is having similar features with the WPACFIN system. However, the cover range of the proposed system is quite smaller than the WPACFIN system. The proposed system is mainly focusing on the data recording, analysis, reporting and data management within a company but not for the whole fishery industry.

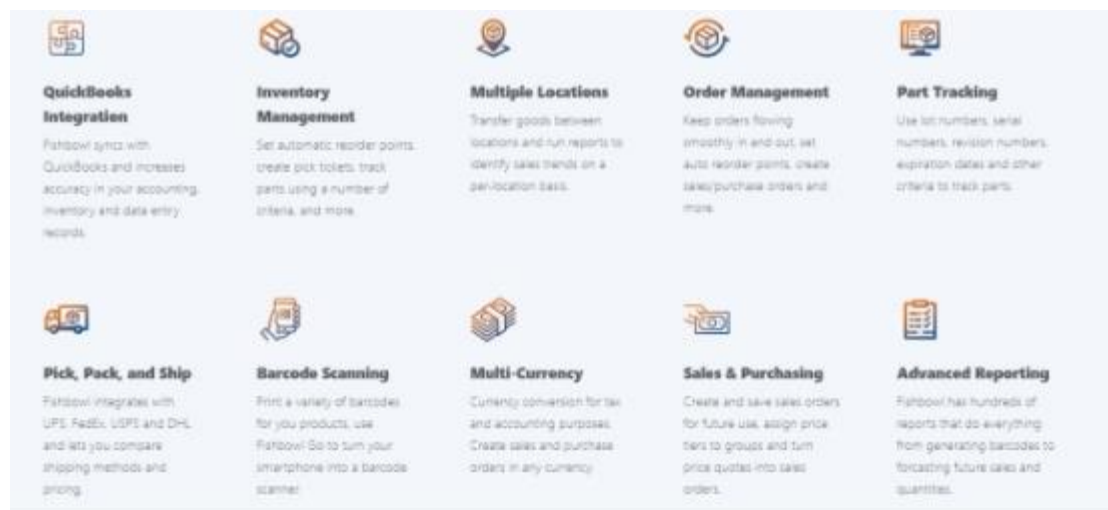
### 2.2.2. Inventory Management System

Inventory management system is a software system that using for tracking inventory level throughout the entire supply chain, which cover from purchasing to production to end sales and deliveries. Company often use the inventory management system to prevent the stock over product overstock and out stages [14].

There are two inventory management system have been reviewed in this section, which is Fishbowl system and ASAP system. The strengths and weaknesses of those systems are shown as below:

- **Fishbowl Inventory system**

Fishbowl inventory software is an inventory management software that designed for small and medium organization. This system is able to meet the requirement of those company that require simplified inventory control, material requirements planning and job shop control or manufacturing execution. It uses an inventory-centric approach and provides functions for barcodes, asset management, raw material management, cycle counting, and customized reports. The system also automates the quotation, order, and procurement process [15].



**Figure 2.1 Key Functions of Fishbowl Inventory System**

**Strengths:**

- **Integrated with the manufacturing**

This system allow user to easily check out the inventory situation. The manufacturing users can directly view the stock available level. Therefore, the user may know what the bill of materials should be used for.

**Weaknesses:**

- **Limitation in report generator**

The report generator in this system is little bit inconvenience. Since, it needs extra pay to customization own reports. It will cause user have difficulty to find the information on certain customers without having a large list of purchasing.

- **ASAP System**

ASAP (Automated Standard Application for Payments) system is an inventory management system that combines the use of desktop software, barcode scanners, barcode printers and mobile devices. The system simplifies inventory management, such as goods, consumables, stocks and much more [16]. It is a system that suitable for stockroom or warehouse at small, medium or even large company. It could easily configurable, enable user to optimize data collection fields for mobile use and barcode scanning. The features of ASAP system are check-in or check-out, advanced user security, email and text alerts, data import, web reporting and so on.



**Figure 2.2 ASAP System**

**Strengths:**

- **Record Stock-in and stock-out**

The function of record stock-in and stock-out of ASAP system able user to tracking the stock shelf life of the product and stock-in or stock-out record of the product. So, the user may track back that when the staff or client have checked out the product and what product have been checked out. This feature could help to ensure the inventory is enough when it is needed.

- **Web reporting functions**

This system support for report generation and web reporting features, it is one of the advance features in this system. The web reporting feature allows the user access to the stock information online through a web browser on computer. The system is support for report customization without any extra charge.

- **Track stock inventory**

The system can support for inventory like batch and serialized inventory which is high complexity. By using this system, the user able to monitor the quality and quantity of the stock. It will automatically allocate batches with materials throughout the inventory life cycle. This system can enhance the record keeping and avoid waste of stock.

**Weaknesses:**

- **Unable to manage customer order**

ASAP system do not have functions that can compare the current stock level and the stock needed in the customer order to ensure the stock in the inventory is enough

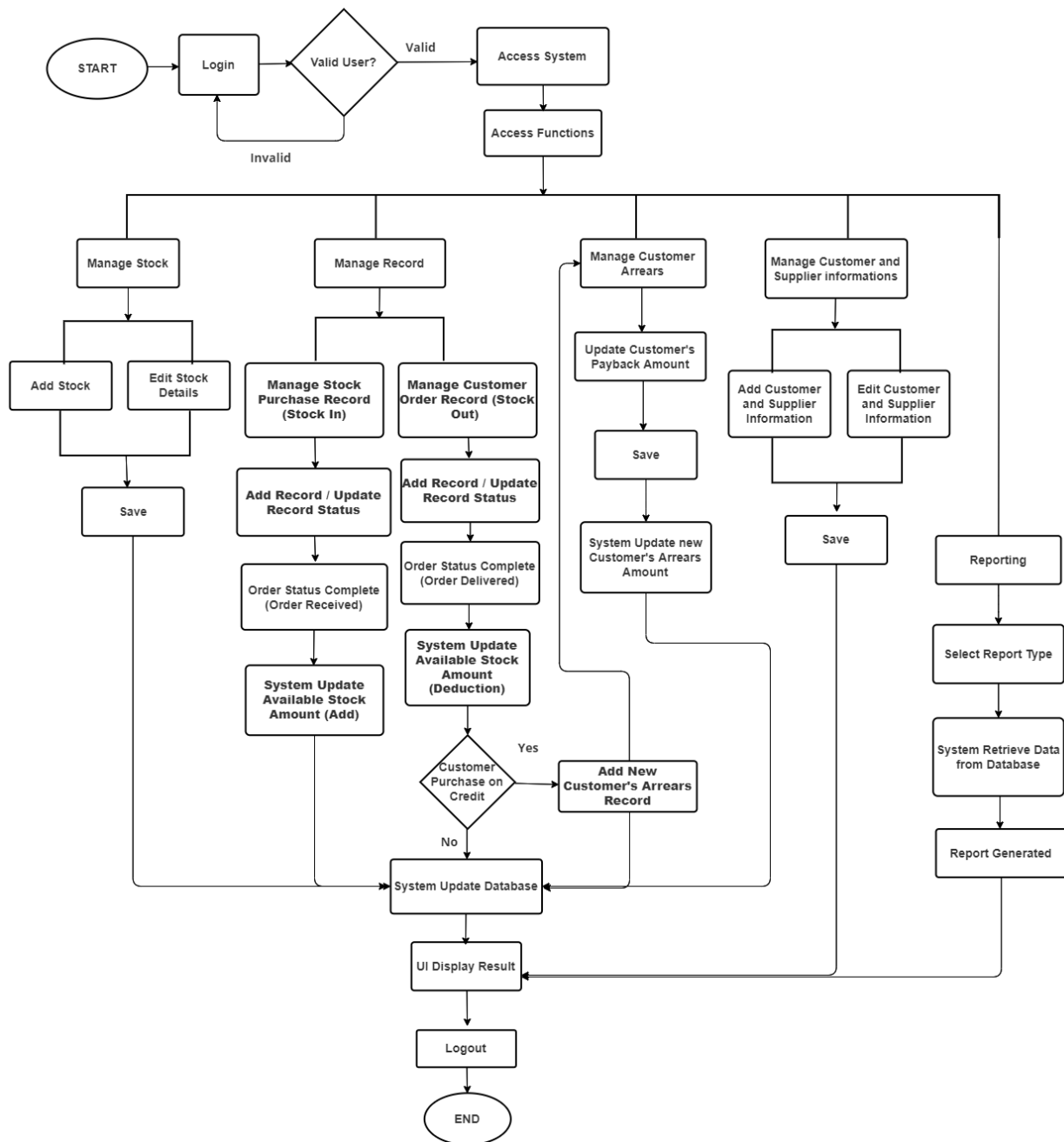
**2.2.3. Fishbowl Inventory System vs ASAP System**

<b>Functions</b>	<b>Fishbowl Inventory System</b>	<b>ASAP System</b>
<b>Inventory control</b>	✓ Able to track stock inventory	✓ Able to record the stock-in and stock-out ✓ Able to track stock inventory
<b>Integrate with manufacturer</b>	YES	NO
<b>Summary report</b>	Simple	Detail
<b>Customize report</b>	Limited, have extra charge	YES

**Table 2.1 Fishbowl Inventory System vs ASAP System**

The table above shows the comparison between the Fishbowl Inventory System and ASAP System. ASAP provides the function that can record the stock-in and stock-out and function to track the stock inventory. However, the fishbowl inventory system does not provide a function that can record the stock-in and stock-out. ASAP system do not integrate with the manufacturer, but Fishbowl inventory system does, so that the user could know which and how many stocks are needed to order in order to avoid stock unavailable. ASAP system is able to generate a detailed and customizable summary report. Fishbowl inventory system is only able to generate simple report and if user want to customize the summary report, they have to pay for extra charge.

### 2.3. Similarity and Differences Between the Reviewed System and Proposed System



**Figure 2.3 Flow chart Diagram for Web based Fishery Information System**

The proposed system of this project is designed intended to allow user to record and manage the business information of the company like stock, customer order, purchase record, customer arrear and so on. However, those two reviewed systems are designed to manage and track the inventory relative information.



Both reviewed system and proposed system are managing some information, but the cover range of the proposed system is larger and is not only focus on one relative information. In term of the system functions, the proposed system is having some similarity but also some differences with the reviewed system. The combination of manage stock function, manage customer order record and manage stock purchase function of the proposed system is similar with the record stock-in and stock-out function of the ASAP system. ASAP system only record information of stock check-in and check-out, but the proposed system also records the information about when the stock is bought from or bought by which individual or company. Moreover, the reporting function of the proposed system is more similar with the ASAP system because it also supports for report customization. The system allow user to customize the type and period of report, such as monthly income report, weekly sales report and so on. Besides, the customization is free of charge.

## **CHAPTER 3: SYSTEM METHODOLOGY/APPROACH**

### **3.1. Data Collection**

The data collection is a procedure of gathering, measuring and analysing on the targeted information. The targeted participation in this data collection process is the key persons from the XIAN Fishery company.

The data collection method that used in this project is **questionnaire**. In this project, have an in-depth understanding of the XIAN Fishery company is needed, but the company is not sufficient in free time to have a face-to-face interview with me. Therefore, a questionnaire which know as a type of written interview has become the best choice for me. It is a research tool that consist of a series of questions and it is aimed to collect data from the respondent [17]. The questionnaire is able to be carried out face to face, online or by email. In order the project could proceed, a set of the questionnaire has been prepared (refer to Appendix- Questionnaire). The questionnaire contains twelve open questions which able to probe the actual existing problems in the business operations from the company. Open question allows the respondent to express their thought and opinion in their own words. It allows researcher to collect more in-depth information from the respondents [17]. There are two key persons from the company have participate to the questionnaire. The questionnaire is sending to the key persons by email, and the key persons will send back their responses. A summarize report is generated base on the responses of the key persons. The founder or CEO of the Xian Fishery company is as a represent to check the report and has agreed with the content (refer to Appendix-Questionnaire Summary Report and Company Agreement).

## **3.2. System Analysis**

### **3.2.1. Functional Requirements**

Functional requirements are any requirement that specifies what the system must do or not do. Functional requirements will describe the specific behaviour of the system when certain conditions are met, include calculations, data input and business processes [18]. The functional requirements for the purposed system are:

- **User Login**

The systems should allow user login by provide a valid email and password to verify their authentication. The system should validate the user email address and password that user enter. If it is valid, system allow user to access the system.

- **Register Account**

The system should allow user that with a manager position to register an account. The system should verify the data that user key in and save it in the database. After the data is verified, user should be able to login to the system.

- **Stock Management**

The system should support user to add and update the stock information. The system will know the exact amount of stock available of the company. System able to update synchronize the stock available according to the customer order record and stock purchase record.

- **Stock Purchase Record Management**

The system should support user to add a stock purchase record and update purchase status. It should help users to count the total payment amount. System will save all the record in the database, so that user can retrieve and view the record whenever they need.

- **Customer Order Record Management**

The system should support user to add a customer order record and update the order status. System will save all the data of the record in the database therefore users can check out the record.

- **Remaining Arrear Calculation**

The system should be able to calculate the remaining arrear of customer. It will minus the arrear amount according to the payback amount that user updated. After the calculation, system should display the updated arrear amount of customer.

- **Report Generation**

The system should allow users to choose the type and the time period of the report that they want to generate. The system will retrieve the required information from the database accordingly to users' need and generate the report.

### **3.2.2. Non-Functional Requirements**

The non-functional requirements are defined as any requirement that specifies how the system performs a specific function. This means that it will describe how the system should behave and the limitations on its functionality. All the remaining requirements that is not included in the functional requirements are covered under non-functional requirements [18].

- **Performance Requirements**

The length of response time is the important factor that effect the performance of the information system. A system that with short response time can improve the efficiency and effectiveness of the business operation process. Therefore, need to ensure that the system is able to give a response in a short period of time for a given job. For instance, system can calculate the remaining arrear amount within few second and display it for user.

- **Operation Requirements**

The system should be able to operate in when user's device is with Internet and browser. The system should be able access for every user who provided a registered email and password. Besides, the system should be able to save and update the data to the database.

- **Security Requirements**

The system should be able to ensure the confidentiality of the system data, which only allow those authorized users to access and manage the system data. All the users must provide their valid user id and password to login to the system.

- **Reliability Requirements**

The system should be able to provide data with high accuracy and ensure the integrity of the data. Even if there are some unpredictable situations occurred, like user accidental power off the computer, the data will not be lost. Furthermore, the system should make sure that all the data is permanently saved, so that user able to view the data even from few years before.

- **User Interface**

The user interface of the system should be user friendly, thus users able to know how to navigate the system when they see the interface. The interface should use an appropriate color for the graphical user interface (GUI) which is pleasant and able to attract user. It could be accomplished by follow the three colour design principle, which do not use more than three colour in a single interface. User interface is a very important factor that will impact on users' experience therefore system should use the appropriate navigate tool and color.

### 3.3. Hardware and Software Requirements

During the implementation of the information system, hardware and software are necessary. All the hardware and software should be ensured that can support the information system before installing the information system. Hardware and software are very important factor which could make a huge impact on the performance of the information system.

Hardware environment is an environment which allow users to input or output data or information. Besides, it also allows users to control, navigate and interacting with the system. Hardware like keyboard, monitor and mouse are most used to allow user to input the data. Other than that, printer is also one of the important hardware for the system. It allows user to print out the data or information that they required, such as printing the monthly income report. Moreover, a software environment is referring to supporting applications. The software environment of an application may include an operating system, a database system, a specific development tool or a compiler [19].

The technology that is used for developing the web-based information system is Python language will be used for the programming part. Furthermore, MySQL will be used to store the databases in the system.

Hardware and Software requirement:

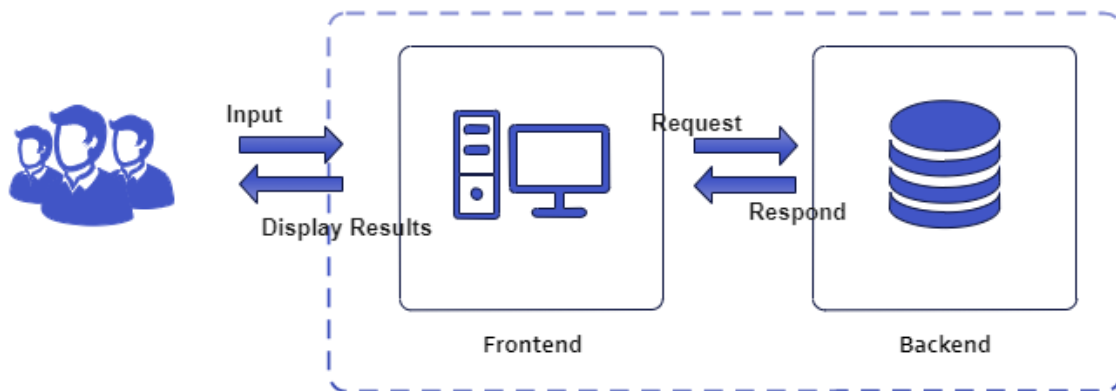
<b>Hardware Requirement</b>	
<b>Processor:</b>	<a href="#"><i>Intel® Core™ i5</i></a>
<b>RAM:</b>	Minimum 4GB but 8GB is recommended
<b>Hard disk:</b>	20GB for installation
<b>Screen Resolution:</b>	1920×1080

**Table 3.1 Hardware requirement**

Software Requirement	
<b>Operation System:</b>	Microsoft Windows 8 or later
<b>DBMS Software:</b>	MySQL
<b>Language:</b>	Python
<b>IDE:</b>	PyCharm
<b>Framework:</b>	Django

**Table 3.2 Software requirement**

### 3.4. System Architecture Diagram



**Figure 3.1 System Architecture Diagram**

A system architecture defines the simultaneous interaction between components like user interfaces, databases and servers in a web application. In another word, it describes the logical connections between the server and the client-side for a better web experience [20]. The system architecture diagram above shows the architecture of the web-based fishery information system. Users are required to use a computer or laptop to as an input device to access and interact with the system functions. The computer or laptop will retrieve or modify the data from the database at the backend. After the database has retrieved or updated the data, it will display on the users' computer or laptop screen.

### 3.5. Use Case Diagram and Description



Figure 3.2 Use-case Diagram



**Description:**

The use case diagram above is showing the actions that the users can perform by using the system. In this system only the company manager able to **register account** for the staff to allow them to access the system. Managers and staff can **add product** and **update the product detail** in the stock list. After they check the stock availability and making decision of whether to receive a customer order or to purchase stock, they can **add the received customer order and the stock purchasing record to the system**. If company is agreed with the customer to purchase-on-credit, once the order is done the system will update the customer arrears record. Users are also able to **manage the information of the supplier and customer**, thus when user add the order record and purchase record, they can direct select the customer or customer from the drop-down list. Next, manager and staffs able to **manage the customer arrears record**, they can check the arrears amount and update the customer payback record. Moreover, they can **view report**, such as sales report, purchasing report, income report and customer arrears report, they can decide to whether download the report or print out the report. All the users are required to provide a valid email address and password to **login** to the system.

### 3.6. Class Diagram

#### 3.4.1. Analysis Class Diagram

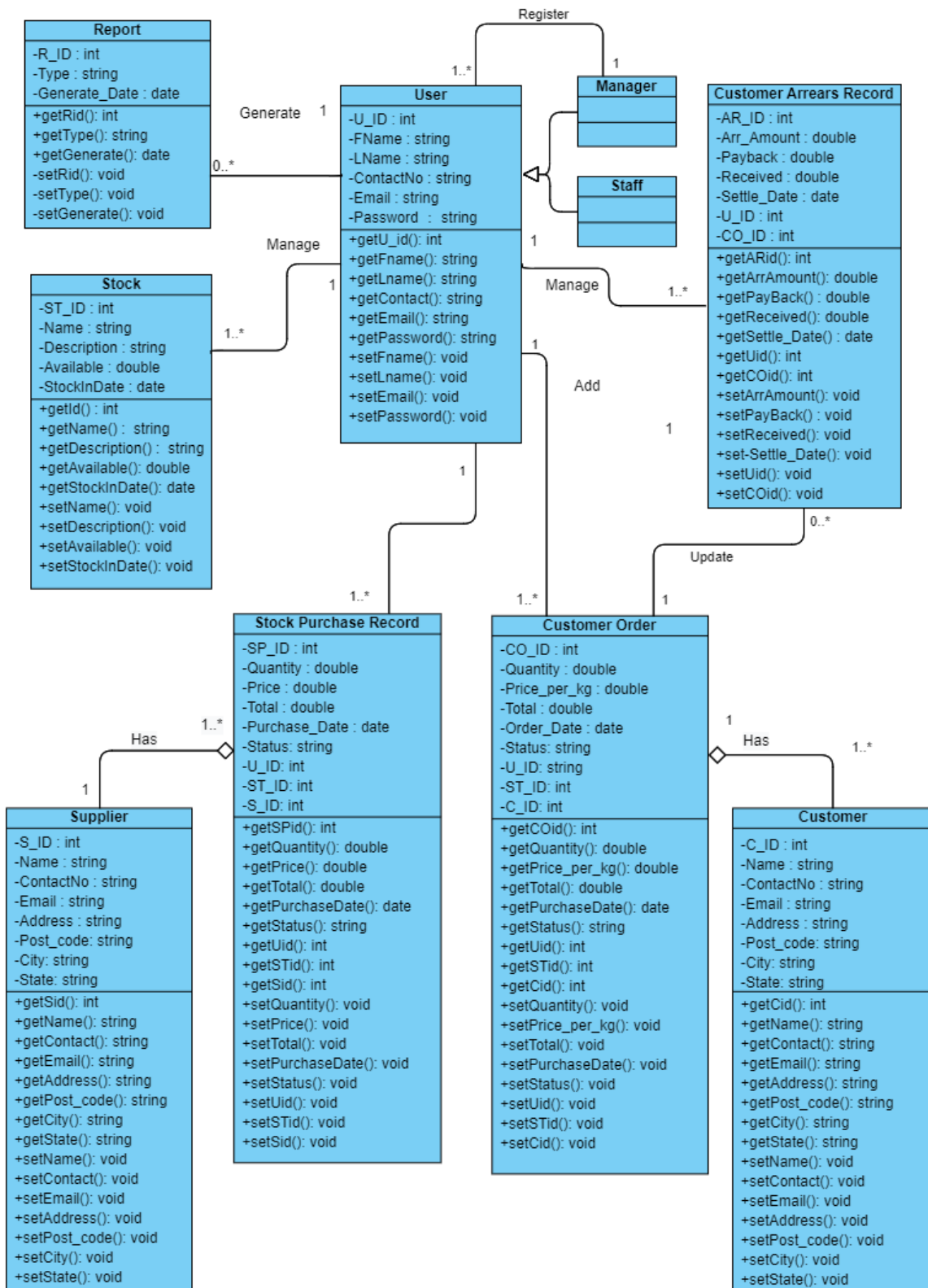


Figure 3.3 Analysis Class Diagram

In this diagram shows that, users able to login and logout the system. The user of the system consists of the managers and staffs of the company. The login account must be generated by manager, each manager is able to generate more than one account. Furthermore, the product in the stock is managed by the user; each product only able to be manage by one user at one time. However, each user able to manage one or more than one product. Users may add one or more than one stock purchase record; a stock purchase record can only add by one and only one user. Each stock purchase record has one and only one supplier, but each supplier able to supply for one or more than one stock purchase record. Moreover, users may add one or more than one customer order to the system, but a customer order record must be added by only one user. Each customer order record has one and only one customer; each customer able to place one or more than one customer order to the company. Besides, each user may manage one or more than one customer arrears record; a customer arrears record is only able to be managed by one user at one time. Each user may not generate any report but also may generate more than one report, but each report must be generated by one user.

### 3.4.2. Design Class Diagram

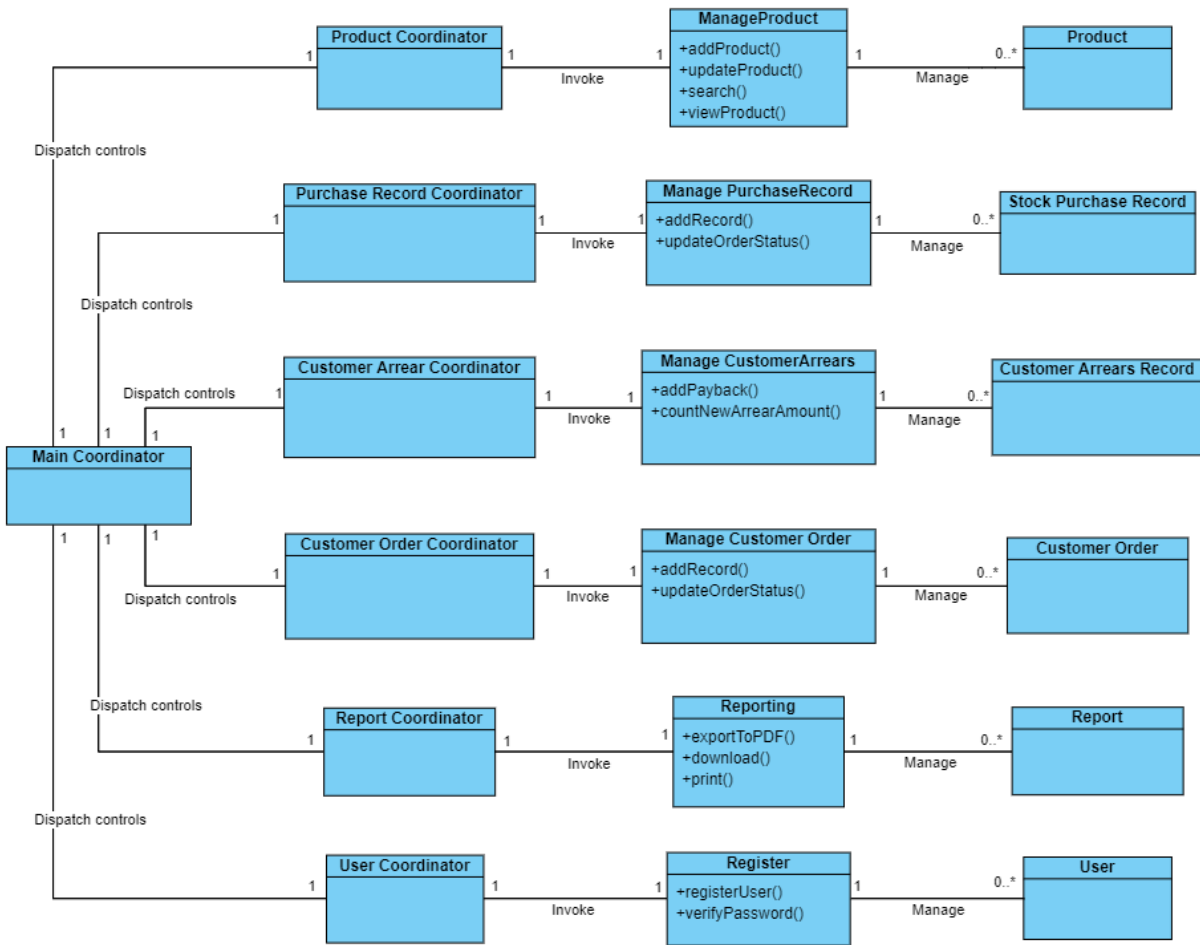


Figure 3.4 Design Class Diagram

## **CHAPTER 4: SYSTEM DESIGN**

### **4.1. Use Case Specification**

#### **4.1.1. Use Case Specification (Add Product)**

**Use Case Name:** Add Product

**Description:**

This use case describes how the user can add a new product to the stock list.

**Actor(s):** Manager, Staff

**Status:** Pathways defined

**Assumption(s):**

- Manager or staff will ensure they are entering a right detail for the product.

**Precondition(s):**

- User has logged in to the system.

**Postcondition(s):**

- Product is added successfully.
- Stock list is updated.

**Primary (Happy) Path:**

- All the required information of product is filled in and it is in a right format.

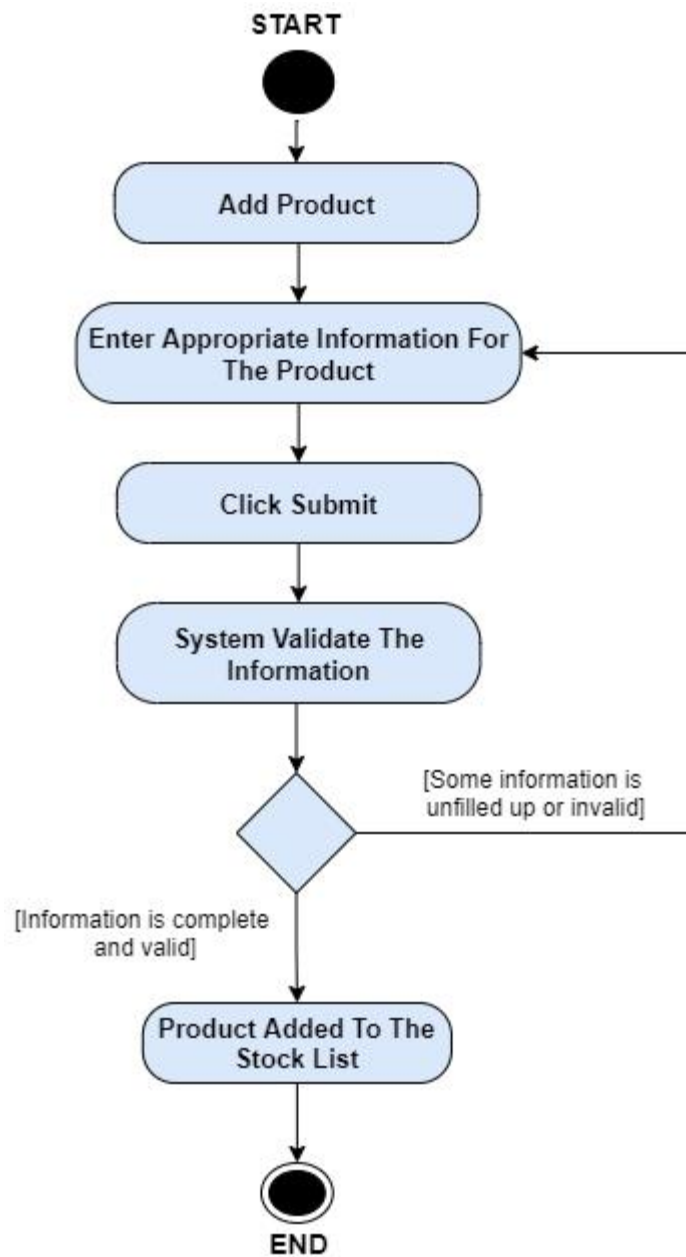
**Alternate Pathways(s):**

- Some of the information is missing.
- Some of the information is filled in a wrong format.

**Exception Pathways(s):**

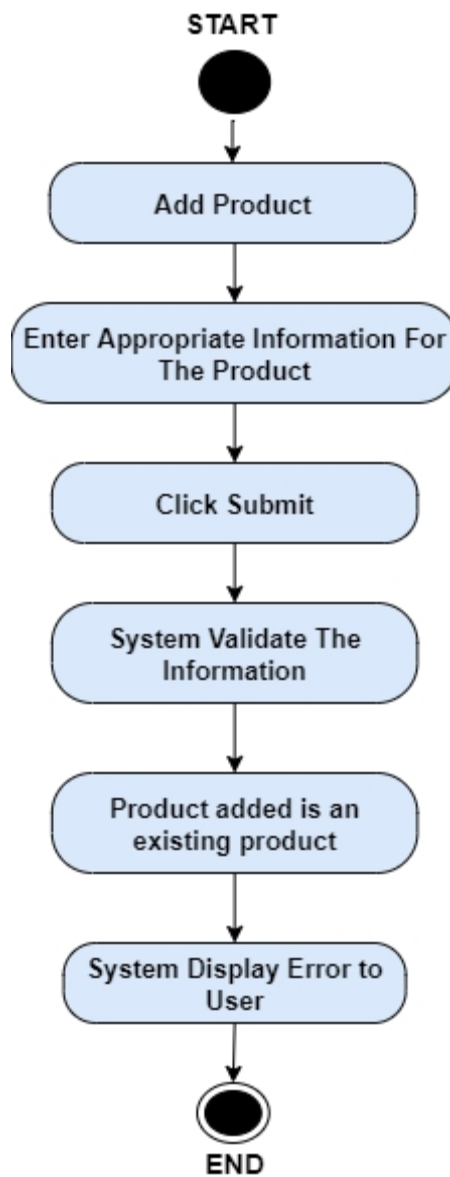
- The product is already in the stock list

**Happy Path and Alternate Path Flow of Events:**



**Figure 4.1 Activity Diagram of Add Product  
(Happy Path and Alternate Path Flow of Events)**

**Exceptional Path Flow of Events:**



**Figure 4.2 Activity Diagram of Add Product  
(Exceptional Path Flow of Events)**

#### 4.1.2. Use Case Specification (Update Product Detail)

**Use Case Name:** Update Product Detail

**Description:**

This use case started when there is some detail that needs to be update regarding the product and ends when the update is saved.

**Actor(s):** Manager, Staff

**Status:** Pathways defined

**Assumption(s):**

- Manager or staff will ensure the product detail that they updated is right.

**Precondition(s):**

- Users has logged into the system.
- Some information of the product is having error.

**Postcondition(s):**

- Product detail is updated.

**Primary (Happy) Path:**

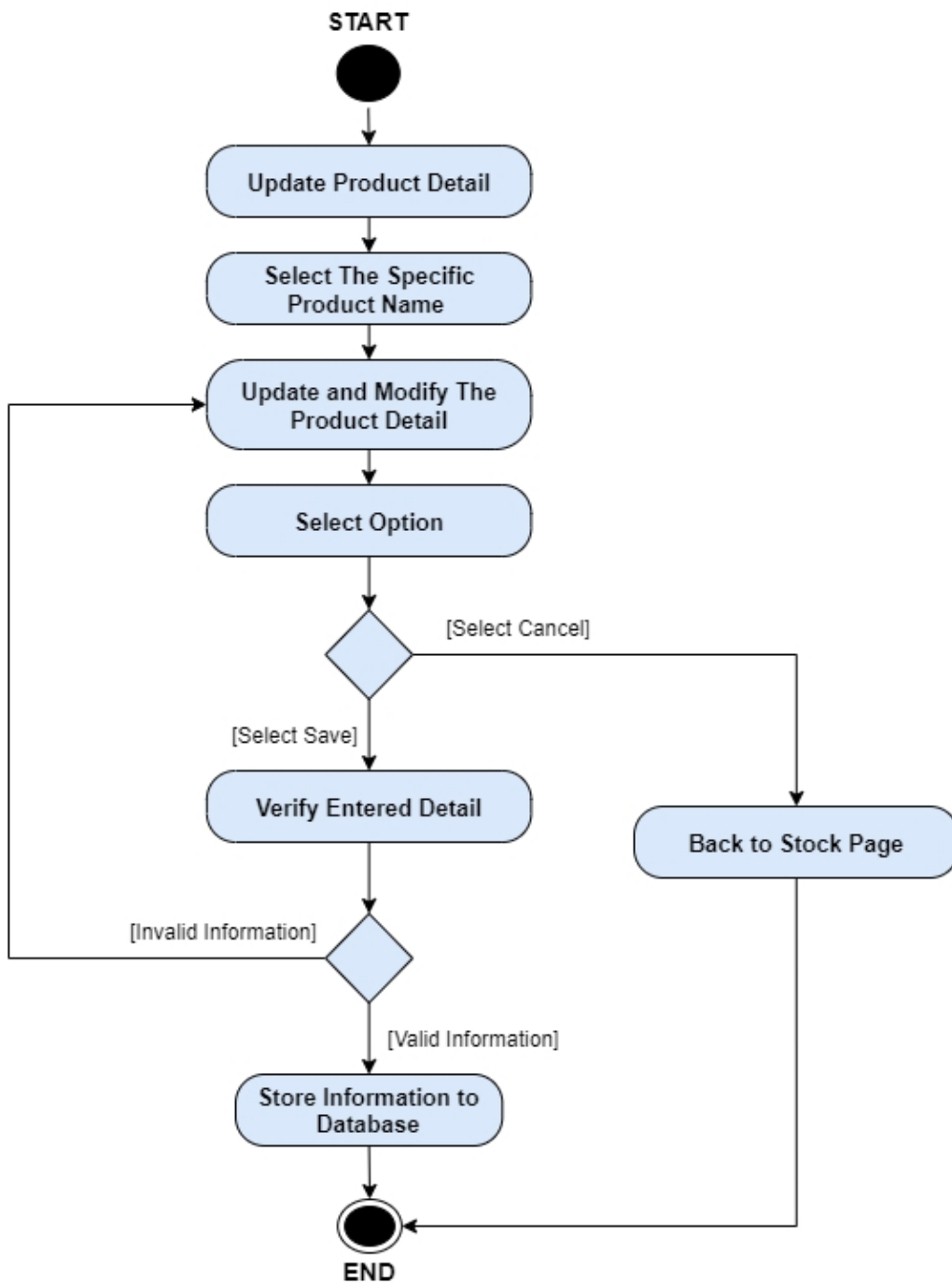
- Manager or staff have modified the product detail and the modification is saved and stock list is updated.

**Alternate Pathways(s):**

- Manager or staff cancel update the product detail.
- Entered Invalid Information.



**Happy Path and Alternate Path Flow of Events:**



**Figure 4.3 Activity Diagram of Update Product Detail  
(Happy Path and Alternate Path Flow of Events)**

### 4.1.3. Use Case Specification (Add Customer Order)

**Use Case Name:** Add Customer Order

**Description:**

This use case started when an order is received. It handles the detail and status of an order, and it ends when the order is done.

**Actor(s):** Manager, Staff

**Status:** Pathways defined

**Assumption(s):**

- Manager or staff will check the stock available before receiving an order and they will keep on monitor and update the order status until the order is done.

**Precondition(s):**

- Stock able to fulfill the customer order.
- Customer order is received.

**Postcondition(s):**

- Order record is added.
- Order is done.
- Available Stock is deducted.

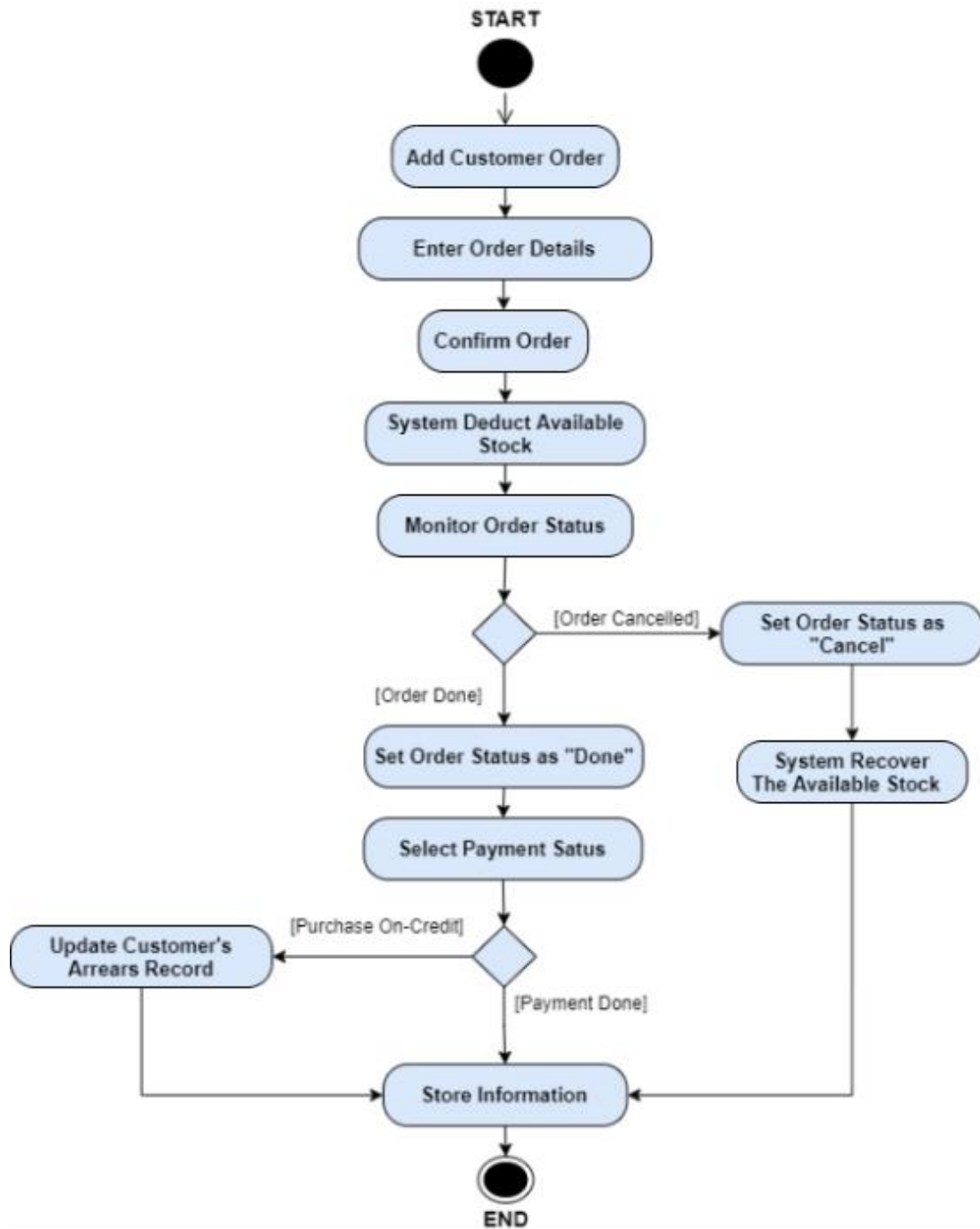
**Primary (Happy) Path:**

- Customer has received the product and payment is completed.

**Alternate Pathways(s):**

- Customer has received the product but purchase-on-credit.
- Customers want to cancel the order.

**Happy Path and Alternate Path Flow of Events:**



**Figure 4.4 Activity Diagram of Add Customer Order  
(Happy Path and Alternate Path Flow of Events)**

#### 4.1.4. Use Case Specification (Add Stock Purchase Record)

**Use Case Name:** Add Stock Purchase Record

**Description:**

This use case started when manager or staff has placed a stock purchase order to the supplier, and it ends when the order is received.

**Actor(s):** Manager, Staff

**Status:** Pathways defined

**Assumption(s):**

- Manager or staff will keep on monitor and update the order status until the product is received.

**Precondition(s):**

- User has logged in to the system
- User placed a purchase order.
- Insufficiency of stock.

**Postcondition(s):**

- Purchase record is added.
- Order is received.
- Stock available is added.

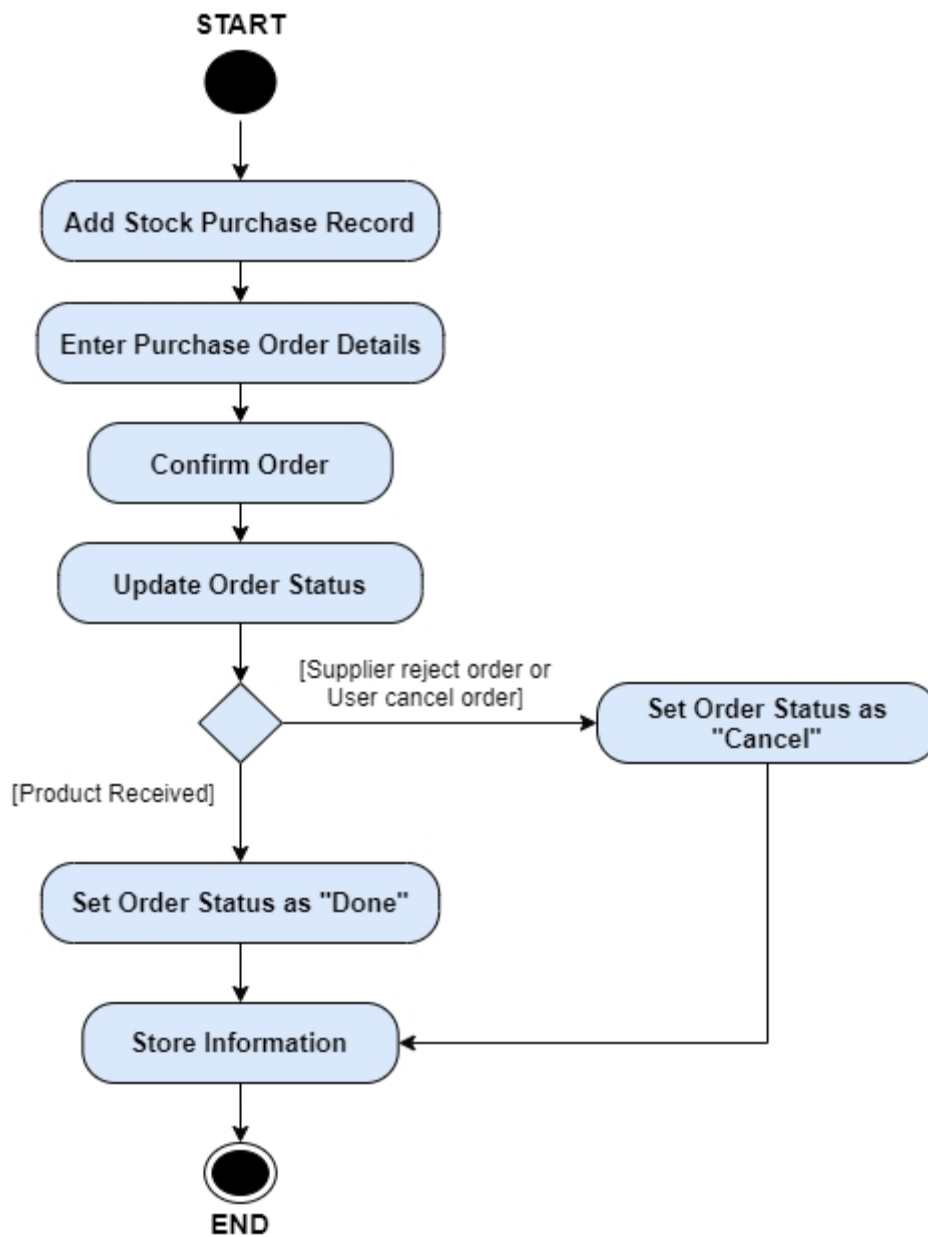
**Primary (Happy) Path:**

- Manager or staff add the purchase record and the product is received.

**Alternate Pathways(s):**

- User has canceled the order.
- Supplier has rejected the order.

**Happy Path and Alternate Path Flow of Events:**



**Figure 4.5 Activity Diagram of Add Stock Purchase Record (Happy Path and Alternate Path Flow of Events)**

#### 4.1.5. Use Case Specification (Manage Customer Arrears Record)

**Use Case Name:** Manage Customer Arrears Record

**Description:**

This use case describes how the user can manage the customer arrear record and check out the updated customer arrear amount.

**Actor(s):** Manager, Staff

**Status:** Pathways defined

**Assumption(s):**

- Manager or staff will update the arrear record when they have received customer payback.

**Precondition(s):**

- Users has logged into the system.
- Customer arrear record is not empty.

**Postcondition(s):**

- Customer arrear amount is updated.

**Primary (Happy) Path:**

- Customer has pay back some amount of their arrears. The manager or staff update the payback amount and the remaining arrears are calculated.

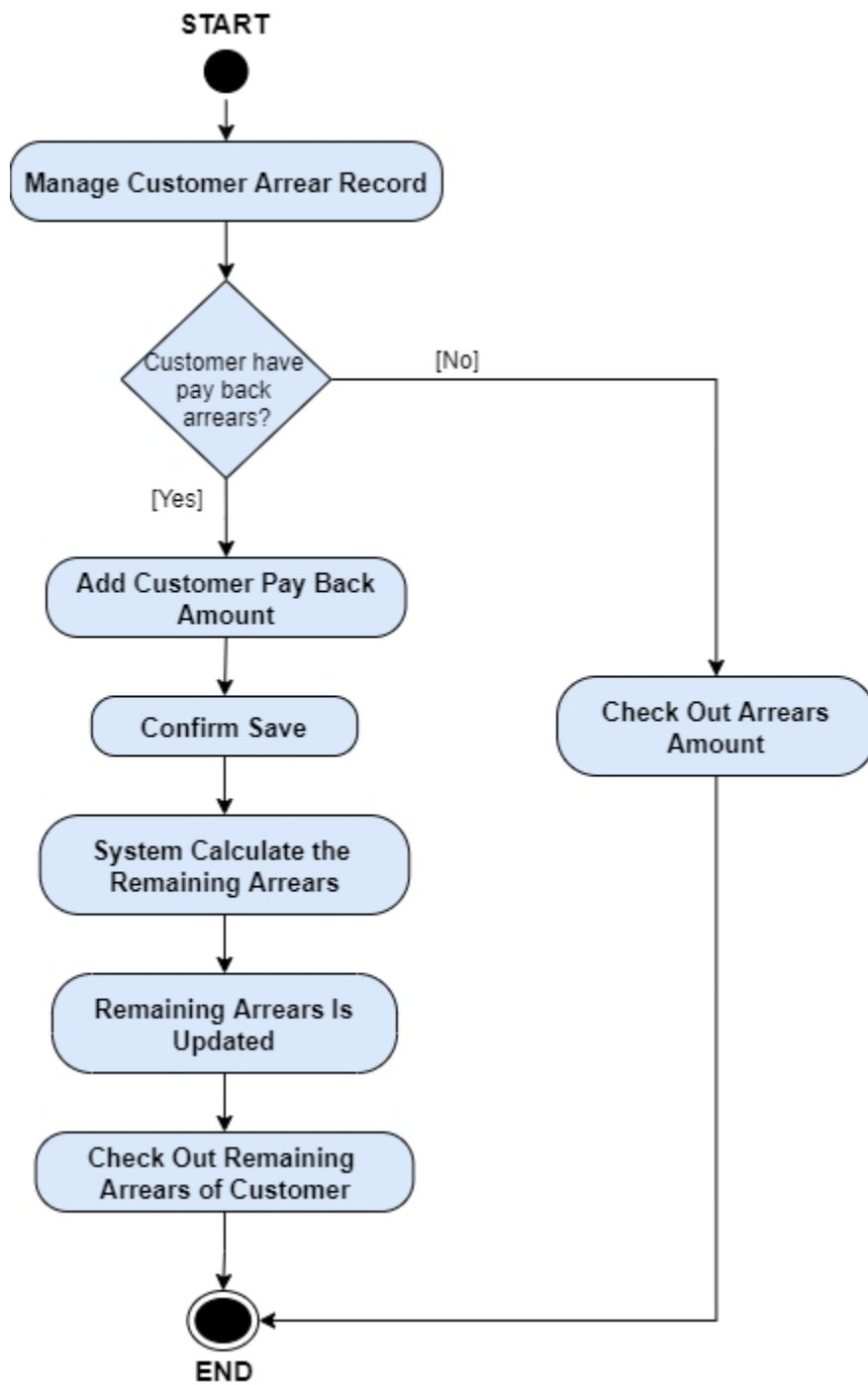
**Alternate Pathways(s):**

- Customer has no payback any of their arrears. Manager or staff check out the arrear amount of customer.

**Exception Pathways(s):**

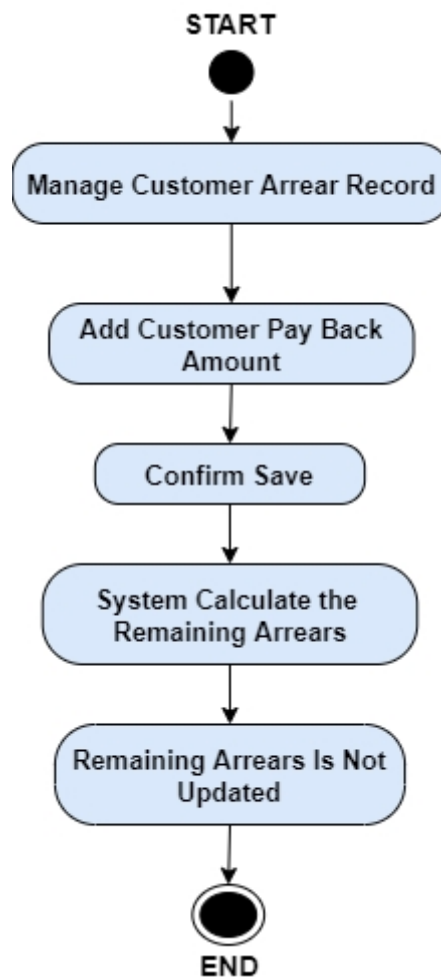
- Customer has payback some amount of their arrears. The manager or staff update the payback amount, but the arrears amount of customer is not updated.

**Happy Path and Alternate Path Flow of Events:**



**Figure 4.6 Activity Diagram of Manage Customer Arrears Record (Happy Path and Alternate Path Flow of Events)**

**Exceptional Path Flow of Events:**



**Figure 4.7 Activity Diagram of Manage Customer Arrears Record (Exceptional Path Flow of Event)**



#### 4.1.6. Use Case Specification (Generate Report)

**Use Case Name:** Generate Report

**Description:**

This use case started when user require to generate a summary report, such as monthly income report, daily sales report and so on. It will end when the report is successful generated.

**Actor(s):** Manager, Staff

**Status:** Pathways defined

**Assumption(s):**

- Manager or staff will update the arrear record when they have received customer payback.

**Precondition(s):**

- Users has logged into the system.

**Postcondition(s):**

- Report is generated.

**Primary (Happy) Path:**

- Manager or staff select the type and property of the report and choose a specific day, month, or year to generate the report.

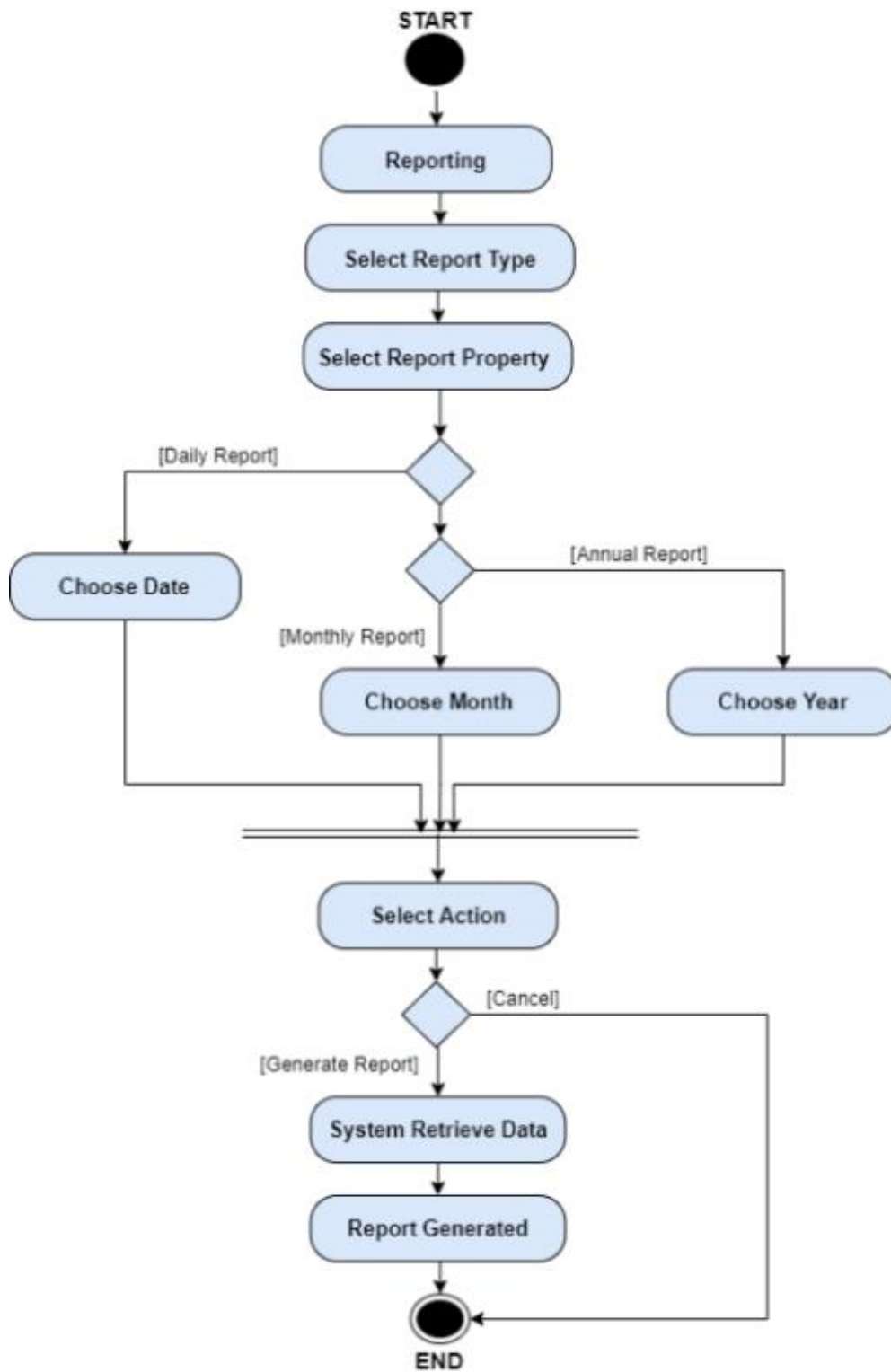
**Alternate Pathways(s):**

- Manager or staff decide to cancel generate report

**Exception Pathways(s):**

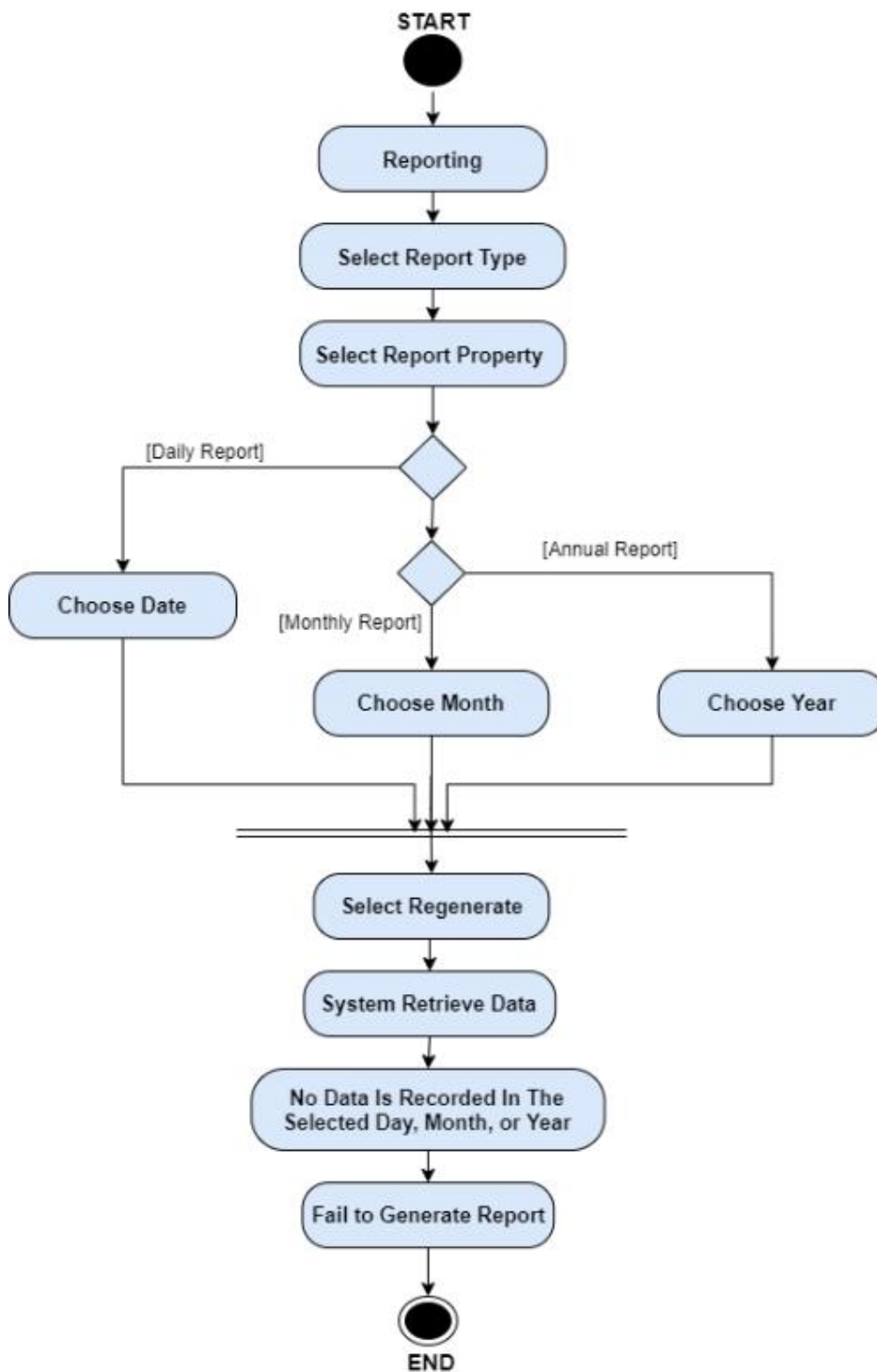
- Manager or staff select the type and property of the report and choose a specific day, month, or year to generate the report but there is not any record in the selected day, month, or year.

**Happy Path and Alternate Path Flow of Events:**



**Figure 4.8 Activity Diagram of Generate Report (Happy Path and Alternate Path Flow of Events)**

**Exceptional Path Flow of Events:**



**Figure 4.9 Activity Diagram of Generate Report  
(Exceptional Path Flow of Event)**

#### 4.1.7. Use Case Specification (Login)

**Use Case Name:** Login

**Description:**

This use case describes how a user login to system to access the functionality of the system.

**Actor(s):** Manager, Staff

**Status:** Pathways defined

**Assumption(s):**

- The staff that has a user account means that he/she have the permission to view, modify and update the data in the system.

**Precondition(s):**

- User already have their own account.

**Postcondition(s):**

- The system displays the home page.

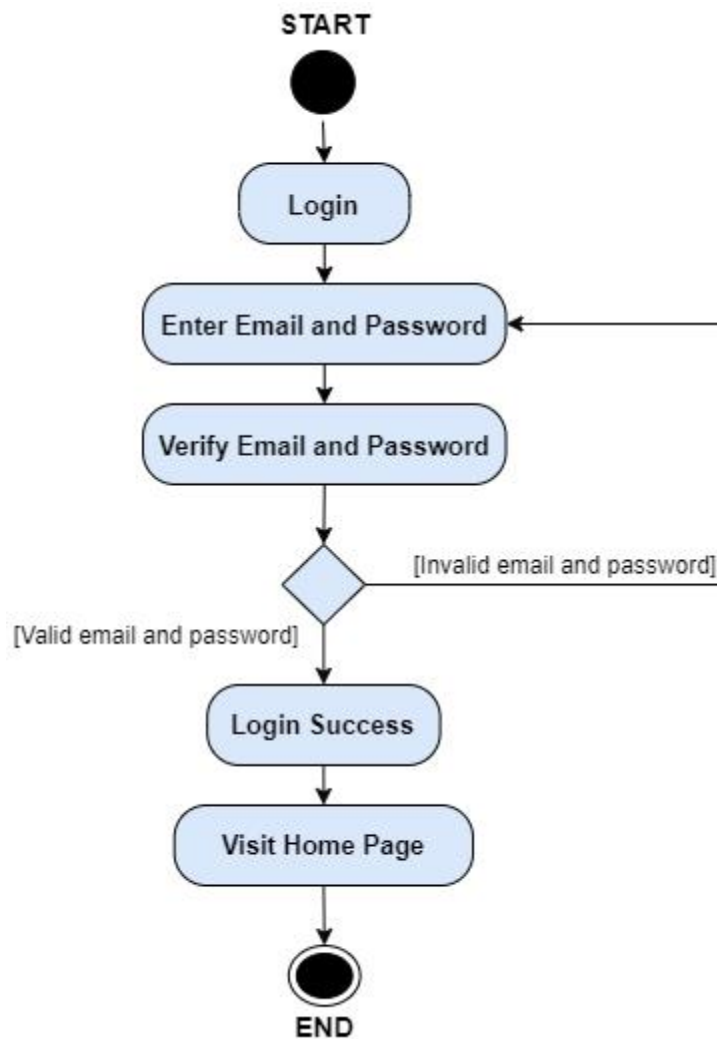
**Primary (Happy) Path:**

- User has entered a valid email and password.

**Alternate Pathways(s):**

- User has entered an invalid email and password.

**Happy Path and Alternate Path Flow of Events:**



**Figure 4.10 Activity Diagram of Login  
(Happy Path and Alternate Path Flow of Events)**

#### **4.1.8. Use Case Specification (Register Account)**

**Use Case Name:** Register Account

**Description:**

This use case started when manager want to give permission to the staff to access the system, he/she will create an account for the staff.

**Actor(s):** Manager

**Status:** Pathways defined

**Assumption(s):**

- Manager only register account for those staffs that he/she willing to give permission to them.

**Precondition(s):**

- Manager has logged into the system.

**Postcondition(s):**

- The staff can view, modify and update data in the system.

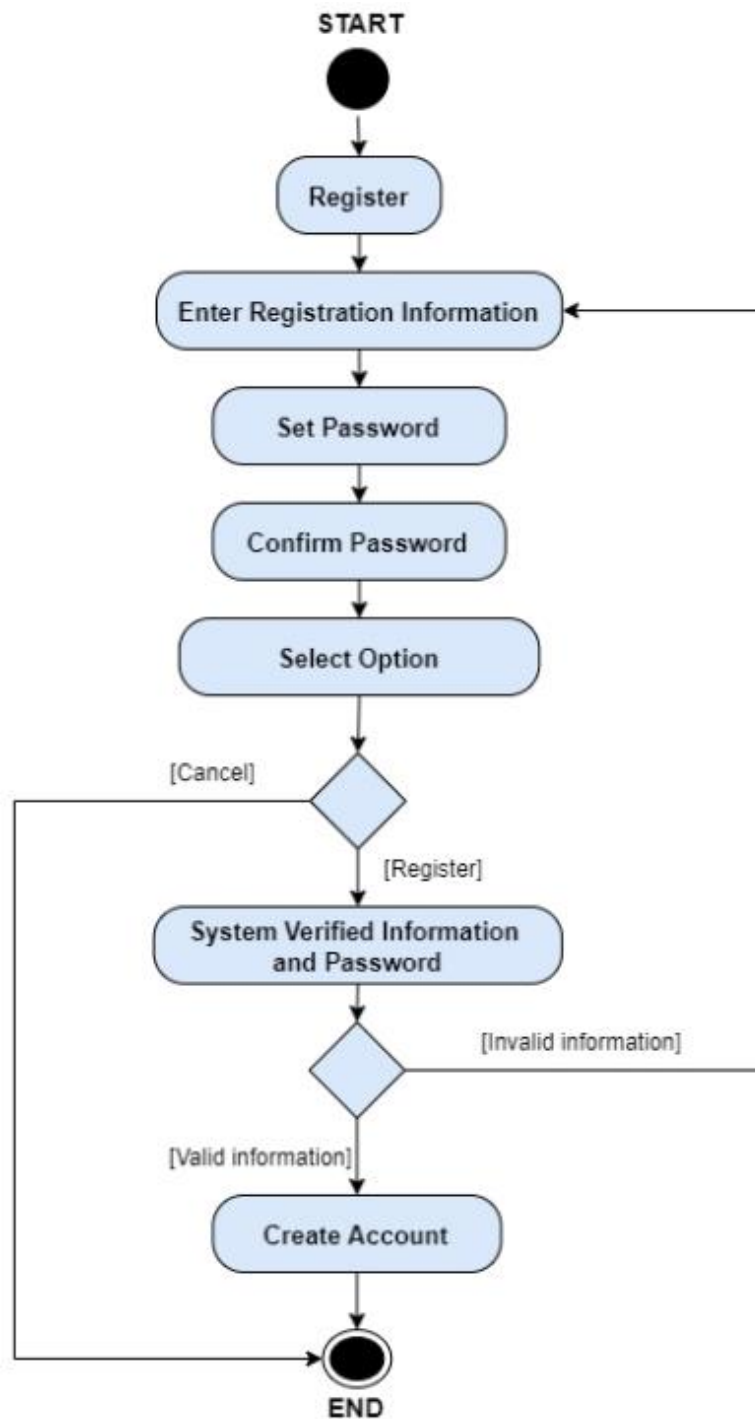
**Primary (Happy) Path:**

- Manager entered a valid staff information, such as name, email and password. The information is verified, and account is created.

**Alternate Pathways(s):**

- Managers cancel the registration.
- Manager has entered some invalid information.

**Happy Path and Alternate Path Flow of Events:**



**Figure 4.11 Activity Diagram of Register Account (Happy Path and Alternate Path Flow of Events)**

## 4.2. Design of Data Storage

### 4.2.1. ERD Diagram

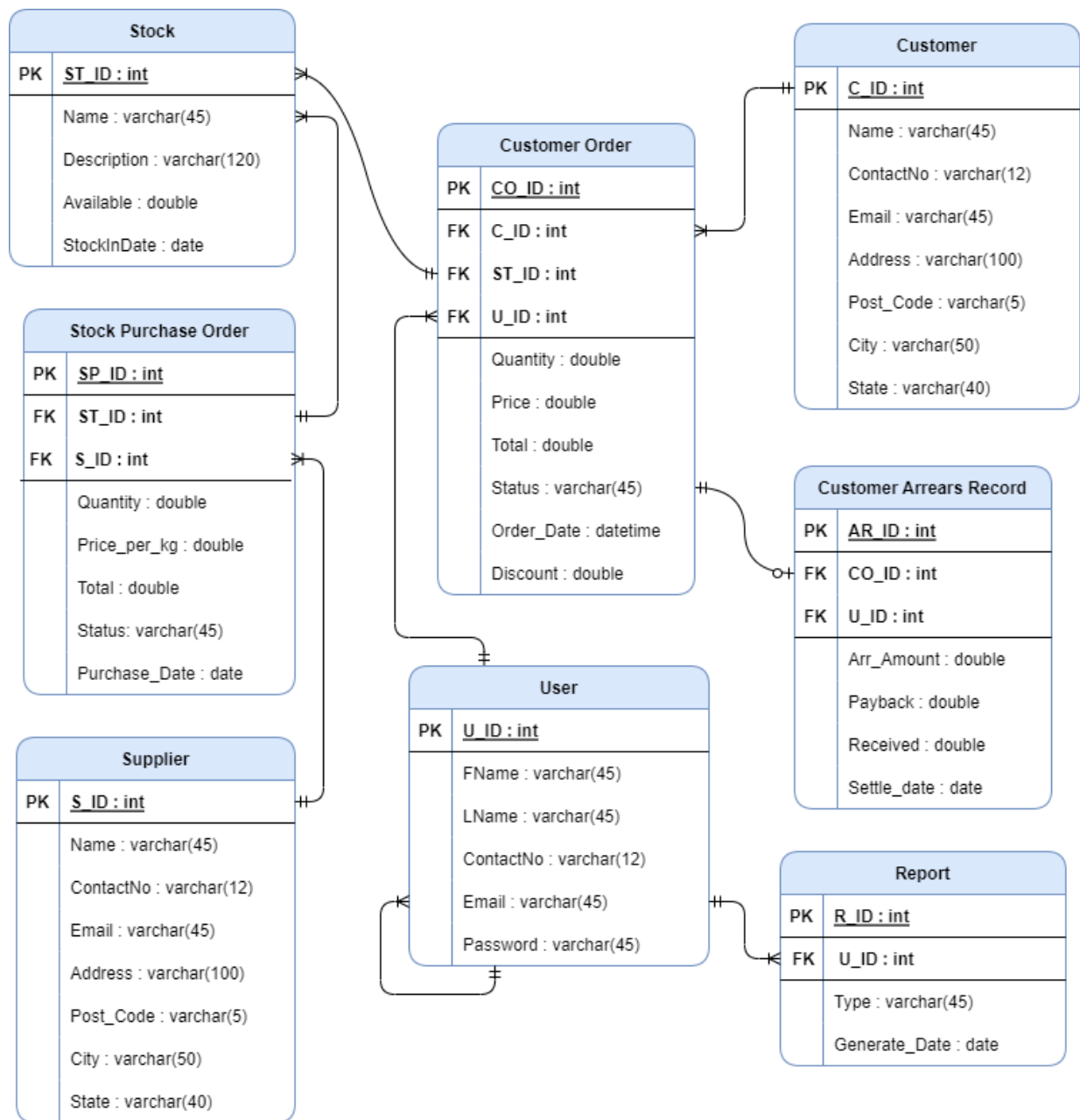


Figure 4.12 ERD Diagram

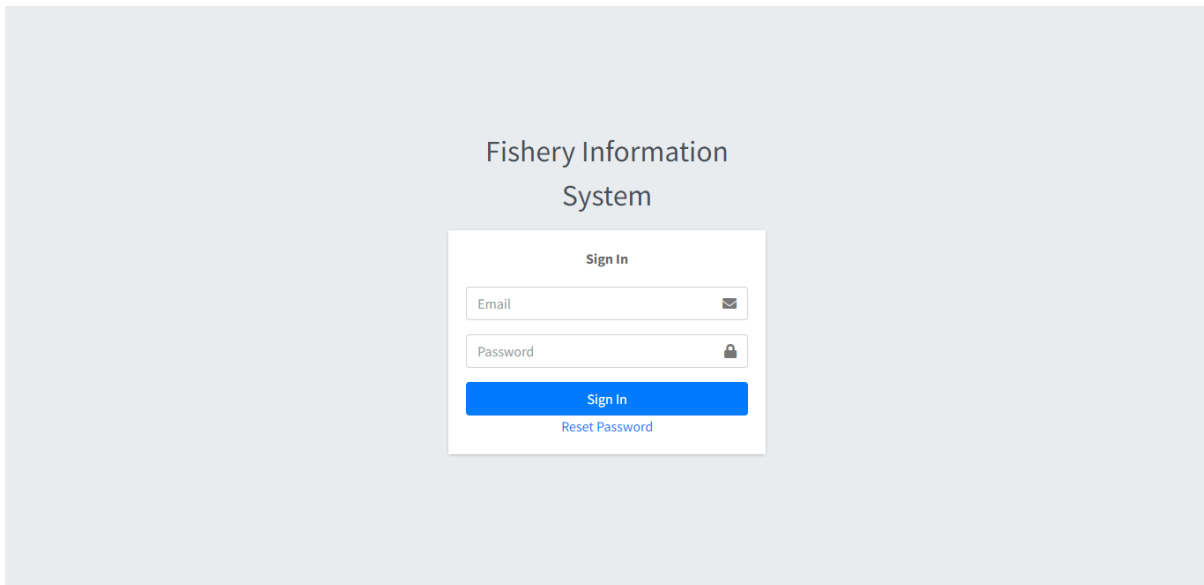


### 4.3. Design of Graphical Interfaces

#### 4.3.1. Graphical Interface for Login Page

This interface allow user to provide their registered email and password in order to access the system.

The user needs to provide the email address and password that the manager helps them register to log into the system. They need to click on the Sign In button to login into the system. If the user has provided a right and valid email and password, user will be allowed to access the system. However, if the email and password is wrong or invalid, the system will show a message box show “Invalid Login Details” which allow user to they are provided a wrong detail. Below the “Sign In” button is showing a Reset Password button, user by reset their password by clicking on the button. The button will direct user to reset their password.



**Figure 4.13 Login Page Interface**

### 4.3.2. Graphical Interface for Home Page (Manager)

This is the Home page interface for manager, the slide bar at the left-hand side is showing the function that manager able to perform by using this system. At the second row of the slide bar, it is showing the profile picture and name of the user who are using the system. Below of it is a series of button that allow user to access to each of the function. Moreover, the button which allocated at the top right corner is a logout button. It allows user to logout the system by click on it. Below of it is a home button, which allow user to back to the home page whenever they want. Next, the button that place above the “Home” is a button that allow user to collapse the sidebar. Furthermore, in the Home page right hand side, is showing button for user to generate monthly and yearly sales report and purchase report.

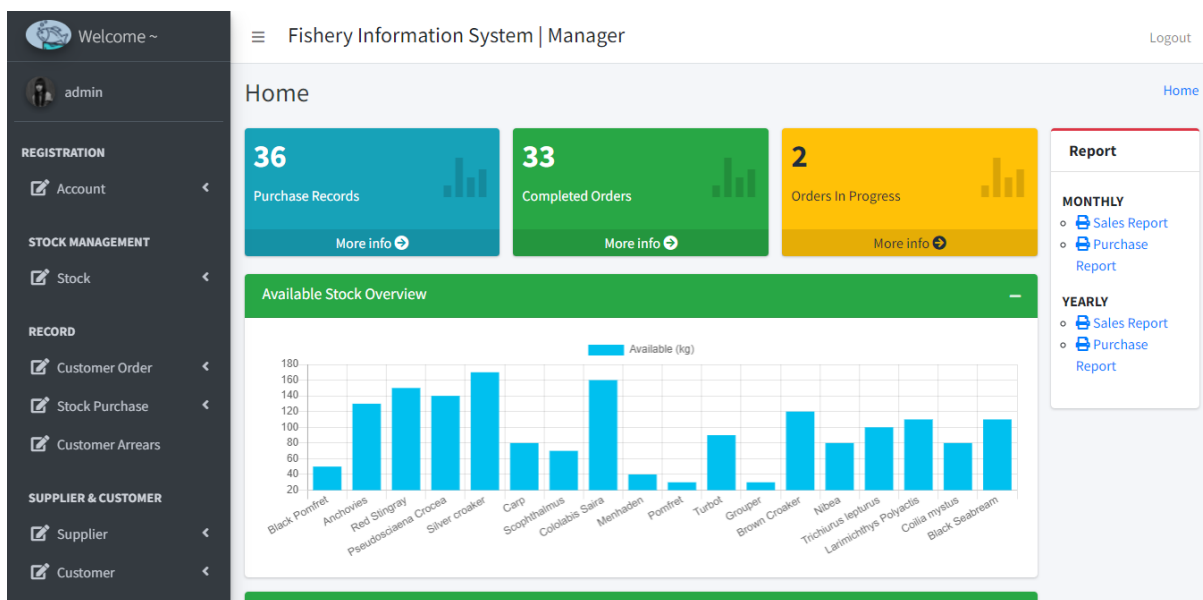
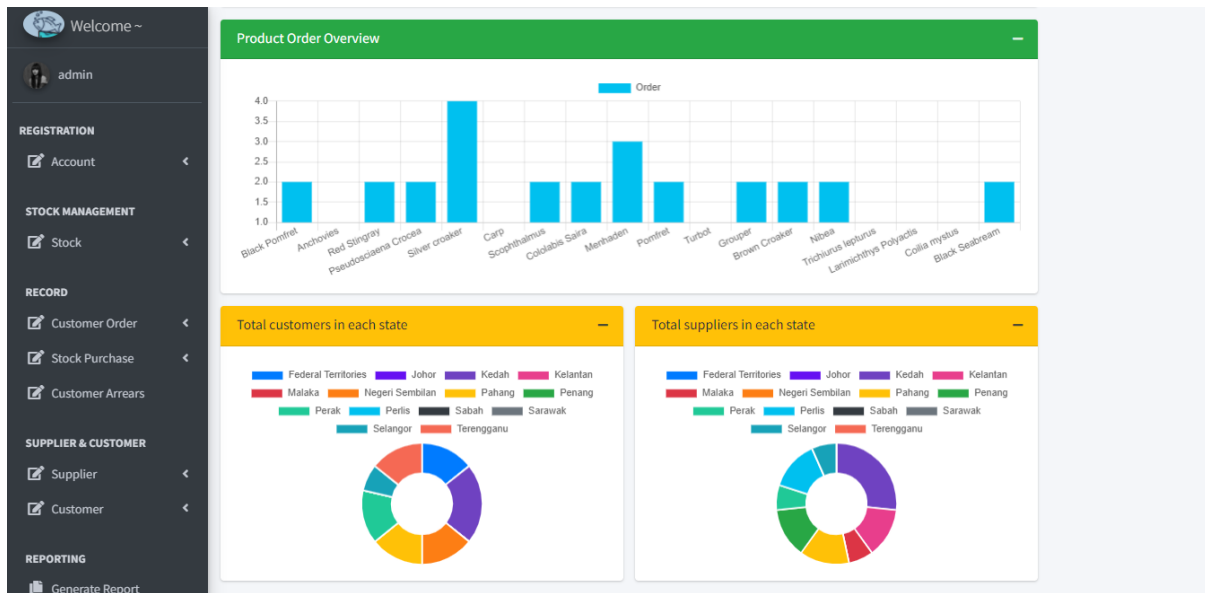


Figure 4.14 Home Page (Manager) Page Interface – 1

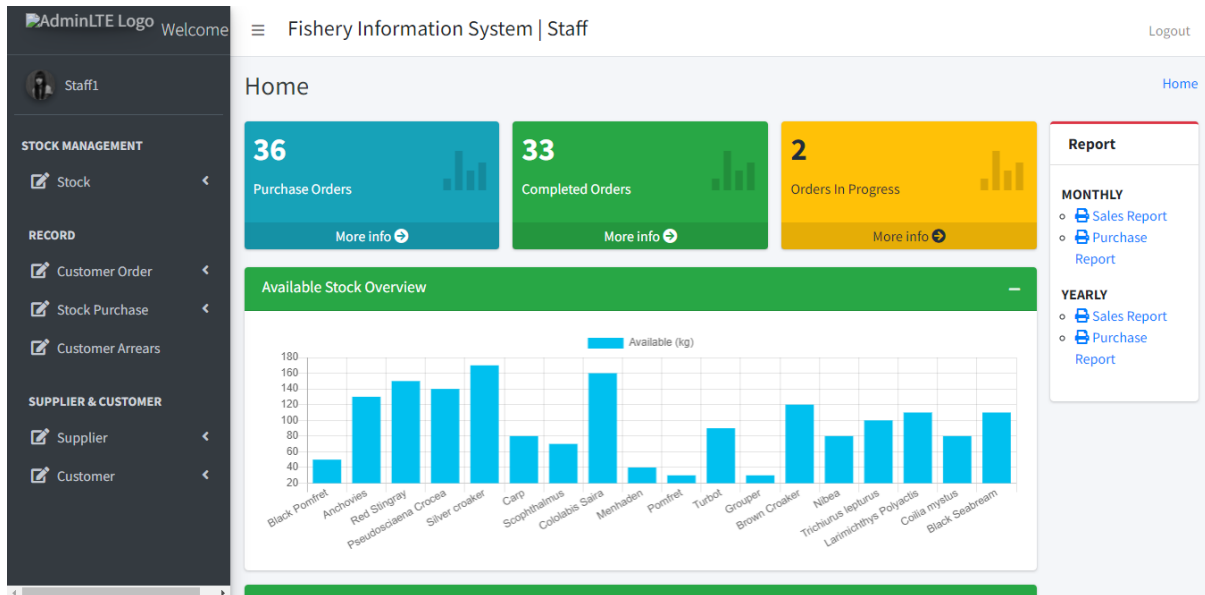


**Figure 4.15 Home Page (Manager) Page Interface – 2**

The content is showing the number of purchase record, completed order and order that still in progress of the current year. Below of it, the bar charts are showing the overview of stock available and number of stock purchase order that recorded. Moreover, the donut charts are showing the total customers and suppliers in each state.

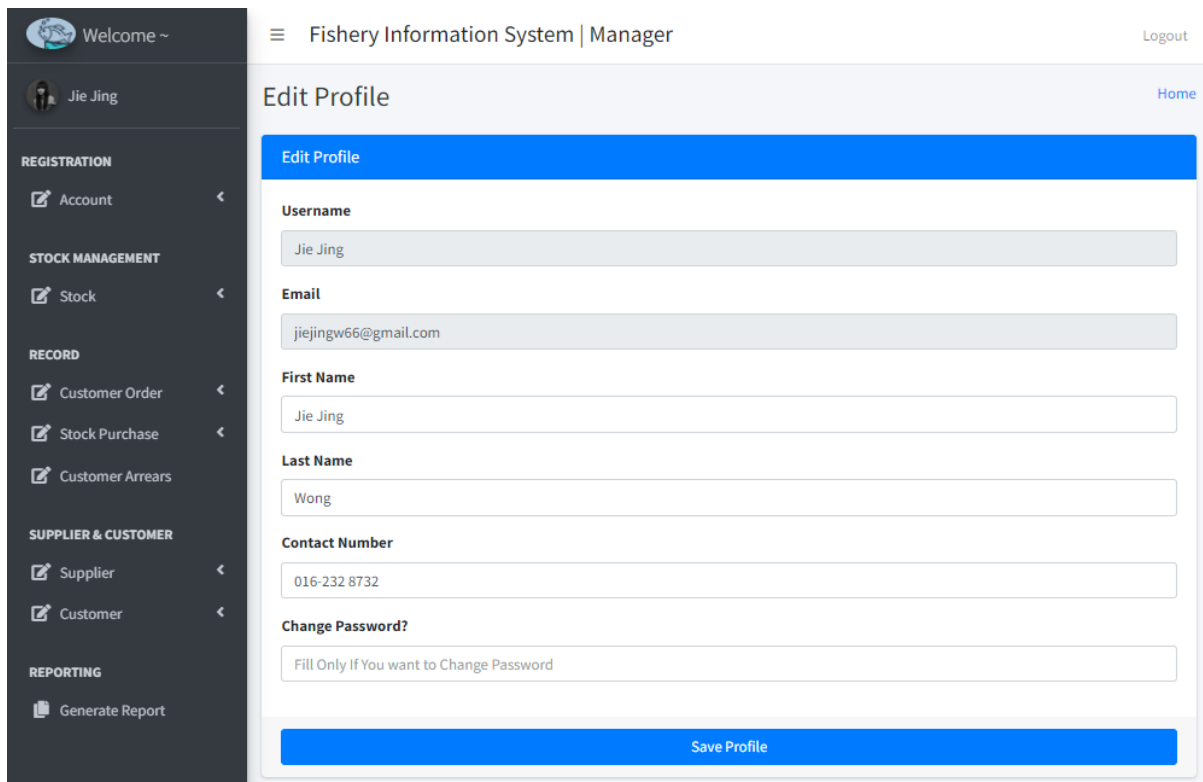
### 4.3.3. Graphical Interface for Home Page (Staff)

This is the Home page interface for staff, the overall design of the interface is consistent with the Home page interface for manager. The different between them is, staff is not allowed to register account for others. Only management level is able to register account for others.



**Figure 4.16 Home Page (Staff) Page Interface**

#### 4.3.4. Graphical Interface for Edit Profile Page



The screenshot displays the 'Edit Profile' page of a 'Fishery Information System | Manager'. The interface includes a dark sidebar on the left with a 'Welcome ~' message and a user profile for 'Jie Jing'. The sidebar contains several menu categories: 'REGISTRATION' (Account), 'STOCK MANAGEMENT' (Stock), 'RECORD' (Customer Order, Stock Purchase, Customer Arrears), 'SUPPLIER & CUSTOMER' (Supplier, Customer), and 'REPORTING' (Generate Report). The main content area is titled 'Edit Profile' and features a blue header bar. Below the header, the form contains the following fields: 'Username' (Jie Jing), 'Email' (jiejingw66@gmail.com), 'First Name' (Jie Jing), 'Last Name' (Wong), 'Contact Number' (016-232 8732), and 'Change Password?' (Fill Only If You want to Change Password). A blue 'Save Profile' button is located at the bottom of the form.

**Figure 4.17 Edit Profile Page Interface**

User can edit their persona information by click on the username that show in the top left corner of the page. After that the edit profile page will shown as above. The form will display the original value of user information, user can modify their name, contact number and also account password in this page.

### 4.3.5. Graphical Interface for Account Registration Page

This is interface that allow manager to register account for other new entry managers.

The screenshot displays the 'Account Registration' page within the 'Fishery Information System | Manager' interface. The page features a dark sidebar on the left with a navigation menu. The main content area is titled 'Account Registration' and contains a form with the following fields:

- Account information** (Section header)
- Email address**: Input field for Email.
- Password**: Input field for Password.
- First Name**: Input field for First Name.
- Last Name**: Input field for Last Name.
- Username**: Input field for Username.
- Contact Number**: Input field with a format hint: 'Format: xxx-xxx xxxxx'.
- User Type**: A dropdown menu currently showing 'User Type'.

A prominent blue 'Register' button is located at the bottom of the form area. The sidebar menu includes sections for REGISTRATION (Account, Account Registration, Account List), STOCK MANAGEMENT (Stock), RECORD (Customer Order, Stock Purchase, Customer Arrears), SUPPLIER & CUSTOMER (Supplier, Customer), and REPORTING (Generate Report).

**Figure 4.18 Account Registration Page Interface**

By click on the “Account” drop down list and select the “Account Registration” option, this interface will appear. In this interface there will be a form that manager needs to fill in. Managers need to enter the email address, first name, last name, username and contact number of the new user and help the new user to set the password. Managers need to select the user type for the new user in the User Type drop down list in the form. After manager clicks on the register button, a message box will appear whether “Account Successfully Registered” or “Failed to Register” to announce manager the result of their registration.

### 4.3.6. Graphical Interface for Account List Page

This interface allows manager to view all the registered account and all the information of other user.

Manager Account					
ID	First Name	Last Name	Username	Email	Contact No
1			admin	admin@gmail.com	
2	Jie Jing	Wong	Jie Jing	jiejingw66@gmail.com	016-232 8732
3	Sheng Wei	Lim	Jason	jasonlim@gmail.com	016-896 9999

Staff Account					
ID	First Name	Last Name	Username	Email	Contact No
4	Staff	Staff	Staff1	staff@gmail.com	016-888 6666
5	Hui Hui	Tang	Hui Hui	huihui@gmail.com	018-777 9999

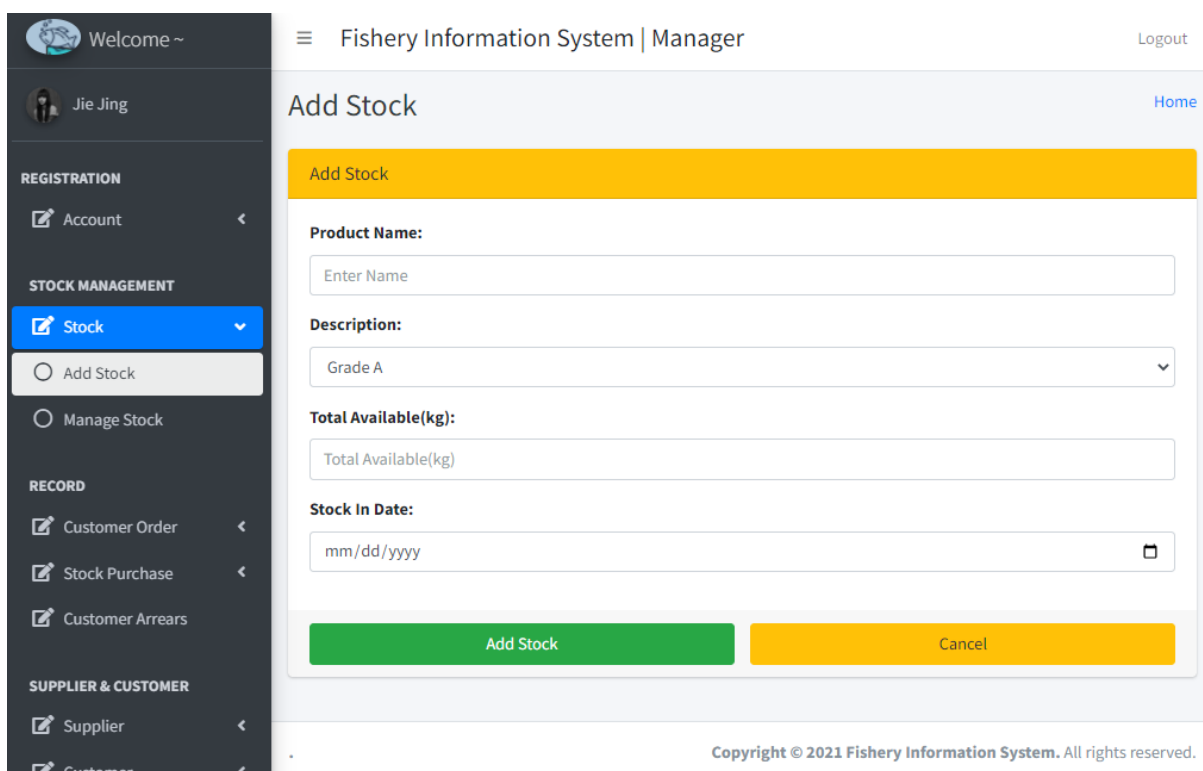
**Figure 4.19 Account List Page Interface**

By click on the “Account” drop down list and select the “Account List” option, this interface will display. There are two table in this interface, one of it is showing the manager account and the another is to show the staff account. All the user information will show in the table but except of password. If other users have modified their persona information contact number or name, the data will also updated and show at this page.

### 4.3.7. Graphical Interface for Add Stock Page

This interface that allows users to add information of a new product.

This page is display when user click on the “Stock” drop down list and select the “Add Stock” option from the side bar. A add stock form will display in the interface, user need to fill in the product name, available stock, select the description from the drop-down list which provide option of Grade A, Grade B, Grade C and Grade D, and select the stock in date. Users click on the “Add Stock” button and a message box will show the result of the action, whether success message “Successfully Added” or fail message “Failed to Add”.



The screenshot displays the 'Add Stock' page within the Fishery Information System. The interface includes a dark sidebar on the left with a navigation menu. The main content area is titled 'Add Stock' and contains a form with the following fields:

- Product Name:** A text input field with the placeholder 'Enter Name'.
- Description:** A dropdown menu currently showing 'Grade A'.
- Total Available(kg):** A text input field with the placeholder 'Total Available(kg)'.
- Stock In Date:** A date input field with the placeholder 'mm/dd/yyyy' and a calendar icon.

At the bottom of the form, there are two buttons: a green 'Add Stock' button and a yellow 'Cancel' button. The footer of the page reads: 'Copyright © 2021 Fishery Information System. All rights reserved.'

**Figure 4.20 Add Stock Page Interface**



### 4.3.8. Graphical Interface for Stock Page

This interface that allows user to view all the product in the stock.

The screenshot displays the 'Stock' page interface. On the left is a dark sidebar with a 'Welcome ~' header and user profile 'Jie Jing'. The sidebar contains several sections: 'REGISTRATION' with 'Account', 'STOCK MANAGEMENT' with 'Stock' (highlighted) and 'Add Stock', 'RECORD' with 'Customer Order', 'Stock Purchase', and 'Customer Arrears', 'SUPPLIER & CUSTOMER' with 'Supplier' and 'Customer', and 'REPORTING' with 'Generate Report'. The main content area is titled 'Stock' and 'Stock Detail'. It features a 'Show 10 entries' dropdown and a search bar. Below is a table with 10 rows of stock items, each with an 'Edit' button. The table columns are: ID, Name, Description, Total Available(kg), Stock In Date, and Action. At the bottom, it shows 'Showing 1 to 10 of 18 entries' and a pagination control with 'Previous', '1', '2', and 'Next' buttons.

ID	Name	Description	Total Available(kg)	Stock In Date	Action
1	Anchovies	Grade B	130.0	March 9, 2022	Edit
2	Menhaden	Grade A	40.0	April 20, 2022	Edit
3	Cololabis Saira	Grade B	160.0	April 19, 2022	Edit
4	Trichiurus lepturus	Grade C	100.0	April 19, 2022	Edit
5	Black Seabream	Grade B	110.0	April 20, 2022	Edit
6	Brown Croaker	Grade B	120.0	April 19, 2022	Edit
7	Pseudosciaena Crocea	Grade C	140.0	April 19, 2022	Edit
8	Larimichthys Polyactis	Grade B	110.0	April 19, 2022	Edit
9	Nibea	Grade C	80.0	April 20, 2022	Edit
10	Silver croaker	Grade A	170.0	April 20, 2022	Edit

**Figure 4.21 Stock Page Interface**

This interface is display when user click on the “Manage Stock” option from the “Stock” drop down list. It shows the product ID, name, description, stock available amount and stock in date. The green colour button in each tail of the row is an edit button. If users click on the button, the system will direct user to the Edit Stock page to edit the selected product. Besides, user can search for a record by enter the keyword in the search column and user also can sort the data base on their preference by click on the table head.

### 4.3.9. Graphical Interface for Edit Stock Page

This interface that will allow user to edit the data of selected stock.

The screenshot displays the 'Edit Stock' page in the Fishery Information System. The page title is 'Edit Stock | Stock: Anchovies | ID: 1'. The form contains the following fields:

- Product Name:** Anchovies
- Description:** Grade B
- Total Available(kg):** 130.0
- Stock In Date:** 03/09/2022

A yellow 'Save Stock' button is located at the bottom of the form. The page footer includes the text: 'Copyright © 2021 Fishery Information System. All rights reserved.'

**Figure 4.22 Edit Stock Page Interface**

Through the page title, users are able to know which product they are editing, it will show the name and id of the selected product. In the edit stock form, it will display all the original value. User can highlight the original value and enter a new value, then click on the “Save Stock” button. A message box will appear to announce user about the result of the action, whether “Data Successfully Edited” or “Failed to Edit Data”.

### 4.3.10. Graphical Interface for Add Customer Order Record Page

This interface allows users to add a new customer order record.

The screenshot shows the 'Add Customer Order Record' page in the Fishery Information System. The page has a dark sidebar on the left with navigation options: 'Account', 'Stock', 'Customer Order' (selected), 'Manage Customer Order', 'Stock Purchase', 'Customer Arrears', 'Supplier', and 'Customer'. The main content area is titled 'Add Customer Order Record' and contains a form with the following fields:

- Supplier:** A dropdown menu with 'Customer' selected and an 'Add New' button.
- Product:** A dropdown menu with 'Product' selected.
- Quantity(kg):** A text input field with 'Quantity(kg)' as a placeholder.
- Price(per kg):** A text input field with 'Price(per kg)' as a placeholder.
- Date of Order:** A date input field with 'mm/dd/yyyy' as a placeholder and a calendar icon.
- Total (RM):** A text input field with 'Total' as a placeholder.
- Order Status:** A dropdown menu with 'Order Status' as the selected option.
- Payment Received(RM):** A text input field with 'Payment Received(RM)' as a placeholder.

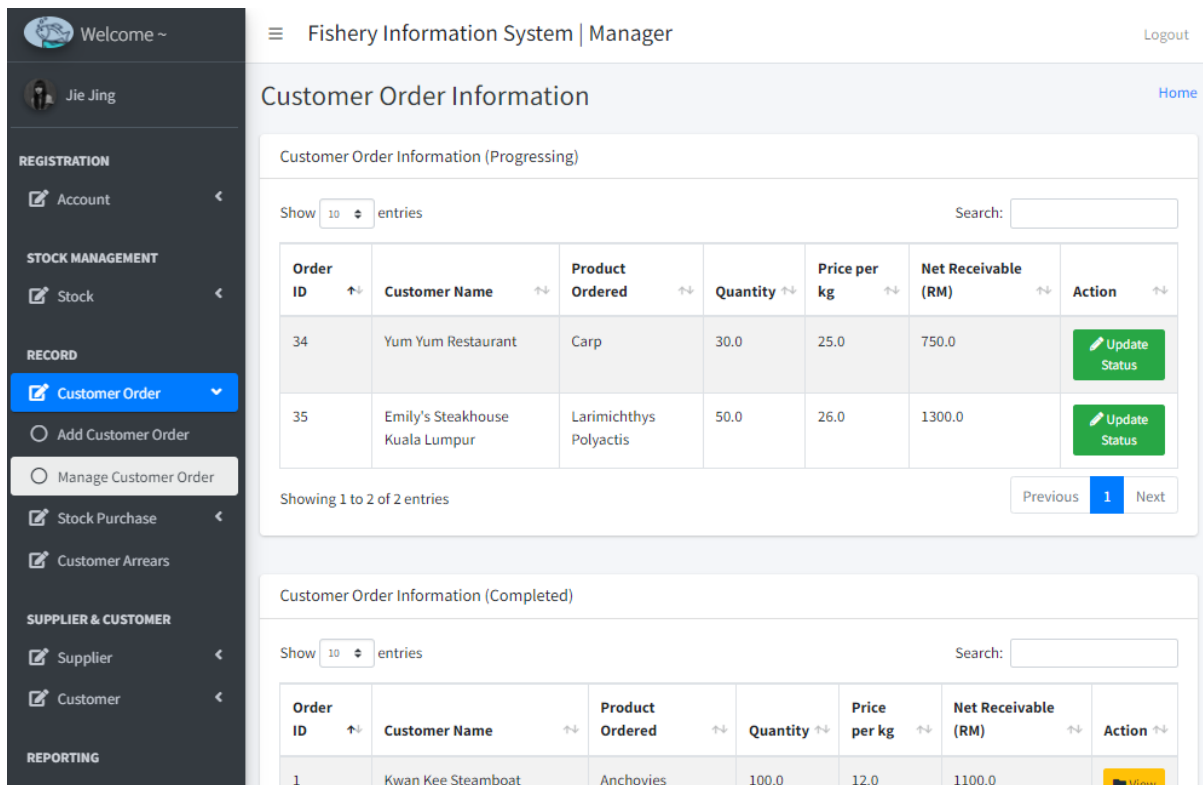
At the bottom of the form, there are two buttons: a green 'Add' button and a yellow 'Cancel' button.

**Figure 4.23 Add Customer Order Record Page Interface**

This interface is displayed when a user clicks on the “Customer Order” drop-down list and selects the “Add Customer Order” option from the sidebar. The add customer order information form will display, and the user needs to select the customer, product, and fill in the quantity, unit price, date of order, total receivable amount, and define the order status. The total represents the amount to be received after discount. If the order status is “In Progress”, the payment received column will be hidden. But if the order status is “Complete”, the user will need to fill in the payment received. Users click on the “Add” button, and a message box will appear to announce the result.

### 4.3.11. Graphical Interface for Customer Order Information Page

This interface allow user to view information of all the customer order record.



The screenshot shows the 'Customer Order Information' page in a web application. The page is titled 'Fishery Information System | Manager' and includes a 'Logout' link. The main content is divided into two sections: 'Customer Order Information (Progressing)' and 'Customer Order Information (Completed)'. Each section features a table with columns for Order ID, Customer Name, Product Ordered, Quantity, Price per kg, Net Receivable (RM), and Action. The 'Progressing' section shows two orders, each with an 'Update Status' button. The 'Completed' section shows one order with a 'View' button. A sidebar menu on the left contains various navigation options, including 'Customer Order' (highlighted), 'Add Customer Order', and 'Manage Customer Order'.

Order ID	Customer Name	Product Ordered	Quantity	Price per kg	Net Receivable (RM)	Action
34	Yum Yum Restaurant	Carp	30.0	25.0	750.0	Update Status
35	Emily's Steakhouse Kuala Lumpur	Larimichthys Polyactis	50.0	26.0	1300.0	Update Status

Order ID	Customer Name	Product Ordered	Quantity	Price per kg	Net Receivable (RM)	Action
1	Kwan Kee Steamboat	Anchovies	100.0	12.0	1100.0	View

**Figure 4.24 Customer Order Information Page Interface**

There will be three table in this page which show the information of progressing order, completed order and cancelled order separately. The table will show the ID, customer name, product ordered, quantity ordered, price per kg and net receivable of each order. This interface is display when user click on the “Manage Customer Order” option from the “Customer Order” drop down list. There is a button in every row of every table, for Customer Order Information (Progressing) table, it will be an update status button which allow user to update the order status. For Customer Order Information (Completed) and Customer Order Information (Cancelled) table, it will be a view button which allow user to view the order information.

### 4.3.12. Graphical Interface for Update Customer Order Status Page

This interface will allow user to update customer order status.

The screenshot shows the 'Update Customer Order Status' page for Order ID: 34. The page is divided into a sidebar and a main content area. The sidebar contains navigation options under categories like REGISTRATION, STOCK MANAGEMENT, RECORD, SUPPLIER & CUSTOMER, and REPORTING. The main content area has a yellow header 'Update Customer Order Status' and a 'Details' tab. Below the tab, there is a table of order details:

Order ID:	34
Order Date:	April 7, 2022
Customer Name:	Yum Yum Restaurant
Product Ordered:	Carp
Quantity (kg):	30.0
Price per kg (RM):	25.0
Actual Receivable Amount (RM):	750.0
Discount Allowed (RM):	(0.0)
Net Receivable (RM):	750.0

Below the table, there is a dropdown menu for 'Order Status' with 'In Progress' selected, and a text input field for 'Payment Received (RM)'. At the bottom, there is a yellow button labeled 'Update Order Status'.

**Figure 4.25 Update Customer Order Status Page Interface (Details tab)**

Through the page title, users able to know which customer order they are editing, it will show the order id of the selected order. In this page will show the details of the customer's order, and user can update the order status by change the value from the drop-down list of order status. If the order status "Cancel" selected, the payment received column will hide. But if order status is "Complete" selected, user will need to fill in the payment received. After click on the "Update Order Status" button, users will be directed to different page according to order status. Furthermore, in the Customer Detail tab will show the respective customer information that place the selected order.

Welcome ~

Fishery Information System | Manager

Logout

Jie Jing

Customer Order | Order ID:34

Home

Update Customer Order Status

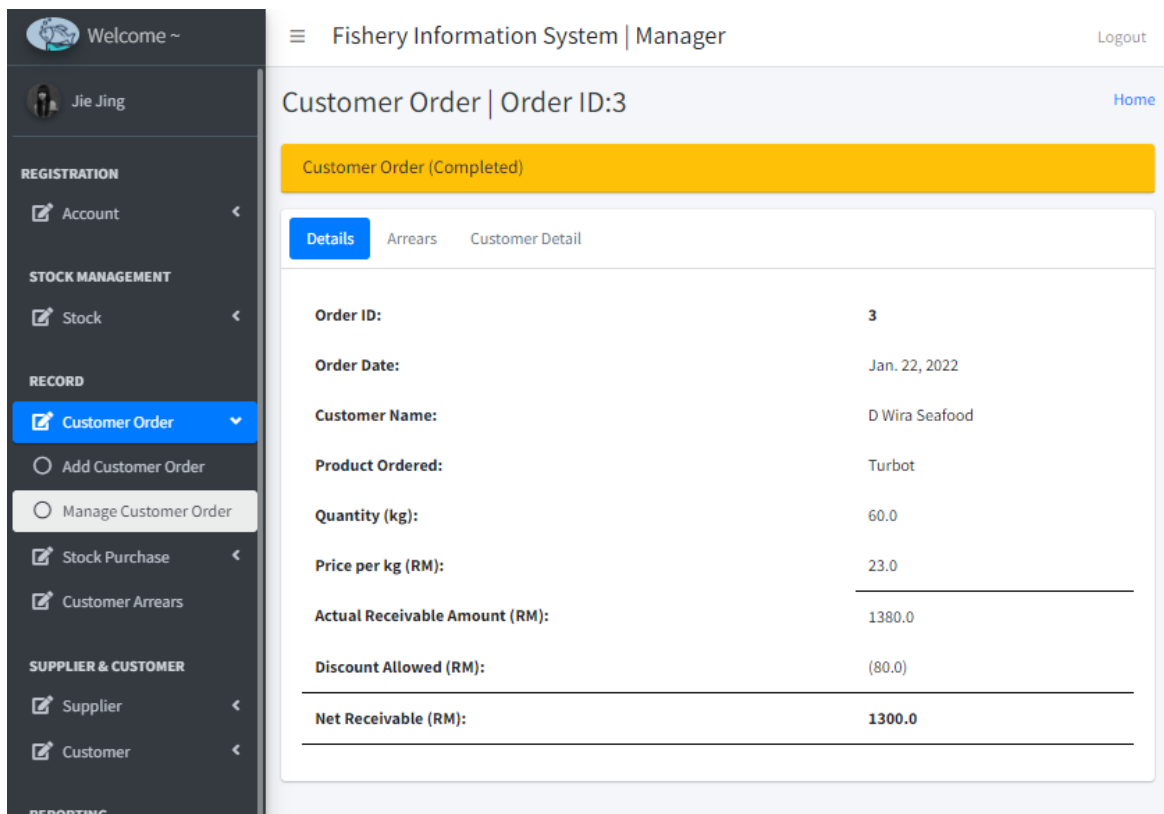
Details **Customer Detail**

<b>Customer/ Company Name:</b>	Yum Yum Restaurant
<b>Contact Number:</b>	011-489 6565
<b>Email Address:</b>	budao@gmail.com
<b>Address:</b>	13, Jalan Sejati, Taman Sejati
<b>Post Code:</b>	08000
<b>City:</b>	Sungai Petani
<b>State:</b>	Kedah

**Figure 4.26 Update Customer Order Status Page Interface (Customer Detail tab)**

### 4.3.13. Graphical Interface for View Completed Customer Order Page

This interface will allow user to view the information that related the completed customer order. In this page will showing three tab which contain the information for the specific customer's order, arrears and customer details. In the tab "Details" will show the detailed information for the order, which also include the actual receivable amount and also the discount allowed that calculated by the system.

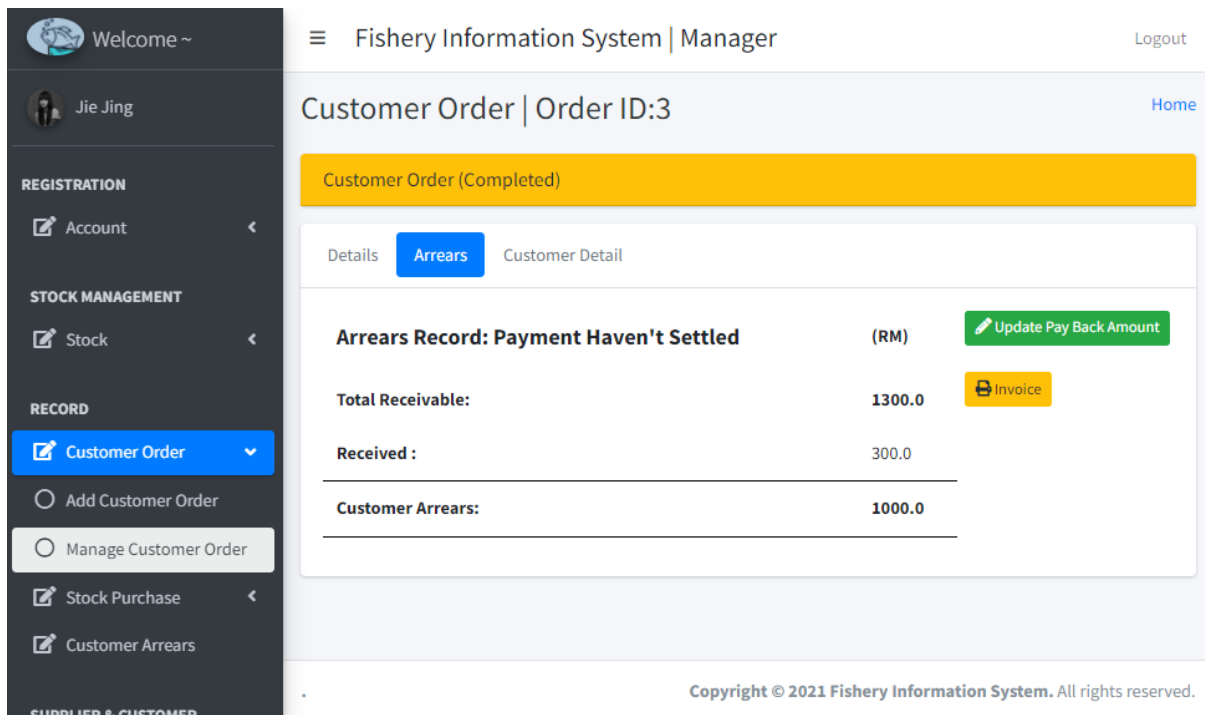


The screenshot shows a web application interface for a Fishery Information System. The user is logged in as 'Jie Jing'. The main content area displays the 'Customer Order | Order ID:3' page, which is currently in the 'Details' tab. The order is marked as 'Completed'. The details are as follows:

Order ID:	3
Order Date:	Jan. 22, 2022
Customer Name:	D Wira Seafood
Product Ordered:	Turbot
Quantity (kg):	60.0
Price per kg (RM):	23.0
Actual Receivable Amount (RM):	1380.0
Discount Allowed (RM):	(80.0)
Net Receivable (RM):	1300.0

Figure 4.27 View Completed Customer Order Page Interface (Details tab)

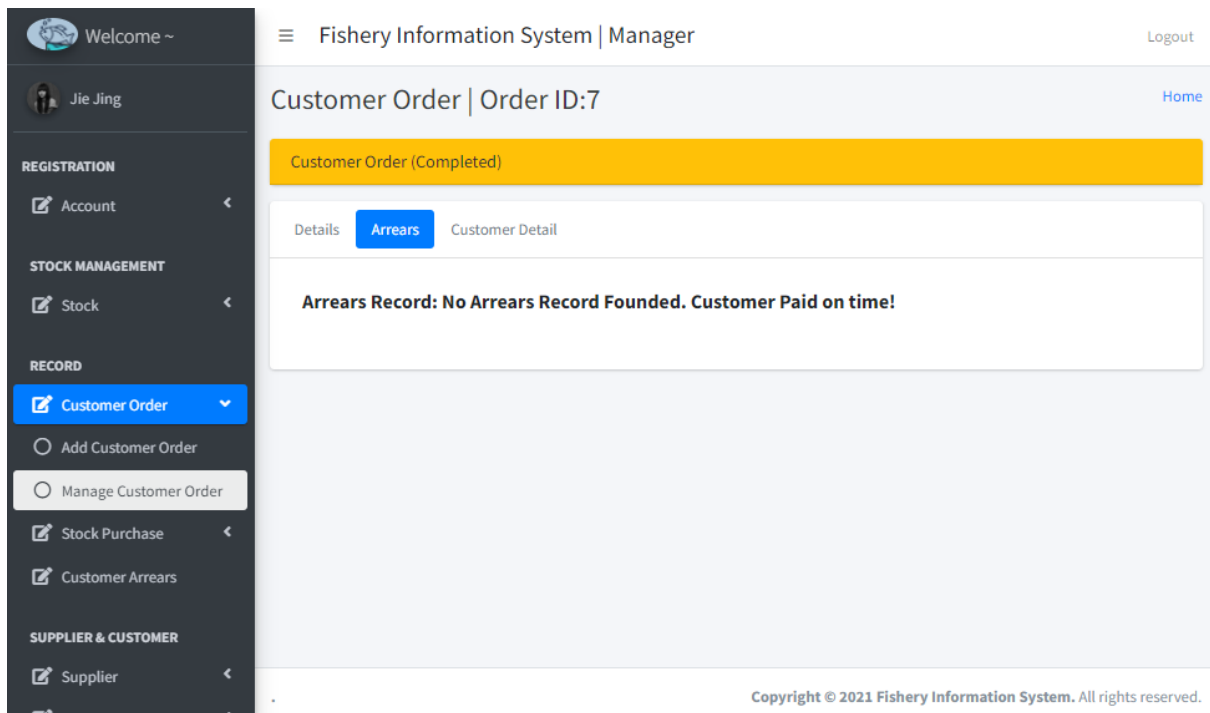
If the payment for order is haven't fully paid, the total receivable amount, received amount and arrears amount will show in the arrears tab. The "Update Pay Back Amount" button will direct user to update the received pay back amount for the arrears record. Moreover, after click on the "Invoice" button, system will generate an invoice of the arrears record for user, user will be directed to preview the invoice. User can decide whether print out the invoice and send it to user or not.



**Figure 4.28 View Completed Customer Order Page Interface (Arrears Haven't Settled)**

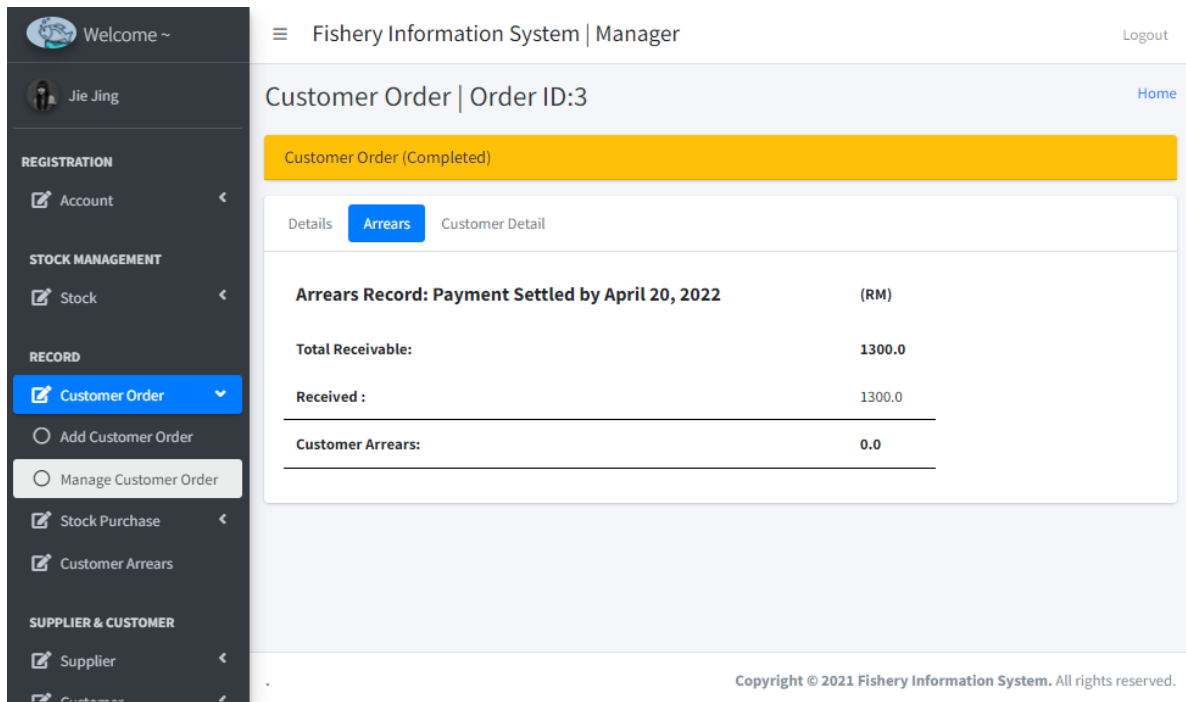


However, in the situation of payment for customer's order has fully paid, arrears record will not appear. Therefore, the arrears tab will announce user, "No Arrears Record Found, Customer Paid on Time!".



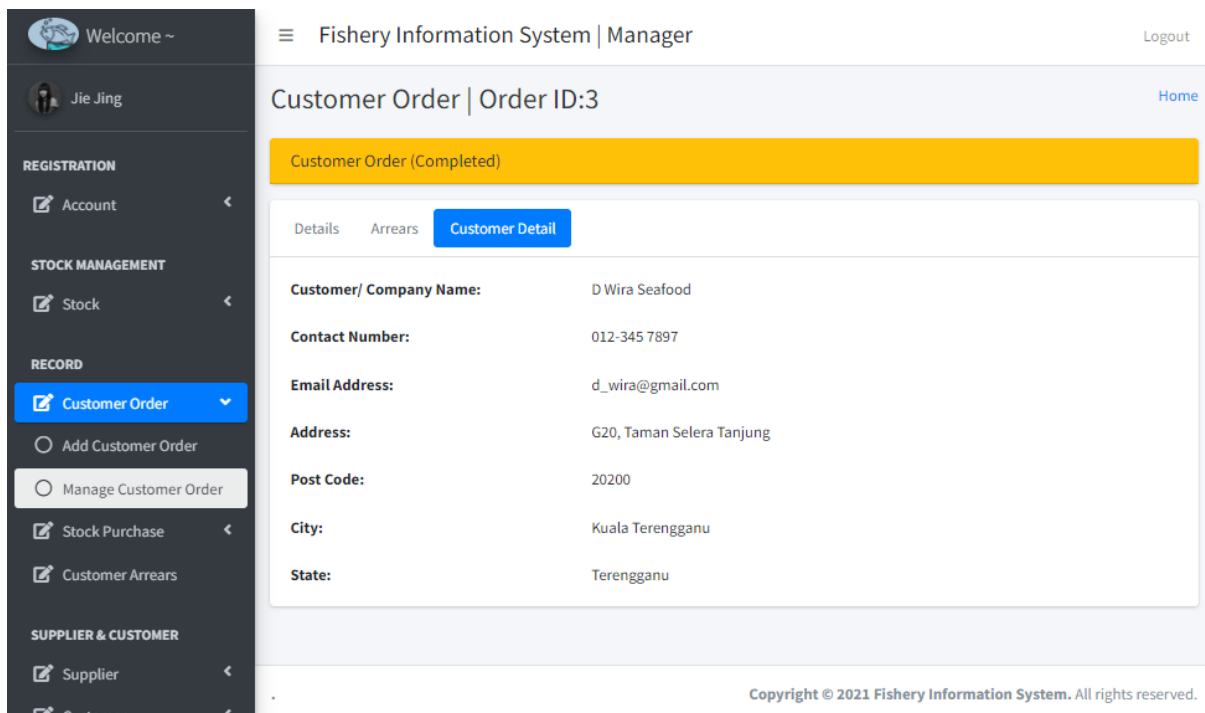
**Figure 4.29 View Completed Customer Order Page Interface (No Arrears)**

In the situation of customer has purchase on credit before but has settled the payment after that, in the arrears tab will show the arrears information and it will announce user, "Payment Settle" and the settle date of the arrears.



**Figure 4.30 View Completed Customer Order Page Interface (Arrears Settled)**

In the “Customer Detail” tab, it will show the respective customer information who place the order.



**Figure 4.31 View Completed Customer Order Page Interface (Customer Detail tab)**

### 4.3.14. Graphical Interface for View Cancelled Customer Order Page

This interface will display when user clicked the view button in “Customer Order Record (Completed)” table. In the tab “Details” will show the detailed information for the order, which also include the actual receivable amount and also the discount allowed that calculated by the system. Besides, in the “Customer Detail” tab, it will show the respective customer information who place the order.

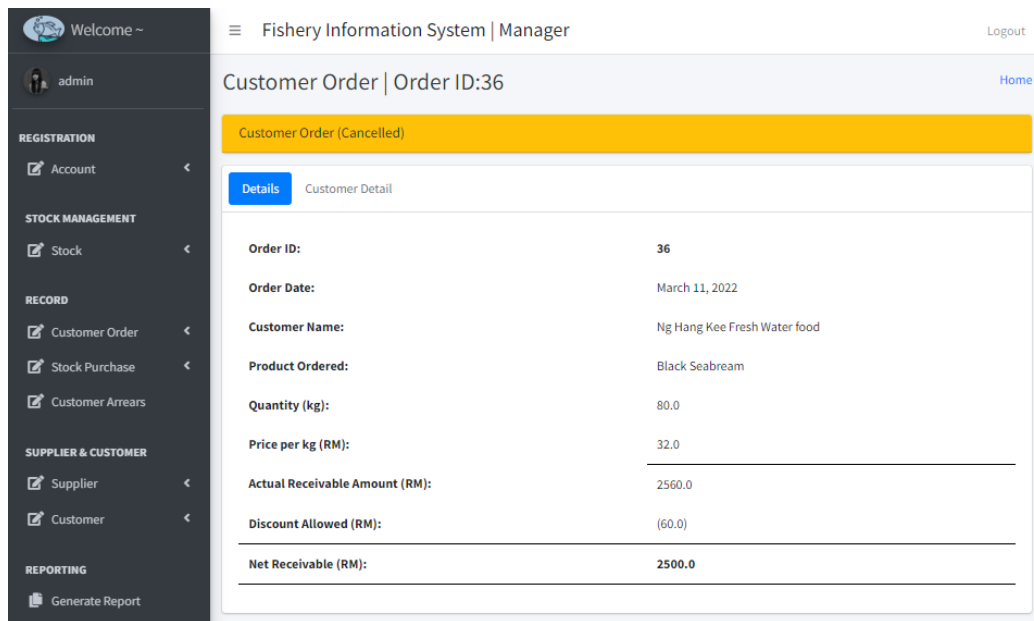


Figure 4.32 View Cancelled Customer Order Page Interface (Details tab)

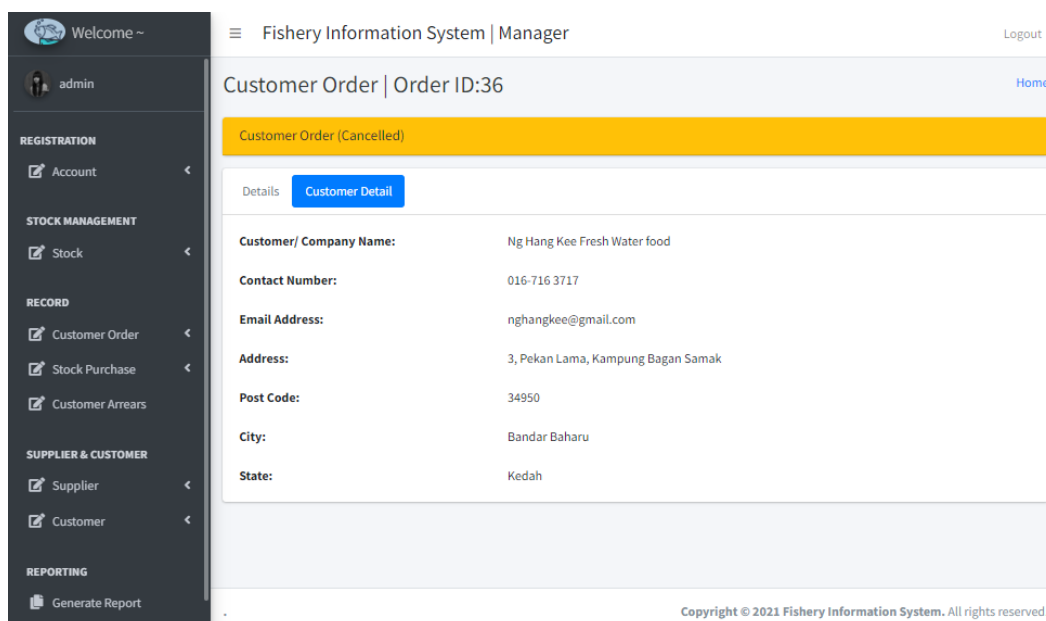


Figure 4.33 View Cancelled Customer Order Page Interface (Customer Detail tab)

### 4.3.15. Graphical Interface for Add Stock Purchase Record Information Page

This interface allows users to add a new stock purchase record.

The screenshot shows the 'Add Stock Purchase Record' page in the Fishery Information System. The page has a dark sidebar on the left with a 'Stock Purchase' dropdown menu. The main content area is titled 'Add Stock Purchase Record' and contains a form with the following fields:

- Product:** A dropdown menu with 'Product' selected and an 'Add New' button.
- Supplier:** A dropdown menu with 'Supplier' selected.
- Quantity(kg):** A text input field with 'Quantity(kg)' as a placeholder.
- Price(per kg):** A text input field with 'Price(per kg)' as a placeholder.
- Date of Order:** A date input field with 'mm/dd/yyyy' as a placeholder and a calendar icon.
- Total (RM):** A text input field with 'Total' as a placeholder.
- Order Status:** A dropdown menu with 'Order Status' selected.

At the bottom of the form, there are two buttons: a green 'Add Record' button and a yellow 'Cancel' button.

**Figure 4.34 Add Stock Purchase Record Information Page Interface**

This interface is displayed when a user clicks on the “Stock Purchase” drop-down list and selects the “Add Stock Purchase” option from the sidebar. The add stock purchase record form will display, and the user needs to select the supplier, product, and fill in the quantity, unit price, date of order, total receivable amount, and define the order status. Users click on the “Add Record” button, and a message box will appear to announce the result.

### 4.3.16. Graphical Interface for Stock Purchase Record Page

This interface allow user to view information of all the stock purchase record.

The screenshot shows the 'Stock Purchase Record' page in a web application. The page has a dark sidebar on the left with a 'Stock Purchase' menu item highlighted. The main content area is titled 'Stock Purchase Record' and contains two tables. The first table, 'Stock Purchase Record Information', has the following data:

Order ID	Supplier Name	Product Ordered	Quantity	Price per kg	Total Amount (RM)	Action
34	Isa Kasturi	Carp	20.0	23.0	520.0	View
35	Tong Seng Ban & Co	Pomfret	75.0	28.0	2100.0	Update Status
36	HBK Seafood Industries Sdn. Bhd.	Scophthalmus	30.0	26.0	780.0	View

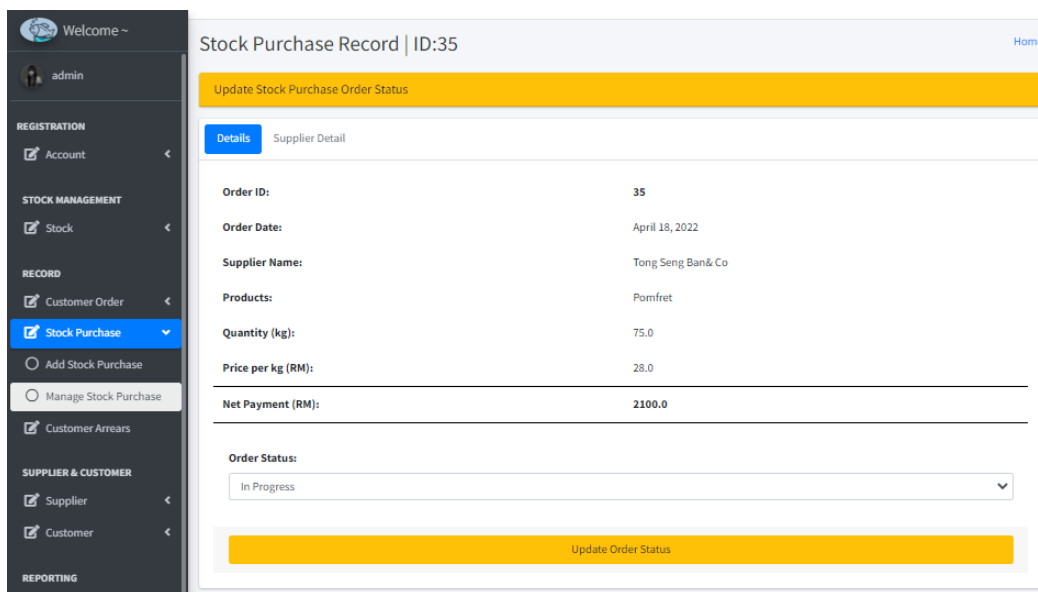
The second table, 'Stock Purchase Record Information (Cancelled)', is currently empty. Both tables include a 'Show 10 entries' dropdown and a search bar. The first table also has a pagination control showing 'Showing 31 to 33 of 33 entries' and a 'Previous 1 2 3 4 Next' navigation bar.

**Figure 4.35 Stock Purchase Record Page Interface**

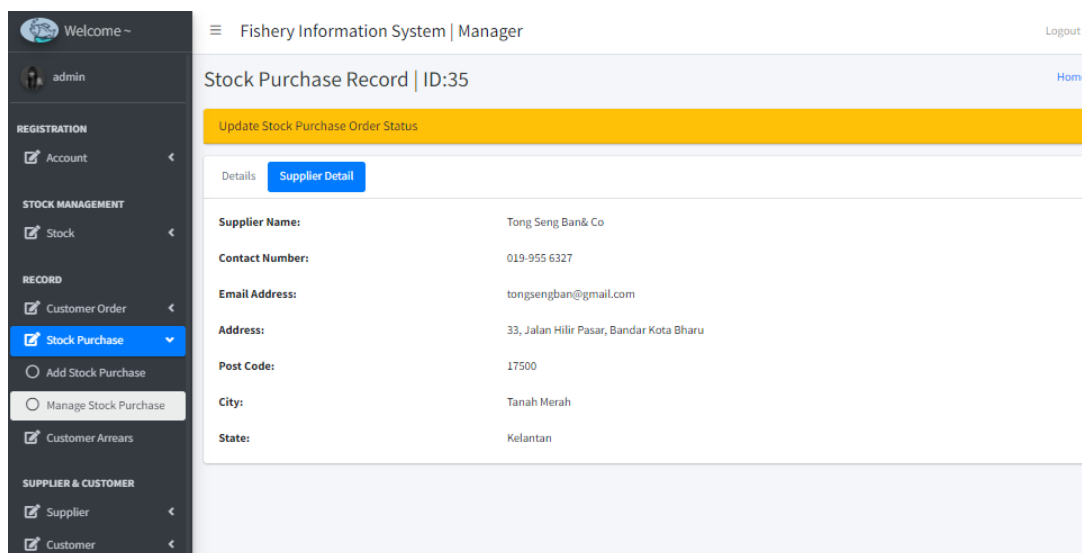
There will be two table in this page, the first table will show the information of progressing order and completed order. However, the second table will show the information for cancelled order. The table will show the ID, supplier name, product ordered, quantity, price per kg and total paid amount of each order. This interface is display when user click on the “Manage Stock Purchase” option from the “Stock Purchase” drop down list. There is a button in every row of every table. For completed order and cancelled order it will be a “View” button for user to view the detailed information of record and “Update Status” button for progressing order. After user clicked the button, system will direct the user to the respective page.

### 4.3.17. Graphical Interface for Update Stock Purchase Order Status Page

This interface will allow user to update stock purchase order status. Through the page title, users able to know which stock purchase order they are editing, it will show the order id of the selected order. In this page will show the details of the stock purchase order, and user can update the order status by change the value from the drop-down list of order status. After click on the “Update Order Status” button, users will be directed to different page according to order status. Furthermore, in the Supplier Detail tab will show the respective supplier information.



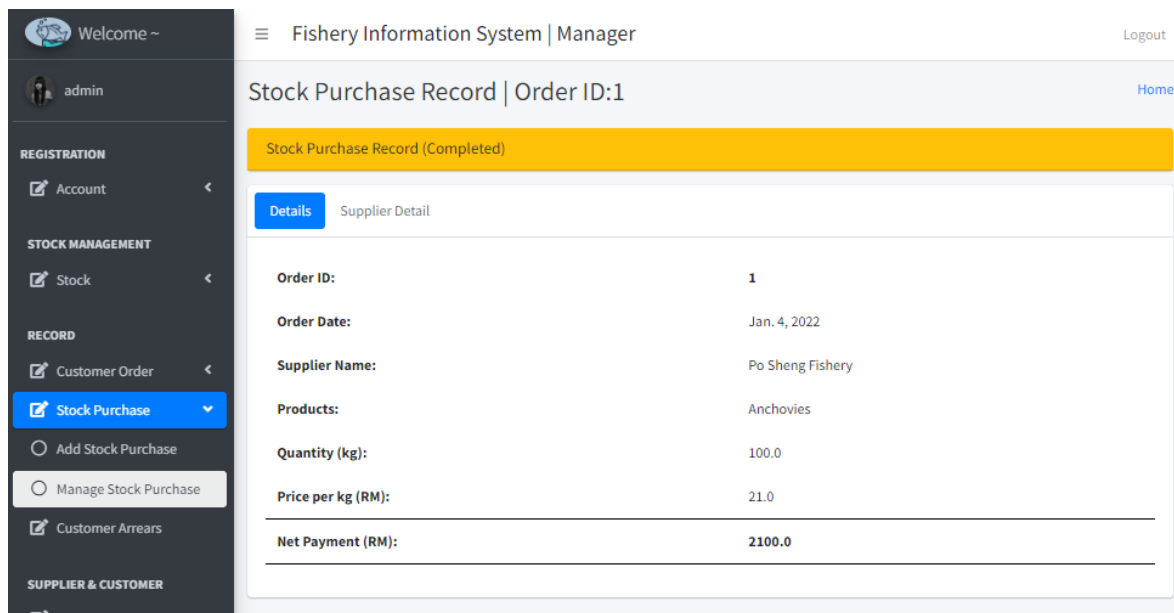
**Figure 4.36 Update Stock Purchase Order Status Page Interface (Details tab)**



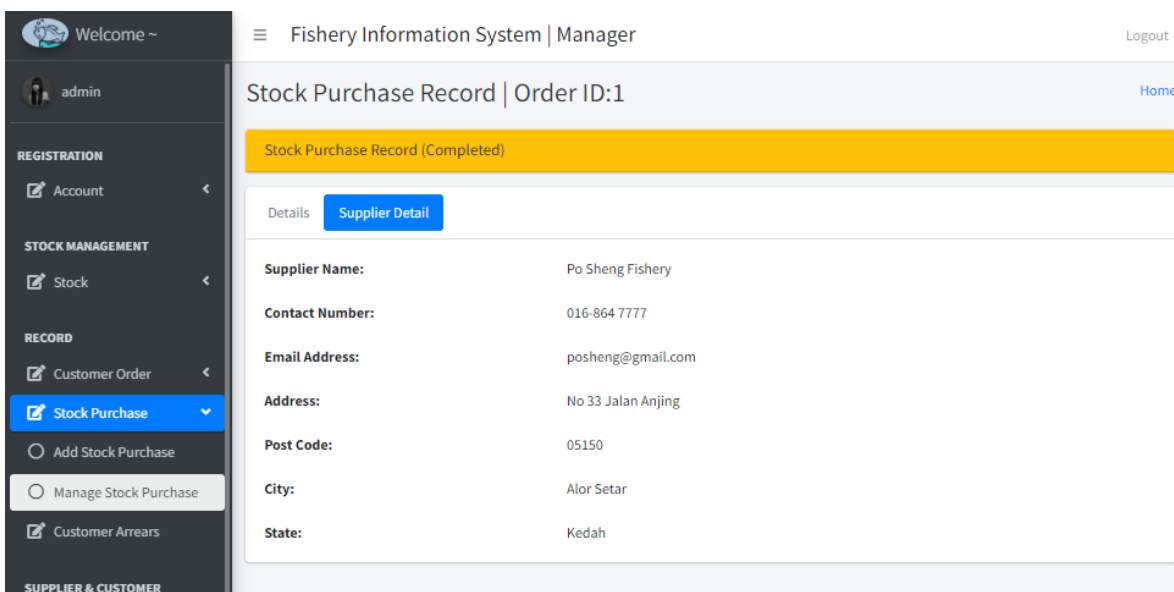
**Figure 4.37 Update Stock Purchase Order Status Page Interface (Supplier Detail tab)**

### 4.3.18. Graphical Interface for View Completed Stock Purchase Order Page

This interface will display when user clicked the view button completed stock purchase record. In the tab “Details” will show the detailed information for the order, which also include the actual receivable amount and also the discount allowed that calculated by the system. Besides, in the “Supplier Detail” tab, it will show the respective supplier information who place the order.



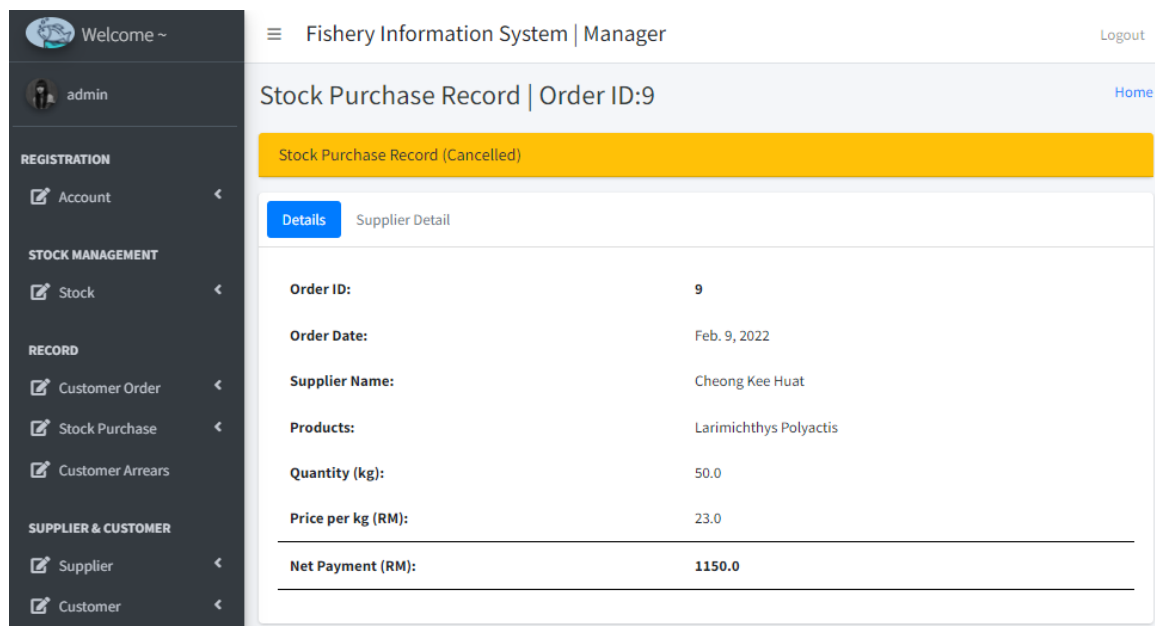
**Figure 4.38 View Completed Stock Purchase Order Page Interface (Details tab)**



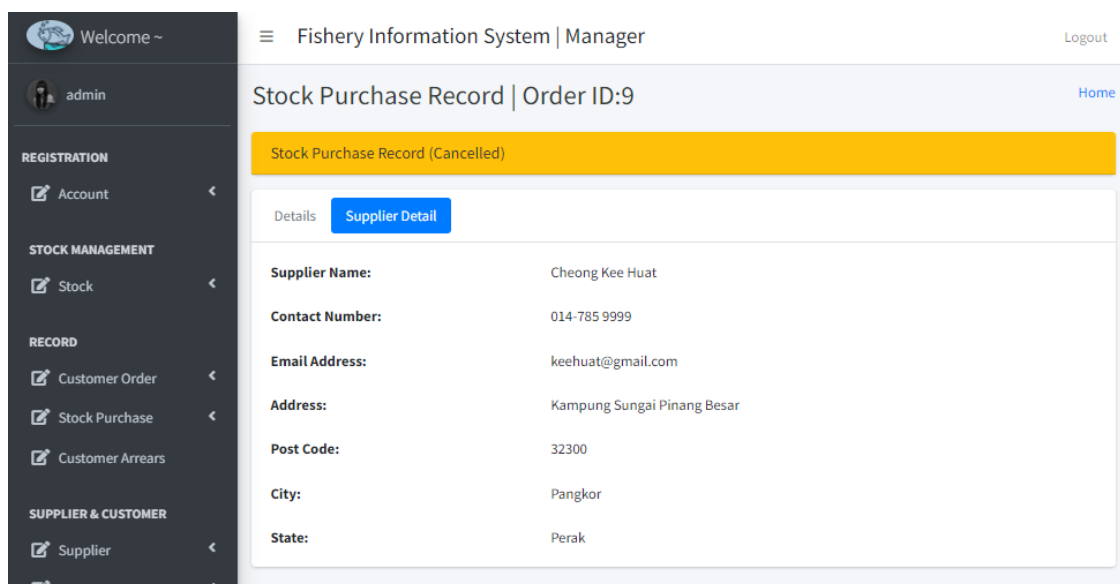
**Figure 4.39 View Completed Stock Purchase Order Page Interface (Supplier Detail tab)**

### 4.3.19. Graphical Interface for View Cancelled Stock Purchase Order Page

This interface will display when user clicked the view button cancelled stock purchase record. In the tab “Details” will show the detailed information for the order, which also include the actual receivable amount and the discount allowed that calculated by the system. Besides, in the “Supplier Detail” tab, it will show the respective supplier information who place the order.



**Figure 4.40 View Cancelled Stock Purchase Order Page Interface (Details tab)**



**Figure 4.41 View Cancelled Stock Purchase Order Page Interface (Supplier Detail tab)**



### 4.3.20. Graphical Interface for Customer Arrears Information Page

This page is for user to view the general information for customer arrears record. The table is showing the record id, related order id, order date, customer name, expected receive amount and arrears amount. There is a “Manage” button in each row which able to direct user to manage the arrears record information.

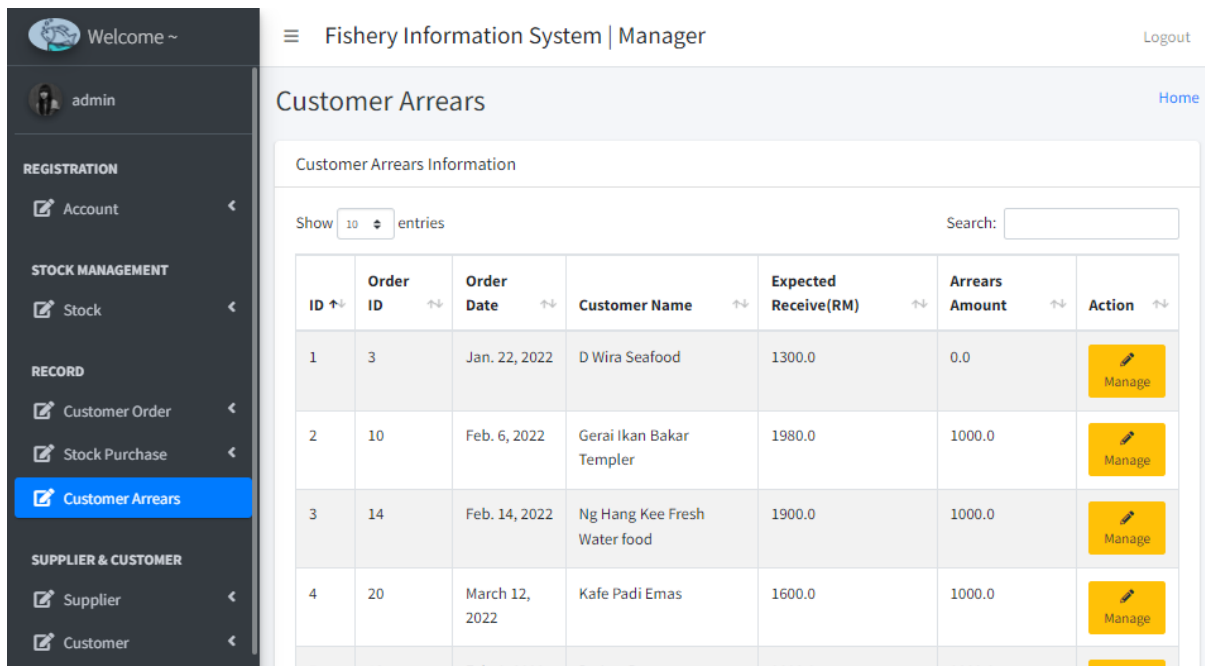


Figure 4.42 Customer Arrears Information Page Interface

### 4.3.21. Graphical Interface for Update Customer Arrears Record Page

This page is for user to update the customer arrears record, there are three tabs in this page. For the Details tab, it will show the information of the customer arrears record. If user click on the “Invoice” button, system will generate an invoice for the customer arrears record. User will be directed to preview the invoice. However, if customer has pay back their arrears, user can update the pay back amount through the input column at the page bottom. After click on the “Update” button, user can see the synchronize update of new arrears amount in the same page.

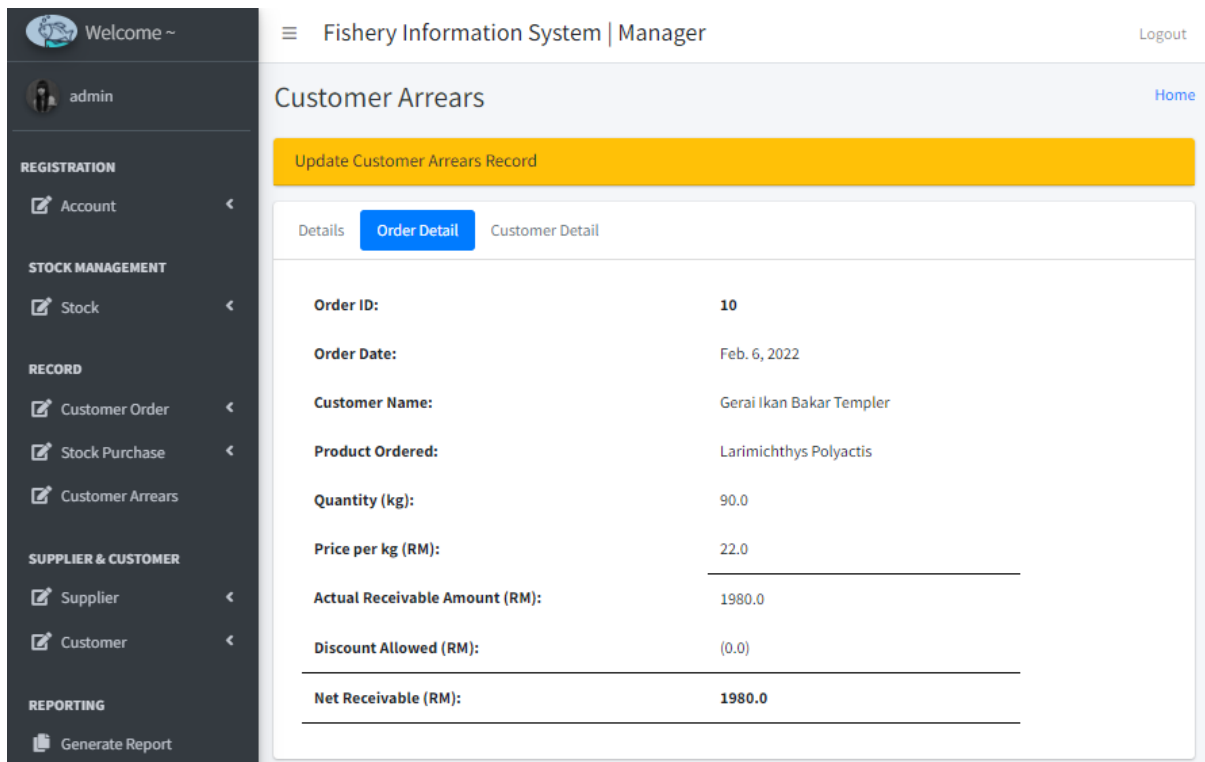
The screenshot displays the 'Update Customer Arrears Record' page in a web application. The page has a dark sidebar on the left with a 'Welcome ~' message and a user profile for 'admin'. The sidebar contains several menu categories: 'REGISTRATION' (Account), 'STOCK MANAGEMENT' (Stock), 'RECORD' (Customer Order, Stock Purchase, Customer Arrears), 'SUPPLIER & CUSTOMER' (Supplier, Customer), and 'REPORTING' (Generate Report). The main content area is titled 'Customer Arrears' and has a 'Home' link. A yellow header bar reads 'Update Customer Arrears Record'. Below this, there are three tabs: 'Details' (selected), 'Order Detail', and 'Customer Detail'. The 'Details' tab shows a table of arrears record information:

Arrears Record ID:	2	<a href="#">Invoice</a>
Customer Order ID:	10	
Order Date:	Feb. 6, 2022	
Customer Name:	Gerai Ikan Bakar Templer	
Total Receivable:	1980.0	
Received :	980.0	
Customer Arrears:	1000.0	

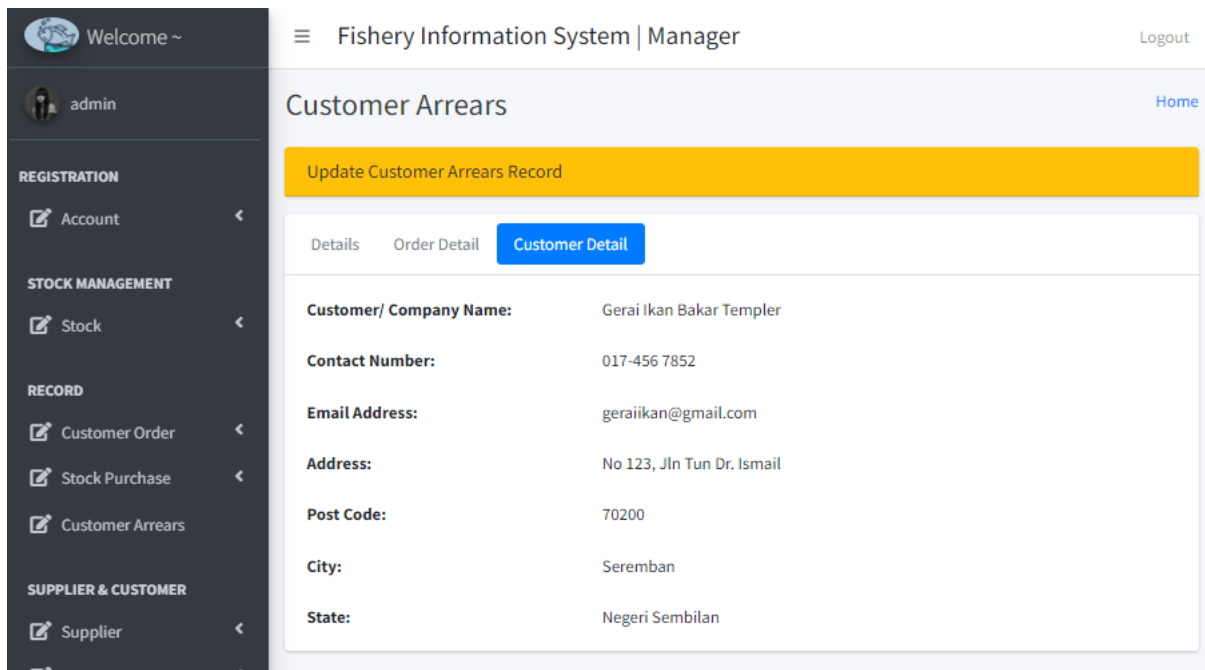
Below the table, there is a section for 'Add Customer Pay Back Amount:' with an input field labeled 'Pay Back Amount (RM):' containing the text 'Payback Amount (RM)' and a yellow 'Update' button.

**Figure 4.43 Update Customer Arrears Record Page Interface (Details tab)**

The Order Details tab will show the respective customer order details. Besides, the Customer Detail tab will show the information of the customer who makes payment arrears.



**Figure 4.44 Update Customer Arrears Record Page Interface (Order Details tab)**



**Figure 4.45 Update Customer Arrears Record Page Interface (Customer Detail tab)**

### 4.3.22. Graphical Interface for View Customer Arrears Record Page

This page is for user to view the customer arrears record that is already settled. There are three tabs in this page. For the Details tab, will show the information of the customer arrears record. The Order Details tab will show the respective customer order details. Besides, the Customer Detail tab will show the information of the customer who makes payment arrears.

The screenshot shows the 'Customer Arrears' page in the 'Fishery Information System | Manager' interface. The page title is 'Customer Arrears' and it includes a 'Home' link. A yellow banner indicates 'Customer Arrears Record (Settled)'. Below this, there are three tabs: 'Details' (selected), 'Order Detail', and 'Customer Detail'. The 'Details' tab displays the following information:

<b>Arrears Record ID:</b>	<b>1</b>
<b>Customer Order ID:</b>	3
<b>Order Date:</b>	Jan. 22, 2022
<b>Customer Name:</b>	D Wira Seafood
<b>Total Receivable:</b>	<b>1300.0</b>
<b>Received :</b>	1300.0
<hr/>	
<b>Customer Arrears:</b>	<b>0.0</b>
<hr/>	

The sidebar on the left contains the following navigation items:

- REGISTRATION
  - Account
- STOCK MANAGEMENT
  - Stock
- RECORD
  - Customer Order
  - Stock Purchase
  - Customer Arrears
- SUPPLIER & CUSTOMER
  - Supplier
  - Customer

**Figure 4.46 View Customer Arrears Record Page Interface (Detail tab)**

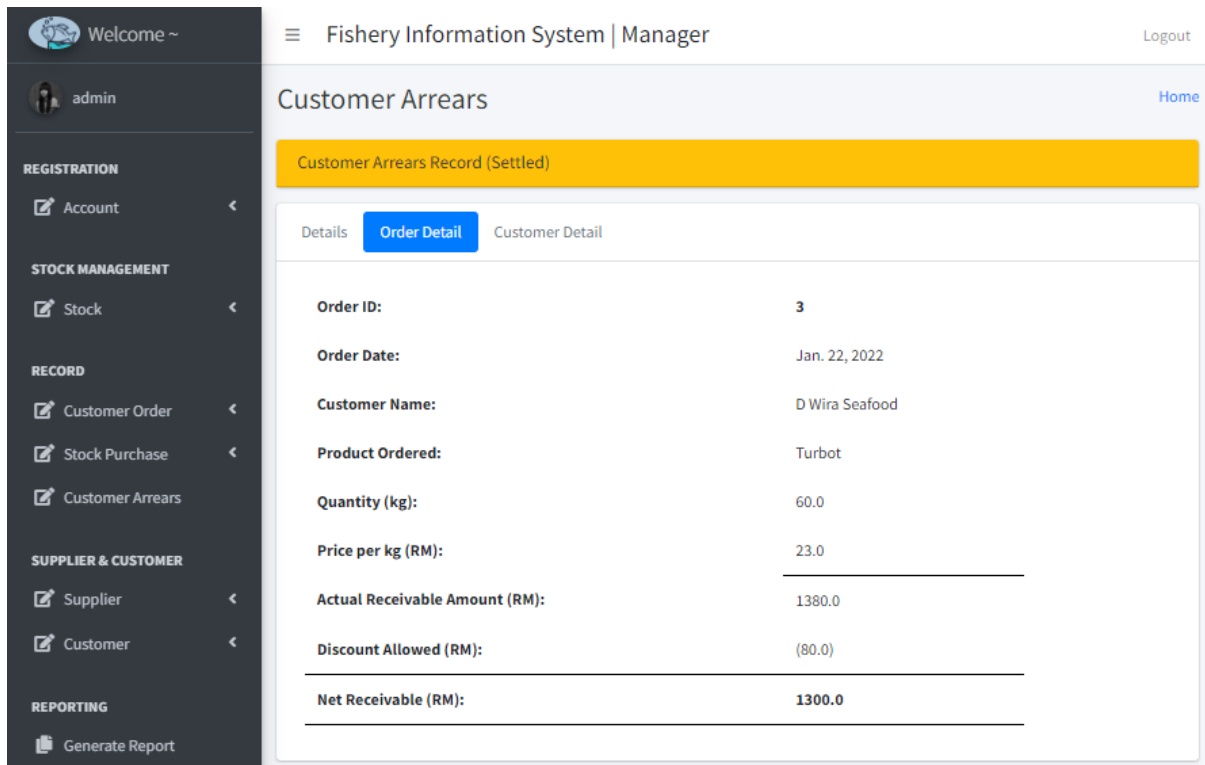


Figure 4.47 View Customer Arrears Record Page Interface (Order Detail tab)

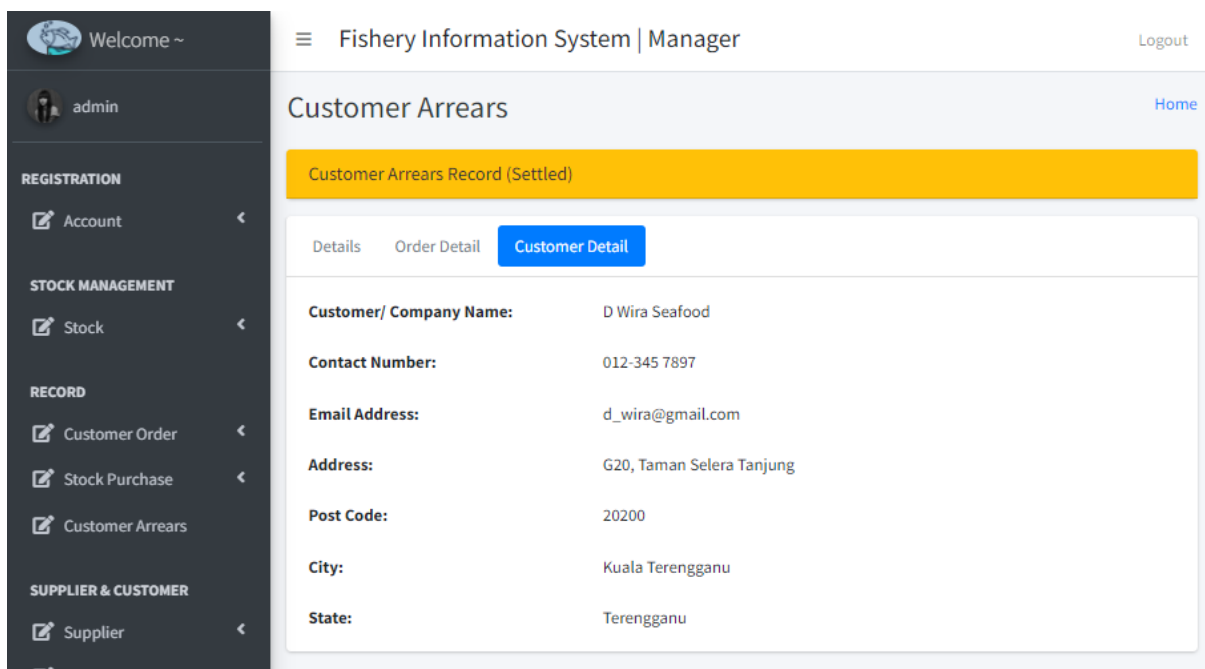


Figure 4.48 View Customer Arrears Record Page Interface (Customer Detail tab)

### 4.3.23. Graphical Interface for Add Supplier Page

This interface allows users to add information of a new supplier.

This interface is display when user click on the “Supplier” drop down list and select the “Add Supplier” option from the side bar. The add supplier form will display and user need to fill in the supplier’s name, contact number, email address and address. Users click on the “Add Supplier” button and a message box will appear to announce the result.

The screenshot shows the 'Add Supplier' page in the Fishery Information System. The page has a dark sidebar on the left with a 'Supplier' dropdown menu. The main content area is titled 'Add Supplier' and contains a form with the following fields:

- Supplier / Company Name:** A text input field labeled 'Supplier Name'.
- Contact Number:** A text input field with a format hint 'Format: xxx-xxx xxxxx'.
- Email address:** A text input field labeled 'Email'.
- Address:** A text input field.
- Post Code:** A text input field labeled 'Post Code'.
- City:** A text input field labeled 'City'.
- State:** A dropdown menu labeled 'State'.

At the bottom of the form, there are two buttons: a green 'Add Supplier' button and a blue 'Cancel' button.

**Figure 4.49 Add Supplier Page Interface**

### 4.3.24. Graphical Interface for Supplier Page

This interface allow user to view information of all the cooperated supplier.

The table will show the ID, name, contact number, email and address of the supplier. This interface is display when user click on the “Manage Supplier” option from the “Stock” drop down list. There is a green colour button in every row of the table, it is an edit button which allow user to edit the supplier information. If users click on the button, the system will direct user to the Edit Stock page to edit information of the selected supplier.

The screenshot displays the 'Supplier' page interface. The page title is 'Supplier' and the user is logged in as 'admin'. The page shows a table of suppliers with the following data:

ID	Name	Contact Number	Email	Address	State	Action
1	Po Sheng Fishery	016-864 7777	posheng@gmail.com	No 33 Jalan Anjing 05150, Alor Setar	Kedah	Manage
2	Hup Keat Fishery	012-418 2478	hupkeatfishery@gmail.com	No. 131, Jalan Sultan Abdul Halim 08000, Alor Setar	Kedah	Manage
3	HBK Seafood Industries Sdn. Bhd.	017-433 6964	hbk_seafood@gmail.com	312, Kawasan Perusahaan Mergong II, Seberang Jalan Putra 05050, Alor Star	Kedah	Manage
4	Cheong Kee Huat	014-785 9999	keehuat@gmail.com	Kampung Sungai Pinang Besar 32300, Pangkor	Perak	Manage
5	Sea Fishery Kingdom Sdn Bhd	016-878 1399	sea-fishery-kingdom@gmail.com	31 & 33, Jalan PJS 11/14 46150, Petaling Jaya	Selangor	Manage

Figure 4.50 Supplier Page Interface

### 4.3.25. Graphical Interface for Edit Supplier Page

This interface will allow user to edit the information of selected supplier.

Through the page title, users able to know which supplier they are editing, it will show the name and id of the selected supplier. In the Overview tab, it will show all the information of the selected supplier.

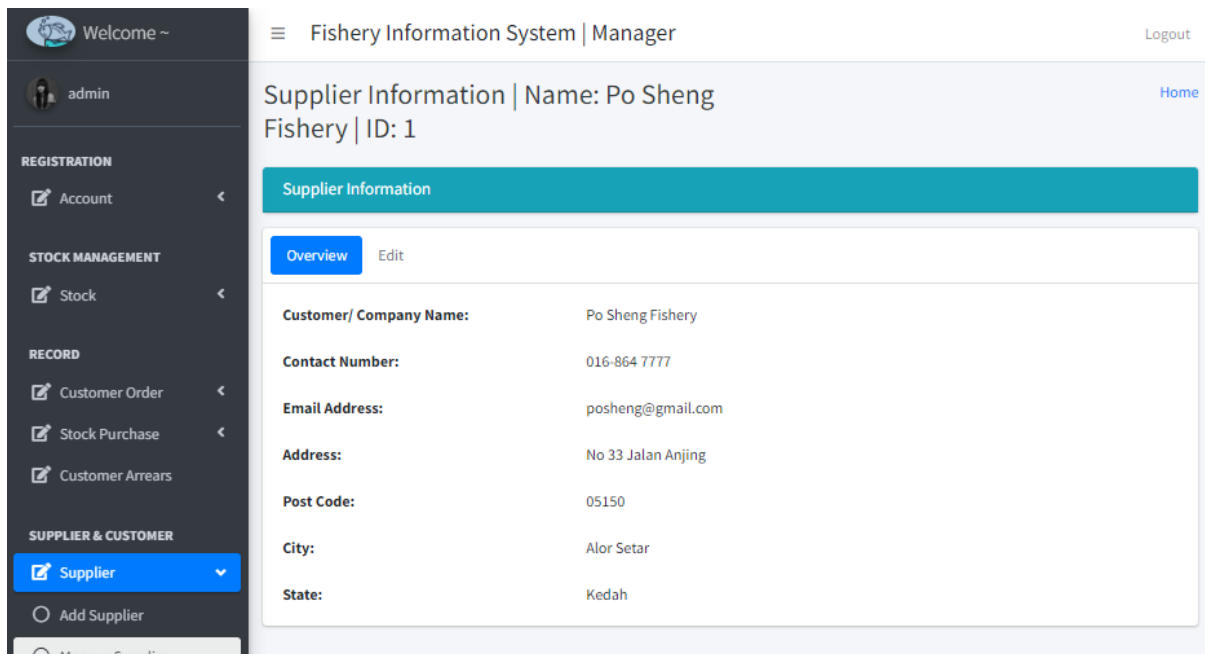
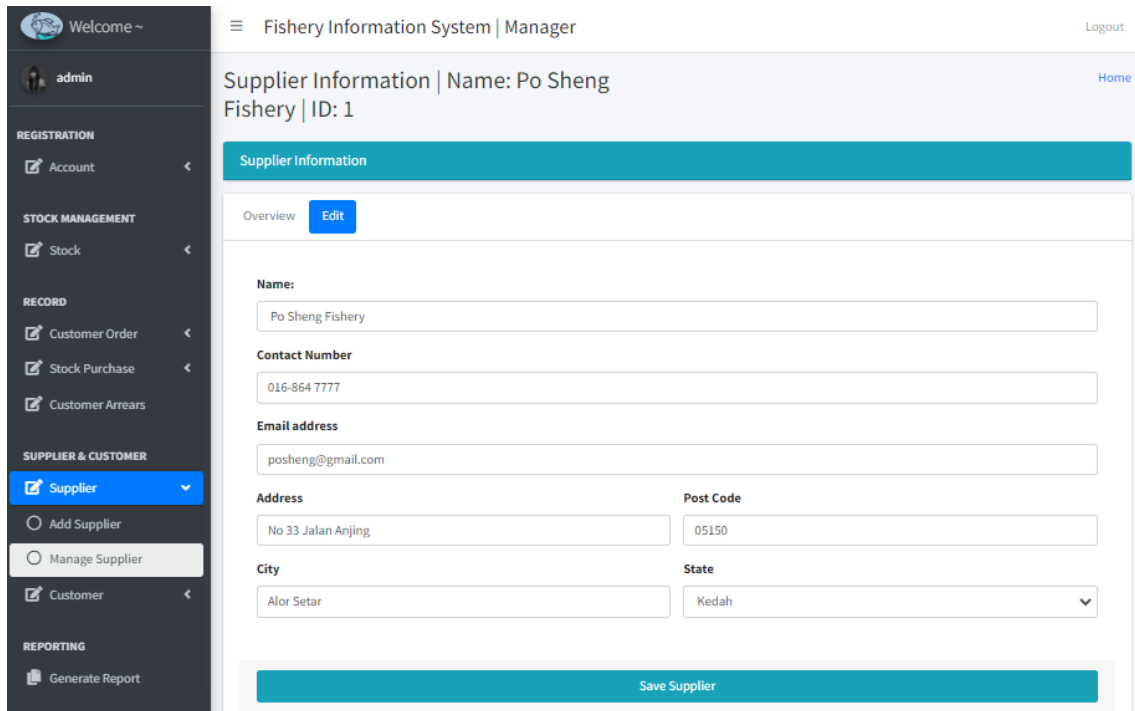


Figure 4.51 Edit Supplier Page Interface (Overview tab)



However, in the Edit tab will show an edit supplier form, it will display the original value of each of the data. User can clear the original value and enter a new value, then click on the “Save Supplier” button. After that, users will see a message box which used to announce user whether the action is success or fail.

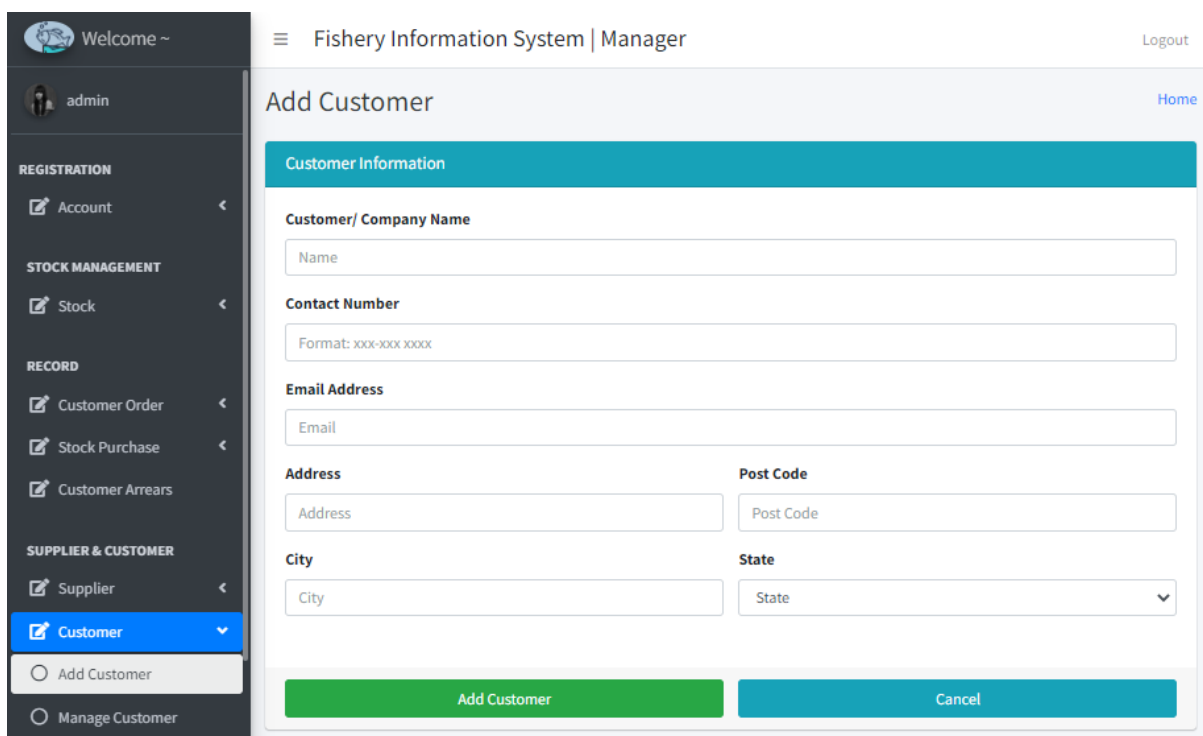


**Figure 4.52 Edit Supplier Page Interface (Edit tab)**

### 4.3.26. Graphical Interface for Add Customer Page

This interface allows users to add information of a new customer.

This page is display when user selected the “Add Customer” option from “Customer” drop down list in the side bar. A add customer form is display in this interface, user fill in the name, contact number, email and address of the customer. Users click on the “Add Customer” button and a message box will appear to announce user whether the action is “Successfully Added” or “Fail to Add”.



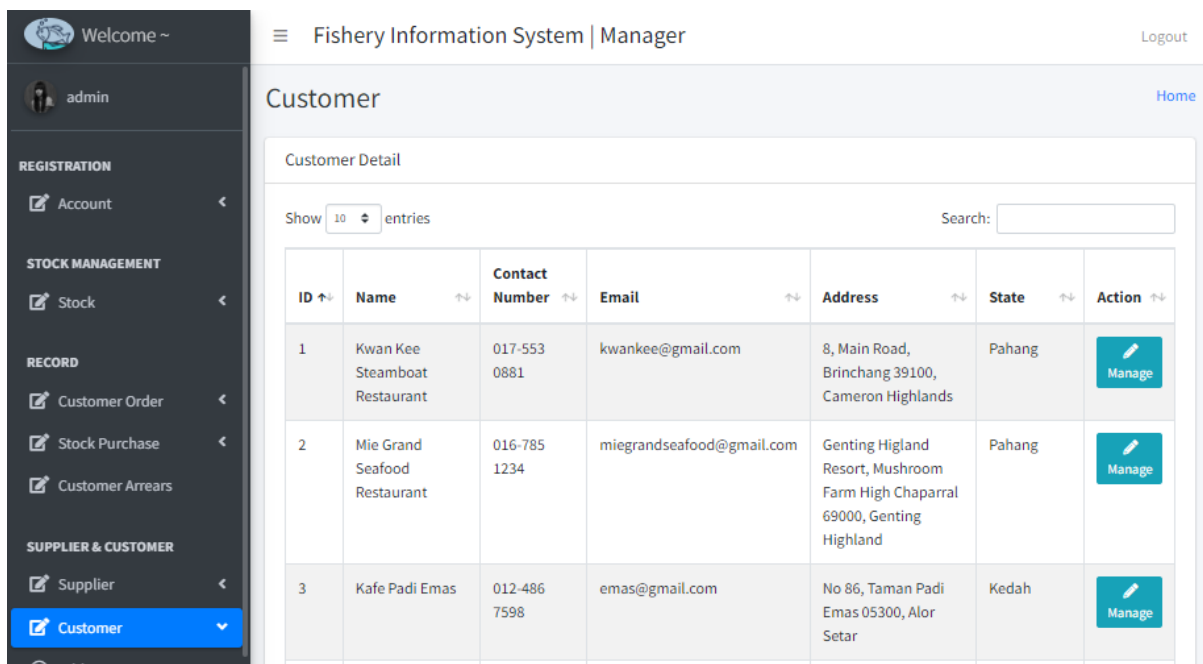
The screenshot displays the 'Add Customer' page within the 'Fishery Information System | Manager' interface. The page features a dark sidebar on the left with a navigation menu. The main content area is titled 'Add Customer' and contains a form for entering customer details. The form is organized into sections: 'Customer Information', 'Customer/ Company Name', 'Contact Number', 'Email Address', 'Address', 'Post Code', 'City', and 'State'. Each section has a corresponding input field. At the bottom of the form, there are two buttons: 'Add Customer' (green) and 'Cancel' (teal). The sidebar menu includes sections for 'REGISTRATION', 'STOCK MANAGEMENT', 'RECORD', and 'SUPPLIER & CUSTOMER', with 'Customer' selected under the last section. The 'Add Customer' option is highlighted in the sidebar.

**Figure 4.53 Add Customer Page Interface**

### 4.3.27. Graphical Interface for Customer Page

This interface allow user to view information of all the existing customer.

The table will show the ID, name, contact number, email and address of the customer. This interface is display when user click on the “Manage Customer” option from the “Customer” drop down list. There is a green colour button in the last column of each row, if users click on the button, the system will direct user to the Edit Stock page to edit information of the selected customer.



The screenshot shows the 'Customer' page in the Fishery Information System Manager. The page title is 'Customer' and it includes a 'Home' link. Below the title is a 'Customer Detail' section with a search bar and a 'Show 10 entries' dropdown. The main content is a table with the following data:

ID	Name	Contact Number	Email	Address	State	Action
1	Kwan Kee Steamboat Restaurant	017-553 0881	kwankee@gmail.com	8, Main Road, Brinchang 39100, Cameron Highlands	Pahang	<a href="#">Manage</a>
2	Mie Grand Seafood Restaurant	016-785 1234	miegrandseafood@gmail.com	Genting Higland Resort, Mushroom Farm High Chaparral 69000, Genting Highland	Pahang	<a href="#">Manage</a>
3	Kafe Padi Emas	012-486 7598	emas@gmail.com	No 86, Taman Padi Emas 05300, Alor Setar	Kedah	<a href="#">Manage</a>

**Figure 4.54 Customer Page Interface**

### 4.3.28. Graphical Interface for Edit Customer Page

This interface will allow user to edit the information of selected customer.

Through the page title, users able to know which supplier they are editing, it will show the name and id of the selected supplier. In the Overview tab, it will show all the information of the selected customer. However, in the Edit tab will show an edit customer form, it will display the original value of each of the data. User can clear the original value and enter a new value, then click on the “Save Customer” button. After that, users will see a message box which used to announce user whether the action is success or fail. Furthermore, in the Remaining Arrears tab will list down all the customer’s arrears record that haven’t settled. The “Update” button will direct user to update the pay back amount at the update customer arrears record page. However, after user click the “Invoice” button, system will generate an invoice for the respective customer arrears record and user will be directed to preview the invoice.

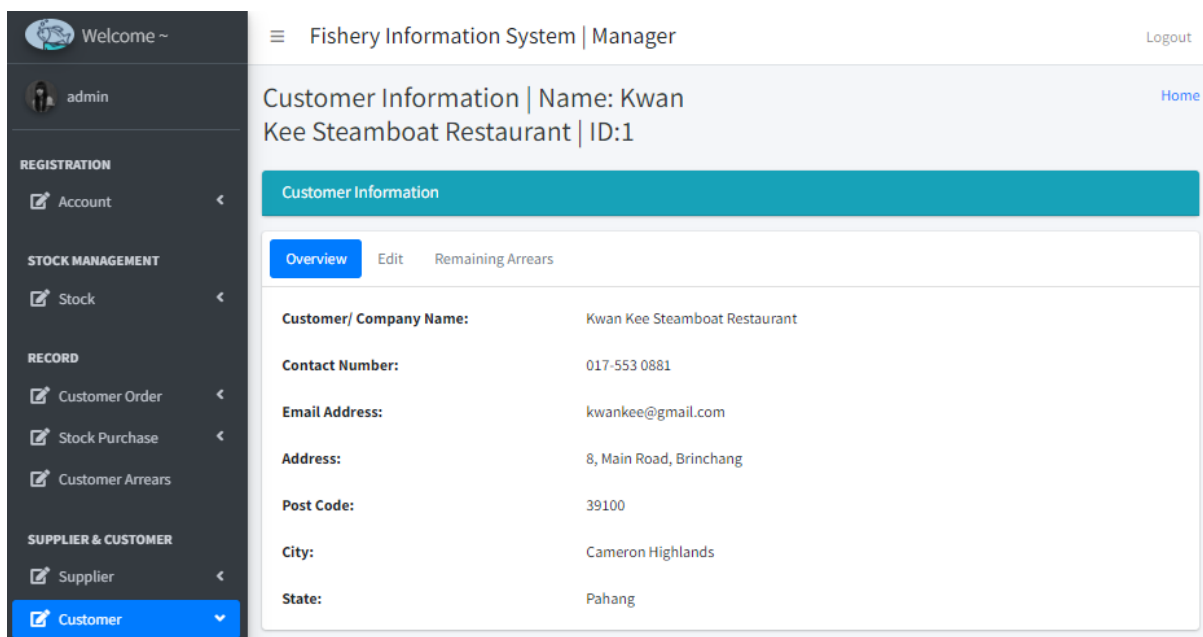


Figure 4.55 Edit Customer Page Interface (Overview tab)

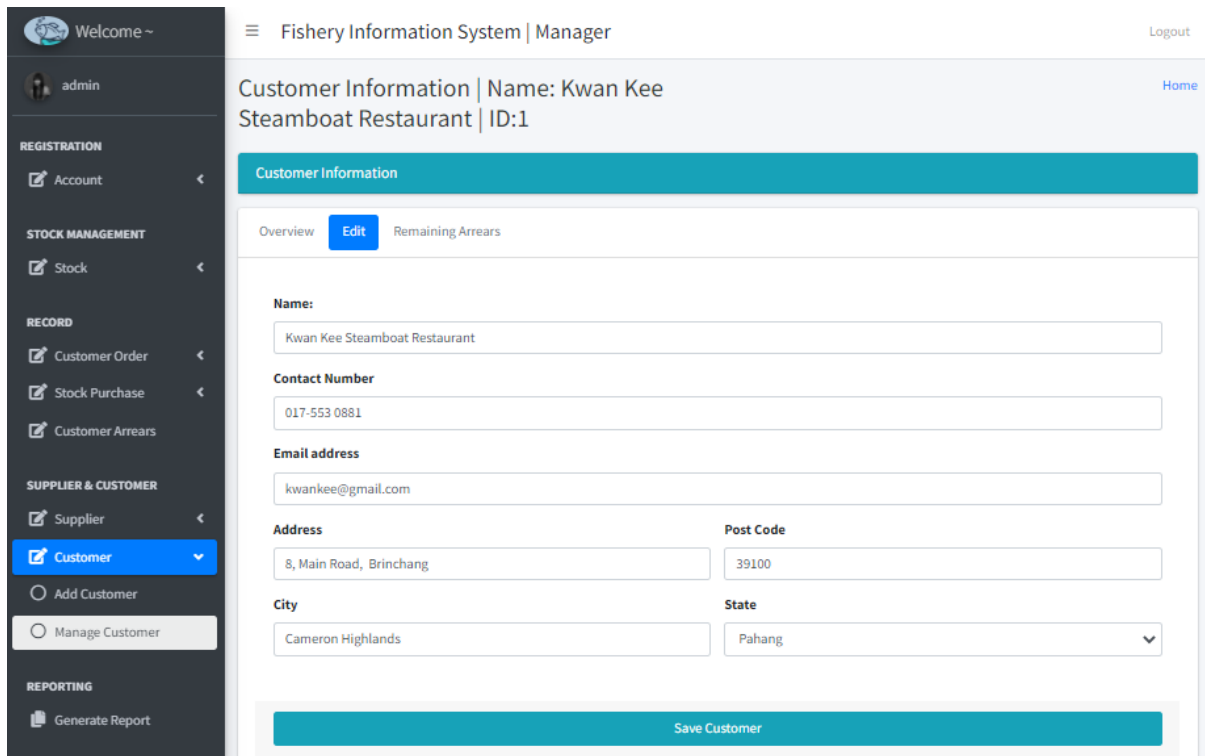


Figure 4.56 Edit Customer Page Interface (Edit tab)

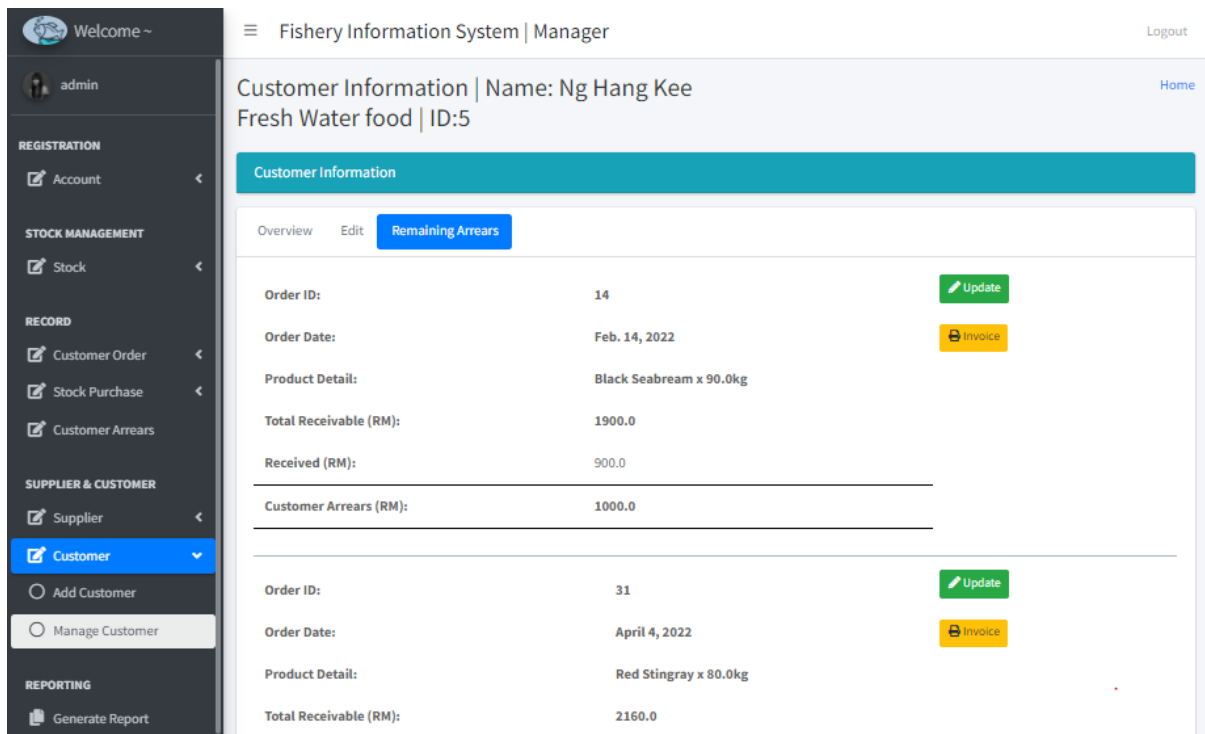


Figure 4.57 Edit Customer Page Interface (Remaining Arrears tab)

### 4.3.29. Graphical Interface for Invoice Preview Page

This page will display when user want to generate an invoice for a selected customer arrears record. The page provides a preview of invoice for user, user can print out the invoice by click on the “Print” button at the bottom of the invoice.

The screenshot shows a web application interface for an invoice preview. On the left is a dark sidebar with a 'Welcome ~' header and a user profile for 'admin'. Below the profile are three main categories: 'REGISTRATION' (with 'Account'), 'STOCK MANAGEMENT' (with 'Stock'), and 'RECORD' (with 'Customer Order', 'Stock Purchase', and 'Customer Arrears'). At the bottom is 'SUPPLIER & CUSTOMER' (with 'Supplier'). The main content area is titled 'Invoice Preview' and contains an invoice form. The invoice is for 'XIAN Fishery Company' (San Francisco, CA) and 'Ng Hang Kee Fresh Water food' (Kedah). It lists contact information, order details (date: Feb. 14, 2022; status: Delivered; payment: Partial Paid), and a table with one item: 'Black Seabream (Grade B)' at RM22.00 per kg, totaling RM1980.00.

**Figure 4.58 Invoice Preview Page Interface**

### 4.3.30. Graphical Interface for Sales Report Preview Page

This page will display when user want to generate a sales report. This page provides a preview of sales report for user, user can print out the sales report by click on the “Print” button at the bottom of the sales report.

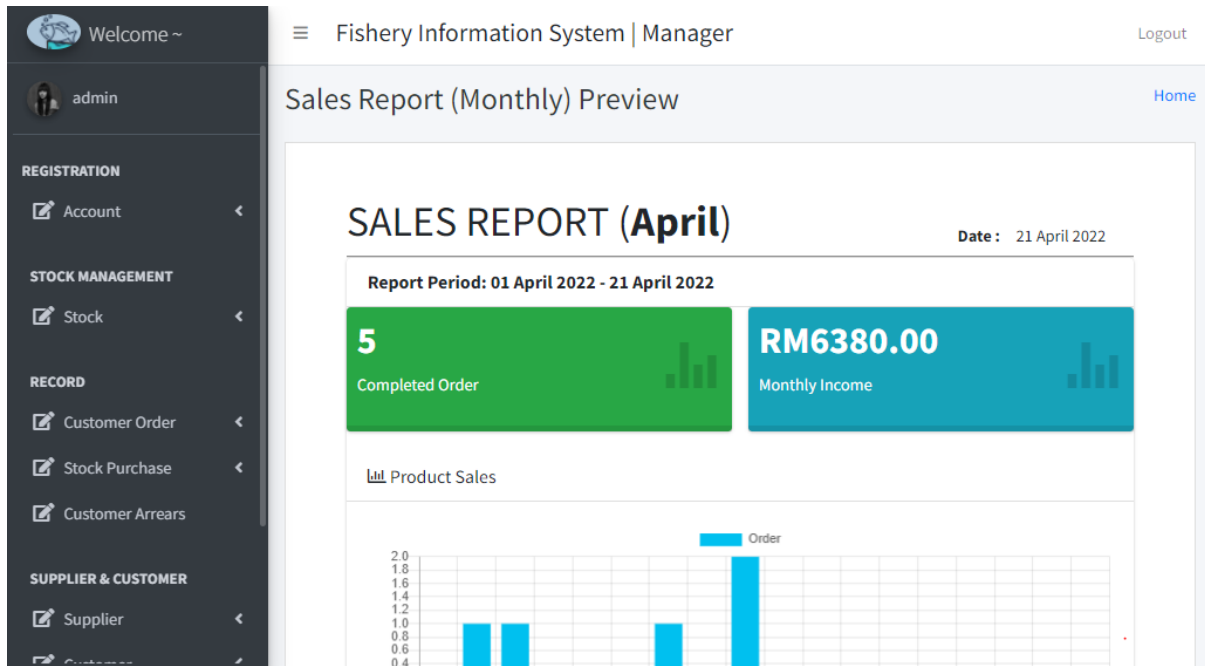


Figure 4.59 Sales Report (Monthly) Preview Page Interface

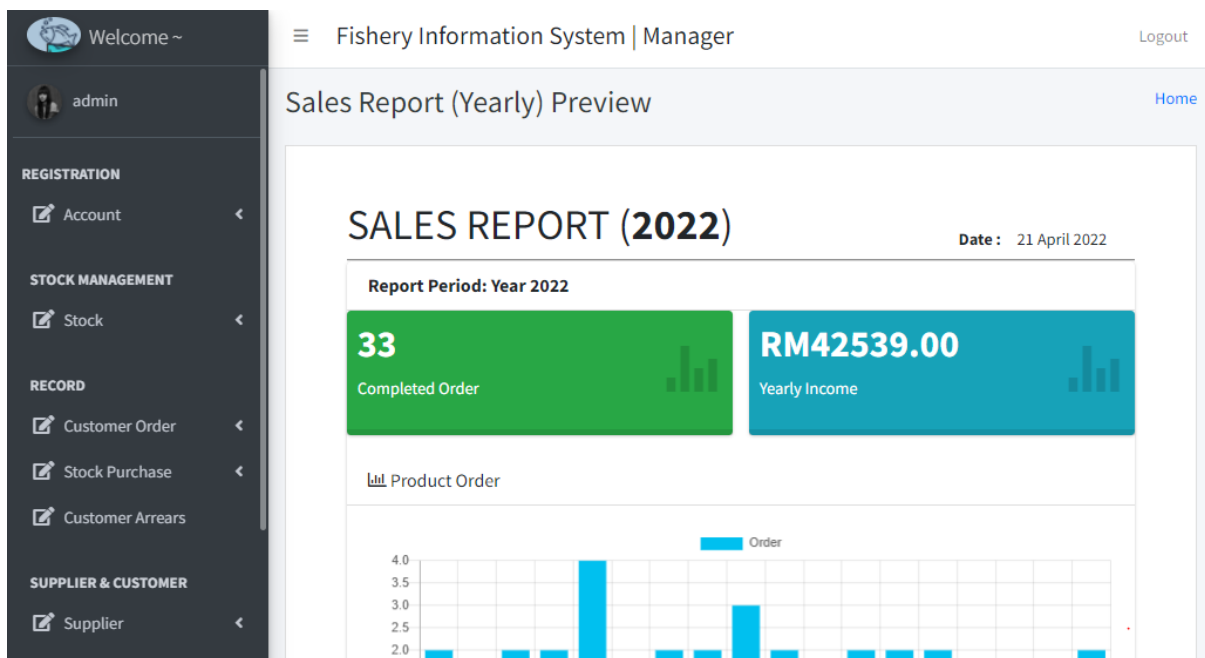


Figure 4.60 Sales Report (Yearly) Preview Page Interface

### 4.3.31. Graphical Interface for Purchase Report Preview Page

This page will display when user want to generate a purchase report. The page provides a preview of purchase report for user, user can print out the purchase report by click on the “Print” button at the bottom of the purchase report.

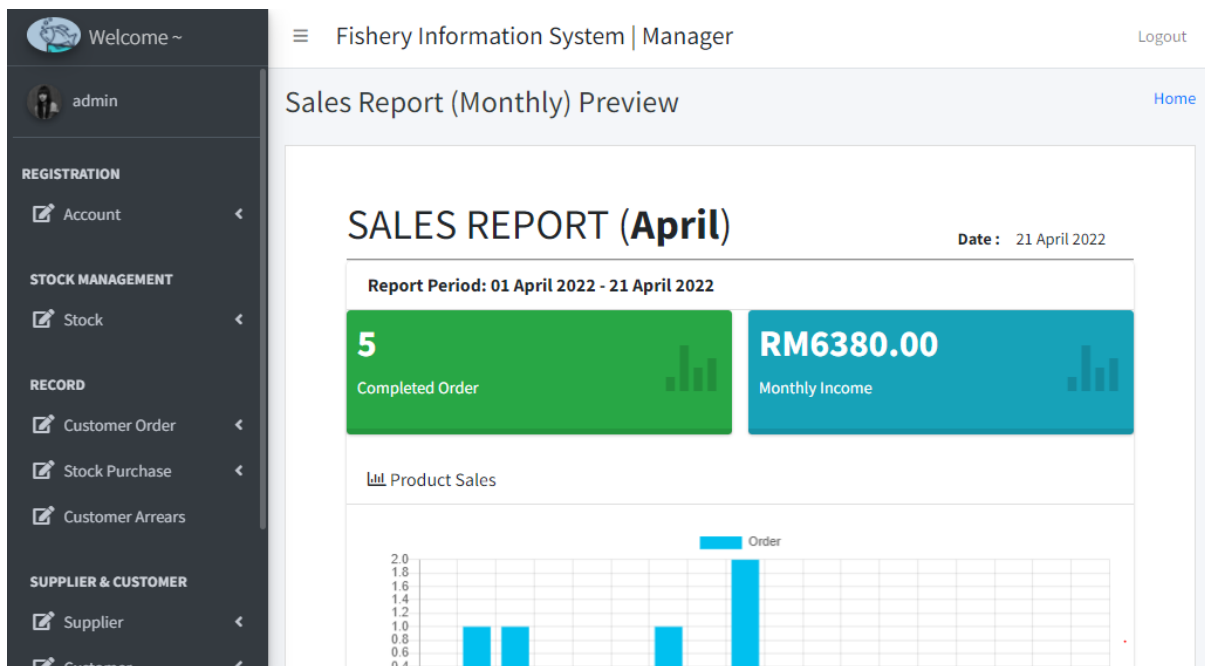


Figure 4.61 Purchase Report (Monthly) Preview Page Interface

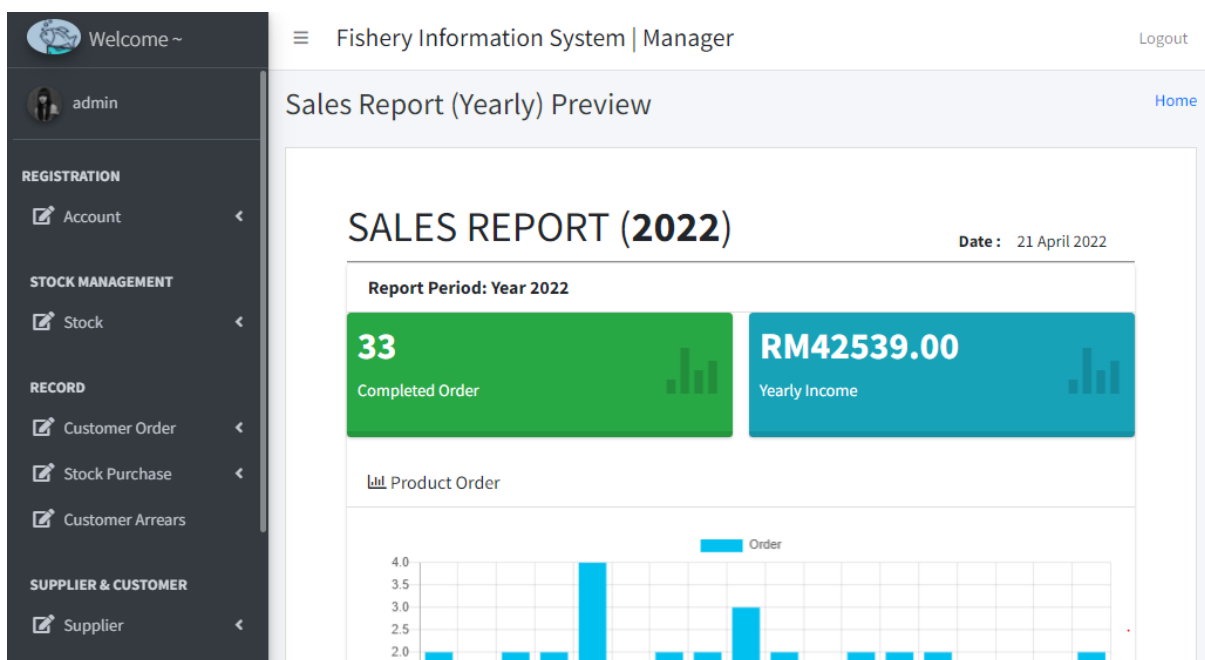


Figure 4.62 Purchase Report (Yearly) Preview Page Interface



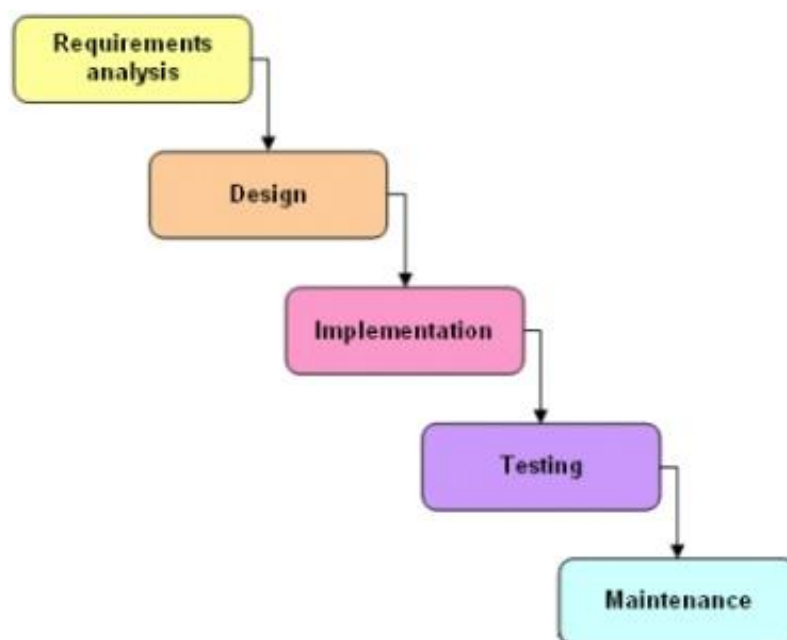
## **CHAPTER 5: SYSTEM IMPLEMENTATION**

### **5.1. System Development Life Cycle (SDLC)**

The System Development Life Cycle (SDLC) is a conceptual model for project management. SDLC describes the process involved in the development of information systems, from the initial planning to maintenance of completed application [21]. The SDLC could help to improve the quality of the system and the overall development process. In normally, there are six phases in the SDLC, which is planning, analyzing, designing, deploying, testing and developing. There are several SDLC model that have been used to develop software product.

- **Waterfall Model**

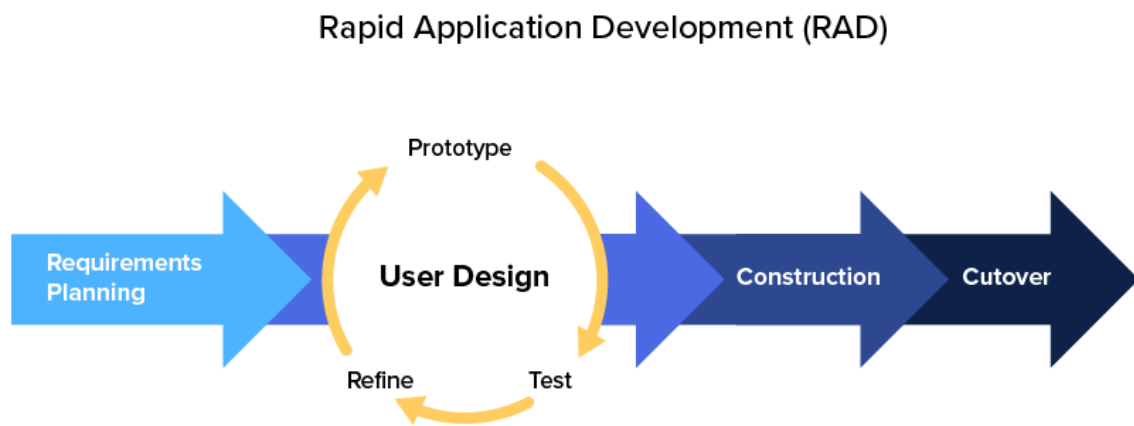
The waterfall model is one of the oldest SDLC model, it is widely used in the government project and in major company. This model is process in a sequential step, which flowing steadily downwards through the phases requirements analysis, design, implementing, testing and maintenance [22]. The waterfall model follows a rule which is no overlapping phase, which means that begins and ends a phase before starting the next one. At the end of each phases will having a review to determine whether the project is on the right path and determine whether to continue or discard the project.



**Figure 5.1 Waterfall Model phases flow**

- **Rapid Application Development Model**

The rapid application development model in short as RAD model is a type of incremental model. In the RAD model, the functions or components are developed in parallel. This can make the complete product for faster product delivery and quickly for customer to provide feedback and requirement about the product [23]. RAD model has no detailed pre-planning. Therefore, it is more flexible to incorporate the changes during the development process. The phases that involve in the RAD model is requirement planning, prototyping, developing, evaluate and testing and implementation.



**Figure 5.2 Rapid Application Development Model phases flow**

- **Waterfall model VS Rapid Application Development Model**

The table below show the comparison between Waterfall model and Rapid Application Development Model in various domain. Such as when to use, strengths, weaknesses, simplicity risk involvement, flexibility to change user involvement, duration and maintenance.

	<b>Waterfall model</b>	<b>RAD Model</b>
<b>When to Use</b>	<ul style="list-style-type: none"> <li>✓ Want to focus on quality rather cost or schedule.</li> <li>✓ Requirements are very well known, clear, and fixed.</li> <li>✓ New version of existing product is needed.</li> <li>✓ Porting an existing product to a new platform</li> </ul>	<ul style="list-style-type: none"> <li>✓ Has limited development time</li> <li>✓ Resources with high business knowledge are available</li> <li>✓ Need to produce the system in a short span of time (2-3 months).</li> </ul>
<b>Strengths</b>	<ul style="list-style-type: none"> <li>✓ Widely used and known.</li> <li>✓ Define before design, and design before coding</li> <li>✓ Very simple to implement</li> <li>✓ Works well on mature products and provides structure to inexperienced teams</li> <li>✓ Minimizes planning overhead.</li> <li>✓ Phases are processed and completed one at a time.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Reduced development time.</li> <li>✓ Reusability of components is increased</li> <li>✓ Quick initial reviews occur</li> <li>✓ Encourages to receive customer feedback</li> <li>✓ Integration from very beginning solves a lot of integration issues.</li> </ul>
<b>Weaknesses</b>	<ul style="list-style-type: none"> <li>✓ All requirements must be known upfront</li> <li>✓ Could not overlapping</li> <li>✓ The deliverable only produced at the final phase.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Depends on strong team and individual performances for identifying business requirements.</li> </ul>

	<ul style="list-style-type: none"> <li>✓ Client may not be clear about what they want and what is needed.</li> <li>✓ Customers have few opportunities to preview the system until it may be too late.</li> <li>✓ Not a preferred model for long and complex projects.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Only system that can be modularized can be built using RAD</li> <li>✓ Requires highly skilled developers/designers.</li> <li>✓ High dependency on modeling skills</li> <li>✓ Cost of modeling and automated code generation is very high.</li> </ul>
<b>Simplicity</b>	Simple	Very simple
<b>Risk Involvement</b>	High	Very low
<b>Flexibility to change</b>	Difficult	Easy
<b>User Involvement</b>	Only at the beginning phase	Only at the beginning phase
<b>Duration</b>	Long	Short
<b>Maintenance</b>	Least	Easily

**Table 5.1 Comparison between Waterfall model and Rapid Application Development Model**

According to the table above, it shows that RAD model is suitable for those project that with limited development time. It also shows that waterfall model has a high amount of risk and uncertainty since any arising of error or changes in the completed software will cause a lot of issues. However, the risk involved in the RAD model is very low since it has a high flexibility to change. During the development process if there are any adjustment of the requirement are needed, it is flexible to change. RAD model could have a quick initial review occur so that able customers to preview and give some feedback. However, the deliverable in waterfall model will only produce at the last phases, customers will have few opportunities to preview the system. As a conclusion, the development methodology of this project is **Rapid Application Development (RAD) model**.

## 5.2. Project Timeline

This two Gantt chart show the estimated timeline for deliverable and milestones of my Final Year Project. I am planning to finish my Final Year Project within two long semesters. In the first long semester, the documentation for FYP1 will involve all the requirement, function available, system flow and interfaces design of the system. It is to make the development more efficiency and effective. Moreover, in FYP1 the prototype 1 will be able to perform function like login, logout, register account, add and manage stock, customer and supplier.

Furthermore, the remaining function will be done in the FYP 2. I will review my FYP1 and start to improve prototype and start for new function development. In this semester I will keep on testing and debugging the system, in order to ensure all the functions are well running and minimize the possibility of data error or function error. The system is expected to be fully develop in week 12.

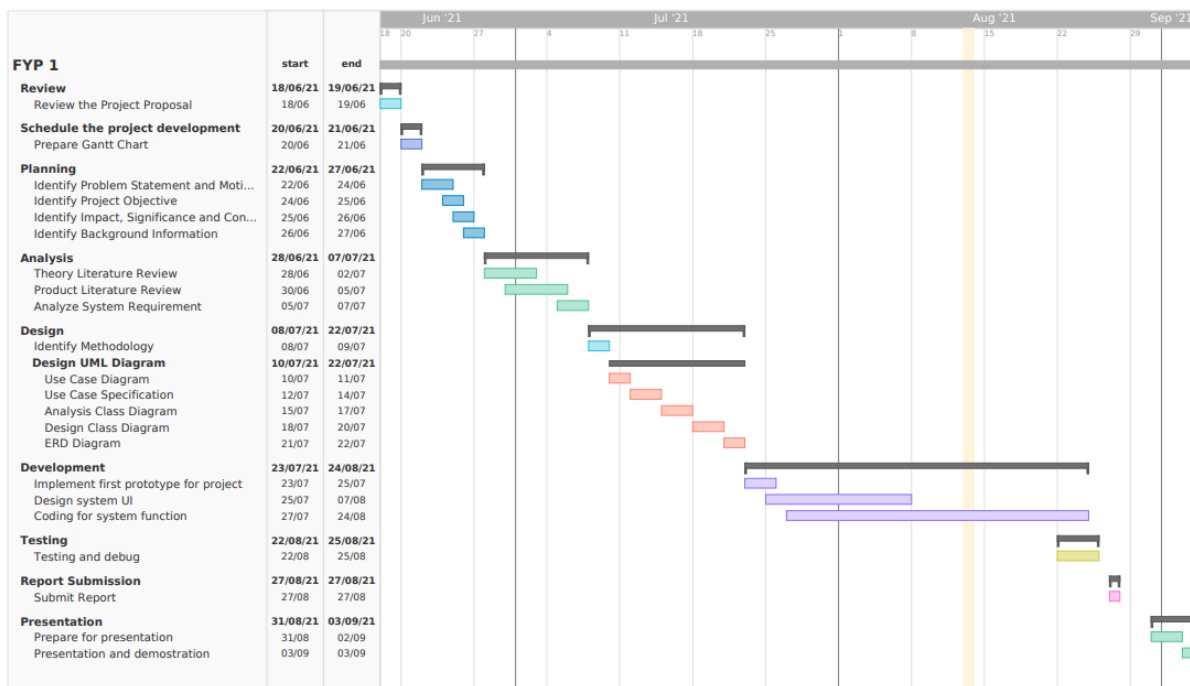


Figure 5.3 Gantt Chart for FYP 1

CHAPTER 5: SYSTEM IMPLEMENTATION

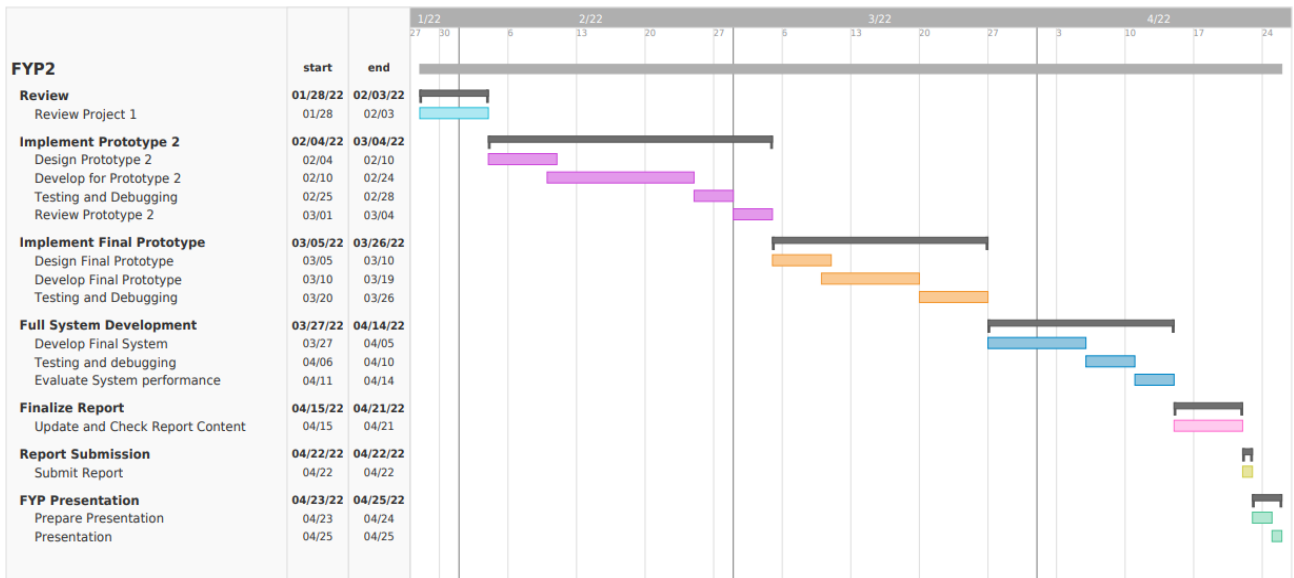


Figure 5.4 Gantt Chart for FYP 2

### 5.3. Technologies and Tools Involved

#### 5.3.1. Programming Languages

Programming languages is a language that programmer used to give instruction for computer to execute. Programming languages is also called as a high-level language, it is a language which computer can understand. Programmers use programming language to develop software program and script. Besides, enable programmer to write, test and debug the code. There are hundreds of programming languages in the world. For instance, Python, HTML, JavaScript, C# and more.

In this project, the programming language that selected is **Python**. In the year of 1991, Guido van Rossum has created Python, which is one of the most popular programming languages in the world. Python can use for web-development, software development, system scripting, artificial intelligent and science computing. Python is able to works on various platform such as Mac, Linux, Windows and so on. As compared to other programming languages such as C#, Python has much more libraries which more than 137,000. Hence, the developer can manage the database, web browser, unit testing and more.

The reasons why I choose Python is because it has **offered huge amounts of frameworks**, which enable to **save the programmer money and effort**. For instance, Django and Flask for web development and Keras and Scipy for data science applications. In addition, compare with other programming languages, **Python language is very easy to read and write**. It is similar with English language. Therefore, it is **easier for further maintenance** of the programs that written in Python. Besides, when there any error occurs, the programmer can **focus on error not on the complexity of the language** so that the debugging and maintains process will be more efficiency.

### 5.3.2. Integrated Development Environment

An integrated development environment or in short IDE is a software application which provide a comprehensive tool to the programmer for software development [24]. The integrated development environment that selected for this project is **PyCharm**. PyCharm is one of the most popular Python IDE in the worlds. It was developed by JetBrains in 2010, a company which famous for creating great software development tool.

PyCharm provides all the important features that a great IDE should have. It provides features including code completion, debugging, testing, error-highlighting, version control system and so on. PyCharm is supported to operate across multiple platforms, for example Windows, Linus and macOS. Hence, the developer can proceed their work through different platform. PyCharm allow developer to work with a lot of relational databases such as Oracle, MySQL, SQL server and more. This IDE is specially designed for Python; however, the developer also can use it to create HTML, CSS and JavaScript files.



**Figure 5.5 Logo of PyCharm**



### 5.3.3. Framework

As the programming language that use in this project is Python, therefore, the framework that will use in this project is **Django**. It is an advanced Python web framework which encourages simple, practical design and rapid development. Django is built by the experienced developers; it **solves most of the hassles of web development** [25]. Therefore, users can focus on writing applications without needing to reinvent the wheel. Django is free and open source.

### 5.3.4. Database Management System

Database management system, or DBMS is a software that handle the data storing, data retrieval and data updating in the computer system. It acts as an interface between the end user and the database [26]. The DBMS that will use in this project is **MySQL**. In this project involved to store the business information in the database such as stock record and so on.

MySQL is a relational database management system that based on the structures query language (SQL). The application has a wide range of uses, for example e-commerce, data warehousing and so on. However, the most common use of the MySQL is for the web databases. The reasons why MySQL is chosen is because it's **connectivity and security**. MySQL is fully networked therefore you can access the database from anywhere at least there are an Internet. Some people may worry that if it can access through Internet the data will be not secured. However, it is not a problem for MySQL, it is absolutely secured. MySQL has access control functions, so users' data will not be accessible by other people. Moreover, MySQL is supports encrypted connections with using the Secure Sockets Layer (SSL) protocol in order to provide additional security [27]. Thus, the individual or organization's data will be protected and confidential.

#### **5.4. Implementation Issues and Challenges**

The implementation phase is intended to deploy and enable the Fishery Information System to operate in the production environment and lets users use the system in real-world situations.

Throughout the implementation process in this project, there are some issues and challenges faced. First of all, is the programming languages that in used for development which is Python. Before this project, I am never learned this programming languages and don't have any basic knowledge about it. Therefore, I need to self-learning all the concept and coding format from basic. It required a lot of time for me to stream the tutorial video and find some example project coding to enhance my understanding. The self-learning process is a quite challenging task for me, but I am feeling very accomplished when I have learned some of the concepts of Python. Furthermore, after I have learned majority of the basic concept of the Python language, I start the system development. Due to the insufficient knowledge about the Python, I need to spend a lot of time to research on the specific bug and error through research to debug and solve the error of the system.

Moreover, another issue is the RAM requirement of the development tool which is PyCharm. It is required minimum of 4GB RAM but 8GB is recommend. My personal laptop has 4GB of RAM it is meet the minimum RAM requirement of the PyCharm. However, when I use it to develop the system, my computer become very lag and it will automatically close the software. It causes my development very slow and inefficient. In order to solve this problem, I have upgraded my laptop RAM to become 8GB and the PyCharm is running smoothly now.

Furthermore, the challenge of database connection. Database is the core of a system, a system without database must be a failed system. If a system unable to connect to a database, user will be unable to store, retrieve or modify data function and this project will be an absolutely failed project. Beside of it, another implementation challenge is to deploy to system as a website. As the proposed project is to develop a web-based fishery information system, then it should be run on website with a web connection. Therefore, if the system unable to be deployed, the system will be unable to be used by the users.

**CHAPTER 6: SYSTEM EVALUATION AND DISCUSSION****6.1. System Testing and Performance Metrics****6.1.1. Test Case****Test Case 1:****Test Case Code:     ARL****Test Case Module:   Account registration and login****Test priority:       HIGH****Test Title:           Verify login for new user****Description:         Test the account registration and login function****Pre-condition:       Manager has created account for new user**

<b>Test Case ID</b>	<b>Step Details</b>	<b>Expected Results</b>	<b>Actual Results</b>	<b>Result</b>
ARL 01	Register account for new user.	Account registered.	Account registered.	Pass
ARL 02	Navigate to Login page.	User should be able to login to system.	User should be able to login to system.	Pass
ARL 03	Key in a valid email and password	Login to system.	Login to system.	Pass
ARL 04	Key in an invalid email or password	User unable to login to system	User unable to login to system	Pass

**Table 6.1 Test the account registration and login function**

**Test Case 2:****Test Case Code:** TC\_A**Test Case Module:** Add record and information**Test priority:** HIGH**Test Title:** Verify and save new information added to system**Description:** Test the add function**Pre-condition:** Users want to add a new record and information

Test Case ID	Step Details	Expected Results	Actual Results	Result
TC_A 01	Add a new stock information, which stock already exist in database.	Information added and new stock information show in “Manage Stock” page	Information added and new stock information show in “Manage Stock” page	Pass
TC_A 02	Add a new stock information, which stock already exist in database.	Information failed to add to database.	Information failed to add to database.	Pass
TC_A 03	Add a new customer information.	Information added and new customer information show in “Customer Information” page.	Information added and new customer information show in “Customer Information” page.	Pass
TC_A 04	Add a new supplier information.	Information added and new supplier information show in “Supplier Information” page.	Information added and new supplier information show in “Supplier Information” page.	Pass
TC_A 05	Add a new customer order record.	Information added and new record show in “Customer Order Information” page.	Information added and new record show in “Customer Order Information” page.	Pass

TC_A 06	Add a stock purchase record.	Information added and new record show in “Stock Purchase Order Information” page.	Information added and new record show in “Stock Purchase Order Information” page.	Pass
---------	------------------------------	-----------------------------------------------------------------------------------	-----------------------------------------------------------------------------------	------

**Table 6.2 Test the add function**

**Test Case 3:****Test Case Code:** TC\_E**Test Case Module:** Edit or update record and information**Test priority:** HIGH**Test Title:** Modify existing information in the system**Description:** Test the data modification**Pre-condition:** Users want to modify the record and information

Test Case ID	Step Details	Expected Results	Actual Results	Result
TC_E 01	User edits stock information, with data that match the required format.	Stock information successfully modified and updated information show in “Manage Stock” page	Stock information successfully modifies and updated information in “Manage Stock” page	Pass
TC_E 02	User edits customer information, with data that match the required format.	Customer information successfully modified and updated information show in “Customer Information” page	Customer information successfully modified and updated information show in “Customer Information” page	Pass
TC_E 03	User edits supplier information, with data that match the required format.	Supplier information successfully modified and updated information show in “Supplier Information” page	Supplier information successfully modified and updated information show in “Supplier Information” page	Pass
TC_E 04	User updates the customer order status.	Customer order status updated.	Customer order status updated.	Pass

TC_E 05	User updates the stock purchase order status.	Stock purchase order status updated.	Stock purchase order status updated.	Pass
---------	-----------------------------------------------	--------------------------------------	--------------------------------------	------

**Table 6.3 Test the data modification**

**Test Case 4:**

**Test Case Code:** TC\_S

**Test Case Module:** Stock available

**Test priority:** HIGH

**Test Title:** Get real time stock available

**Description:** Test the calculation of stock available

**Pre-condition:** Users has added new customer order record or stock purchase order record or have update the order status.

**Test Date:** Stock Name: Black Pomfret

Available Quantity: 300kg

Test Case ID	Step Details	Expected Results	Actual Results	Result
TC_S 01	Customer order record - Quantity: 80kg Order status: In Progress	Stock available quantity deducted to 220kg.	Stock available quantity deducted to 220kg.	Pass
TC_S 02	Customer order record - Quantity: 80kg Order status: Completed	Stock available quantity deducted to 220kg.	Stock available quantity deducted to 220kg.	Pass
TC_S 03	Customer order record - Quantity: 80kg Order status: Cancel	Stock available quantity added back to 300kg.	Stock available quantity added back to 300kg.	Pass
TC_S 04	Stock purchase record - Quantity: kg Order status: In Progress	Stock available quantity will not have any update.	Stock available quantity will not have any update.	Pass



TC_S 05	Stock purchase order record - Quantity: 80kg Order status: Completed	Stock available quantity added to 380kg.	Stock available quantity added to 380kg.	Pass
TC_S 06	Stock purchase record - Quantity: 80kg Order status: Cancel	Stock available quantity deducted back to 300kg.	Stock available quantity deducted back to 300kg.	Pass

**Table 6.4 Test the calculation of stock available**

**Test Case 5:**

**Test Case Code:** TC\_G

**Test Case Module:** Generate customer arrears record

**Test priority:** HIGH

**Test Title:** Define occur of customer arrears

**Description:** Test the calculation of customer arrears

**Pre-condition:** Users updated customer order status to “Complete” and payment has not fully received.

**Test Date:** Actual receivable amount: RM1500

Test Case ID	Step Details	Expected Results	Actual Results	Result
TC_G 01	Received payment: RM500. Payment is not fully settled.	Arrears occurred, customer arrears record generated, and arrears amount is RM1000.	Arrears occurred, customer arrears record generated, and arrears amount is RM1000.	Pass
TC_G 02	Received payment: RM1500.	Customer arrears record will not be generated.	Customer arrears record will not be generated.	Pass

**Table 6.5 Test the calculation of customer arrears**

**Test Case 6:**

**Test Case Code:** TC\_U

**Test Case Module:** Update pay back amount

**Test priority:** HIGH

**Test Title:** Get real time customer arrears amount

**Description:** Test the calculation of updated customer arrears and received amount.

**Pre-condition:** Customer has pay back to their arrears. Users update the pay back amount.

**Test Date:** Arrears Amount: RM 1000  
Received Amount: RM 500

Test Case ID	Step Details	Expected Results	Actual Results	Result
TC_U 01	User updates pay back amount of RM600.	The arrears amount updated to RM 400 and received amount updated to RM 1100. Result displayed to user.	The arrears amount updated to RM 400 and received amount updated to RM 1100. Result displayed to user.	Pass

**Table 6.6 Test the calculation of updated customer arrears and received amount**

**Test Case 7:****Test Case Code:** TC\_I**Test Case Module:** Invoice**Test priority:** Medium**Description:** Test the view and printing invoice**Pre-condition:** Users want to generate invoice for the customer arrears.

<b>Test Case ID</b>	<b>Step Details</b>	<b>Expected Results</b>	<b>Actual Results</b>	<b>Result</b>
TC_I 01	User clicks on the print button in the manage customer arrears page.	Invoice generated and show the preview of invoice to user.	Invoice generated and show the preview of invoice to user.	Pass
TC_I 02	User clicks on the print button in the button of preview invoice page.	User directed to print the invoice.	User directed to print the invoice.	Pass

**Table 6.7 Test the view and printing invoice**

**Test Case 8:**

**Test Case Code:** TC\_R

**Test Case Module:** Report

**Test priority:** Medium

**Description:** Test the view and printing report

**Pre-condition:** Users want to generate report.

Test Case ID	Step Details	Expected Results	Actual Results	Result
TC_R 01	Select the specific report and show the report details	Show the preview of report to user.	Show the preview of report to user.	Pass
TC_I 02	Clicks on the print button in the bottom of report preview page.	User directed to print the report.	User directed to print the report.	Pass

**Table 6.8 Test the view and printing report**

**6.2. Testing result**

The below is showing the test result summary for all the test case:

Test Case	Test Case Module	Result
1	Account registration and login	Pass
2	Add record and information	Pass
3	Edit or update record and information	Pass
4	Stock available	Pass
5	Generate customer arrears record	Pass
6	Update pay back amount	Pass
7	Invoice	Pass
8	Report	Pass

**Table 6.9 Test Result Overview**

### 6.3. Objectives Evaluation

The objectives evaluation is a systematic assessment of project objective, it is aimed to determine the level of achievement of project objectives. The main objective of this project is to develop a web-based fishery information system for XIAN Fishery company, that able to help them to manage their business information and integrate with reporting module.

#### Objective:

- **Develop web-based information system**

- ✓ **Result: Achieved**

- The system has deployed as a website, which user can access the system through the link: <https://fisheryinformationsystem.herokuapp.com/>

- **Manage stock available**

- ✓ **Result: Achieved**

- System help user to calculate the actual available stock. System will deduct the needed stock quantity, when a customer order has placed, and it will also add back the quantity when the order has cancelled. Besides, system will add stock available quantity, when the stock purchase order has completed. System able to ensure that there will no issue like overstock or understock. Therefore, customer order could be completed on time.

- **Manage stock-in, stock-out and customer arrears record**

- ✓ **Result: Achieved**

- System allow user to record the customer order and stock purchase order in the system. This will allow user to check all the stock-in and stock-out whenever they need. Moreover, if situation of customer purchase on credit is occur, system will help user to generate arrears record. This can ensure all the customer arrears will not be missed and able to have a proven of arrears record. The system will help user to calculate new arrears amount when user has updated the pay back amount of customer. It ensures the accuracy of the customer arrears amount.

- **Integrate with reporting module**

✓ **Result: Achieved**

System allow user to generate invoice for the customer arrears, user can print out or download the invoice. Besides, system also allow user to generate sales report and purchase report for current month or year. The report provides a summary for user to overview the stock sold, stock purchased, income and spending amount.

As a conclusion, the project objective has successfully achieved, and the system is developed according to the needs of the company.

## **CHAPTER 7: CONCLUSION AND RECOMMENDATION**

### **7.1. Conclusion**

In conclusion, the existence of technology has brought a lot of convenience to people. Technology has provided a hugely effectiveness and efficiency for business running. Almost all the business operations could be done by a system, which could provide a higher accuracy. Manually managing information may cause a lot of mistakes that are unable to recognize. Thus, an information system is developed in order to provide a systematic way for user to manage their business information with high productivity and accuracy.

The fishery information system allows the user to perform tasks by simply clicking on the system functions module. Users can save the time they spend collecting data from those handwriting records to generate reports and manually calculate the total income, expenses and arrears. By using this system, user can know the actual stock available amount to avoid issue like overstock and understock. User can manage customer or supplier information anytime whenever they needed, and all the order or purchase records is linked to the specific supplier and customer. Customer order and purchase order can be managed and updated easily, and the total income and expenses will be calculated by the system. Furthermore, the system provides a reporting function in order to help the company to summarize the business information and generate different type of report.



## **7.2.Recommendation**

### **7.2.1. Future Improvement**

- **Report with more option**

Currently the reporting functions is only able to generate sale report and purchase report for current year or current month. For future improvement, the system will allow user to generate more report, based on their selected month and year.

- **Notification**

Currently the system does not provide notifications function for user, for the future improvement, the system will send notification to user when the stock level is lower or higher than a selected amount.

**REFERENCES**

- [1] J. Sallehudin, A. Noor Hanis, T. Tengku Balkis, and M. Nor Azlin, “Improvement on the implementation of the new Malaysia e-Logbook for tuna Fisheries in Indian Ocean.,” *Ayan*, vol. 8, no. 5, p. 55, 2019.
- [2] M. O. Ahmad Faizal, “Fisheries Country Profile: Malaysia – SEAFDEC,” Jun. 11, 2018. <http://www.seafdec.org/fisheries-country-profile-malaysia/> (accessed Mar. 21, 2022).
- [3] K. Quaas, M., Hoffmann, J., Kamin, K., Kleemann, L., Schacht, “Fishing for proteins: How marine fisheries impact on global food security up to 2050. A global prognosis. WWF Germany; International WWF Center for Marine Conservation, Hamburg.,” 2016.
- [4] H. D. Thoreau, “On Fisheries Information System! - The Point,” Jan. 31, 2020. <https://thepoint.gm/africa/gambia/article/on-fisheries-information-system> (accessed Feb. 18, 2022).
- [5] Spagnolo M. and Labanchi L, “Chapter 6-The fisheries information system,” pp. 307–326, 2011.
- [6] B. Markgraf, “The Role of Management Information Systems in Decision-Making,” Mar. 08, 2019. <https://smallbusiness.chron.com/role-management-information-systems-decisionmaking-63454.html> (accessed Feb. 18, 2022).
- [7] K. C. Laudon and J. P. Laudon, “Management Information Systems: Managing The Digital Firm (14th Edition),” Jan. 2015.
- [8] “Fishing industry - Wikipedia,” 2020. [https://en.wikipedia.org/wiki/Fishing\\_industry](https://en.wikipedia.org/wiki/Fishing_industry) (accessed Feb. 18, 2022).
- [9] “Fishing industry Facts for Kids,” 2020. [https://kids.kiddle.co/Fishing\\_industry](https://kids.kiddle.co/Fishing_industry) (accessed Feb. 18, 2022).
- [10] “Fishery - Wikipedia,” 2020. <https://en.wikipedia.org/wiki/Fishery> (accessed Feb. 18, 2022).
- [11] S. Scalia, “What Are Information Systems? - Definition & Types - Video & Lesson Transcript | Study.com,” Sep. 28, 2021. <https://study.com/academy/lesson/what-are->

## REFERENCES

- information-systems-definition-types-quiz.html (accessed Feb. 18, 2022).
- [12] “Fisheries Information System (FIS) - FWS ECOS Application Help - myUSGS Confluence,” 2019.  
<https://my.usgs.gov/confluence/pages/viewpage.action?pageId=386760842> (accessed Feb. 18, 2022).
- [13] D. Hamm, “The Western Pacific Fishery Information Network: A Fisheries Information System,” *Mar. Fish. Rev.*, vol. 55, no. 2, pp. 102–108, 1993.
- [14] “Inventory management software - Wikipedia,” 2020.  
[https://en.wikipedia.org/wiki/Inventory\\_management\\_software](https://en.wikipedia.org/wiki/Inventory_management_software) (accessed Feb. 18, 2022).
- [15] D. Singletary, “Update: Fishbowl Vs. Quickbooks - Wiss & Company, LLP,” Apr. 02, 2019. <https://wiss.com/blog/update-fishbowl-vs-quickbooks/> (accessed Feb. 18, 2022).
- [16] “Inventory System | Voted Best Inventory System for 5 Years Straight,” 2019.  
<https://asapsystems.com/products/inventory-system/> (accessed Feb. 18, 2022).
- [17] S. McLeod, “Questionnaire: : Definition, Examples, Design and Types | Simply Psychology,” 2018. <https://www.simplypsychology.org/questionnaires.html> (accessed Feb. 18, 2022).
- [18] “Functional vs Non-Functional Requirements - Understand the Difference,” 2020.  
<https://reqtest.com/requirements-blog/functional-vs-non-functional-requirements/> (accessed Feb. 18, 2022).
- [19] B. Vangie, “What is Software Environment? | Webopedia,” May 24, 2021.  
<https://www.webopedia.com/definitions/software-environment/> (accessed Feb. 18, 2022).
- [20] H. Dhaduk, “An Ultimate Guide of Web Application Architecture,” May 31, 2021.  
<https://www.simform.com/blog/web-application-architecture/#section7> (accessed Mar. 22, 2022).
- [21] A. S. Gillis, “What is the software development life cycle (SDLC)? A definition from WhatIs.com,” 2019. <https://searchsoftwarequality.techtarget.com/definition/software-development-life-cycle-SDLC> (accessed Feb. 18, 2022).

## REFERENCES

- [22] R. S. Kumar, A. Kumar, and S. Bajaj, “Analysis of Various Software Reliability Models and Proposing a New Model of Software Reliability for Embedded Systems,” *Int. J. Innov. Res. Comput. Sci. Technol.*, vol. 5, no. 3, pp. 287–290, 2017, doi: 10.21276/ijircst.2017.5.3.6.
- [23] I. H. Sarker, F. Faruque, U. Hossen, and A. Rahman, “A survey of software development process models in software engineering,” *Int. J. Softw. Eng. its Appl.*, vol. 9, no. 11, pp. 55–70, 2015, doi: 10.14257/ijseia.2015.9.11.05.
- [24] K. L. Busbee, “Integrated Development Environment,” Dec. 15, 2018. <https://press.rebus.community/programmingfundamentals/chapter/integrated-development-environment/> (accessed Feb. 18, 2022).
- [25] “The web framework for perfectionists with deadlines | Django,” 2021. <https://www.djangoproject.com/> (accessed Feb. 18, 2022).
- [26] M. Raza and S. Wickramasinghe, “DBMS: Database Management Systems Explained – BMC Software | Blogs,” Dec. 09, 2021. <https://www.bmc.com/blogs/dbms-database-management-systems/> (accessed Feb. 18, 2022).
- [27] “MySQL :: MySQL 8.0 Reference Manual :: 6.3 Using Encrypted Connections.” <https://dev.mysql.com/doc/refman/8.0/en/encrypted-connections.html> (accessed Feb. 18, 2022).

## **APPENDIX - QUESTIONNAIRE**

### **Questionnaire**

My name is Wong Jie Jing, I am a year 2 trimester 2 student of Bachelor of Information Systems (Honours) Business Information Systems at University Tunku Abdul Rahman (UTAR) Perak. As partial fulfillment for the completion of my degree, I will need to undertake a project work. Thence, I am now conducting a project entitled: “Web-based Information System for Fishery Industry”.

In order to make the project successful, I have chosen XIAN Fishery company to be part of my project involvement. The project that I am conducting now is intended to solve the potential problems facing your company. Upon completion of the project, the final deliverable of my Final Year Project (FYP) can be used in your company. Therefore, I would like to collect some necessary information from your company, in order to resolve and develop a system for your company.

The purpose of this questionnaire is to probe the existing problem(s) in the business processes/operations in your company. Your participation in this questionnaire will greatly contribute to the success of the project. This questionnaire would take a few minutes of your valuable time to complete answering all these questions. Your response will remain private and the data collected in this questionnaire will be used strictly for academic purpose only.

Thank you very much for your participation.

**1. What are the business operations (example: payment/ storekeeping and etc) being performed in your company? Business operations- Day to day and monthly**

---

**2. Are the business operations done manually or computer system? If computer system, which business operation and which business operation is done manually?**

---

**3. Can you tell me the category of staff involve in business operations? For example: clerk - handles data entry**

---

**4. Can you tell me more about the present situation/problem?**

---

**5. How long has it been an issue/problem? (Related to question 4)**

---

**6. How is it (the problems) impacting your organization/customers/staff?**

---

**7. How much is the issue/problem costing you in time/money/resources/staff/energy?**

---

**8. How severe is the problem and which one of the problems is affecting most/most concern in your company?**

---

**9. What are you (the company) currently doing to address the problem?**

---

**10. Does this affect other parts of the business [other business operations]?**

---

**11. What is the biggest challenge to fix the problems?**

---

**12. What options are you currently looking at to address the problems? (computerized system / information system / automation)**

---

**APPENDIX - QUESTIONNAIRE SUMMARY REPORT AND COMPANY AGREEMENT**

**Summary Report of The Questionnaire**

This questionnaire has been participated by two of the key persons from the XIAN Fishery industry, which is the CEO and the manager of the company. This report covers a summary of all the responses from the key persons.

The questions below correspond to the original question numbers and both of the open ended questions have two responses.

**1. What are the business operations (example: payment/ storekeeping and etc) being performed in your company? Business operations- Day to day and monthly**

The business operation that performed in the company are storekeeping, record daily income and update daily price of the fishes.

**2. Are the business operations done manually or computer system? If computer system, which business operation and which business operation is done manually?**

All the business operation are done in manually.

**3. Can you tell me the category of staff involve in business operations? For example: clerk - handles data entry**

Clerk to handles the data entry and storekeeper to handle the stock record.

**4. Can you tell me more about the present situation/problem?**

The problem that facing by the XIAN Fishery industry is overstock and understock problem, hard to generate summary report and the data in daily income report is incomplete.

**5. How long has it been an issue/problem? (Related to question 4)**

The problem has been occurred for 2 to 3 years



**6. How is it (the problems) impacting your organization/customers/staff?**

The company do not have enough stock to fulfill customers' order cause the company loss of integrity. The company is waste the storage space and unable to recover the debt. It also causes of loss to the company.

**7. How much is the issue/problem costing you in time/money/resources/staff/energy?**

The company had to spend a lot of time, staff and energy to proofread the record again and again. Besides, they have using more electricity to store the stock due to overstock. The problem also causes the staff need to work overtime.

**8. How severe is the problem and which one of the problems is affecting most/most concern in your company?**

Both the key persons think that overstock and under stock problem is affecting most the company.

**9. What are you (the company) currently doing to address the problem?**

The company have trying to always double checking and calculate the record every day and ensure the staff is recording the data on time in order to address the problem.

**10. Does this affect other parts of the business [other business operations]?**

The key persons think the problem will affect other parts of the business operation.

**11. What is the biggest challenge to fix the problems?**

The biggest challenge for the company to fix the problems is human mistake and error.

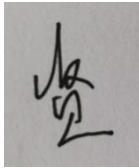
**12. What options are you currently looking at to address the problems? (computerized system / information system / automation)**

The two key persons are selected information system.

## COMPANY AGREEMENT

I, Neo Ee Hian (Name), am a Founder/ CEO (Job position) of the XIAN Fishery company. I would as a representative to check and verify the summary report of the questionnaire response. I confirm that I have read and understood the summary report stated above. I am ( **agree** / ~~not agree~~ ) with the summarized information in the report.

Signature:



---

Name: NEO EE HIAN

## FINAL YEAR PROJECT WEEKLY REPORT

*(Project II)*

<b>Trimester, Year:</b> Trimester 3 Year 3	<b>Study week no.:</b> 3
<b>Student Name &amp; ID:</b> Wong Jie Jing, 18ACB05517	
<b>Supervisor:</b> Ts. Dr Anbuselvan a/l Sangodiah	
<b>Project Title:</b> Web Based Information System for Fishery Industry	

### 1. WORK DONE

I have reviewed my FYP 1 and also the system function related advice received from the moderator during my FYP 1.

### 2. WORK TO BE DONE

Improve the existing functions and double checking the report content.

### 3. PROBLEMS ENCOUNTERED

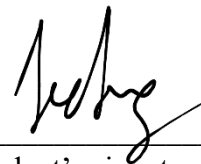
The progress is running smoothly, do not have any problem is encountered.

### 4. SELF EVALUATION OF THE PROGRESS

The progress of my FYP 2 is start in this week, I will try my best to ensure this project can done on time.



Supervisor's signature



Student's signature

## FINAL YEAR PROJECT WEEKLY REPORT

*(Project II)*

<b>Trimester, Year:</b> Trimester 3 Year 3	<b>Study week no.:</b> 5
<b>Student Name &amp; ID:</b> Wong Jie Jing, 18ACB05517	
<b>Supervisor:</b> Ts. Dr Anbuselvan a/l Sangodiah	
<b>Project Title:</b> Web Based Information System for Fishery Industry	

### 1. WORK DONE

I have done for the improvement for the existing system function and corrected some of typo error dan detail in the report. Besides, I have developed interfaces for the manage stock purchase record (add, edit, manage).

### 2. WORK TO BE DONE

The work to be done in next week is to develop the manage purchase order functions (add, edit, update order status).

### 3. PROBLEMS ENCOUNTERED

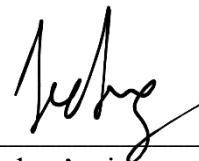
The progress is running smoothly, do not have any problem is encountered.

### 4. SELF EVALUATION OF THE PROGRESS

The progress is still within the planning, but I will try to improve my progress efficiency.



Supervisor's signature



Student's signature

## FINAL YEAR PROJECT WEEKLY REPORT

*(Project II)*

<b>Trimester, Year:</b> Trimester 3 Year 3	<b>Study week no.:</b> 7
<b>Student Name &amp; ID:</b> Wong Jie Jing, 18ACB05517	
<b>Supervisor:</b> Ts. Dr Anbuselvan a/l Sangodiah	
<b>Project Title:</b> Web Based Information System for Fishery Industry	

### 1. WORK DONE

I have developed the manage purchase order functions, which allow user to add, edit and update order status. Besides, when the order is complete, system will add the stock available quantity (still need to improve stock purchase record (add, edit, manage).

### 2. WORK TO BE DONE

The work to be done in next week is to develop the manage purchase order functions (add, edit, update order status) and add filter for user account registration which can avoid duplicate of username and email. Develop some manage customer arrears record functions.

### 3. PROBLEMS ENCOUNTERED

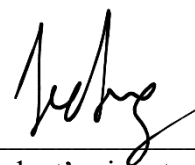
Faced unable solved error for function of filter orders status and add stock available amount.

### 4. SELF EVALUATION OF THE PROGRESS

Have developed some function, but some still need to improve. Progress is still within planning, but hope could be more efficiency for the development process.



Supervisor's signature



Student's signature

## FINAL YEAR PROJECT WEEKLY REPORT

*(Project II)*

<b>Trimester, Year:</b> Trimester 3 Year 3	<b>Study week no.:</b> 9
<b>Student Name &amp; ID:</b> Wong Jie Jing, 18ACB05517	
<b>Supervisor:</b> Ts. Dr Anbuselvan a/l Sangodiah	
<b>Project Title:</b> Web Based Information System for Fishery Industry	

### 1. WORK DONE

Have fixed the error that can't be solve last 2 weeks, have developed functions for manage customer order and have done for the filter to ensure the registered username and email will not have duplicate that could cause system error.

### 2. WORK TO BE DONE

Develop manage customer arrears record functions and functions for calculate the discount, arrears amount, total received amount and pay back amount.  
Develop reporting functions.

### 3. PROBLEMS ENCOUNTERED

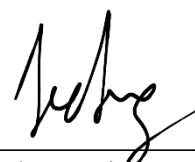
Have spent a lot of time to do the research online to resolve the bug or error, have delayed the process.

### 4. SELF EVALUATION OF THE PROGRESS

Planned work has not 100% done, process has delayed a bit.  
Need to accelerate development progress.



Supervisor's signature



Student's signature

## FINAL YEAR PROJECT WEEKLY REPORT

*(Project II)*

<b>Trimester, Year:</b> Trimester 3 Year 3	<b>Study week no.:</b> 12
<b>Student Name &amp; ID:</b> Wong Jie Jing, 18ACB05517	
<b>Supervisor:</b> Ts. Dr Anbuselvan a/l Sangodiah	
<b>Project Title:</b> Web Based Information System for Fishery Industry	

### 1. WORK DONE

Have improved some of the user interface, add tab for some of the pages. Developed manage customer arrears record functions for calculate the arrears amount, total received amount and pay back amount. Have make some adjustment for report.

### 2. WORK TO BE DONE

Develop reporting functions, deploy the system, and complete the report.

### 3. PROBLEMS ENCOUNTERED

Used annotate method to filter the data but output always have an error. Have change to use aggregate method, error solved.

Faced some unexpected issue, has hampered the progress.

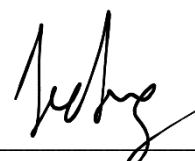
### 4. SELF EVALUATION OF THE PROGRESS

Progress is hampered but still have done few functions for system.

I will try my best to done all the system functions and complete the report.



Supervisor's signature



Student's signature

POSTER

**UTAR**  
UNIVERSITI TEKNOLOGI MALAYSIA

# Web Based Information System for Fishery Industry

## INTRODUCTION

The Information system is used to manage stock, stock purchase, customer order and customer arrear records of XIAN Fishery company. It allows the company to have more accurate and effective management of the company information.

## OBJECTIVE & SCOPE

The main objective of this project is to develop a fishery information system in order to address the company issues like overstock and under stock problems, inaccurate report data, error in calculation and hard to manage reports.

## METHODOLOGIES

System Development

- Python language
- Django Framework
- MySQL

Data Collection

- Questionnaire

## FUNCTIONS

Web Based Information System

- Add and Manage Customer Information
- Add and Manage Supplier Information
- Add and Manage Stock Purchase Record
- Add and Manage Customer Arrear Record
- Generate Report
- Add and Manage Customer Order Record
- Add and Manage Stock Information

## CONCLUSION

The Information system is a web-based system that was developed to help the XIAN Fishery company resolve the issues that cause company loss and integrity loss. The requirement and function of the system is developed base on the company need.


Bachelor of Information Systems(Hons)  
Business Information Systems

Final Year Project

By Wong Jie Jing



# PLAGIARISM CHECK RESULT

 <p>Originality Report</p>	<p>Processed on: 21-Apr-2022 17:10 +08                  ID: 1816215913                  Word Count: 14860                  Submitted: 1</p>	<p><b>18ACBo5517_FYP2</b>                  By Wong Jie Jing</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #2e8b57; color: white; padding: 5px;"><b>Similarity Index</b></td> <td style="padding: 5px; text-align: center; font-size: 24px;"><b>9%</b></td> </tr> <tr> <td style="padding: 5px;"><b>Similarity by Source</b></td> <td style="padding: 5px;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="font-size: 10px;">Internet Sources:</td> <td style="text-align: right; font-size: 10px;">9%</td> </tr> <tr> <td style="font-size: 10px;">Publications:</td> <td style="text-align: right; font-size: 10px;">1%</td> </tr> <tr> <td style="font-size: 10px;">Student Papers:</td> <td style="text-align: right; font-size: 10px;">N/A</td> </tr> </table> </td> </tr> </table>	<b>Similarity Index</b>	<b>9%</b>	<b>Similarity by Source</b>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="font-size: 10px;">Internet Sources:</td> <td style="text-align: right; font-size: 10px;">9%</td> </tr> <tr> <td style="font-size: 10px;">Publications:</td> <td style="text-align: right; font-size: 10px;">1%</td> </tr> <tr> <td style="font-size: 10px;">Student Papers:</td> <td style="text-align: right; font-size: 10px;">N/A</td> </tr> </table>	Internet Sources:	9%	Publications:	1%	Student Papers:	N/A
<b>Similarity Index</b>	<b>9%</b>												
<b>Similarity by Source</b>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="font-size: 10px;">Internet Sources:</td> <td style="text-align: right; font-size: 10px;">9%</td> </tr> <tr> <td style="font-size: 10px;">Publications:</td> <td style="text-align: right; font-size: 10px;">1%</td> </tr> <tr> <td style="font-size: 10px;">Student Papers:</td> <td style="text-align: right; font-size: 10px;">N/A</td> </tr> </table>	Internet Sources:	9%	Publications:	1%	Student Papers:	N/A						
Internet Sources:	9%												
Publications:	1%												
Student Papers:	N/A												

[include quoted](#)   [include bibliography](#)   [exclude small matches](#)

mode: show highest matches together   [Change mode](#)

<div style="border: 1px dashed #ccc; padding: 5px; margin-bottom: 10px;"> <p style="font-size: 12px; margin: 0;"><b>CHAPTER 1: INTRODUCTION 1.1. Background</b></p> <p style="font-size: 10px; margin: 0;">Information Fishery industry <b>is one of</b></p> </div> <p style="font-size: 10px; margin: 0;">the most important subsectors in Malaysia, it</p> <div style="border: 1px dashed #ccc; padding: 5px; margin-bottom: 10px;"> <p style="font-size: 12px; margin: 0;"><b>has three main subsectors</b> which is <b>marine capture fisheries</b>, inland fisheries <b>and</b></p> </div> <p style="font-size: 10px; margin: 0;">aquaculture. Fishery industry also playing an important role in the national economy. The fishery industry has contributed about 1.07 - 1.73% to Gross Domestic Product (GDP) [1]. Besides than contributing to the national GDP, the fishery industry also provides job opportunity,</p> <div style="border: 1px dashed #ccc; padding: 5px; margin-bottom: 10px;"> <p style="font-size: 12px; margin: 0;"><b>foreign exchange and the main source of protein supply for the population in the country</b></p> </div> <p style="font-size: 10px; margin: 0;">. Along with the development of the fishery industry, it has provided employment for more than 20,000 fish farmers and 79,000 fishermen [2].</p> <div style="border: 1px dashed #ccc; padding: 5px; margin-bottom: 10px;"> <p style="font-size: 12px; margin: 0;"><b>Fish constitutes 60-70% of the national animal protein intake, with per capital consumption of 47.8kg per year.</b></p> <p style="font-size: 10px; margin: 0;">In addition, 150g of fish</p> </div> <p style="font-size: 10px; margin: 0;">can</p> <div style="border: 1px dashed #ccc; padding: 5px; margin-bottom: 10px;"> <p style="font-size: 12px; margin: 0;"><b>provides 50 to 60% of adult's daily protein requirement</b></p> </div> <p style="font-size: 10px; margin: 0;">[3]. An information system (IS) is a formal, organizational system that designed to collect, store, process and distribute information. Due to the keeping increasing of company data, the information system in Malaysia fishery industry is playing an important role which to provide support for</p>	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border: 1px solid #ccc; padding: 5px; text-align: center; font-weight: bold;">1</td> <td style="padding: 5px; font-size: 10px;">1% match (Internet from 27-Jul-2021) <a href="http://eprints.utar.edu.my">http://eprints.utar.edu.my</a></td> </tr> <tr> <td style="border: 1px solid #ccc; padding: 5px; text-align: center; font-weight: bold;">2</td> <td style="padding: 5px; font-size: 10px;">1% match (Internet from 05-May-2015) <a href="http://ijcsi.org">http://ijcsi.org</a></td> </tr> <tr> <td style="border: 1px solid #ccc; padding: 5px; text-align: center; font-weight: bold;">3</td> <td style="padding: 5px; font-size: 10px;">1% match (Internet from 11-Jan-2021) <a href="https://docplayer.net/9966875-A-survey-of-software-development-process-models-in-software-engineering.html">https://docplayer.net/9966875-A-survey-of-software-development-process-models-in-software-engineering.html</a></td> </tr> <tr> <td style="border: 1px solid #ccc; padding: 5px; text-align: center; font-weight: bold;">4</td> <td style="padding: 5px; font-size: 10px;">&lt; 1% match (Internet from 20-Mar-2022) <a href="http://eprints.utar.edu.my">http://eprints.utar.edu.my</a></td> </tr> <tr> <td style="border: 1px solid #ccc; padding: 5px; text-align: center; font-weight: bold;">5</td> <td style="padding: 5px; font-size: 10px;">&lt; 1% match (Internet from 27-Jul-2021) <a href="http://eprints.utar.edu.my">http://eprints.utar.edu.my</a></td> </tr> <tr> <td style="border: 1px solid #ccc; padding: 5px; text-align: center; font-weight: bold;">6</td> <td style="padding: 5px; font-size: 10px;">&lt; 1% match (Internet from 27-Jul-2021) <a href="http://eprints.utar.edu.my">http://eprints.utar.edu.my</a></td> </tr> <tr> <td style="border: 1px solid #ccc; padding: 5px; text-align: center; font-weight: bold;">7</td> <td style="padding: 5px; font-size: 10px;">&lt; 1% match (Internet from 15-Oct-2021) <a href="http://eprints.utar.edu.my">http://eprints.utar.edu.my</a></td> </tr> <tr> <td style="border: 1px solid #ccc; padding: 5px; text-align: center; font-weight: bold;">8</td> <td style="padding: 5px; font-size: 10px;">&lt; 1% match (Internet from 08-Mar-2020) <a href="http://eprints.utar.edu.my">http://eprints.utar.edu.my</a></td> </tr> <tr> <td style="border: 1px solid #ccc; padding: 5px; text-align: center; font-weight: bold;">9</td> <td style="padding: 5px; font-size: 10px;">&lt; 1% match () <a href="#">Che Din, Yusnizam. "Portfolio Investment in Focus of Using Agent in Stock Trading Environment", universiti teknologi petronas, 2005</a></td> </tr> <tr> <td style="border: 1px solid #ccc; padding: 5px; text-align: center; font-weight: bold;">10</td> <td style="padding: 5px; font-size: 10px;">&lt; 1% match () <a href="#">ABDUL RAHMAN, ANIS LIYANA. "MOBILE APPLICATION ON CAMPUS NEWS FOR UTP STUDENTS", Universiti Teknologi Petronas, 2014</a></td> </tr> </table>	1	1% match (Internet from 27-Jul-2021) <a href="http://eprints.utar.edu.my">http://eprints.utar.edu.my</a>	2	1% match (Internet from 05-May-2015) <a href="http://ijcsi.org">http://ijcsi.org</a>	3	1% match (Internet from 11-Jan-2021) <a href="https://docplayer.net/9966875-A-survey-of-software-development-process-models-in-software-engineering.html">https://docplayer.net/9966875-A-survey-of-software-development-process-models-in-software-engineering.html</a>	4	< 1% match (Internet from 20-Mar-2022) <a href="http://eprints.utar.edu.my">http://eprints.utar.edu.my</a>	5	< 1% match (Internet from 27-Jul-2021) <a href="http://eprints.utar.edu.my">http://eprints.utar.edu.my</a>	6	< 1% match (Internet from 27-Jul-2021) <a href="http://eprints.utar.edu.my">http://eprints.utar.edu.my</a>	7	< 1% match (Internet from 15-Oct-2021) <a href="http://eprints.utar.edu.my">http://eprints.utar.edu.my</a>	8	< 1% match (Internet from 08-Mar-2020) <a href="http://eprints.utar.edu.my">http://eprints.utar.edu.my</a>	9	< 1% match () <a href="#">Che Din, Yusnizam. "Portfolio Investment in Focus of Using Agent in Stock Trading Environment", universiti teknologi petronas, 2005</a>	10	< 1% match () <a href="#">ABDUL RAHMAN, ANIS LIYANA. "MOBILE APPLICATION ON CAMPUS NEWS FOR UTP STUDENTS", Universiti Teknologi Petronas, 2014</a>
1	1% match (Internet from 27-Jul-2021) <a href="http://eprints.utar.edu.my">http://eprints.utar.edu.my</a>																				
2	1% match (Internet from 05-May-2015) <a href="http://ijcsi.org">http://ijcsi.org</a>																				
3	1% match (Internet from 11-Jan-2021) <a href="https://docplayer.net/9966875-A-survey-of-software-development-process-models-in-software-engineering.html">https://docplayer.net/9966875-A-survey-of-software-development-process-models-in-software-engineering.html</a>																				
4	< 1% match (Internet from 20-Mar-2022) <a href="http://eprints.utar.edu.my">http://eprints.utar.edu.my</a>																				
5	< 1% match (Internet from 27-Jul-2021) <a href="http://eprints.utar.edu.my">http://eprints.utar.edu.my</a>																				
6	< 1% match (Internet from 27-Jul-2021) <a href="http://eprints.utar.edu.my">http://eprints.utar.edu.my</a>																				
7	< 1% match (Internet from 15-Oct-2021) <a href="http://eprints.utar.edu.my">http://eprints.utar.edu.my</a>																				
8	< 1% match (Internet from 08-Mar-2020) <a href="http://eprints.utar.edu.my">http://eprints.utar.edu.my</a>																				
9	< 1% match () <a href="#">Che Din, Yusnizam. "Portfolio Investment in Focus of Using Agent in Stock Trading Environment", universiti teknologi petronas, 2005</a>																				
10	< 1% match () <a href="#">ABDUL RAHMAN, ANIS LIYANA. "MOBILE APPLICATION ON CAMPUS NEWS FOR UTP STUDENTS", Universiti Teknologi Petronas, 2014</a>																				

<b>Universiti Tunku Abdul Rahman</b>			
<b>Form Title: Supervisor's Comments on Originality Report Generated by Turnitin for Submission of Final Year Project Report (for Undergraduate Programmes)</b>			
Form Number: FM-IAD-005	Rev No.: 0	Effective Date: 01/10/2013	Page No.: 1 of 1



**FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY**

<b>Full Name(s) of Candidate(s)</b>	Wong Jie Jing
<b>ID Number(s)</b>	18ACB05517
<b>Programme / Course</b>	Bachelor of Information Systems (Honours) Business Information Systems
<b>Title of Final Year Project</b>	WED BASED INFORMATION SYSTEM FOR FISHERY INDUSTRY

<b>Similarity</b>	<b>Supervisor's Comments (Compulsory if parameters of originality exceed the limits approved by UTAR)</b>
<b>Overall similarity index: <u>  9  </u> %</b>  <b>Similarity by source</b> Internet Sources: <u>  9  </u> % Publications: <u>  1  </u> % Student Papers: <u>  N/A  </u> %	
<b>Number of individual sources listed of more than 3% similarity: <u>  0  </u></b>	
<b>Parameters of originality required, and limits approved by UTAR are as Follows:</b> (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

\_\_\_\_\_  
Signature of Co-Supervisor

Name: Ts. Dr Anbuselvan a/l Sangodiah

Name: \_\_\_\_\_

Date:   22 April 2022  

Date: \_\_\_\_\_



## UNIVERSITI TUNKU ABDUL RAHMAN

### FACULTY OF INFORMATION & COMMUNICATION TECHNOLOGY (KAMPAR CAMPUS)

#### CHECKLIST FOR FYP2 THESIS SUBMISSION

Student Id	18ACB05517
Student Name	Wong Jie Jing
Supervisor Name	Ts. Dr Anbuselvan a/l Sangodiah

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.
	Front Plastic Cover (for hardcopy)
√	Title Page
√	Signed Report Status Declaration Form
√	Signed FYP Thesis Submission Form
√	Signed form of the Declaration of Originality
√	Acknowledgement
√	Abstract
√	Table of Contents
√	List of Figures (if applicable)
√	List of Tables (if applicable)
	List of Symbols (if applicable)
√	List of Abbreviations (if applicable)
√	Chapters / Content
√	Bibliography (or References)
√	All references in bibliography are cited in the thesis, especially in the chapter of literature review
√	Appendices (if applicable)
√	Weekly Log
√	Poster
√	Signed Turnitin Report (Plagiarism Check Result - Form Number: FM-IAD-005)
√	I agree 5 marks will be deducted due to incorrect format, declare wrongly the ticked of these items, and/or any dispute happening for these items in this report.

\*Include this form (checklist) in the thesis (Bind together as the last page)

I, the author, have checked and confirmed all the items listed in the table are included in my report.

(Signature of Student)

Date: 22 April 2022