

**FISH PROCESS MANAGEMENT SYSTEM
FOR
TESS AGRO (PLC)**

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Fish Process Management System
For
TESS Agro (PLC)

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December 2017



**This dissertation is submitted in partial fulfilment of the requirement of the
Degree of Bachelor of Information Technology (external) of the
University of Colombo School of Computi**

DECLARATION

Declaration

"I certify that this dissertation does not incorporate, without acknowledgement, any material previously submitted for a degree or diploma in any university and to the best of my knowledge and belief, it does not contain any material previously published or written by another person or myself except where due reference is made in the text. I also hereby give consent for my dissertation, if accepted, to be made available for photocopying and for interlibrary loans, and for the title and abstract to be made available to outside organizations.

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ABSTRACT

None would argue against the importance of the fish process management system in the TESS AGRO (PLC). Just about every sea food processing company has a software solution. Whether that system is as effective as it might be at generating and capturing sales, and communicating the right information about the processing is an entirely different story. TESS AGRO PLC established in 1992 as the first cold chain operator in Sri Lanka and dedicated towards processing and distribution of superior seafood, since 2007. TESS AGRO PLC processes and exports varieties of top quality sea food products including Yellow fin & big eye Tuna, Sword fish and Reef fish to European countries, USA, JAPAN and some other destinations.

Fish process management system was developed to improve the control of their fish receive, production and packing operations and overcome their current drawbacks as the main objective. Fish processing refers to the process associated with fish and the fish products. As a result, integrated solution that would meet the unique requirements of fish processors and traders in Sri Lanka are proposed. They often rely on simple low cost equipment and live and work in remote areas where basic services and facilities are not available.

It is a windows based system that was developed using OOP (Object Oriented Programming) concepts. UML Diagrams such as Use Case, Class diagrams, and Activity diagrams were used to design and analyse the system.

Proposed system was developed using C# as a programming language which is used in OOP concepts. Microsoft Visual Studio 2010 has been selected as framework for the development of the system. Microsoft SQL server 2005 was selected as data base management system. Adobe Photoshop CS5 was chosen as the interface designing tool in the main stages of the development.

At the end of the development the system was tested by various users to prevent whether the issues with the existing system has been resolved.

Further, the system has provided improves standards, quality and efficiency.

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LIST OF ACRONYMS

HTML	Hypertext Mark-up language
AJAX	Asynchronous Java Script and XML (Extensible Markup Language)
RDBMS	Relational Data Base Management System
OOP	Object Oriented Programming
OOA	Object Oriented Analysis
UI	User Interface
UML	Unified Modelling Language
IT	Information Technology
MSSQL	One of the popular Relational Data Base management system
XML	Extensible Markup language
RUP	Rational unified Process model
RAM	Random Access memory
OS	Operating System
LAN	Local Area Network
WWW	World Wide Web
URL	Uniform Resource Locate
PO	Purchase Order

CHAPTER 01 - INTRODUCTION

1.1 Introduction TESS fish processing system

Sri Lanka has a well-established fishery industry and plays a key role in Sri Lanka's social and economic life. Fish process sector is very important to Sri Lankan fishery industry. It is also a source of earnings in terms of foreign currency and provides employment opportunities to people. Today fishing and processing activities provide employment to millions of people around the world.

TESS AGRO PLC established on 1992 as first cold chain operator in Sri Lanka and dedicated towards processing and distribution of superior seafood, since 2007. TESS AGRO PLC processes and exports varieties of top quality sea food products including Yellow fin & big eye Tuna, Sword fish and Reef fish to Europe countries, USA, JAPAN some other destinations.[1]

The company also engages in hiring short and long term cold storage to exporters, importers who need storage facilities. Reefer containers are also hired for inland transportation. At present the company has 45000 cubic ft of cold rooms of 500 tons capacity and operates over 20 reefer containers.

TESS AGRO PLC process and export varieties of top quality sea food products including Yellow fin & Big eye Tuna, Sword fish and Reef fish.

As a responsible company, strictly adhere to all measures means for sustainable & environmentally friendly sea food product.

1.2 Problem Domain of the Project

Fish process management system was developed to improve the control of their fish receive, production and packing operations and overcome their current drawbacks was the main objective. Fish processing refers to the process associated with fish and fish products.

As a result, propose an integrated solution that would meet the unique requirement of Fish processors and traders in Sri Lanka often rely on simple low cost equipment and live and work in remote areas where basic services and facilities are not available. They may also lack knowledge, skills and the ability to invest in new equipment and ideas.

At the present, TESS AGRO Company used fish production system with many issues. Most of things manually using paper application.

These manual process are having below negative characteristics,

- Processing Delay.
- Time Consuming
- Difficult to handle data accurately and security because of the data lost, viewing by unauthorized people, can't collect the data at the time.
- If customer wants search their details it very difficult.
- Unable to analyse past data.
- Paper work result needs lot of space to keep data.
- Possibility of data duplication as there's no repetition check.
- Not more than one person can access data at same time.
- Retrieval of data very slow.

They overcome above difficulties and improve standards, quality and efficiency.

1.3 Motivation of the project

TESS AGRO PLC is a leading exporter of fish. Seek to implement a system to improve the control of their fish Receive, Production and Packing Operations. More specially, the system is a very comprehensive and configurable Production system and is fully windows base. Production system is barcode driven and can be extend to make full use of radio data terminals and wireless networks.

The purpose of this system is to promote the full advantages of technologies to customers. MIS report also generated by the system using fish receives Process & packing Details. Compare to current system has got lot of Benefits, which accelerate implementing solutions for modern and more challenging business needs swiftly.

Therefore I've plan to prepare fish process management system for TESS AGRO (PLC) to be presented at the end of final year of Bachelor of Information Technology degree conducted by the University of Colombo.

1.4 Objective and Scope of the system

Fish process management system was developed to improve the control of their fish receive, production and packing operations and overcome their current drawbacks was the main objective. Fish process management system is to monitor and control all

processing and production operations, including weighing, grading, ,packing, labeling, , receipts, quality control, , order packing, giving 100% traceability. The system allows users to follow the overall production process in real-time.

As a result, propose an integrated solution that would meet the unique requirement of TESS. The scope of the project has been identified to cover the following functionalities,

- More specially, the system is a very comprehensive and configurable Production system and is fully windows base.
- Tess Receiving module facility to,
 - Automatically capture fish weight with stable scale.
 - Reject receiving fish
 - Facility to setup lorry no ,supplier Fish Type, Grade and other master data
 - Generate summary report.
- Tess Processing module facility to,
 - System automatically Capture loin weight with stable scale.
 - System generated loin code.
 - Reject Loin
 - Facility to set up Expire date, Packing date
 - Re-pack loins
 - Review no of loins and weight for each QC code.
 - System facilitate to view remain loin numbers.
 - Generate summary report.
- Tess Packing system facility to,
 - Select relevant buyer order for shipment.
 - System automatically Capture loin weight with stable scale.
 - System read loin code from barcode reader.
 - Set up loin grade/Batch code
 - Facility to set up use by date, recording date
 - Review no of average loins for each box /Box grade / Remain boxes
 - System facilitate to reject loins
 - Generate summary report

- The Administrator of the system will be based on role control access MIS module.
- Enable faster fish receive, process and packing with quality output
- Improve Traceability
- Improve quality of barcode labelling and barcode reading
- Provide improved management information.
- System facilitate to repack loins with new packing data, weight with review remains loin numbers.
- Generate summary report and other type of MIS reports.
- Member management.

CHAPTER 02 – ANALYSIS

2.1 Fact Gathering Techniques

Fact-finding technique is a formal process of using research, meetings, interviews, questionnaires, sampling and other techniques appropriate to collect information about system problems, requirements, and preferences. It's also referring to information gathering and data collection. An analyst applies several of these techniques during a single system project. The main methods used for fact finding process were;

- **Interview**

Most widely used technique. Requires the most skills and sensitivity. Used to collect information from group or individuals. The discussion planned out ahead of time based on the type of requirements looking for. Generally use open end questions to get the interviewee to start talking.

- **Observation**

Unlike other fact finding techniques which used, this is very helpful to get clear idea about process or organization. Visit the organization and observe & understand flow of documents, existing process, users of the process etc.

2.2 Analysis Existing Manual System

According to the current process Fish process details are maintained in files. In this situation employer cannot access those information immediately as their requirement, it may take much time to search. Activities TESS AGRO (PLC) are being performed by following major steps,

- Purchase fish from suppliers
- Check fish quality, weight and ID
- Process fish into fish loins
- Generate barcode and loin id
- Fresh fish loins pack in the box with ice
- Manage fish stock
- Employee management
- Maintain reports

The manufacturing process, Fish processing plan can't succeed unless it can get fish to process. As completion increase in the fish market, quality standard of the fish products are rising. Finding keeping a good market for fish depend delivering consistently high quality product. Production System helps to maintain quality with reviewing reports. In the receiving process, should review potential supplier of each type of fish,

- Fish quality
- Volume they can supply
- No of pieces & weight
- Summary sheet (Reject/Color reject/histamine).

Processing yield is very important for fish plant. Don't sell same weight of fish as you buy. Fishes are not in same size or quality and can only be made different no of loins. Processing module facilitate to process received fish, System will store loin weight and print label with barcode. System automatically generates loin code with using QC no. Fresh fish products are pack in the boxes with ice. Frozen products can be packed in number of ways. In this module verify loin weight and print Box label with barcode. Different buyers will have different requirements and expectations for quality, packing, volume, and timing of packing, price and other factors. Therefore system should full fill their requirements. Figure 2.1 shows the existing manual system which used to process loins.

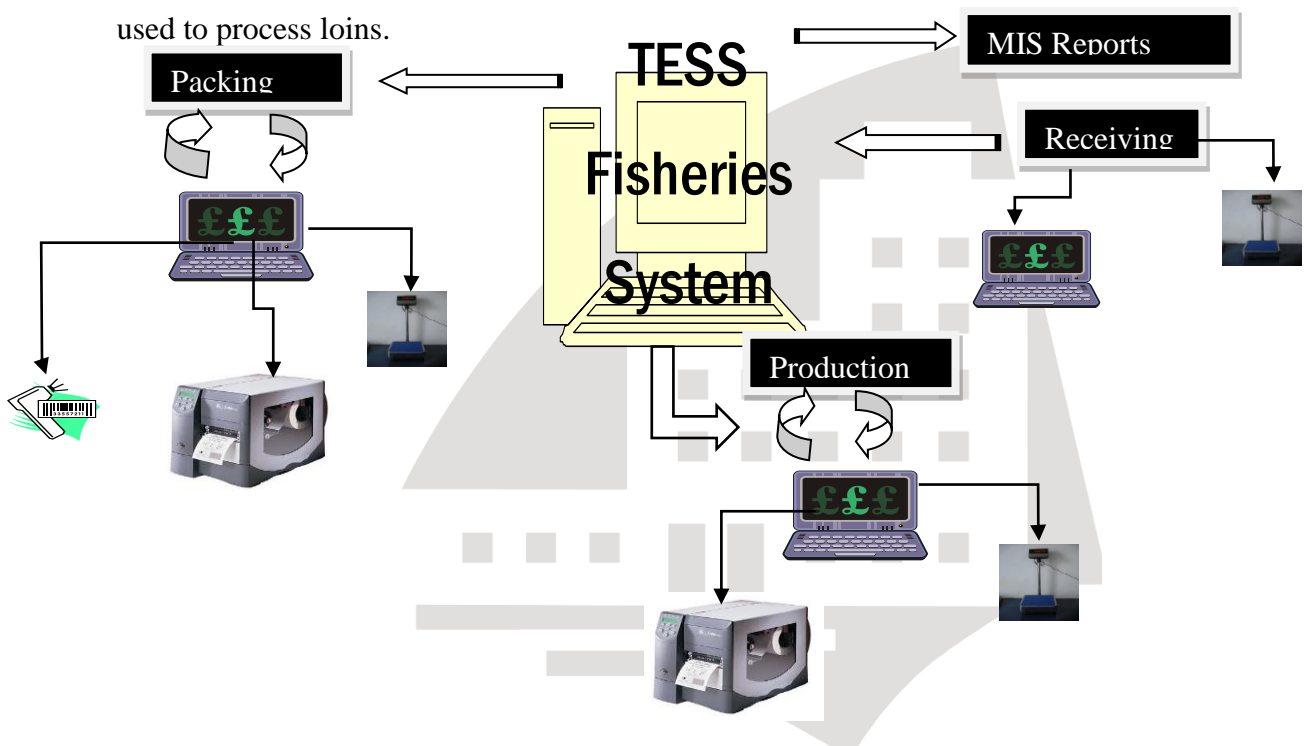


Figure 2.1 TESS Fish Existing Manual System

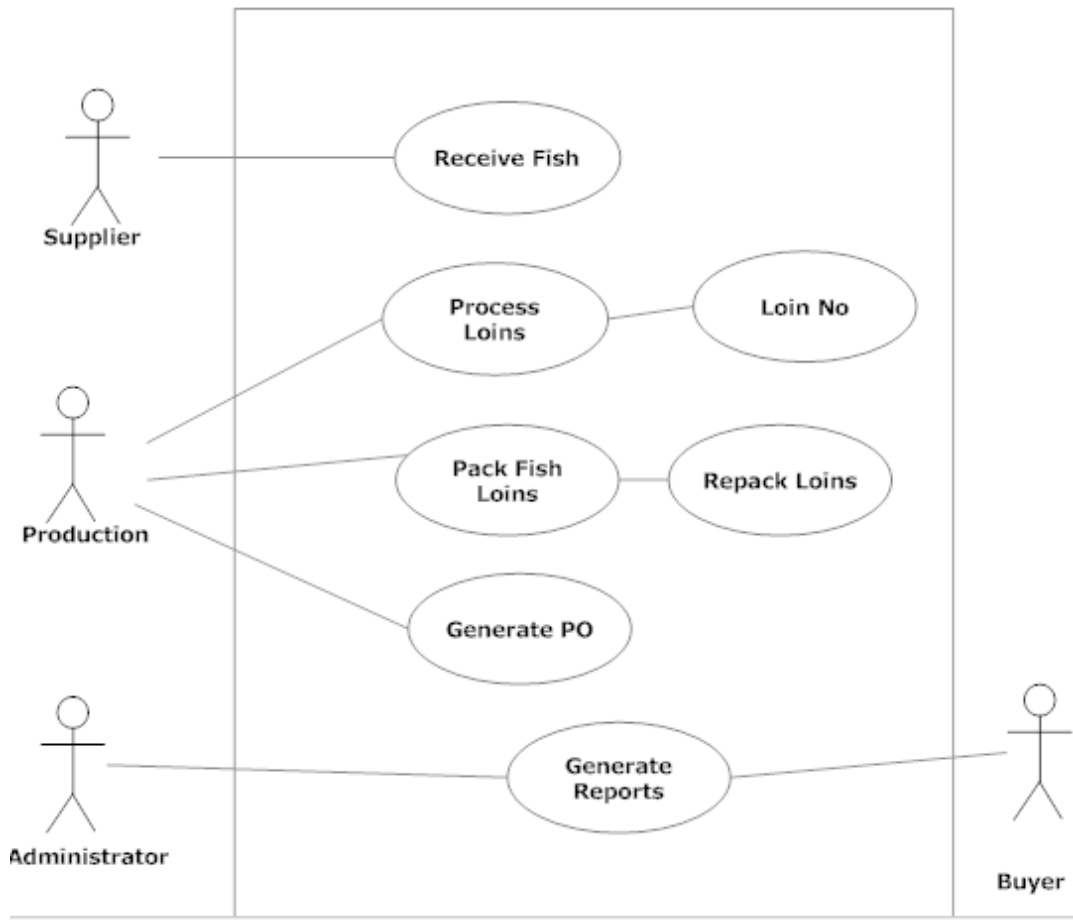


Figure 2.2 Use Case diagram for existing system

2.3 Drawbacks of current system

Problems of existing manual system can be listed below,

- Processing Delay.
- Time Consuming
- Difficult to handle data accurately and security because of the data lost, viewing by unauthorized people, can't collect the data at the time.
- If customer wants search their details it very difficult.
- Unable to analyse past data.
- Paper work result needs lot of space to keep data.
- Possibility of data duplication as there's no repetition check.
- Not more than one person can access data at same time.
- Retrieval of data very slow.

In order to overcome these problems FISH PROCESSING SYSTEM was developed. It would help the system to manage time, effort and resources effectively and efficiently.

2.4 Similar System and literature review

2.4.1 P-Fish fish processing system

By studying other existing fish processing systems, one of the most famous software is P-Fish. It was designed by Aucxis. They have 30 years international experience of designing and implementing tailor made solutions, to integrate clients' ideas and objectives into advanced, user-friendly systems, using the latest technology. Figure 2.3 represent main system interfaces for P-fish processing system. [2]

The screenshot displays the P-Fish processing system interface. At the top, there are filter tabs: Catch Date, Vessel, Species, Weight, Catch Zone, and Fishing Method. Below these is a data entry form with fields for Date (8-3-2015), Submit, and a table with columns: Catch Date, Vessel, Species, Weight (kg), Catch Zone, and Fishing Method. The table contains several rows of data. Below the form is a section for 'Loads created (Load Count : 7)' with a table showing Lot number, Species, Size Label, Weight (kg), Box Count, Created On, and Removed on. A 'Box number' label points to a field containing 'EPC urn:epc:id:glal:8718868119.01.1000E25' and a 'Box type' field containing 'Kist UK 40 kg'. Below this is a 'Detections' section with a table showing Event date, Company, Biz Step, Biz Location, Disposition, Box Count, and Buyer. The interface also shows a date selector for 8-3-2015 and 9-3-2015, and a 'Loads created (Load Count : 2)' section at the bottom.

Figure 2.3 P-Fish processing system interface

2.4.2 Way fish sea food export management system

Way fish is a Web-based Seafood export management software system that simplifies and helps in a smarter way to increase business productivity and profitability.

The inventory could operate multiple warehouse locations. It calculates the true yield and margin on everything you cut and meeting the unique challenges of weight, products where yields, collection hub, product accounting, settlement processing, catch weight, multiple freezer/warehouse and Shipment. Figure 2.4 shows the way fish system interfaces.[3]

Figure 2.4 Way-Fish processing system interface

2.5 System Requirements

2.5.1 Functional Requirements

Functional Requirements define fundamental requirements that system must perform. The functional requirements for the system are divided into four main categories Receiving , processing , packing and MIS

Fish Receiving Module

- Automatically capture fish weight with stable scale.
- Reject receiving fish
- Facility to setup lorry no ,supplier Fish Type, Grade and other master data
- System should generate summary report.

Fish Processing Module

- System automatically Capture loin weight with stable scale.
- System generated loin code.
- Reject Loin
- Facility to set up Expire date, Packing date
- Re-pack loins

- Review no of loins and weight for each QC code.
- System facilitate to view remain loin numbers.
- Generate summary report.

Fish Packing Module

- Select relevant buyer order for shipment.
- System automatically Capture loin weight with stable scale.
- System read loin code from barcode reader.
- Set up loin grade/Batch code
- Facility to set up use by date, recording date
- Review no of average loins for each box /Box grade / Remain boxes
- System facilitate to reject loins
- Generate summary report

MIS Module

- The Administrator of the system will be based on role control access MIS module.
- Enable faster fish receive, process and packing with quality output
- Improve Traceability
- Improve quality of barcode labelling and barcode reading
- Provide improved management information.
- System facilitate to repack loins with new packing data, weight with review remains loin numbers.
- Generate summary report and other type of MIS reports.
- Member management

2.5.2 Non Functional Requirements

Non-Functional Requirements (NFRs) are sometimes considered to be the most important requirements from an architectural perspective, leading some to mischaracterize them as "architectural requirements". This is a misleading approach though as a Product must meet its functional and non-functional requirements to provide business value. If functional requirements are ignored, then an architecture with some impressive mechanisms for dealing with non-functional requirements that doesn't actually do anything is unlikely to be useful as a Product.[4]

Non-functional requirements define needs in terms of performance, Design Constants, Stranded Compliance, Reliability, security and availability.

- ❖ Performance - Define acceptable response times for system functionality.
 - The load time for user interface screens shall take no longer than two seconds.
 - The log in information shall be verified within five seconds.
 - Queries shall return results within five seconds.

- ❖ Security

All the confidential data such as customer details, Fish processing details, suppliers and buyer details are maintained by the system. So system should maintain confidentiality. There should be two privilege levels in the system.

- User Level
- Administrator Level

Timely backup should be taken to certain period of time and appropriate security measure should be taken by limiting access privileges to protect data.

- ❖ Maintainability- Easy to keep the system as it is and corrects defects with making changes.
- ❖ Robustness – Strength of the system to handle system functions accurately and maintains the Database without unexpected failure.
- ❖ Usability- Users be taken benefits of the system and provide user friendly graphical user interfaces.
- ❖ Flexibility- Add new features to the system easily.

CHAPTER 03 - DESIGN

3.1 Introduction

In software engineering, a design pattern is a general reusable solution to a commonly occurring problem in software design. A design pattern is not a finished design that can be transformed directly into code. It is a description or template for how to solve a problem that can be used in many different situations. Object-oriented design patterns typically show relationships and interactions between classes or objects, without specifying the final application classes or objects that are involved. [5]

Software design is a blue print or plan for a proposed system. System Designers may use various types of strategies such as Structured Design, Functional Oriented Design or Object Oriented Design.

3.2 System Design Tools

When designing a system, first need to look at the IT infrastructure. The investment in hardware, software and services should be evaluated. The software design strategy is the process by which the user requirements and problems are gathered and discussed in order to arrive at the optimum solution which will address the requirements and problems. Various types of software design tools and strategies could be used to handle different aspects of the design process. UML diagrams were used throughout the system design.

3.3 Alternative Solutions Evaluation

TESS AGRO PLC is a leading exporter of fish. Seek to implement a system to improve the control of their fish Receive, Production and Packing Operations. More specially, the system is a very comprehensive and configurable Production system and is fully windows base. Production system is barcode driven and can be extend to make full use of radio data terminals and wireless networks. When considering alternate solutions system should compare with below alternatives.

- **Manual fish process system**

According to the current process, file base system can be maintained by system users. In this situation employer cannot access those information immediately as their requirement, it may take much time to search. Most of things manually process using

paper application. As well as manual process are having below negative characteristics Processing Delay, Time Consuming and difficult to handle data accurately and security. The TESS AGRO PLC wants to implement system to manage time, effort and resources effectively and efficiently. Therefore manual fish process system is not applicable for the proposed Fish Process Management system.

- **Purchase Off-the-self product**

In the software market there is various type of off the self-product. TESS Fish process Management System also can process using off the self-product. This type of product can easily purchase and install but it does not completely satisfied with customer requirements. Tess fish process system should develop as unique system because they used various types of hardware resources such as digital scale, barcode label printing machine, barcode reader etc. so off the self-product is not applicable for the proposed system.

3.4 Alternate for development platform

3.4.1 Standalone system

Standalone system is a very old mechanism to develop software. Both software application and database run in same computer. Therefor one personal computer used as client machine and server machine. It is very risky process because if computer crashed with virus should install both system and database. System accessed by only one person. Because of above negative characters standalone system was not suitable for proposed fish process management system.

3.4.2 Web base system

Web base system can access any ware with any computer connected to the internet. Software IDE or framework must be installed into server machine. It has so many advantages high security, easy maintenance, cost effective etc. But fish process management system should work with many hardware resources and system wok within the cool room. Data access through the hardware ports. So it is difficult to configure and maintain. Access internet connection also poor in the cool room. So web base system also not applicable for the proposed system.

3.4.3 Network based centralized system

This mean centralized database server accesses all terminals. Application software should install terminals which connected into server. System and hardware maintenance is costly than other systems. But Fish process management system process different locations in the cool room therefore we should access different terminals in every location with connecting Digital scale, printer and barcode reader.

So we selected network based centralized system as Fish Process Management System.

3.5 Object Oriented Design

Object Oriented Design approach is a process of planning a software system where objects will interact with each other to solve specific problems. Object oriented design works around the entities and their characteristics instead of functions involved in the software system. This design strategy focuses on entities and its characteristics.

Object - Abstractions of real world or system entities. Entity has attributes associated to it.

Classes – class is a template for a object. It represents collection of objects having same characteristic properties that exhibit common behaviour.

The objects are the real world entities that exist around us and the basic concepts like abstraction, encapsulation, inheritance, polymorphism all can be represented using UML. So UML is powerful enough to represent all the concepts exists in object oriented analysis and design. UML diagrams are representation of object oriented concepts only.

3.6 Methodology for the proposed system

The goal of this system is to have a simple, easy to use, fast website. Help management to take important business decisions easily and quickly. RUP (Rational unified Process) model has been choose for develop proposed web base system.

The RUP has determined a project life-cycle consisting of four phases. These phases allow the process to be presented at a high level in a similar way to how a 'waterfall'-styled project might be presented, although in essence the key to the process lies in the iterations of development that lie within all of the phases. Also, each phase has one key objective and milestone at the end that denotes the objective being accomplished. The

visualization of RUP phases and disciplines over time is referred to as the RUP hump chart. Figure 3.1 shows the diagrammatic representation for PUP model.[6]

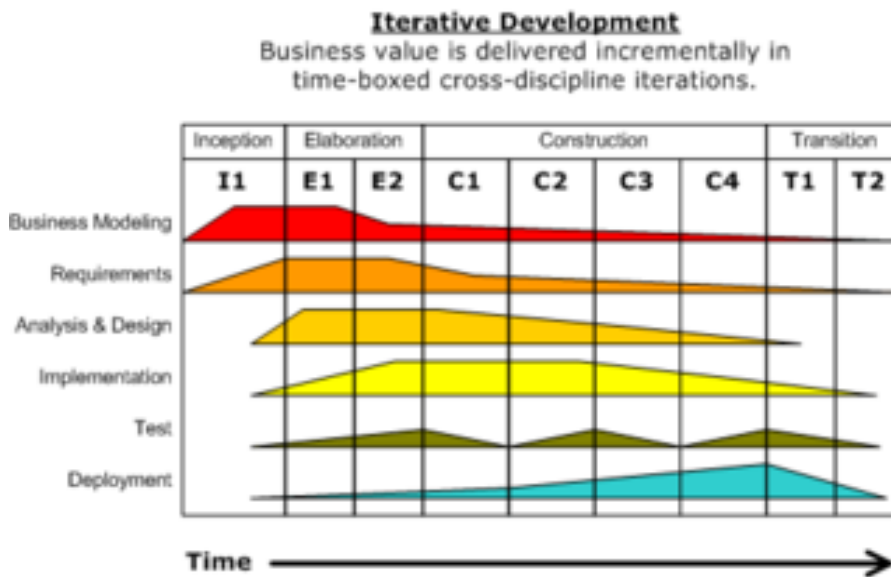


Figure 3.1 Relational Unified Process Model

RUP has four main phrases such as Inception, Elaboration, Construction and Transition. Each involves business modelling, analysis and design, implementation, testing, and deployment.

❖ Inception

Is where the business case is defined which include business context. It is important to the process to first formulate the scope of the project and also determine what resources will be needed.

❖ Elaboration

Is where problem analysis is conducted and architecture of the project get is basic form. In this stage, the developers take a closer look at the project to determine its architecture foundation and to evaluate the architecture in relation to the project. This stage is important to the RUP because it is here that developers analyse the risks associated with changing the scope of the project

❖ Construction

Mainly focused on development of the project. The project is developed and completed. The software is designed, written, and tested.

❖ Transition

Phase where the build system is transferred into end user. Final adjustments or updates are made based on feedback from end users.

The proposed system designed base on Object Oriented design techniques & tools because of reduce development time, increase code reuse, modular architecture, client server architecture etc. UML is main role in object oriented design techniques. Figure 3.2 shows the use case diagram for fish process management system.

3.7 Use Case Diagram for Fish Process Management System

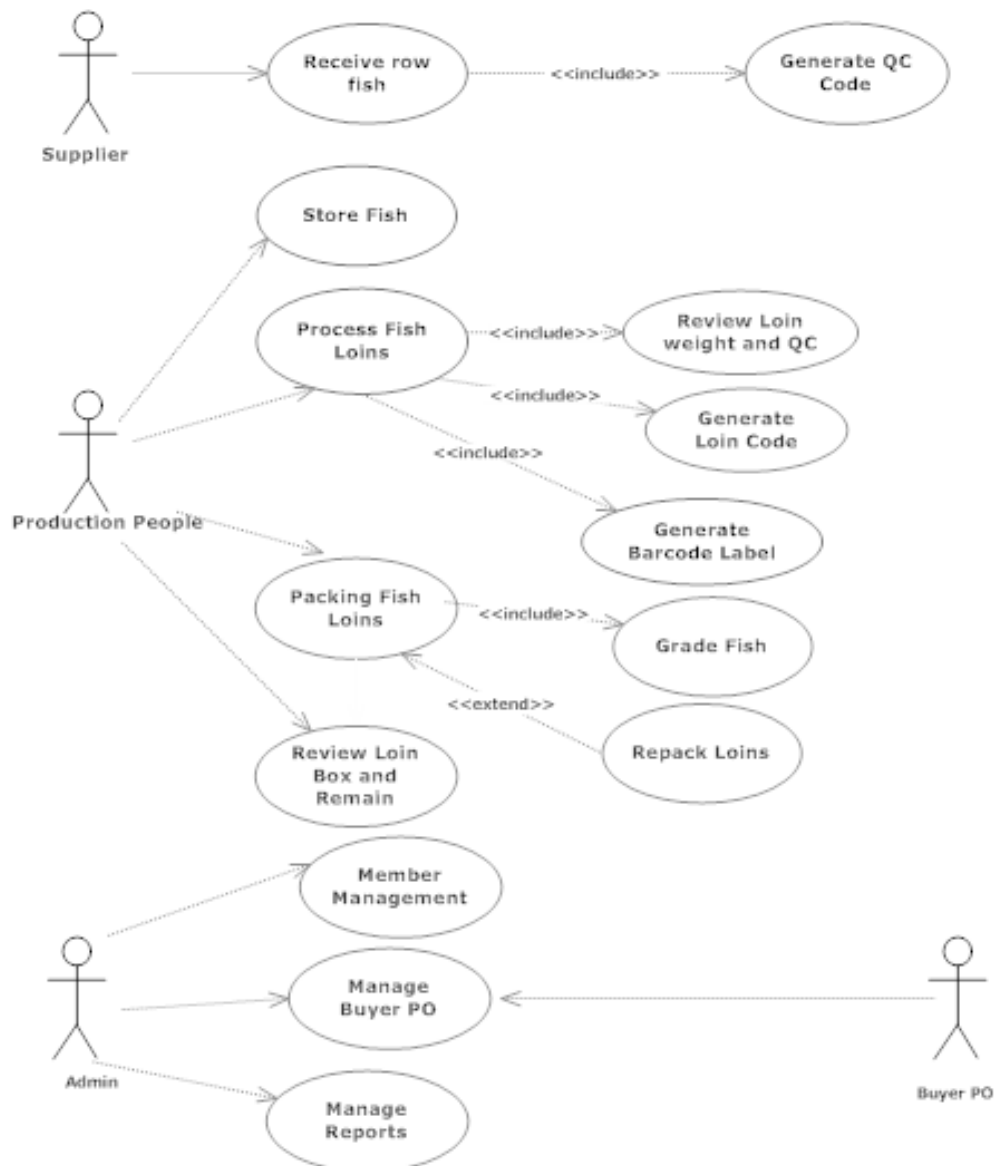


Figure 3.2 Use Case diagram for fish process Management System

3.8 Database Design

Data Base design of the proposed Fish processing system shows each relation in the system. There are three level architecture of database design. Figure 3.3 represent database table structure of the proposed system.

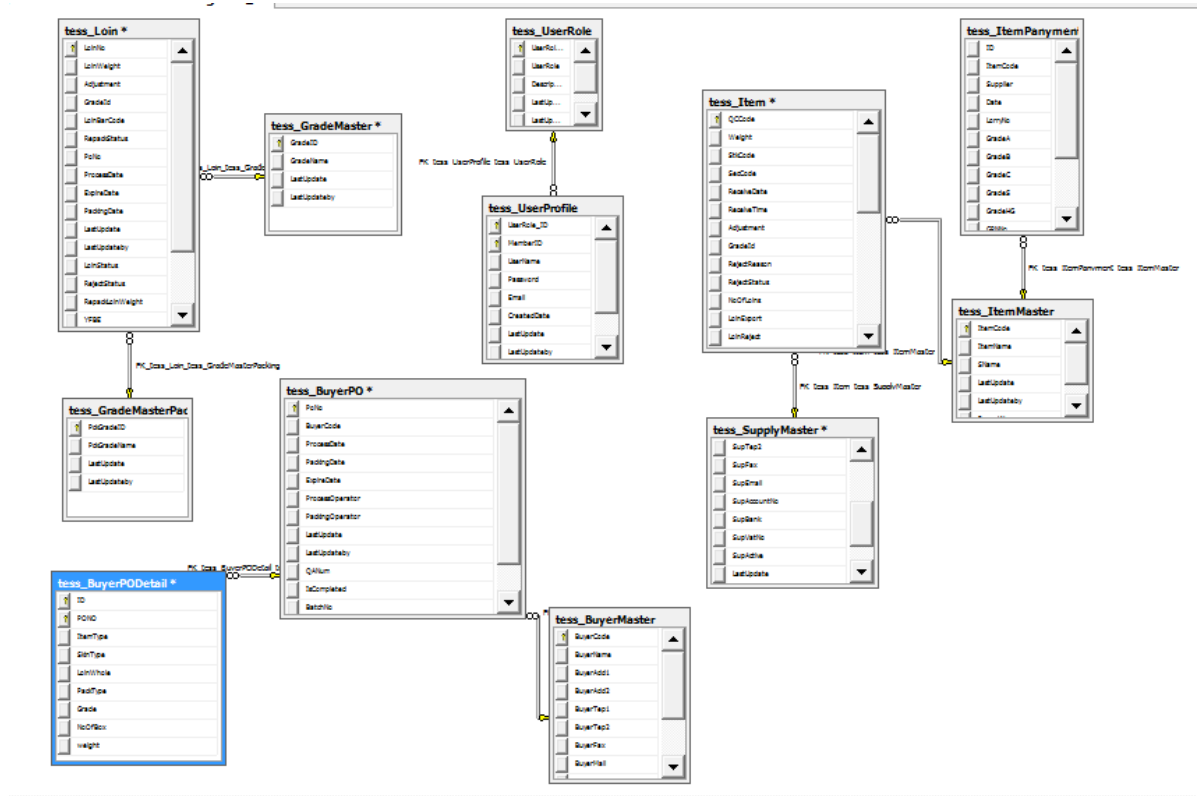


Figure : 3.3 Data Base Diagram for the system

3.9 Activity diagram

3.9.1 Activity diagram for fish receive module

Figure 3.4 shows the activity diagram for fish receiving module. Using this module receive fish for loin processing

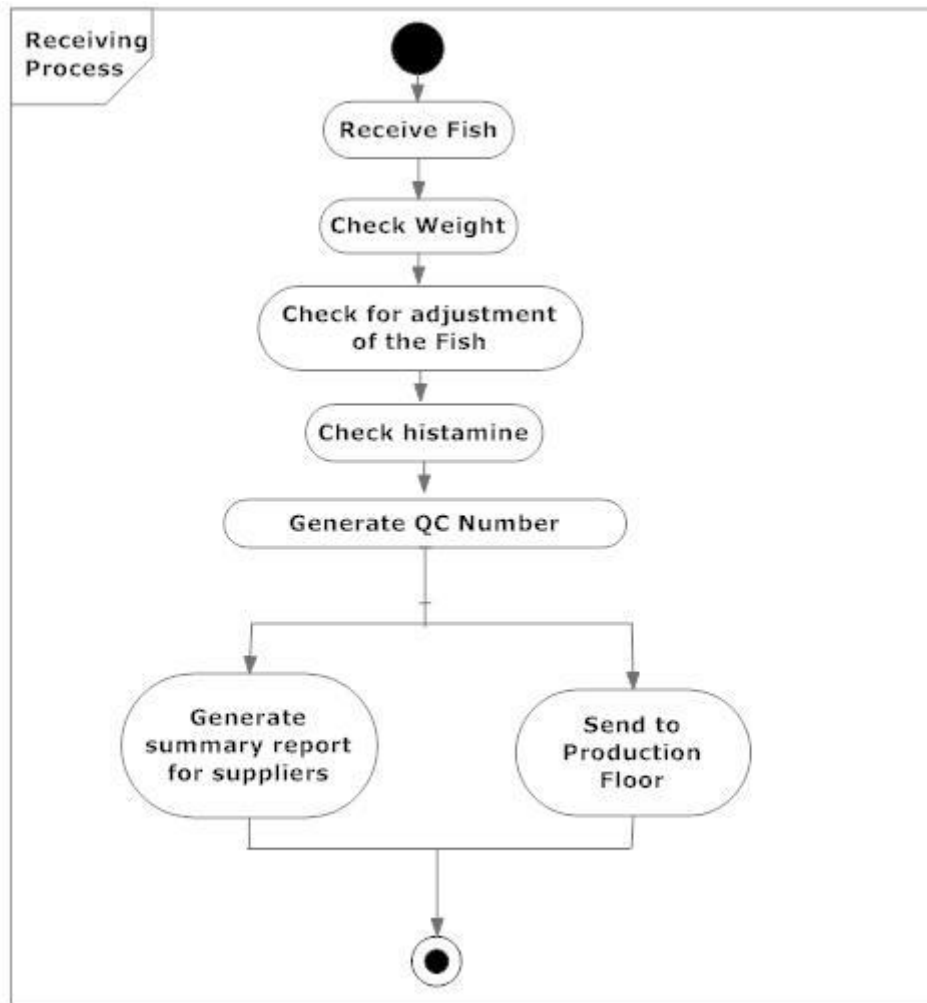


Figure 3.4 Activity Diagram for receiving module

3.9.2 Activity diagram for fish process module

Figure 3.5 shows the activity diagram for fish process module. This module process loin fish and repack fish loins because of some reasons to failure fish loin daily repack.

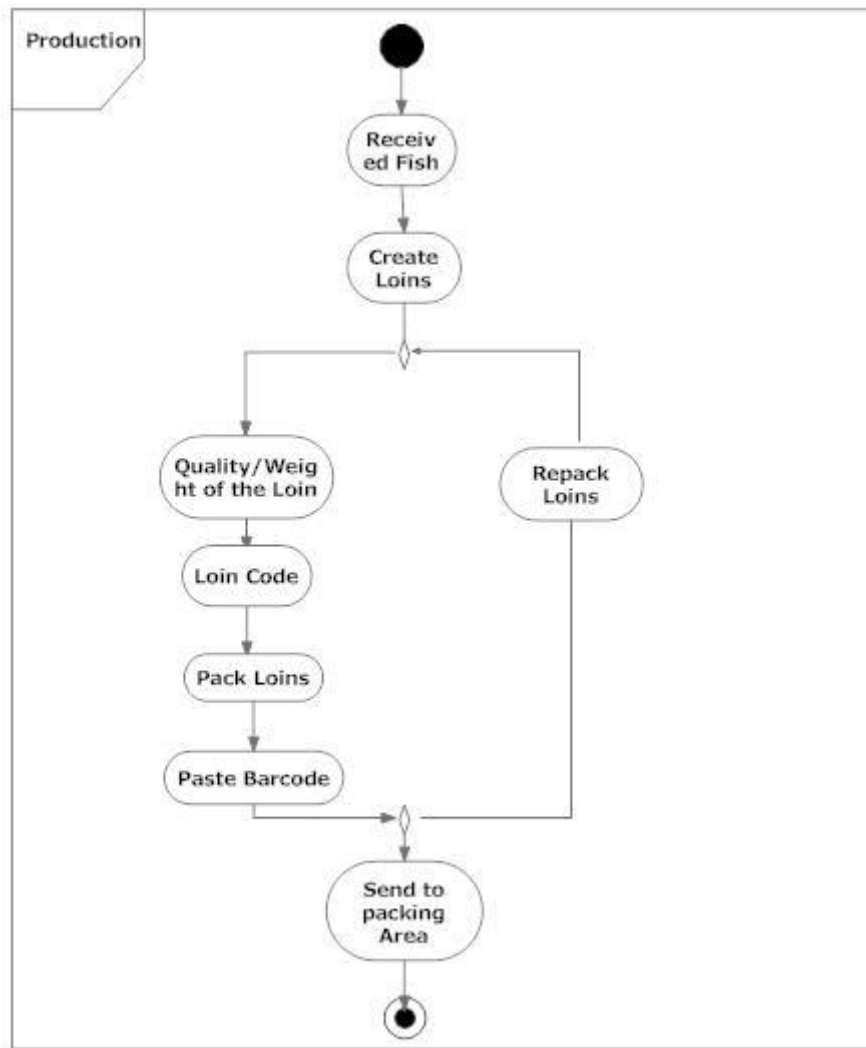


Figure 3.5 Activity Diagram for process module

3.9.3 Activity diagram for fish packing module

Figure 3.6 shows the activity diagram for fish packing module. Process loins packing for exports with buyers request.

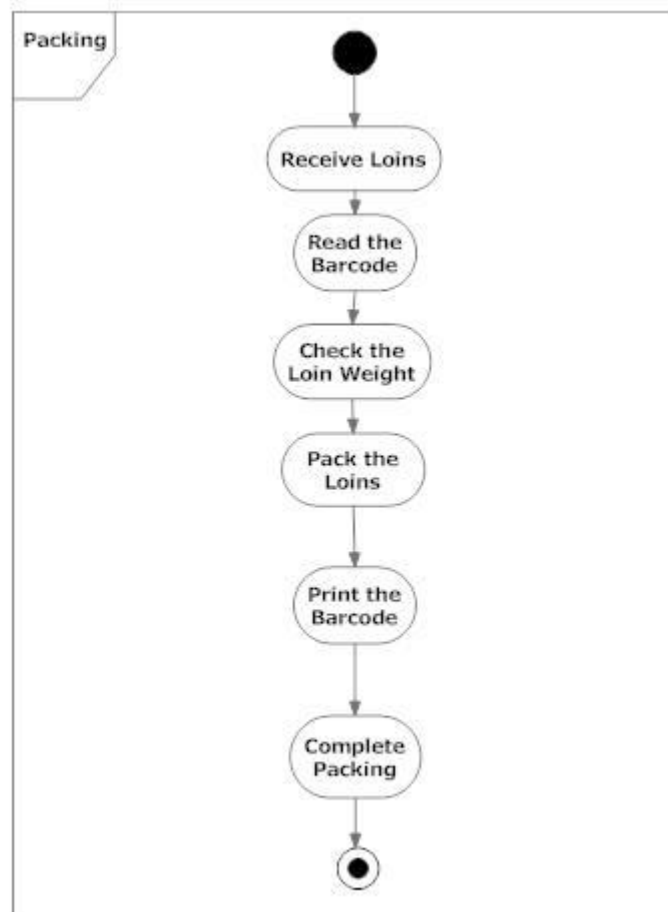


Figure 3.6 Activity Diagram for packing module

3.10 User Interface design

Software system users judge a system by its interfaces rather than system functionality. So it is important to design interfaces that are easily understood and not complicated. A poorly designed interface can cause a user to make errors. Poor user interface design is the reason why so many systems are never used. Fish Process Management system designed with four main tabs and include sub sections.

3.10.1 User Interface Design Principals

- User Familiarity- The interface should use terms and concepts which are drawn from the experience of the people who will make most use of the system.
- Consistency - Interface should be consistent in that, wherever possible, comparable operation should be activated in the same way.

- Minimal Surprise – user should never be surprised by the behaviour of the system.
- Recoverability- interface should have a mechanism to allow users to recover from errors.
- User Guidance- Interface should provide meaningful feedback when errors occur and provide
- Context – sensitive user help facility.
- User Diversity – The interface should provide appropriate interaction facility for different type of system users. [7]

There are several actions were taken in order to ensure the good and user friendly interfaces throughout whole system. Eye friendly colours and text use to design system interfaces. e.g. light colours and low contrast. Keep the interface simple. System design avoids unnecessary elements and is clear in the language use on labels and in messaging. Create consistency and use common UI elements. By using common elements, users feel more comfortable and are able to get things done more quickly. After save, update and delete records system shows successful message. Before update and delete system take permission from user. Table 3.1 shows user interface design standards.

Form Input Standards	
Font	Microsoft Sans Serif
Font Size	9Px
Font Color	#000
Background Color	#fff

Table 3.1 Interface Design Standards

Page Header Standards

Figure 3.7 shows the Fish process management system header.



Figure 3.7 System Page Headers

Tab Controller standards

Figure 3.8 shows the system tab controller .It shows all tabs which is in the FPMS.



Figure 3.8 System Tab Controllers

Error Message standards

System error messages show as popup message and Figure 3.9 represent error message.

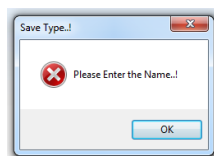


Figure 3.9 Error Message

Success Message standard

System success messages show as popup message and Figure 3.10 represent success message with information icon and ok button.

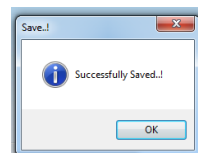


Figure 3.10 Success Message

Report design standards

All reports header design with company logo and other company
Figure 3.11 represent error message.

	<small>TESS AGRO LTD, NO 87, NEW NUGE ROAD, KELANIYA, SRILANKA. TEL: +94 11 2910055, FAX: +94 11 2910615, EMAIL: tess@sil.lk, WEB: www.tess.lk</small>		
	PACKING LIST		CONSIGNEE: <u>Double underline</u>
	AWB NO: Red		
PACKING DATE: Data labels	BATCH NO: Font S:	PAGE NO: Page 1 of 1	

Figure 3.11 Report Design

Login Interface

System logging interface displayed by Figure 3.12. Capture user name and password with validating user role and privileges.

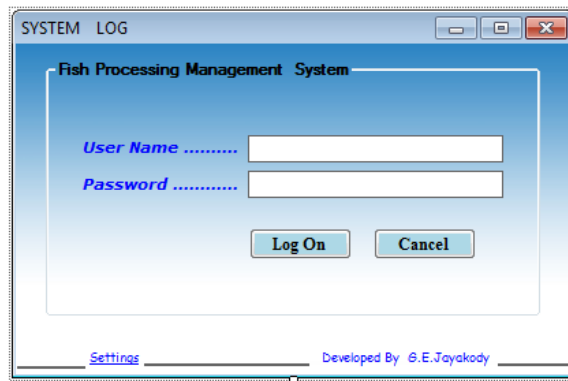


Figure 3.11 Login Interface

Administrator Home page

Below figure 3.13 shows the admin home page with all tabs and controls.



Figure 3.12 System Home Page

Master Page design

Figure 3.14 shows the master page design structure. Master module help to install system master data. Officially identified system master will be stored this section.

User Role ID	User Role	Description
3		
4		
2	Account1	Account Section Head
1	Admin	Admin Full Access
5	sdf	sdf

Figure 3.14 Master Page Design

Fish Receiving interface

Overall fish receive description section of this document gives an overview of the receive functionality of the product. It describes the informal requirements and the technical requirements specification. System capture fish weight & Fish Id and other details transfer data into server Database. Figure 3.15 shows fish receiving interface.

Figure 3.15 Fish Receiving Interface

Fish Processing Interface

Fish process module help to process loin fish. Figure 3.16 shows the fish processing interface.

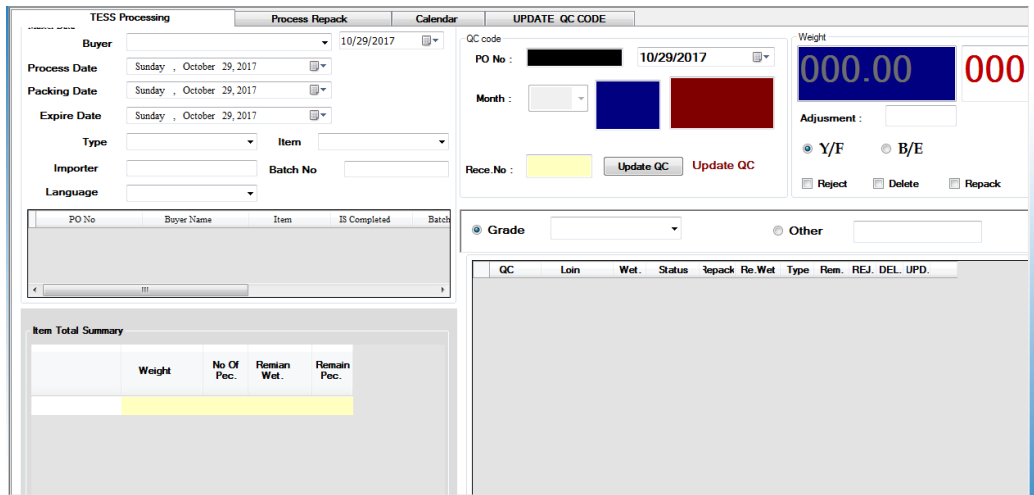


Figure 3.16 Fish Processing Interface

Fish Packing Interface

Fish packing module help to pack fish loins into boxes. Fresh fish products are pack in the boxes with ice. Frozen products can be packed in number of ways. In this module verify loin weight and print Box label with barcode. Fish packing interface displayed by figure 3.17.

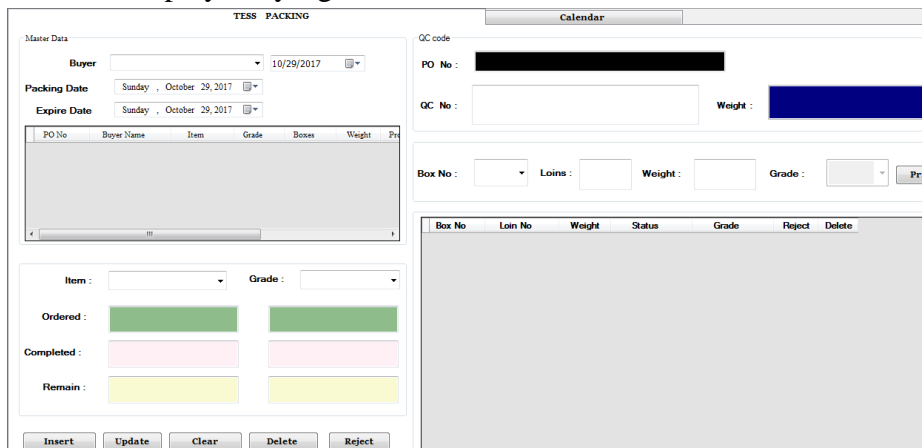


Figure 3.17 Fish Packing Interface

Report design


Management reports are listed and available from the reports sub menu. Accessible users can have facility to access reports at any given time period. Using this module try to show detail data with current status and historical data. Figure 3.18 shows the report and figure 3.19 barcode label which print for loin process.

tess TESS AGRO LTD, NO 87, NEW NUGE ROAD, KELANIYA, SRI LANKA.
 TEL: +94 11 2910659, FAX: +94 11 2910615, EMAIL: tess@sl.lk,
 WEB: www.tess.lk

PACKING LIST		CONSIGNEE: Double overline				
AWB NO:	Red					
PACKING DATE:	Data labels	BATCH NO: Font S:	PAGE NO: Page 1 of 1			
Box	Description	PRESENTATION	GRADE	PCS.	NET WT. (kg)	
White	3D Riber		OLAP	DateTim	Monday	114.78
Gray	Pie		Drill Down	Currend	Satur	119.42
Blue	3D Riber		Subreport	String	Satur	157.18
Navy	XY Scatter		Subreport	Boolean	Sund	99.94
Gray	Doughnut	Field	Cross-Tab	Currend	Tuesi	255.47
Red	XY Scatter		Cross-Tab	Currend	Monday	30.35
Blue	Line		Subreport	Time	Wed	158.80
Red	3D Riber		Form	Date	Friday	199.54
Olive	Doughnut	Field	Drill Down	Boolean	Tuesi	55.37
Red	Bar		Form	Time	Wed	99.30
Prepared By:	No OF BOXES:	6	PAGE NET WT. (kg):	1,329.25		

Figure 3.18 Report Design

QC CODE : 12186015 **281.45 Kg.**
 Grade : H&G Batch No : 001
 Importer : Boston



DATE OF PACKING : 18/06/2012
 DATE OF EXPIRY : 26/06/2012
 SUBJECT TO STORAGE BELOW +2 deg C

Figure 3.19 Loin Barcode Label

CHAPTER 04 - Implementation

4.1 Introduction

This chapter discussed how to implement fish process management system as fully windows base system. System implementation was done by software developers after complete understanding of the system requirements. It may take time depend with system complexity. Organizations should consider several factors when implementing a fish process management, depending on the type of applications they want to build and whether or not they need to be able to customize them. C# which is programing language selected to implement the system.

4.2 System Implementation

4.2.1 Development Environment

The system development environment divided into two categories, Software Environment and Hardware Environment. Table 4.1 shows the Development environment figures.

Development Environment	
Hardware Requirements	Software Requirements
Intel Core i5 Processor 2.50GHz	Windows 7
160 Hard Disk	Internet Explorer 10 or Mozilla Firefox 3 or above
2GB RAM or upward	Microsoft .NET Framework 3.5 or 4.0
2-3 USB ports	Microsoft SQL 2005 /Crystal Report 8.5
Printer port/Serial port	Microsoft Office Project Professional 2007
Barcode Reader	Microsoft Office Visio 2007
Digital Scale	Adobe Photoshop

Table 4.1 Development Environment

Fish process management system which is developed as windows based system using Visual Studio 2010 (.NET Framework 4.0) and Microsoft SQL 2005 as database management server.

4.3 Development Tools and Technologies

4.3.1 Visual Studio 2010

C# is a programming language which was used to develop fish process management system. Visual Studio 2010 is a development platform which was supported for c# language.

Microsoft Visual C#, Microsoft's implementation of the C# language, targets the .NET Framework, along with the language services that lets the Visual Studio IDE support C# projects. While the language services are a part of Visual Studio, the compiler is available separately as a part of the .NET Framework. The Visual C# 2008, 2010 and 2012 compilers support versions 3.0, 4.0 and 5.0 of the C# language specifications, respectively. Visual C# supports the Visual Studio Class designer, Forms designer, and Data designer among others.[8]

4.3.2 MS SQL Server 2005

MS SQL was used as backend. Database Management system was a major role in the stability and the reliability of system data. It is small, easy to use and low cost database either single user or limited network database. It was high security or the potential to deal with much simultaneous users.

4.4 System Architecture

Developing the system to the three -tier structure enables the system to be deployed across a company's Wide area Network (WAN) while requiring the single centralized database. The presentation layer is a thin client that handles the instructions regarding the interface. The processing of the business logic that retrieves, updates, inserts and delete data, applies business rules and calculation that require interaction with the database, or may be used from more than one screen if performed on an application server.

This is typically centralized and located near the database server or on the physically database server. This database optionally contains referential integrity rules, however always contains the data for the application. The SQL queries that manipulate the data are executed on the database server .This architecture ensures minimal network traffic

and adding to that the application logics executed on servers that ensure high performance level are achieved.

The system architectural components are shown in figure 4.1. Presentation Layer shows all windows form in the systm.it is play major role.

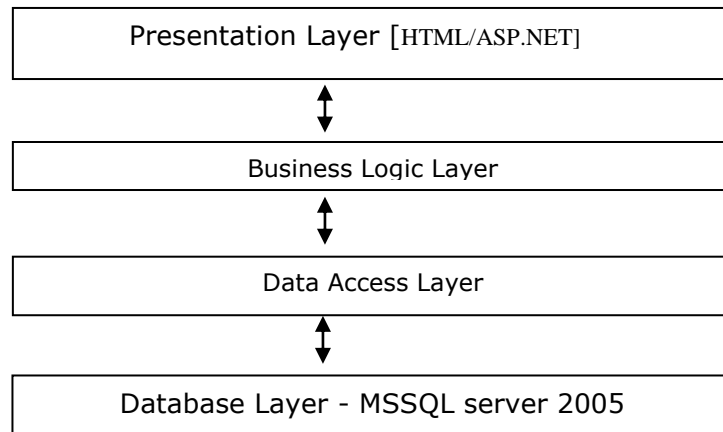


Figure 4.1 Technical Structure

4.5 Module Structure

This diagram dispatch main architectural layers such as presentation layer, business logic layer and data access layer. FPMS layer represented as presentation layer and FPMS.BAL for Business layer and FPMS.DLL for Data access layer. These three layers represented three-tier architecture in the fish process management system. FPMS library use to design system forms/front end and FPMS.BLL used to design system classes and business logics and FPMS.DLL used to connect system Database (MS SQL) as data access layer. Figure 4.2 displayed by module structure.

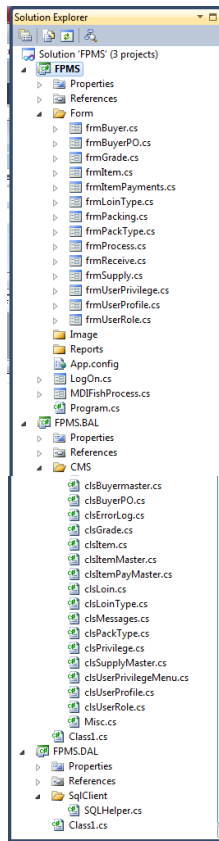


Figure 4.2

Module Structure

4.6 Major Code Segments

4.6.1 Fish packing

```
private void txtLoinNo_KeyDown(object sender, KeyEventArgs e)
{
    try
    {
        //check if enter key press
        if (e.KeyCode == Keys.Enter)
        {
            //check loin is existing no
            if (IsLoinExit())
            {
                //calculate the loin weight
                GetLoinWeight();

                //check if Box wight exceeded Max weight
                string boxWeight = txtWeight.Text.ToString();
                int weightBox =
                    Convert.ToInt16(Math.Round(Convert.ToDouble(boxWeight)
                    ));
            }
        }
    }
}
```

```
//check max box weight > 37 or not
if (weightBox > 37)
{
    if (obj_message.saveQuestion())
    {
        int selectbox = cmbBoxNo.SelectedIndex;
        cmbBoxNo.SelectedIndex = selectbox + 1;

        //validate inputs
        if (ValidateForm("Insert"))
        {
            /* check is grade match with loin Grade*/
            if (isCheckGrade())
            {
                //record insert into DB
                Insert();
            }
            else
            {
                //veiw error message

                obj_message.ErrorMessage("Sorry,LOIN
                GRADE COULD NOT MATCH WITH
                PACKING GRADE.", "Error");
            }
        }
        else {

            obj_message.ErrorMessage("Sorry,Could not
            found record.", "Error"); }
    }
}
else {
    //Validate inputs
    if (ValidateForm("Insert"))
    {
        /* check is grade match with loin Grade*/
        if (isCheckGrade())
        {
            //insert record less than 37
            Insert();
        }
        else
        {

            obj_message.ErrorMessage("Sorry,LOIN GRADE
            COULD NOT MATCH WITH PACKING GRADE.",
            "Error");
        }
    }
}
```

```

    }
    else {
        obj_message.ErrorMessage("Sorry, Could not found
record.", "Error"); }
    }
}
else
{
    obj_message.ErrorMessage("Sorry, LOIN DOES
NOT EXIT.", "Error"); }

//reset textbox
txtLoinWeight.Text = "000.00";
txtLoinNo.Text = "";
txtLoinNo.Focus();
}

}
}
catch (Exception ex)
{
    obj_error.Message = ex.Message.ToString();
    obj_error.ErrorDate =
        DateTime.Parse(DateTime.Today.ToShortDateString());
    obj_error.lastUpdateBy = "Admin";
    obj_error.Insert_ErrorLog();
}
}
}

```

4.6.2 Fish Remain Summary method

```

private void RemainSummary()
{
    /*Load Summary recors (total weight/no of pice etc)*/
    SqlDataReader obj_Reader;
    int GradeCode = 0;
    int ItemTypeCode = 0;

    //Get selected item from combobox
    clsItemMaster selectedItem = (clsItemMaster)cmbItem.SelectedItem;
    ItemTypeCode = int.Parse(selectedItem.ItemCode.ToString());

    //Data set put into the SQLDatareader
    obj_Reader = clsLoin.GetRemain_Summary(txtPONo.Text.Trim(), "All",
        GradeCode.ToString(), ItemTypeCode.ToString());

    txtRemainWeight.Text = "00";
    txtRemainBox.Text = "00";

    txtCompleteBox.Text = "00";
}

```

```

txtCompleteWeight.Text = "00";

//insert record after if data reader has records
if (obj_Reader.HasRows)
{
    //loop the data reader
    while (obj_Reader.Read())
    {
        //check total weight
        if (obj_Reader["POtotalWeight"].ToString() == "")
        {
            txtTotWeight.Text = "0";
        }
        else
        {
            txtTotWeight.Text = obj_Reader["POtotalWeight"].ToString();
        }

        txtTotLoins.Text = obj_Reader["POBOX"].ToString();

        //data view into text box nd combo box
        decimal completeweight =
            decimal.Parse(obj_Reader["TotalWeight"].ToString());
        int completebox = int.Parse(obj_Reader["NoOfBox"].ToString());

        decimal weight = decimal.Parse(txtPOWeight.Text.ToString())
        decimal.Parse(obj_Reader["TotalWeight"].ToString());
        int box = int.Parse(txtPOBox.Text.ToString())-
            int.Parse(obj_Reader["NoOfBox"].ToString());

        txtRemainWeight.Text = weight.ToString();
        txtRemainBox.Text = box.ToString();

        txtCompleteWeight.Text = completeweight.ToString();
        txtCompleteBox.Text = completebox.ToString();
    }

    //close data reader
    obj_Reader.Close();
}
}

```

4.7 Reuse Existing code

GetData_Item was a method used in clsItem class. This method was used by all forms which we retrieve item data. Used SqlDataReader as a return type and pass parameters as QC Code, Type and serial no.

```

public static SqlDataReader GetData_Item(string QCCode, string SelectType, string
Serial)
{
    try
    {
        //set parameter for common class method
        SqlParameter[] parameterSet = {new SqlParameter("@vcrQCCode",
        SqlDbType.VarChar),
        new SqlParameter("@VrcSelectType", SqlDbType.VarChar),
        new SqlParameter("@VrcSerial", SqlDbType.VarChar)};

        //set parameter value
        parameterSet[0].Value = QCCode;
        parameterSet[1].Value = SelectType;
        parameterSet[2].Value = Serial;

        SqlHelper objCls = new SqlHelper();

        //load records master data
        SqlDataReader daReader = objCls.GetDataInput("[Select_Item]",
        parameterSet);
        return daReader;

    }
    catch (Exception ex)
    {
        throw ex;
    }
}

```

This is a method which used to execute SQL Stored Procedure. Pass paramers as array and execute stored procedure for all operations in the system. SqlDataReader as return type abd pass spName and paramers for method parameters.

```

public SqlDataReader GetDataInput(string SPName, IDataParameter[] parameters)
{
    //check connection string state
    if (connection.State == ConnectionState.Closed)
    {
        //open connection
        connection.Open();
    }

    //SQL command

```



```
SqlCommand command = new SqlCommand(SPName, connection);
command.CommandType = CommandType.StoredProcedure;

//insert SQL parameters
foreach (SqlParameter parameter in parameters)
{
    command.Parameters.Add(parameter);
}

//get SQL output
SqlDataReader rdFillComdetail =
    command.ExecuteReader(CommandBehavior.CloseConnection);

//return sqldatareader
return rdFillComdetail;

//close connection
connection.Close();

//clear sql pool
SqlConnection.ClearPool(connection);

}
```

System validation message also used as common method in the class. Each forms used these messages with creating clsMessage class object.

```
public class clsMessages
{
    // Confirm Save
    public bool saveQuestion()
    {
        DialogResult ansSaveQuestion = MessageBox.Show("Do You Want to Save Changes..?", "Save..!", MessageBoxButtons.YesNo, MessageBoxIcon.Question);
        if (ansSaveQuestion == DialogResult.Yes)
        {
            return true;
        }
        else
        {
            return false;
        }
    }

    //Confirm Delete
    public bool deleteQuestion()
```

```
{
    DialogResult ansSaveQuestion = MessageBox.Show("Do You Want to Delete
Record..?", "Delete..!", MessageBoxButtons.YesNo,
MessageBoxIcon.Question);
    if (ansSaveQuestion == DialogResult.Yes)
    {
        return true;
    }
    else
    {
        return false;
    }
}

//Successfully Save
public void saveSuccess()
{
    MessageBox.Show("Successfully Saved..!", "Save..!",
    MessageBoxButtons.OK, MessageBoxIcon.Information);
}

//Successfully Delete
public void deleteSuccess()
{
    MessageBox.Show("Successfully Deleted..!", "Delete..!",
    MessageBoxButtons.OK, MessageBoxIcon.Information);
}

//Validate Record message
public void ValiateSuccess(string text, string caption)
{
    MessageBox.Show(text, caption, MessageBoxButtons.OK,
    MessageBoxIcon.Error);
}

//Successfully Save
public void updateSuccess()
{
    MessageBox.Show("Successfully Updated..!", "Update..!",
    MessageBoxButtons.OK, MessageBoxIcon.Information);
}

//Validate Record message
public void ErrorMessage(string text, string caption)
{
    MessageBox.Show(text, caption, MessageBoxButtons.OK,
    MessageBoxIcon.Error);
}
}
```

CHAPTER 05 - EVALUATION

5.1 Introduction

Evaluation during a program's implementation may examine whether the program is successfully recruiting and retaining its intended participants, using training materials that meet standards for accuracy and clarity, maintaining its projected timelines, coordinating efficiently with other on-going programs and activities, and meeting applicable legal standards. [8]

5.2 Testing Strategy

Software testing is most important phrase in the software development lifecycle. IT helps to verify the system provide expected behaviours or not. In this way we used various type of testing strategies such as unit testing (Black Box and white box) , Integration testing ,system testing and acceptance testing.

5.2.1 Unit Testing

A unit is the smallest testable part of an system like functions, classes, procedures or interfaces Done by software developers to make sure that code meets its design and requirements and behaves as expected. Black box testing is a testing the tester worried about the output of the program not about the logic. Whit Box testing based on an analysis of the internal structure of the component or system. Program is transparent box logic is seen by tester.

5.2.2 Integration Testing

After completed unit testing combine all sub modules such as fish receive module, fish processing module and fish packing module. There are various types of testing procedures such as top-down approach and bottom-up approach.

5.2.3 System Testing

After completed integrated testing, all sub modules also and main modules interconnect properly. Finally test both functional and non-functional requirements of the testing to verify meet specific requirements. System testing done by tester with all modules, hardware components and system database.

5.2.4 Acceptance Testing

Acceptance testing was done by customer. Customer test system meets their requirement properly. Acceptance testing mean not only simple errors like spelling mistake but also check with major errors like sub system crashes ,performance etc. After completed system testing, acceptance testing performed as final testing strategy. Various type of pre written scenarios, test cases used as testing materials.

5.3 Test Plan & Test Cases

Test plan is a document describing the scope, approach, resources and schedule of intended test activities. It identifies amongst others test items, the features to be tested, the testing tasks, who will do each task, degree of tester independence, the test environment, the test design techniques and entry and exit criteria to be used, and the rationale for their choice, and any risks requiring contingency planning. It is a record of the test planning process.[9]

Test case is an essential part of the testing procedure and it help to manage testing process. Once the system development is being completed, design test plan to test system functionally. The main purpose test case is to ensure whether the system Passes or Fails of its functionality. Figure Table 5.1 shows Test Plan for the system. Please refer Appendix E for system test cases.

Module Name	Function name	Tester	Test Priority
User Login Module	Login page open properly	Geethani	High
	Logging details Valied	Geethani	High
	Invalid logging details	Geethani	High
	Error message display	Geethani	High
User Management Module	Insert system users	Geethani	High
	Update system users	Geethani	High
	Delete system users	Geethani	High
	Search system users	Geethani	High
	Confirm deletion of system users	Geethani	low

	Manage User Rights	Geethani	Medium
	User login validation	Geethani	High
	Update existing system users	Geethani	High
Master data module	Insert master data	Geethani	High
	Update master data	Geethani	High
	Delete master Details	Geethani	High
	Load existing details with grid view click	Geethani	High
	Confirm delete cancelation	Geethani	High
	Validate message	Geethani	High
	Error message	Geethani	High
Fish Receiving module	Insert fish receive details	Geethani	High
	Update fish receive details	Geethani	High
	Delete fish receive details	Geethani	High
	Search fish receive details	Geethani	High
	View fish receive details	Geethani	High
	Search with current date	Geethani	High
	Confirm deletion of data	Geethani	High
Fish Processing module	Insert fish process details	Geethani	High
	Update fish process details	Geethani	High
	Delete fish process details	Geethani	High
	Search fish process details	Geethani	High
	View fish process details	Geethani	High
	Confirm deletion of data	Geethani	High
Fish Packing module	Search PO details	Geethani	High
	Reload existing records	Geethani	High
	Update fish packing	Geethani	High
	Delete confirmation	Geethani	High

Report generation module	Generate daily receive, packing and processing report	Geethani	High
	Generate monthly report	Geethani	High

Table 5.1 Test Plan for FPMS

5.4 User Evaluation Summary

System user interaction is captured by referring to the quality of a user's experience when interacting with system. It also referred how satisfied users are with this system. To gather this information, from system users by providing User Evaluation sheet.[10] A summary of the evaluation sheet shown below Table 5.2. The user evaluation forms shows in at given in the annex 6.

	Evaluation Criteria	Poor	Average	Good	Excellent
01	Is the user interface easy to understand?			1	3
02	Security features of the System		1	3	
03	User friendliness of the system by providing necessary information about error messages, transaction successfully messages etc.			2	2
04	System navigation and tab control			1	3
05	Barcode label printing process and barcode scanning process			2	2
06	System Response Time		1	3	
07	System Report generation facility			1	3
08	Easy to learn system			2	2
09	Are you satisfied with the developed new Fish process management system?			3	1
10	Comment				

Table 5.2 User Evaluation Summary

CHAPTER 06 – CONCLUSION

6.1 Introduction

In this chapter discussed about critical evaluation of the system and suggestions for any future work. Also discussed whether the project objectives satisfied or not. Problem uncounted and solution found also discussed. Finally lesson Learn from this project are presented.

6.2 Critical Appraisal

Sri Lanka has a well-established fishery industry. The total production of sea food in Sri Lanka was around 400,000 equating to 171 million USD in the same year. There are around 14 deep sea fishing harbours in Sri Lanka. The main product categories are Tuna, Sword tail, Marlin and other fish species exported in fresh, frozen filleted form. Tess Agro (PLC) is a leading exporter of fish. - Seek to implement a system to improve the control of their fish receive, Production and Packing Operations. As a result, propose an integrated solution that would meet the unique requirement of TESS. This document contains the System requirement specification for the TESS Fishery System.

We are accepting proposal to design, Develop and Implement the system that would suit their requirements and gives maximum benefit at lowest cost, within short duration. We will assume full responsibility for system content maintenance and administration. In addition design a user friendly system with an intuitive interface.

Initially Fish Process management System analysing and feasibility studying were done. In the requirement gathering phase fact gathering techniques were very important to gain a complete picture of the system. Many techniques were used to gather facts such as interview, record view, and observation and analysed existing system. During the analysing process system solutions compared functional and non-functional requirements. Finally, the best solution was selected with satisfied all the requirements.

RUP (Rational unified Process) model has been choose for develop proposed web base system. Because RUP is representative of the newer iterative and incremental methods, forming the basis of rapid development approaches such as Agile Development. It is defined and documented using UML. And it is adoptable process

framework; elements of process can be changed according to user need. UML diagrams are provided to design an accurate design of the project. In addition, user interface was designed and test cases were developed in this stage of the project. The data that are now kept in large physical files will be stored in the centralized database of the system. That will reduce the damages that can be happened to the data unexpectedly.

The total project conclusion time was extended than proposed project time, because new functionalities and features were added into the system with customer request. Finally I was designed and developed a system with user satisfaction. By comparing system feedbacks was 100% positive with existing system. Therefor system was successfully completed with reached customer satisfaction.

6.3 Lessons Learn

There were lots of lessons that we learned from the time developing this project. Learn to work according to a time schedule and how to manage the time to take the maximum benefit. Most important this project was developed as real world application for fish process management system.

Especially in software programing. Very hard to estimate how much time will take even if everything go smoothly. It is quite common to run in to unexpected problems. Debugging the code can be help when figuring out what it does. Both methods help to understand the code error.

Real world software development is great experience to practise theoretical programing knowledge. It is great deal with customer to develop project within time schedule. Requirement gathering is how much important to gain proper understand about the project scope and functionality.

One of the great things with software development, if you are working with difficult problem try to think when you are sleeping, sure the best solution can see on next day.

It was an extraordinary knowledge was accumulated while developing the system. There were lot of experiments to get on to a better out come and those things impacted to collect new things in to my knowledge.

6.4 Future Work

In future, proposed system can be improved by adding more features. Fish Process Management system was developed to input fish weight manually into the system and process data.

- Capture fish weight automatically using digital scale

Future can enhance system to input fish weight into system automatically with using digital scale.

- More charts for easy capture reports

More illustrative charts, graphs can be implemented as report generation mechanism to easily capture reservation details.

- Online MIS module and online payment module

Management reports and PO processing can be online using web application. Fish supplier payment and fish buyer payments.

The inclusion of these features would make software highly demand in live environment.

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APPENDIX-A System Documentation

Install Microsoft SQL Server 2005

- Run setup MS SQL Server 2005, double click on the setup.exe to start product installation. Figure A.1 shows SQL product installation interface.

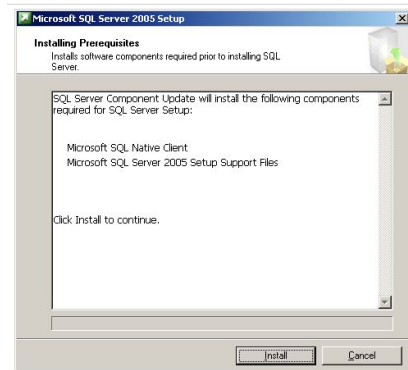


Figure A.1 SQL Product Installation

- Then agree to license agreement and click Next button to install MS SQL prerequisites
- Then system check configuration and display configuration message. Figure A.2 display SQL system configuration check details.

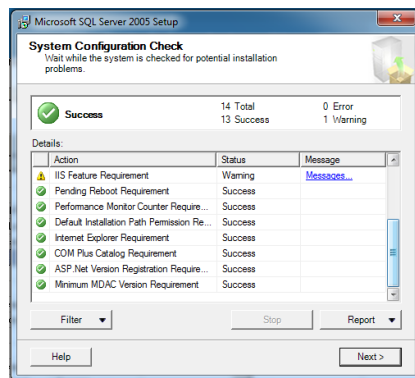


Figure A.2 SQL Configuration message

- Then fill registration details and next to select instance name. Figure A.3 shows how SQL instance name form looks like.

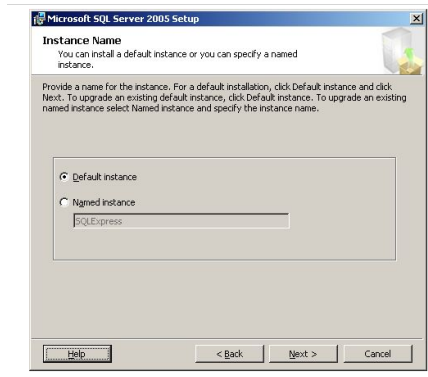


Figure A.3 SQL Instance Name

- Then click “Next ” button and set up service account details, insert username and password. Figure A.4 SQL service accounts interface.

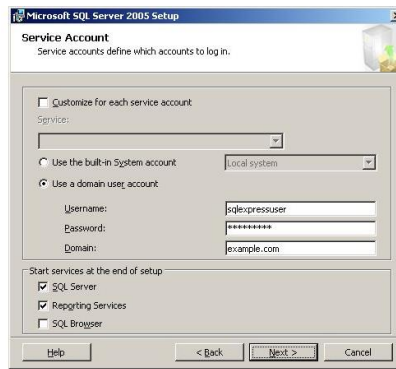


Figure A.4 SQL Service Accounts

- Next window provide options to select authentication mode. Below figure A.5 shows SQL authentication window.

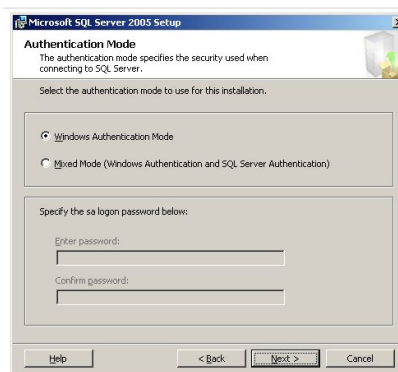


Figure A.5 SQL Authentication Mode

- Click “Next” and Installation will start.
- Installation will complete within 10-30 minutes. Click “Finish” to complete the installation

Restore Database

- After successfully installed Database management system restore DBTess database . Figure A.6 show Database create window.

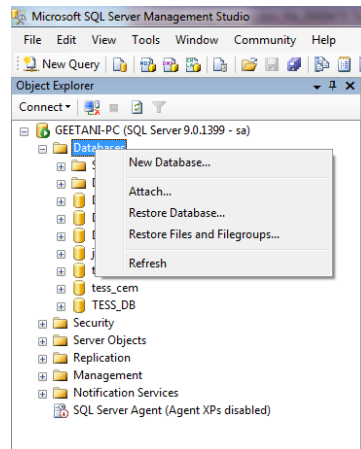


Figure A.6 Create Database

- Then restore database dialog box will appear. Enter database name and select database backup. Figure A.7 select backup file window.

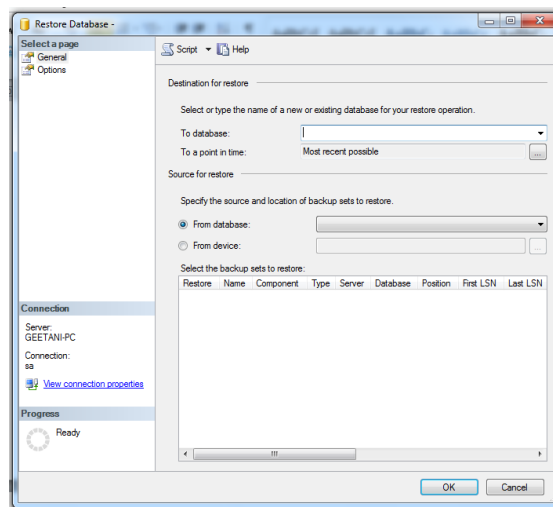


Figure A.7 Select backup File

- Select from device option and click “Add” button to attach database. Figure A.8 shows insert backup file window.

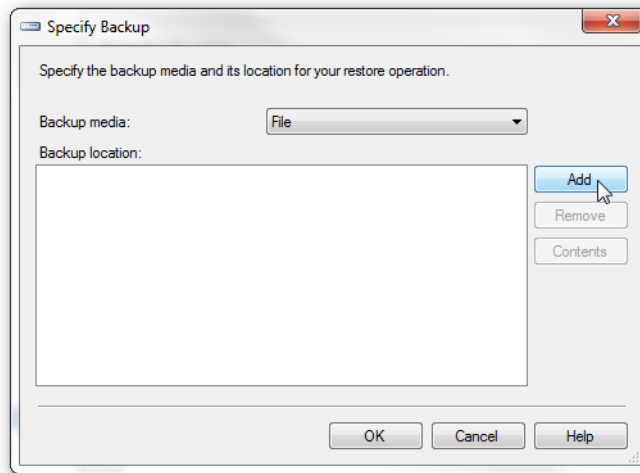


Figure A.8 Add backup

- After successfully installed Database message will display. The click OK to confirm. Figure A.9 shows successfully completed message.

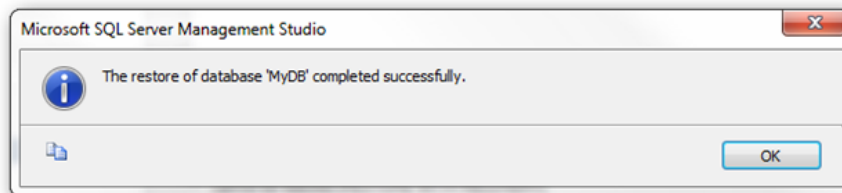


Figure A.9 Successfully Completed Message

Install Fish Process Managements System

- Double click on FPMS_V01.msi file to install set up. Installer will install system into computer. Figure A.10 shows setup file.

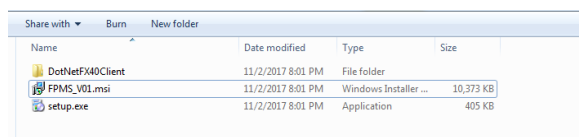


Figure A.10 FPMS .msi file

- TPMS setup wizard will display. Figure A.11 shows setup wizard.

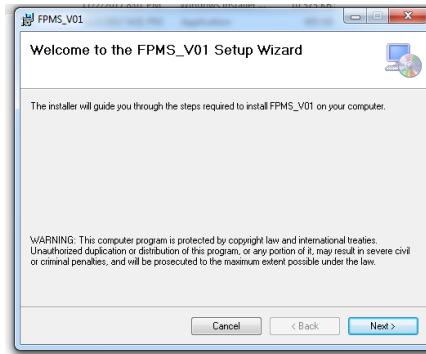


Figure A.11 Setup Wizard

- Select the folder destination and click Next button. Figure A.12 view destination folder window.

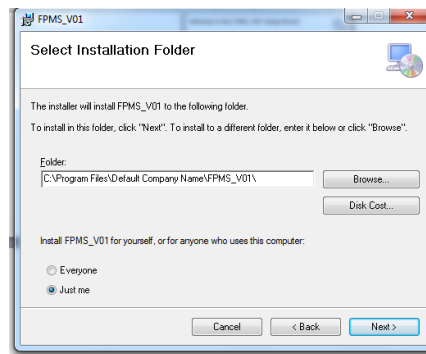


Figure A.12 Select Installation folder

- Confirm Installation and click Next. Figure A.13 shows confirm installation window.

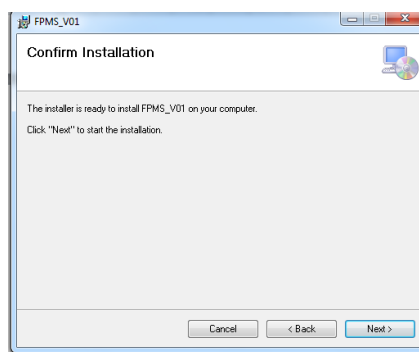


Figure A.13 Confirm Installation

- Wait few seconds setup is being to install .Figure A.14 shows Insatation progress window.

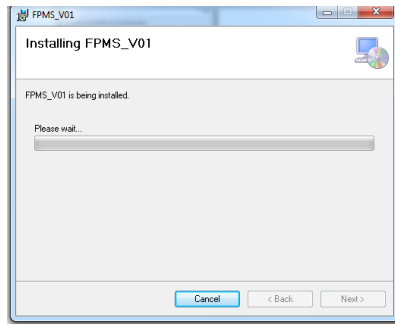


Figure A.14 Installation Progress wizard

- Click close button, Installation completed. Figure A.15 shows installation complete wizard.

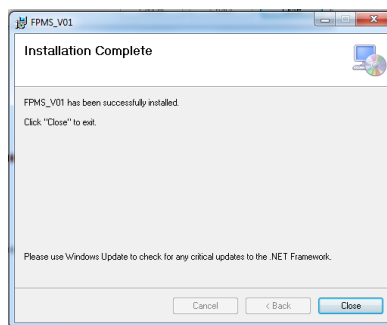


Figure A.15 Installation complete wizard

- Once the executable is installed shortcut icon created on the desktop. DoubleClick the icon on the desktop

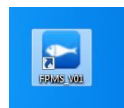


Figure A.16 Setup EXE file

APPENDIX-B Design Documentation

In chapter 3 discussed detailed design approach with case diagram. Used case diagrams categorized into five separate modules for easy and clear understand. Fish receive module, fish processing module, fish packing module, Report generation module and user management module.

- **Use case diagram for Fish Receive Module**

Figure B.1 shows use case diagram for fish receive module



Figure B.1 Use case diagram for Fish Receive Module

Use case name	Fish Receive Module
Actors	Admin/Production and supplier
Description	Supplier can supply fish into the factory and production staff receives row fish, check weight, check quality before store into cool room.
Pre-conditions	
User log into the system and configure scale.	
Flow of events	
Set Master data (Supplier name, Item name etc)	
Check fish weight	
Check fish adjustment	

Check histamine
Generate Fish QC No
Generate Supplier report
Fish send to process
Post Conditions
Fish receive details should store in the system database for report generation

Table B.1 Use Case Description for fish receive module

• **Use case diagram for Fish Process Module**

Figure B.2 shows use case diagram for fish process module



Figure B.2 Use case diagram for Fish Process Module

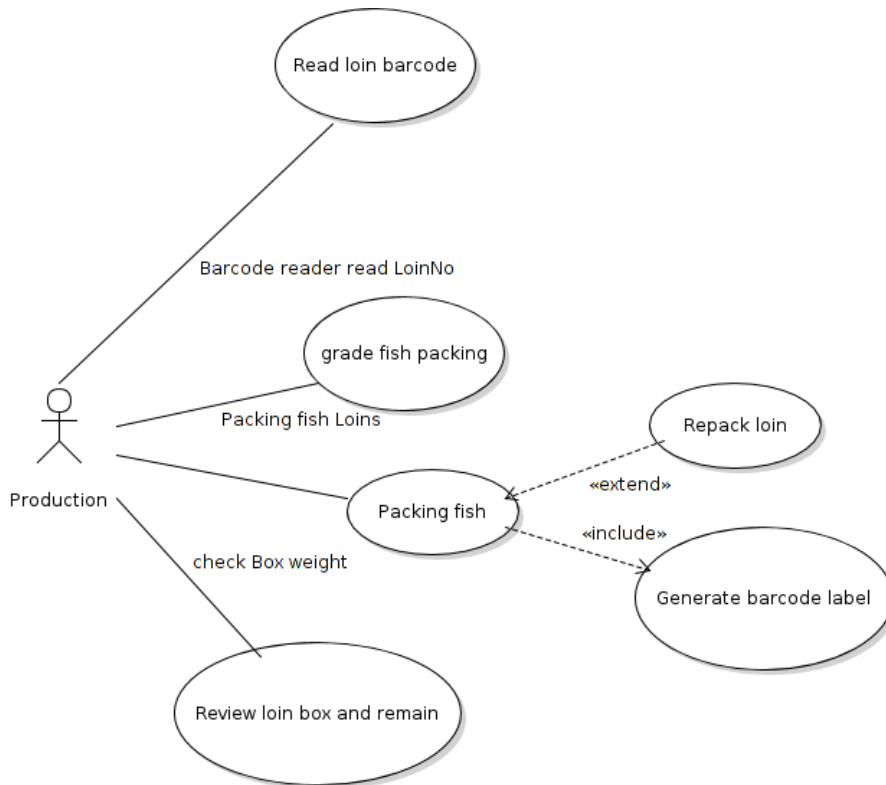
Use case name	Fish Process Module
Actors	Admin/Production
Description	Fish process module help to process fish loins. After receive fish loins into process table check weight, quality and loin grade. Then process loin

	and generate barcode label for each fish loins.
Pre-conditions	
User log into the system and configure scale. And barcode printer.	
Flow of events	
Set Master data (Item name, grade, PO etc.)	
Check fish weight	
Check fish grade	
Check histamine	
Generate Fish Loin No	
Print Loin barcode label	
Post Conditions	
Fish process details should store in the system database for report generation	

Table B.2 Use Case Description for fish process module

• **Use case diagram for Fish Packing Module**

Figure B.3 shows use case diagram for fish packing module



FigureB.3 Use case diagram for Fish Packing Module

Use case name	Fish Packing Module
Actors	Production

Description	Help to pack fish loins into boxes. Fresh fish products are pack in the boxes with ice. Verify loin weight and print Box label with barcode.
Pre-conditions	
User log into the system and configure scale and printer.	
Flow of events	
Set Master data (Type, weight, grade etc.)	
Read barcode label	
Check fish grade	
Check histamine	
Check fish weight	
Print box barcode label	
Post Conditions	
Fish packing details should store in the system database for report generation	

Table B.3 Use Case Description for fish packing module

• **Use case diagram for Report Generation Module**

Figure B.4 shows use case diagram for report generation module

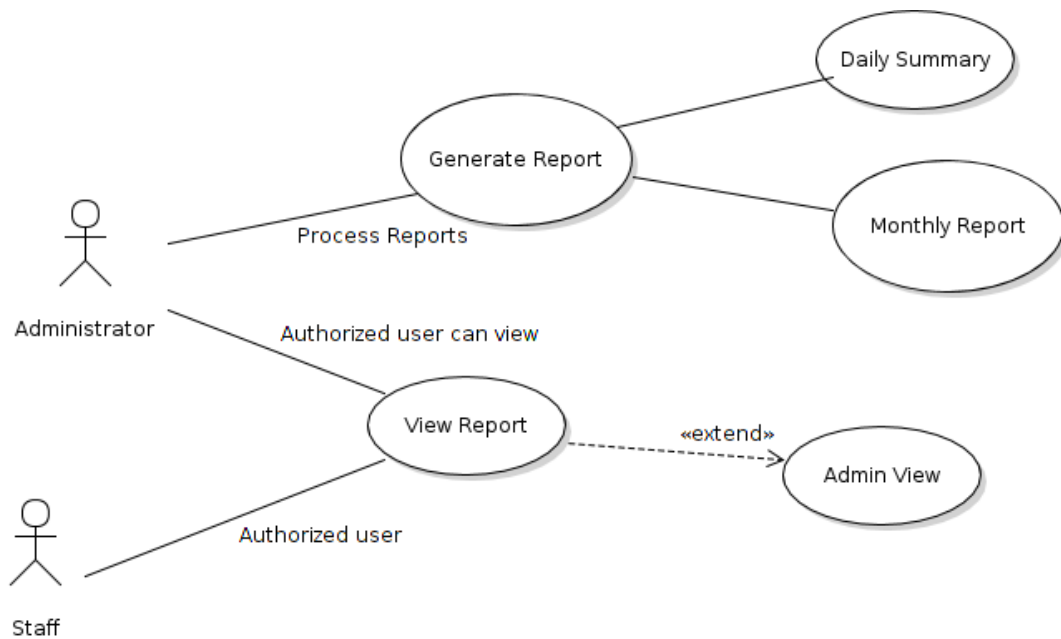


Figure B.4 Use case diagram for Report Generation Module

Use case name	Management Report Generation
Actors	System user / Administrator
Description	System user can generate management reports
Pre-conditions	

System user log into the system
Flow of events
Select report type
Select the date/month which user want to generate reports
Generate reports
Post Conditions
View reports

Table B.4 Use Case Description for Report generation module

• Use case diagram for User Management Module

Figure B.5 shows use case diagram for user management module

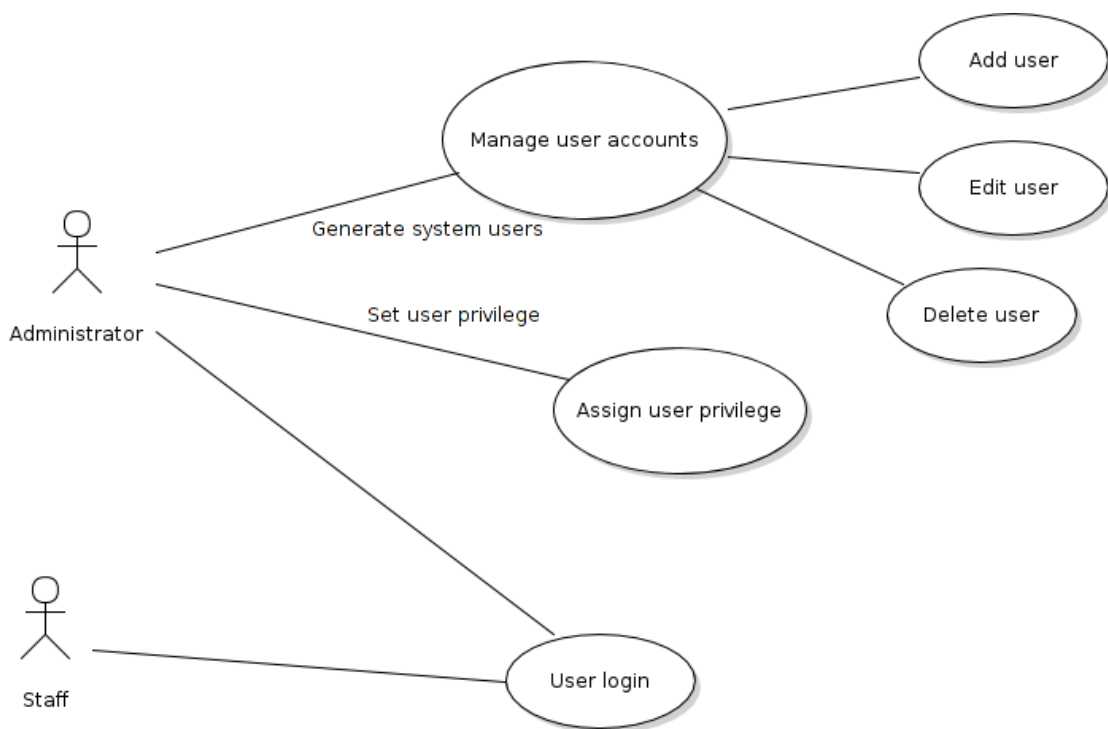


Figure B.5 Use case diagram for User Management Module

Use case name	Manage User
Actors	Administrator / Staff
Description	Administrator can manage users
Pre-conditions	
	Existing user or new user
	Insert user details and save new user
Flow of events	
	Check is existing user or not
	Insert new user
	Check user privilege and set user privilege
	Display success message
Post Conditions	

Generate new user and saved into the database

Table B.5 Use Case Description for User Management Module

Architectural Diagram (Project Modeling)

Figure B.1 shows architectural diagram for Fish Process Management system.

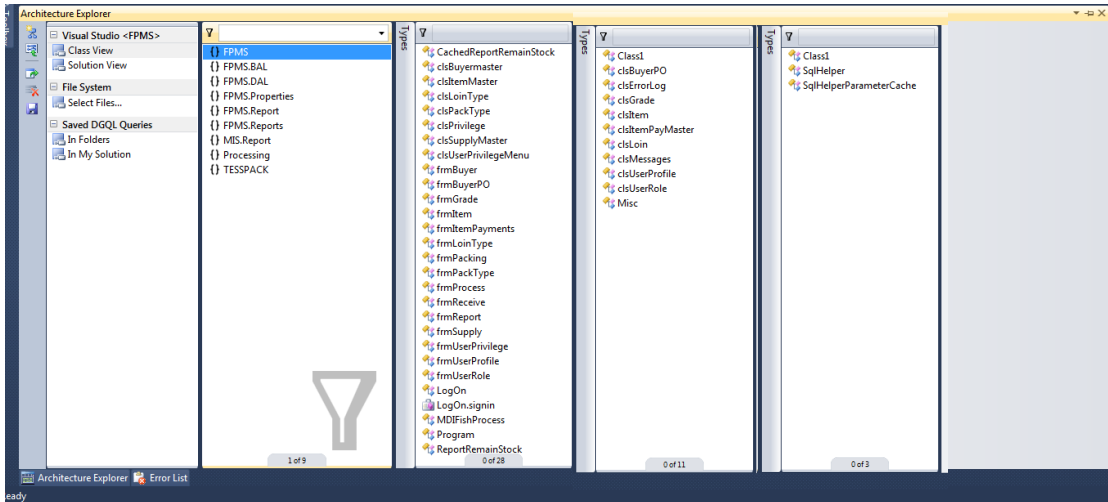


Figure B.6 Architectural Diagram

APPENDIX-C User Documentation

• Install Fish Process Management System

Once the executable is installed, double click on the FPMS_V01 shortcut icon in the desktop. Figure C.1 shows FPMD shortcut icon.



Figure C.1 FPMS shortcut icon

• Login Form

After setup the Fish Process Management System, user can execute the system. When you double click the shortcut icon user can log into the system. When user input username and password system checks whether the login details are valid or not. Authorized user have facilitate to log into the system using their login details. If you have forgotten your password please contact your system administrator and regenerate your user name and password. Figure C.2 shows Login form for the system.

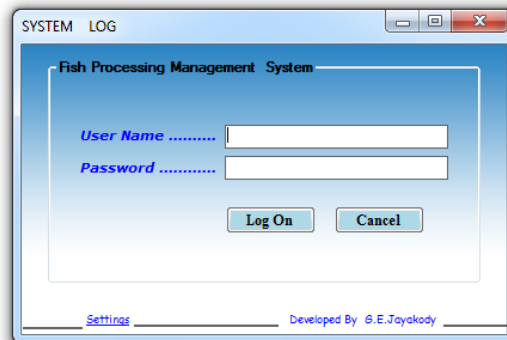


Figure C.1 System Login Form

• Main Form

Figure C.3 shows system main form and all system functions and sub functions can be viewed in the main form. Authorized persons can access each forms. When you have log in successfully the screen will change to reflect the information below.

When you have finished your session, Please remember to sign out. Because your system will stay signed in until you,

- Quite your system
- Shut down your computer or,

- Sign out

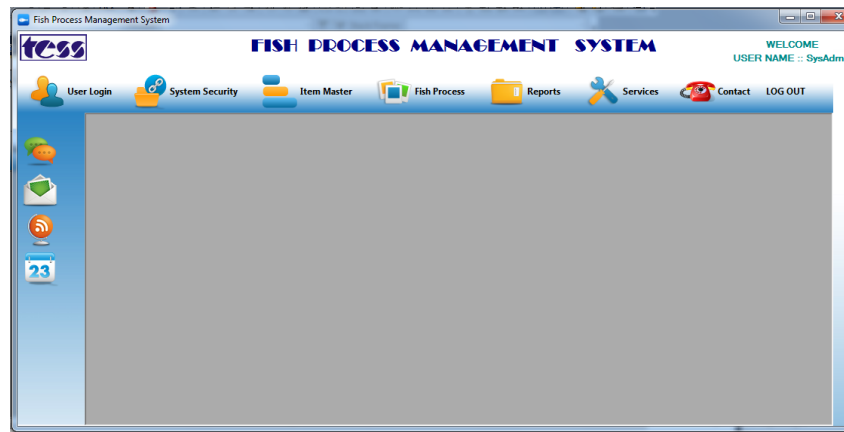


Figure C.3 Main Form

- **Navigation Tab**

Navigation tabs help to navigate between system forms, this system has six main navigations. Figure C.4 shows navigation form.

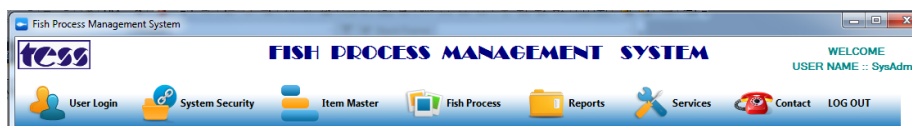


Figure C.4 Navigation Tab

- **Navigation Detail**

Six main navigation has sub navigations also. Figure C.5 shows navigation detail window.

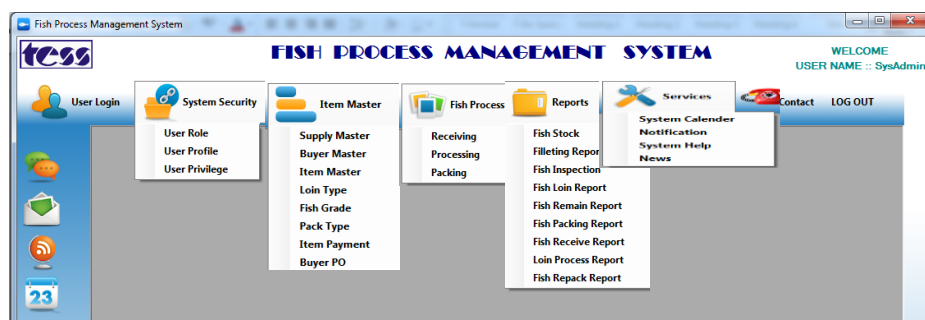


Figure C.5 Navigation Detail

- **User Role**

Each user in the system has user name with User Role. User role identifies the individual and gives them authorization to data view and other specific operations.

User role can be share, this facilitate the management of users, privilege as well as data security. Same user role can be used for multiple operations. Switch to User Role sub menu. There are several possible settings for each user. Such as Insert, Update, Delete and search etc. Figure C.6 shows user role form.

User Role ID	User Role	Description
Account1	Account1	Account Section Head1
1	Admin	Admin Full Access
7	DB Access	DB Access
6	IT	IT
5	User 1	User New

Figure C.6 User Role Form

• User Profile

The user profile screen allows you to add new user into system. After configured user role Switch to User Profile sub menu. There are several possible settings for each user. Creating new user for an existing operation is easier than edit existing operation, but must be an administrative user for the operation. Each user need a user ID .user ID identifies individual and gives them to authorization to Insert, Edit Delete and view data. User ID should not be share, each user should have their own user ID .The Same user ID can be used for multiple operations. Figure C.7 shows user profile window.

User Role	User Name	E-mail	Created By
Account1	sa	sa	sa
Account1	SysAdmin	sysadmin@	Geethani
Admin	geethani	sa	warren

Figure C.7 User Profile

• User Privilege

Each user role can assign user privileges. User role identified the individual and gives them authorization for specific operations. Only administrative user may authorize

other users for operations. If you do not have administrative privileges, firstly you have to choose **System Security** menu, Then Switch to **User Privilege** sub menu. When you select appropriate user role, authorized operations are listed. If operation name is not checked, then you do not have privilege for those operations. If user role were not a limited user, they would be able to view all reports and information .By making user role do not privilege for some sectors, system not allow viewing all records. Figure C.8 shows user privilege interface.

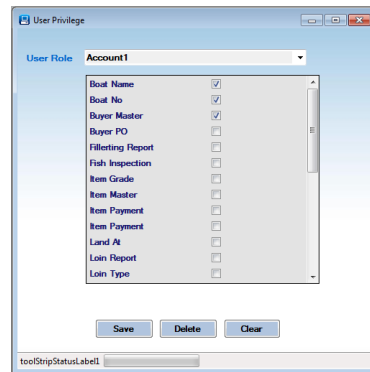


Figure C.8 User Privilege Form

- **Master Module**

Master module help to install system master data. Officially identified system master will be stored this section. This is basic module which needed to input adequate data into the system. Firstly you have to choose main structure menu, Then Switch to sub menu. When first opened, list will show all records in master file. System will be able to insert new record using the new button. Yyou will be able to edit and delete record. Before delete record, make sure record not affect other transactions. Master module in the fish process management system help to input main master details such as supply master data, buyer master data, and Item master data, loin master data, fish grade master , packing type master data and Item payment details.

- **Supply Master**

See figure C.9 for the interface of supplier details.

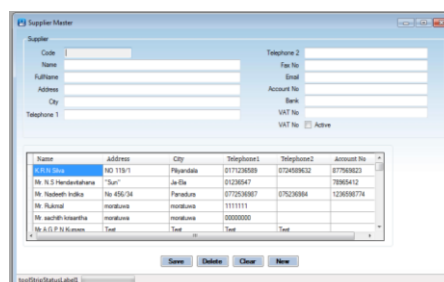


Figure C.9 Supplier Master Form

- **Buyer Master**

See figure C.10 for the interface of buyer details.

Buyer Name	Address	City	Telephone1
ASTCOM	SKDNHGFKDFHKG	KDISHGUFHTH	646546561
Boston	oo	oo	oo
Dynamic Ocean Pte Ltd	541 Lor 23 Geylang	Singapore 38	oo
E. Geiger Germany	E. Geiger Germany	E. Geiger Ge	E. Geiger Ge
ERICH GEIGER e.k. fish & c...	N/A	N/A	N/A

Figure C.10 Buyer master Form

- **Item Master**

See figure C.11 for the interface of Item master details.

Item Code	Item Name	Sname
6	Grouper	Grouper
6	Red Snapper	Red Snapper
3	Flourfish	Ephraepholus spp
2	Sword	Xiphus gladius
1	Tuna	Thunnus spp.
4	TunaB	Thunnus spp Special

Figure C.11 Item master Form

- **Loin Master**

See figure C.12 for the interface of Loin master details.

Type ID	Type Name
3	dddd
2	Loins
1	Whole fish

Figure C.12 Loin Master Form

- **Fish Grade**

See figure C.13 for the interface of fish grade details.

The screenshot shows a window titled 'Grade'. It has two input fields: 'Grade ID' and 'Grade Name'. Below them is a table with two columns: 'Grade ID' and 'Grade Name'. The table contains the following data:

Grade ID	Grade Name
3	A
4	B
5	C
10	lg
9	Grouper
1	H & G
7	Parrot

At the bottom of the window are buttons for 'Save', 'Delete', 'Clear', and 'New'. There is also an 'Admin' field at the very bottom.

Figure C.13 Fish Grade Form

● **Packing type**

See figure C.14 for the interface of packing type details.

The screenshot shows a window titled 'Packing Type'. It has two input fields: 'Packing ID' and 'Name'. Below them is a table with two columns: 'Packing ID' and 'Packing Name'. The table contains the following data:

Packing ID	Packing Name
2	Packed in master bag
1	Vacuum Packed

At the bottom of the window are buttons for 'Save', 'Delete', 'Clear', and 'New'. There is also an 'Admin' field at the very bottom.

Figure C.14 Packing Type Form

● **Item payment**

See figure C.15 for the interface of item payment details.

The screenshot shows a window titled 'ITEM PAYMENTS'. It has several search filters: 'Date' (Friday, April 18, 2014), 'Supplier', 'GRN No', 'Item', 'Lorry No', 'Fish Type', and 'Type'. There are 'Search', 'Reset', and 'Delete' buttons. Below the filters are input fields for 'H/G', 'S', 'A', 'B', and 'C', with 'Save' and 'Save All' buttons. At the bottom is a table with the following data:

Supplier	GRN	Item	LorryNo	H/G	S	A	B	C	Type	YFBE
Mr.E.P.Deepal P...	140418-2	Tuna	LB-7030	10	10	10	10	10	W	YF
Mr.E.P.Deepal P...	140418-2	Tuna	LB-7030	20	20	20	20	20	G	YF
Mr.E.P.Deepal P...	140418-2	Grouper	LB-7030	20	20	20	20	20	G	YF
Mr.E.P.Deepal P...	140418-2	Red Snap...	LB-7030	20	20	20	20	20	G	YF
Mr.E.P.Deepal P...	140418-2	Reefish	LB-7030	20	20	20	20	20	G	YF
Mr.E.P.Deepal P...	140418-2	Sword	LB-7030	20	20	20	20	20	G	YF
Mr.E.P.Deepal P...	140418-2	TunaB	LB-7030	20	20	20	20	20	G	YF

Figure C.15 Item payment Form

● Buyer PO

This screen helps to insert buyer purchase order details into the system. Insert more than one PO for each buyer. Using add button can insert each record into the system and finally save all records when you click Insert button. See figure C.16 for the interface of buyer PO details.

The screenshot shows a web-based form titled "Buyer PO". At the top, there are several input fields: "PO Number" (with a date format hint "(DD/MM/YY/D1)"), "Buyer", "Importer", "Process Date" (set to "Friday, November 03, 2017"), "Packing Date" (set to "Friday, November 03, 2017"), "Expiry Date" (set to "Friday, November 03, 2017"), and "QA Number". Below these are dropdown menus for "Item", "Grade", "Loin Type", and "Pack Type". An "Add" button is located to the right of the "Pack Type" dropdown. A table with the following columns is visible: "Item", "Loin Type", "Packing Type", "Grade", "No Of Box", and "Weight". Below the table, there is a "Date" dropdown set to "Friday, November 03, 2017" and a grid with columns "PO Number", "Buyer Name", "Process Date", and "Packing Date". At the bottom right, there are "Save", "Delete", and "Clear" buttons. The user name "Admin" is visible in the bottom left corner.

Figure C.16 Buyer PO Form

● Fish Receive Module

Fish processing plan can't succeed unless it can get fish to process. Overall fish receive description section of this document gives an overview of the receive functionality of the product. It describes the informal requirements and the technical requirements specification. System capture fish weight & Fish Id using scale and transfer data into server Database. In the receiving process, you should review potential supplier of each type of fish, Fish quality, Volume they can supply, No of pieces & weight, Summary sheet (Reject/Color reject/histamine).

New Supplier will be required to register to the system with complete supplier form, which is in the system as well as Fish Type, Category, Grade etc. If you select current date system automatically select fish receive details in the grid view. See figure C.17 for the fish receive summary.

TESS Receiving		Calendar		Re Received						
Current Date: Monday, April 28, 2014										
QC Code	Weight	Adj.	Status	Grade	Item	Type	YF/BE	Hold	Reject	Delete
14118021	46.8	0	RECEIVED	A	Tuna	W	YF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14118022	27.2	0	RECEIVED	A	Tuna	W	YF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14118023	35.3	0	RECEIVED	A	Tuna	W	YF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14118024	52.2	0	RECEIVED	A	Tuna	W	YF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14118025	58	0	RECEIVED	A	Tuna	W	YF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14118026	46	0	RECEIVED	S	Tuna	W	YF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14118027	71.8	0	RECEIVED	S	Tuna	W	YF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14118028	44.8	0	RECEIVED	A	Tuna	W	YF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14118029	70.4	0	RECEIVED	A	Tuna	W	YF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14118030	35.9	0	RECEIVED	A	Tuna	W	YF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

No of Pec: 000 Tot. W(kg) 0000.00 PRINT SUPPLIER GRN

HOLD FISH REJECT FISH DELETE FISH

Figure C.17 Fish Receive Summary

When you enter fish loin weight into red color box & after few seconds it transfer into blue box as actual weight. The select fish grade, Serial Code, fish type and other master details to receive fish. See figure C.18 for the interface of fish receive master details.

Summary	
000.00	000.00
Serial No	<input type="text"/>
QC code	17 307 <input type="text"/>
Type	<input checked="" type="checkbox"/> YF <input type="checkbox"/> BE <input type="checkbox"/> Other
Fish Type	<input checked="" type="radio"/> W <input type="radio"/> H <input type="radio"/> G
Grade	<input checked="" type="radio"/> B <input type="radio"/> H/G <input type="radio"/> S <input type="radio"/> A <input type="radio"/> C <input type="radio"/> Other
Master Data	
Item	<input type="text"/>
Supplier	<input type="text"/>
Lorry No	<input type="text"/> <input type="checkbox"/> Save
Temperature	<input type="text"/> Batch No <input type="text"/>
ST. Keeper	<input type="text"/>
QC Officer	<input type="text"/>

Figure C.18 Fish Receive Master Details

● Fish Re-Receive Module

Re-Receive is very important process for this operation, once you are ready to start process the received fish, a lot of things can go wrong. Sometimes order cancellation, sometimes critical equipment's brakes, transportations and marketing arrangements don't work out the way you expected. For these and many other reasons Re-receiving

is very important process. System facilitates to receive fish with new qc code. See figure C.19 for the interface of fish re-received.

Figure C.19 Re-Received Form

- **Fish summary module**

In this module system facilitate to view received fish summary details with enter date and click search button. You can view fish weight and no of paces for each grade. See figure C.20 for the interface of fish summary details.

Figure C.20 Fish Summary Detail

● **Fish Process Module**

Fish process module help to process loin fish. Before start process loin should select buyer name ,process date ,packing date, expire date and other primary details. If you select Buyer Name & PO Date system automatically select PO Details in the below PO Detail Box. See figure C.21 for the interface for fish process PO details.

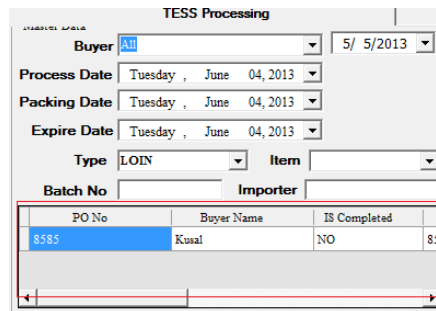


Figure C.21 Fish Process PO Detail

When you select PO No in the PO table .system automatically select Process Date, Packing Date and Expire Date, Importer, Batch No, Grade for Loin Label. See figure C.22 for the interface of PO details and Barcode label.

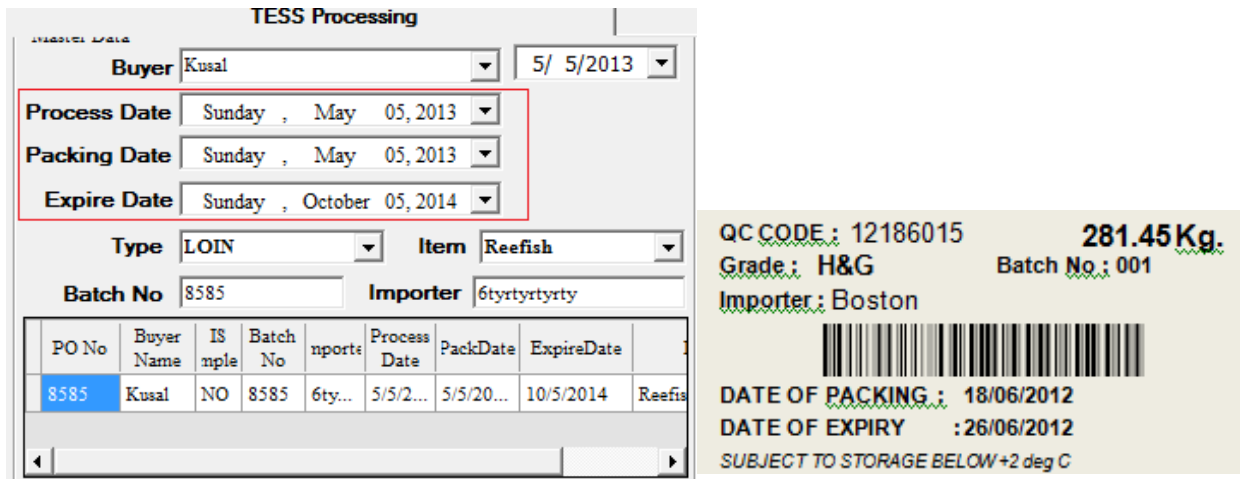


Figure C.22 Fish Process PO Detail and Barcode Label

When double click on PONo its automatically select into PO BOX. Enter valid date. This is the date you entered for QC Code. See figure C.23 for the interface for QC code generator.

Figure C.23 Fish Process QCCode generator

- **LOIN Weight**

When you enter fish loin weight into red color box & after few seconds it transfer into blue box. If you want to any adjustment in the fish weight set the adjustment box. If adjustment is Zero system calculate stable weight without adjustment weight. Refresh button to clear weight. See figure C.24 for the interface of fish loin weight.

Figure C.24 Loin weight

Enter last three digits of QC Code & press (ENTER) ↵ then records save successfully.

QC	Loin	Wet.	Status	Repack	Re Wet	Type	Rem.	REJ.	DEL.	UPD.
14115187	4-25-187-02	2.28	PACKED	NO	0.00	A				Edit
14115187	4-25-187-03	3.45	PACKED	NO	0.00	A				Edit
14115187	4-25-187-04	3.40	PACKED	NO	0.00	A				Edit
14115188	4-25-188-01	3.78	PACKED	NO	0.00	A				Edit
14115189	4-25-189-05	3.12	PACKED	NO	0.00	A				Edit
14115189	4-25-189-06	3.02	PACKED	NO	0.00	A				Edit
14115190	4-25-190-01	2.50	PACKED	NO	0.00	A				Edit
14115190	4-25-190-02	2.50	PACKED	NO	0.00	A				Edit
14115190	4-25-190-03	3.29	PACKED	NO	0.00	A				Edit
14115190	4-25-190-04	3.18	PACKED	NO	0.00	A				Edit
14115191	4-25-191-06	2.80	PACKED	NO	0.00	A				Edit
14115191	4-25-191-07	3.61	PACKED	NO	0.00	A				Edit

Figure C.25 Fish loin process Form

- **Re-process**

Re-Process is very important process for this operation, once you are ready to start process the received fish, a lot of things can go wrong. Sometimes order cancellation, sometimes critical equipment's brakes, transportations and marketing arrangements don't work out the way you expected. For these and many other reasons Re-processing is very important process. System facilitate to process fish with new loin code and print new loin barcode. You should enter process date and search to view existing list. See figure C.26 for the interface for loin reprocess form.

Figure C.26 Loin Reprocess Form

- **Fish Packing Module**

Fish packing module help to pack fish loins into boxes. Fresh fish products are pack in the boxes with ice. Frozen products can be packed in number of ways. In this module verify loin weight and print Box label with barcode. Different buyers will have different requirements and expectations for quality, packing, volume, and timing of packing, price and other factors. Therefore system should full fill their requirements. Here are some of information system should consider for this module,• Buyer, Buyer Order, Recording Data, Packing Date, Use by date, No of boxes remain ,Average no of loins ,Box Grade. Tess Packing module facility to,

- Select relevant buyer order for shipment.
- System Capture loin weight
- System read loin code
- Facility to set up use by date, recording date

- Review no of average loins for each box /Box grade / Remain boxes
- System facilitate to reject loins
- Generate summary report

If you select date and buyer name system automatically select fish PO details in the grid view. See figure C.27 for the interface of fish packing module.

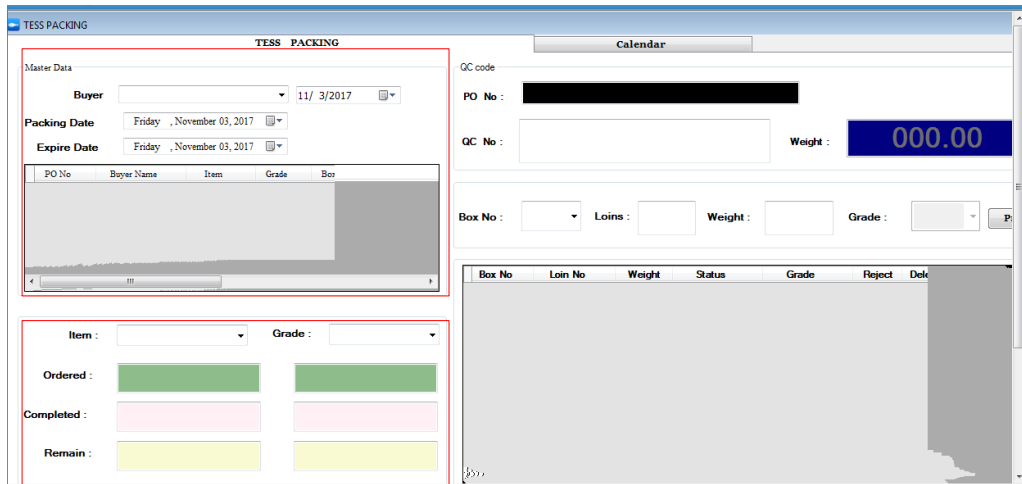


Figure C.27 Fish Packing Module

Packing module facilitate to view packing fish summary details. You can view fish weight and no of paces for each range. See figure C.28 for the interface of fish packing summary.

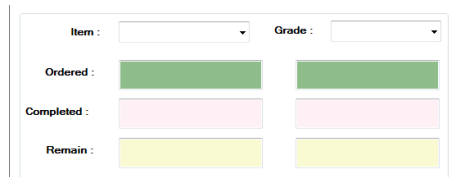


Figure C.28 Fish Packing Summary

APPENDIX-D Management Reports

Management reports are listed and available from the reports sub menu. Accessible users can have facility to access reports at any given time period. Using this module try to show detail data with current status and historical data. When user log into the system, facilitate to view report only authorized users. Super admin can restricted or facilitate to data view with changing User Role. Each report have facility to search reports with using searching criteria. See figure D.1 for the interface of Report searching criteria.

Searching Criteria

Figure D.1 Report Searching Criteria

- **Supplier summary report**

System shows summary report for each supplier with below records. Supplier name, receive weight, reject weight, no of pieces and receive date. Further total fish weight for each supplier display in the bottom of the report. See figure D.2 for the supply summary report.

Receive Date	Supplier Name	Total Qty.	Total Weight	Reject Qty	Reject Weight	Recovery Weight
24-Apr-2013	Mr. Rukma	28	1,113.23	2	66.70	84.01%
		28	1,113.26	2	66.70	
25-Apr-2013	Mr. D. M. Roy Appaham	9	446.50	0	0.00	100.00%
		9	446.50	0	0.00	
26-Apr-2013	Mr. D. M. Roy Appaham	9	401.10	1	62.70	84.37%
		6	247.50	0	0.00	100.00%
	15	648.60	1	62.70		
27-Apr-2013	Mr. D. M. Roy Appaham	7	386.80	0	0.00	100.00%
		16	827.40	0	0.00	100.00%
	23	914.20	0	0.00		

Figure D.2 Supplier Summary Report

• **Loin Inspection Report**

Fish loin inspection report help to view reports with loin details which process in the system. Report view QcCode, loin No, Loin weight, status and date. See figure D.3 for the loin inspection report.

tess		LOIN INSPECTION REPORT				
		Print Date : 9 November 2017 11:36:47 am				
PO NO :- 5071201						
QC Code	Loin No	Loin Weight	Repack Status	Reject Status	Loin Status	Process Date
12181024	1218102401	3.10	YES	NO	PROCESS	5-Jul-2012
12181024	1218102402	2.20	YES	NO	PROCESS	5-Jul-2012
12181024	1218102403	1.50	YES	NO	PROCESS	5-Jul-2012
12181024	1218102404	4.00	YES	NO	PROCESS	5-Jul-2012
12181024	1218102405	2.90	YES	NO	PROCESS	5-Jul-2012
12181027	1218102701	2.20	NO	NO	PROCESS	5-Jul-2012
12181027	1218102702	2.90	NO	NO	PROCESS	5-Jul-2012
12181027	1218102703	3.10	NO	NO	PROCESS	5-Jul-2012
12181027	1218102704	2.60	NO	NO	PROCESS	5-Jul-2012
12181027	1218102705	2.20	NO	NO	PROCESS	5-Jul-2012
12181027	1218102706	1.90	NO	NO	PROCESS	5-Jul-2012

Figure D.3 Loin Inspection Report

• **Available fish stock**

This report shows available fish stock for selected date. It shows summary for each grade and shows available records in next 10 days. See figure D.4 for the fish stock report.

tess		AVAILABLE FISH STOCK AS AT END 24 Apr 2014												
		Print Date : 25 April 2014 2:06:35 am												
GRADE	NOS	QTY (KG)	TODAY 25 Apr	1 DAY 24 Apr	2 DAYS 23 Apr	3 DAYS 22 Apr	4 DAYS 21 Apr	5 DAYS 20 Apr	6 DAYS 19 Apr	7 DAYS 18 Apr	8 DAYS 17 Apr	9 DAYS 16 Apr	10 DAYS 15 Apr	More..
A	120.30	3,820.00	849.30 849	836.00 22	0.00 0	0.00 0	51.40 2	0.00 0	0.00 0	0.00 0	513.70 10	0.00 0	252.10 5	1,318.10 32
B	92.00	382.00	182.00 182	0.00 0	0.00 0	0.00 0	0.00 0	0.00 0	0.00 0	0.00 0	0.00 0	0.00 0	200.00 10	0.00 0
S	24.00	836.40	0.00 0	1.00 1	0.00 0	20.00 1	0.00 0	0.00 0	0.00 0	0.00 0	33.20 1	0.00 0	138.10 5	644.10 16
TOTAL	136.30	5,039.00	1,031	836.00 23	0.00 0	20.00 1	51.40 2	0.00 0	0.00 0	0.00 0	546.90 11	0.00 0	590.20 20	1,962.20 48

Figure D.4 Available Fish Stock Report

• **Monthly Packing Report**

Report shows monthly packing details with each PO numbers. Total weight for each PO number display in the group footer. See figure D.5 for the monthly packing report.

PO No		Box No	Box Weight	No of Loins	Item Name	Packing Grade	Packing Date
11061301		Buyer Name : TESS AGRO LTD-BELGIUM					
	1	30.20	9	Tuna	SCC	06/11/2013	
	2	30.80	11	Tuna	SCC	06/11/2013	
	3	30.70	10	Tuna	SCC	06/11/2013	
	4	33.00	14	Tuna	SCC	06/11/2013	
	5	34.70	16	Tuna	SCC	06/11/2013	
	6	34.10	16	Tuna	SCC	06/11/2013	
	7	33.80	17	Tuna	SCC	06/11/2013	
	8	13.00	6	Reefish	Other	06/11/2013	
	9	11.00	7	Reefish	Other	06/11/2013	
	10	12.30	6	Reefish	Other	06/11/2013	
Total Box Weight :		263.60					

Figure D.5 monthly packing Report

- **Daily Packing Report**

It shows daily packing summary for each fish grades. See figure D.6 for the Daily packing report.

Grade	30KG Boxes		15KG Boxes	
	Boxes	Weight	Boxes	Weight
A	160	4,926.25	235	3,700.63
AACC	4	110.70	0	0.00
ACC	391	12,355.48	19	223.10
AMC	267	8,135.59	267	4,420.47
AR	219	7,034.69	8	97.44
B	376	12,276.80	301	4,866.30
BCC	62	1,631.00	3	35.20
E	3,616	111,890.73	25	299.04
HSG	2	100.50	0	0.00
HSR	117	3,961.97	296	3,126.46
Other	719	22,026.14	177	2,750.93
Regular	0	0.00	1	16.60
Regular	692	16,201.44	296	4,449.69
S	0	0.00	14	56.40
Saku	266	8,867.90	17	199.20
SCC	305	9,248.23	604	9,212.33
SMT	7	199.20	4	62.00
Sword	7	199.20	4	62.00

Figure D.6 Daily Packing Report

APPENDIX-E Test Results

Test cases for User Login

Test cases with result to User Login is displayed by table E.1


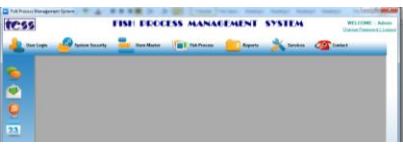
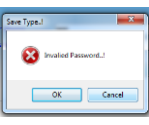
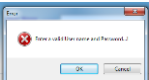
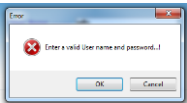
No	Test Case	Expected Output	Actual output	Status
01	Double click on the shortcut icon.	Make sure login page display	Display Login page 	✓
02	Enter correct username and password	Successfully log into the system.	Display master page. 	✓
03	Enter correct username and empty password	Display error message.	View error message. 	✓
04	Enter valid password and invalid username	Display error message	View error message 	✓
05	Enter invalid Username & password	Display error message	View error message 	✓

Table E.1 Test Case User Login

Test cases for User Management

Test cases with result to User management is displayed by table E.2


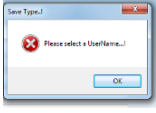

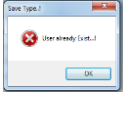
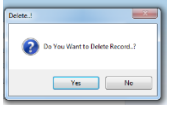
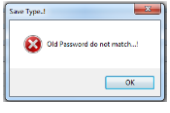

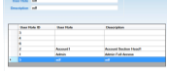
No	Test Case	Expected Output	Actual output	Status
01	Enter all required details and click save button	Make sure successfully insert message display.	Display Successfully insert message. 	✓
02	Without enter required fields and click save button.	Display error message.	View error message. 	✓
03	Try to save with all fields empty.	Display error message.	View error message. 	✓
04	Enter existing user name	Make sure error message should display as: 'Existing User name'	View error message. 	✓
06	When select the user and click delete button	Make sure delete confirmation message should display as: ''	View message. 	✓
07	When select the existing user and update password without enter old password.	Old password should match	View error message 	✓
07	When select the user and click update button	Make sure successfully update message should display	View message. 	✓
08	When click row header of grid view	Load all user details	Load all user details 	✓

Table E.2 Test Case User Management

Test cases for Master Data Module

Test cases with result to Master Data module is displayed by table E.3


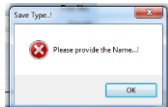
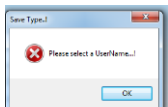
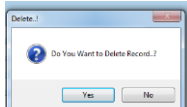



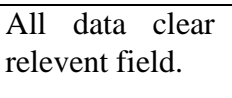
No	Test Case	Expected Output	Actual output	Status
01	Enter all required details and click save button	Make sure successfully insert message display.	Display Successfully insert message. 	✓
02	Without enter required fields and click save button.	Display error message.	View error message. 	✓
03	Try to save with all fields empty.	Display error message.	View error message. 	✓
06	When select the record and click delete button	Make sure delete confirmation message should display as: “ ”	View message. 	✓
07	When select the user and click update button	Make sure successfully update message should display	View message. 	✓
08	When click row header of grid view	Load all user details	Load all user details 	✓
09	When click “New” button	Load fields should be clear and ID column disable with New Entry message		✓
10	When click “Clear” button	All fields should be clear.	All data clear in relevent field. 	✓

Table E.3 Test Case Master Data Module

Test cases for Fish Receive Module

Test cases with result to fish receive module is displayed by table E.4


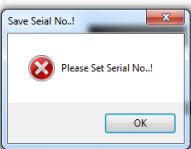
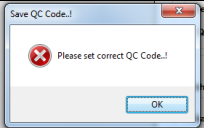
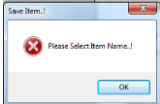
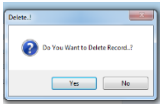
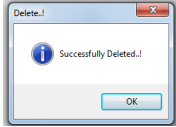
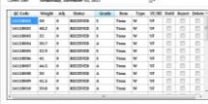
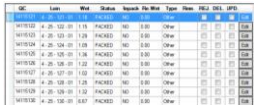
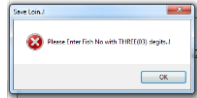
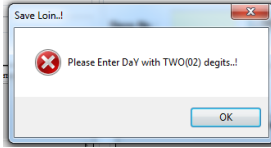
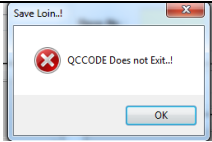
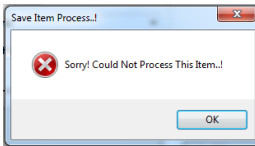
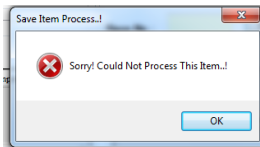
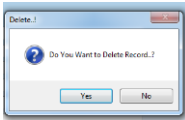
No	Test Case	Expected Output	Actual output	Status
01	Enter all required details and press “Enter” key in Serial No Textbox	Record add into the data grid	Records add into the data grid.	✓
02	Without enter required fields and press enter key in Serial No Textbox	Display error message.	View error message. 	✓
03	Try to save with all fields empty.	Display error message.	View error message. 	✓
06	Try to save record without enter correct QC Code	Display error message		
06	When delete record without select item	Error message should display	View message. 	✓
06	When select the item and click delete button	Make sure delete confirmation message should display as:	View message. 	✓
07	When select the item and click “Delete Fish” button	Make sure successfully deleted message should display	View message. 	✓
08	When select the current date retrieve all related data.	Load all records	Load all received details 	✓

Table E.4 Test Case for Fish Receive Module

Test cases for Fish Process Module

Test cases with result to fish process module is displayed by table E.5

No	Test Case	Expected Output	Actual output	Status
01	Enter all required details and press "Enter" key in Serial No Textbox	Record add into the data grid	Records add into the data grid. 	✓
02	Without enter Fish No and press enter key in Fish No box	Display error message.	View error message. 	✓
03	Try to process Loin without day field.	Display error message.	View error message. 	✓
06	When QC CODE wrong or does not exit	Display error message		✓
06	When Serial no does not exit	Error message should display	View message. 	✓
06	Try to continue process after completed a process.	Warning message display	View message. 	✓
06	When selected item try to delete.	Delete confirmation message should display as:	View message. 	✓

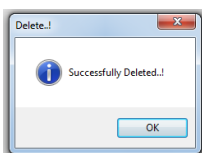
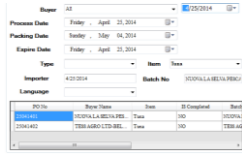
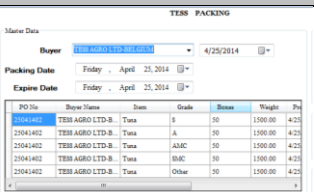
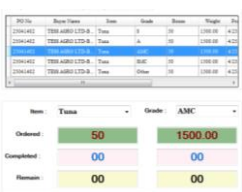
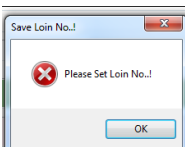
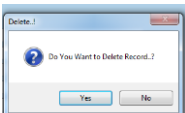
07	When select the item and click “Delete Fish” button	successfully deleted message should display	View message. 	✓
08	When select the date retrieve all PO details in the PO data grid data.	Load all records	Load all received details 	✓

Table E.5 Test Case for Fish Process Module

Test cases for Fish Packing Module

Test cases with result to fish packing module is displayed by table E.6

No	Test Case	Expected Output	Actual output	Status
01	When search PO details by PO Date	PO Details should be filtered		✓
02	When click row header in the PO details grid view	All PO details item name, grade, Boxes and weight should be loaded.		✓
02	Without enter required fields and click “Insert button	Display error message.	View error message. 	✓
06	When select the PO No and click delete button	Delete confirmation message should display	View message. 	✓

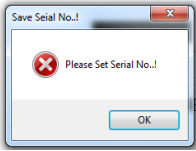
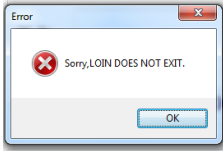

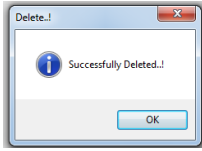
03	Try to save with all fields empty.	Display error message.	View error message. 	✓
06	Try to add record without enter correct QC Code	Display error message		✓
06	When add record into data grid without select BoxNo	Display error message		✓
07	When select the item and click "Delete" button	Make sure successfully deleted message should display		✓

Table E.6 Test Case Fish Packing Module

Test cases for report generation Module

Test cases with result to report generation module is displayed by table E.7

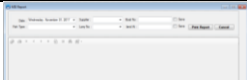
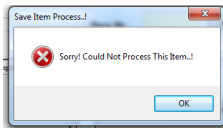
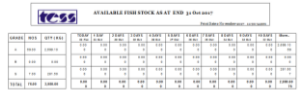
No	Test Case	Expected Output	Actual output	Status
01	When select fish stock Report	Report wizard display with search criteria		✓
02	When click Report Print button without select criteria	Warning message display		✓
02	Select criteria and click Report Print button	Report generate properly.		✓

Table E.7 Test Report Generation Module

User Acceptance Test Result

Figure E.1 shows user evaluation sheet1

Fish Process Management System

User Evaluation for Fish Process Management System

Please tick appropriate answer for each question about Fish Process Management System

Name of the Employee: Diluka Somarathna

Designation : Assistant Accountant

	Evaluation Criteria	Poor	Average	Good	Excellent
01	Is the user interface easy to understand?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
02	Security features of the System	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
03	User friendliness of the system by providing necessary information about error messages, transaction successfully messages etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
04	System navigation and tab control	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
05	Barcode label printing process and barcode scanning process	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
06	System Response Time	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
07	System Report generation facility	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
08	Easy to learn system	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
09	Are you satisfied with the developed new Fish process management system?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10	Comments				
Signature		Date			
<u>Diluka</u>		<u>2017/10/20</u>			

Figure E.1 User Evaluation Sheet 1

Figure E.2 shows user evaluation sheet2

User Evaluation for Fish Process Management System

Please tick appropriate answer for each question about Fish Process Management System

Name of the Employee: Starck Keener S. L. M. Kumar

Designation : Starck Keener

	Evaluation Criteria	Poor	Average	Good	Excellent
01	Is the user interface easy to understand?				✓
02	Security features of the System			✓	
03	User friendliness of the system by providing necessary information about error messages, transaction successfully messages etc.				✓
04	System navigation and tab control				✓
05	Barcode label printing process and barcode scanning process				✓
06	System Response Time			✓	
07	System Report generation facility			✓	
08	Easy to learn system				✓
09	Are you satisfied with the developed new Fish process management system?				✓
10	Comments				
04	System navigation and tab control				
05	Barcode label printing process and barcode scanning process				
06	System Response Time				
07	System Report generation facility				
08	Easy to learn system				
09	Are you satisfied with the developed new Fish process management system?				
10	Comments				

Signature [Signature] **Date** 16/11/17

Figure E.2 User Evaluation Sheet 2

Figure E.3 shows user evaluation sheet3

User Evaluation for Fish Process Management System

Please tick appropriate answer for each question about Fish Process Management System

Name of the Employee: Tharini S. Somanathan

Designation : Quality Controller

	Evaluation Criteria	Poor	Average	Good	Excellent
01	Is the user interface easy to understand?			<input checked="" type="checkbox"/>	
02	Security features of the System		<input checked="" type="checkbox"/>		
03	User friendliness of the system by providing necessary information about error messages, transaction successfully messages etc.			<input checked="" type="checkbox"/>	
04	System navigation and tab control			<input checked="" type="checkbox"/>	
05	Barcode label printing process and barcode scanning process			<input checked="" type="checkbox"/>	
06	System Response Time		<input checked="" type="checkbox"/>		
07	System Report generation facility				<input checked="" type="checkbox"/>
08	Easy to learn system			<input checked="" type="checkbox"/>	
09	Are you satisfied with the developed new Fish process management system?			<input checked="" type="checkbox"/>	
10	Comments	It is very help to use this system we can gain more easily than manual system.			

Signature: Tharini S. Somanathan Date: 20/10/2017

Figure E.3 User Evaluation Sheet 3

Figure E.4 shows user evaluation sheet4

Fish Process Management System

User Evaluation for Fish Process Management System

Please tick appropriate answer for each question about Fish Process Management System

Name of the Employee: Ishan Kandambi

Designation : QA Engineer

	Evaluation Criteria	Poor	Average	Good	Excellent
01	Is the user interface easy to understand?				✓
02	Security features of the System			✓	
03	User friendliness of the system by providing necessary information about error messages, transaction successfully messages etc.				✓
04	System navigation and tab control				✓
05	Barcode label printing process and barcode scanning process			✓	
06	System Response Time			✓	
07	System Report generation facility				✓
08	Easy to learn system			✓	
09	Are you satisfied with the developed new Fish process management system?			✓	
10	Comments				

Signature: Ishan Kandambi Date: 13-10-2017

Figure E.4 User Evaluation Sheet 4

APPENDIX-F Code Listing

Code snippets for user logging

```
private void btnLog_Click(object sender, EventArgs e)
{
    /*
    *
    // method name: User mlog into the system
    // created: 8/07/2017
    // Author: geethani
    // Contains all methods for performing user logging functions
    *
    */
    // Create SQL Data reader object
    SqlDataReader obj_datareader;

    try
    {
        // validate that all data records are correct
        if (ValidateControl())
        {
            // retrieve data into sql data reader with call method
            obj_datareader = obj_userpro . GetData_UserProfile (Misc .enCrypt
            (txtUserName.Text.Trim().ToString()), "UserExit" , Misc . encrypt
            (txtPassword .Text. Trim() .ToString ());

            //Check whether SQL Data reader fill with data or not
            if (obj_datareader.HasRows)
            {
                //loop the SQL data reader
                //Check whether SQL Data reader fill with data or not
                while (obj_datareader.Read())
                {
                    //create object in MDI form
                    MDIFishProcess objfish_MDI = new MDIFishProcess();

                    //show forms and hide login form
                    this.ShowInTaskbar = false;
                    this.Hide();
                    objfish_MDI.Show();
                    this.Close();

                }
            }
            else
            {
                //view success message
                MessageBox.Show("Enter a valid User name and password .!",
                "Error", MessageBoxButtons.OKCancel, MessageBoxIcon.Error);
            }
        }
    }
}
```

```
    }  
  }  
  catch (Exception ex)  
  {  
    MessageBox.Show(ex.ToString());  
  }  
}
```

Code snippets for validate controls in login form

```
private static bool ValidateControl()  
{  
  
    LogOn frm = (LogOn)Application.OpenForms["LogOn"];  
  
    //check the textbox is empty or not  
    if (string.IsNullOrEmpty(frm.txtUserName.Text))  
    {  
        //view message  
        MessageBox.Show("Invalid User Name..!", "Save Type..!",  
            MessageBoxButtons.OKCancel, MessageBoxIcon.Error);  
        frm.txtUserName.Focus();  
        return false;  
    }  
  
    //check the textbox is empty or not  
    if (string.IsNullOrEmpty(frm.txtPassword.Text))  
    {  
        //view message  
        MessageBox.Show("Invalid Password..!", "Save Type..!",  
            MessageBoxButtons.OKCancel, MessageBoxIcon.Error);  
        frm.txtPassword.Focus();  
        return false;  
    }  
  
    return true;  
}
```

Code snippets for Load master data into combo box

```
private void LoadItemMaster()  
{  
    try  
    {  
  
        //call method in class with providing parameters  
        // retrieve data into sql data reader  
  
        SqlDataReader dreaderItemMaster = clsItemMaster.GetDatatemMaster  
            ("", "SelecAll");  
    }  
}
```

```

//Check whether SQL Data reader fill with data or not
if (dreaderItemMaster.HasRows)
{
    //loop the SQL data reader
    while (dreaderItemMaster.Read())
    {
        //add records into combobox
        cmbFishType.Items.Add(new clsItemMaster (dreaderItemMaster[1] .
            ToString(), int.Parse (dreaderItemMaster[0].ToString()));

    }
}
catch (Exception ex)
{
    MessageBox.Show(ex.ToString());
}

// close SQL Data reader
dreaderItemMaster.Close();
}
}

```

- Code snippets for Load data grid view

```

private void Grid_load()
{
    /*
    *
    // method name: grid load fish receive
    // created: 20/07/2017
    // Author: geethani
    // Contains all methods for performing fish receive functions
    *
    */
    // Create SQL Data reader object
    SqlDataReader obj_DReader;

    //Set receiving date
    string QCDate = txtQCYear.Text.Trim() + txtQCday.Text.Trim();
    bool hold = false;
    bool reject = false;
    int rowcount = 0;

    // retrieve data into sql data reader
    obj_DReader = clsItem.GetData_Item(QCDate, "SelectedDate", "");

    //insert record after if data reader has records
    if (obj_DReader.HasRows)
    {
        //clear grid rows
        dgvFishReceive.Rows.Clear();

        //loop the SQL data reader
    }
}

```

```

while (obj_DReader.Read())
{
    rowcount++;

    //read SQL data reader and check the status
    if (obj_DReader["HoldStatus"].ToString() == "HOLD")
    { hold = true; }
    else
    { hold = false; }

    //read SQL data reader and check the status
    if (obj_DReader["RejectStatus"].ToString() == "REJECT")
    { reject = true; }
    else
    { reject = false; }

    //add data into gridview

    dgvFishReceive.Rows.Add(obj_DReader["QCCode"],
        obj_DReader["Weight"], obj_DReader["Adjustment"],
        obj_DReader["Status"], obj_DReader["GradeName"],
        obj_DReader["ItemName"], obj_DReader["FishType"],
        obj_DReader["BEYF"], hold, reject,false);
}

//increase grid vie row count
    dgvFishReceive.FirstDisplayedScrollingRowIndex =
        dgvFishReceive.FirstDisplayedScrollingRowIndex + rowcount-1;

// Clsoe SQL Data reader
obj_DReader.Close();

//View grid summery
set_GridSummary();

}
else
{
    //Clear grid rows
    dgvFishReceive.Rows.Clear();
}
}

```

- Code snippets for insert fish processs data

```

private void txtFish_KeyDown(object sender, KeyEventArgs e)
{
    /*
    *
    // method name: Insert loin into processing database
    // created: 8/08/2017
    // Author: geethani
    // Contains all methods for performing fish loin process

```

```

*
*/

try
{
    //Check wether press Enter key or not
    if (e.KeyCode == Keys.Enter)
    {
        // validate that all data insert propoerly
        if (ValidateForm("Insert"))
        {
            //Check wether date text box empty or not
            if ((cmbMonth.Text.Length > 0) && (txtday.Text.Length > 0) &&
                (txtFish.Text.Length > 0))
            {
                if (txtFish.Text.Length != 3)
                {
                    //view error message
                    obj_message.ValiateSuccess("Please
                        Enter Fish No with THREE(03) degits..!", "Save Loin..!");
                }
                if (txtday.Text.Length != 2)
                {
                    //view error message
                    obj_message.ValiateSuccess("Please
                        Enter DaY with TWO(02) degits..!", "Save Loin..!");
                }
            }

            //Set Date with format
            string doyear = txtday.Text.ToString() + "/" + cmbMonth . Text.
                ToString() + "/" +
                DateTime.Today.Year.ToString();

            DateTime dofyear = DateTime.ParseExact(doyear,
                "dd/MM/yyyy", null);

            txtQCDate.Text = dofyear.DayOfYear.ToString("000");
            txtQCSerial.Text = txtFish.Text.ToString();

            string isExit = "";

            //Is exist Item code
            SqlDataReader obj_Reader;
            string QCNO = txtQCYear.Text.Trim() + txtQCDate.
                Text.Trim () + txtQCSerial.Text.Trim();

            // retreview data into sql data reader with call method in class
            IItem
            obj_Reader = clsItem.GetData_Item (QCNO, "IsExitItem",
                "");

            if (obj_Reader.HasRows)
            {

```

```
        //loop the SQL data reader //Check wether SQL Data reader fill
        with data or not
        while (obj_Reader.Read())
        {
            isExit = obj_Reader["QCCode"].ToString();
        }
    }
    if (isExit != "")
    {
        //Insert data into table
        Insert();

        //load data grid
        Grid_load();
    }
    else
    {
        //view message

        obj_message.ValiateSuccess("QCCODE Does not
        Exit..!", "Save Loin..!");


    }
    txtFish.Focus();
}

}
}
    if (Control.ModifierKeys == Keys.Shift)
    {
        txtScaleWeight.Focus();
    }
}
}
catch (Exception ex)
{ }
}
```


APPENDIX-G Client Certification

TESS AGRO PLC

Office : 87, New Nuge Road,
Kelaniya, Sri Lanka.
Phone : 94 11 2910859 (9 Auto Lines)
Fax : 0112910615 E-mail : tess@slt.lk
www.tess.lk



November 4, 2017

Project Examination Board,
University of Colombo School of computing,
No 17, Swarna Road,
Colombo 06.

Dear Sir/Madam,

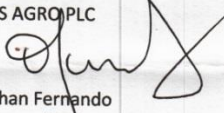
Certification of Fish Process Management System for TESS AGRO PLC

This is to certify that Ms G.E.Jayakody who is studying at University of Colombo School of Computing (UCSC) has successfully developed an Fish Process Management System for TESS AGRO PLC as her BIT final year project.

I glad to say that the system has facilitated to increase the productivity of the business. The management of the TESS AGRO PLC has decided to accept the proposed system. She has successfully completed and submitted the proposed system addressing all the requirements that are required for traceability of the raw material to finished product.

Thank You.

Yours Faithfully
TESS AGRO PLC



Dilshan Fernando
Director /CEO

TESS AGRO PLC.
87, NEW NUGE ROAD,
KELANIYA.

Associate Companies : TESS AGRO LTD., TROPIC FROZEN FOODS LTD., TROPIC FISHERY (PVT) LTD.
Factory (Negombo) : 16/1, Tammitta Road, Negombo. Phone : 94 31 2222959 Fax : 94 31 223348
Factory (Polonnaruwa) : Medagama, Dimbulagala.

GLOSSARY

Actor: Someone or something external to the system that must interact with the system under development.

Activity Diagram: Business and operational step-by-step workflows of components in a system

Attribute: a characteristic of an object

Class: A description of a group of objects with common properties, common behaviour, common relationships to other objects.

Class diagram: Shows the relationship between the system classes.

Database: Collection of logically related records or files.

Entity Relationship Diagram: Show the relationship between system entities.

Foreign Key: A foreign key is the primary key of one entity that is copied into another

Functional Requirement: Service provided by the system as per user requirement.

Non Functional Requirement: Additional features of the system provided to increase the user attraction.

Object Oriented Analysis: Analysis will be done using Object Oriented methodologies.

Object Oriented Designing: Designing will be done using Object Oriented Methodologies.

Transaction: An agreement, communication, or movement carried out between separate entities or objects, often involving the exchange of items of value, such as information, goods services and money.

Unified Modelling Language: It is a standard language for specifying, visualizing, constructing, and documenting the artefacts of software systems, as well as for business modelling and other on-software systems.

Use Case: Representation of the business processes of the system.

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