



Sri Lanka Institute of Information Technology

FILLING-SERVICE STATION MANAGEMENT SYSTEM

Project Report

Information Technology Project 2015

Project ID: [ITP_2015_B2_02](#)

Submitted by:

1. IT14119118– T.K.H.Nimeshika
2. IT14118746– L.A.Ranasinghe
3. IT14127342– K.B.P.Thabrew
4. IT14118296– A.A.M.A.S.S.Perera
5. IT14124990– K.S.N.Sucharitharathne
6. IT14130762– R.S.K.I.P.Perdinandis
7. IT14118364– R.C.P.Dissanayaka
8. IT14105012– H.D.Welikala

Submitted to:

(Supervisor's signature)

.....

Name of the supervisor

Ms.Asanthika Imbulpitiya

Date of submission

Abstract

The current manual system of A.P.Gunawardhane Company (pvt) Ltd is unfavorable for the proper functioning of the company procedures in many ways. All the tasks are currently handled through paper based methods which are time consuming and very less efficient. Data can be subjected to duplication and considered information can be flawed and inconsistent due to common human errors. The paper based manual system does not provide an appreciable amount of security for the information and resource flow of the company. As a solution for the above stated problems, it is decided to develop a new system for A.P.Gunawardhane Company (pvt) Ltd which automates the daily procedures of the company. The proposed system paves the way for the users to perform the required tasks conveniently with less time consumption. With the proposed system it is possible to handle the procedures in a fast and efficient manner and the security of information can be maintained at a high level. The system is adaptable and it provides scope for accurate information flow which is an immense advantage for the company for its operation

Acknowledgement

We take this opportunity to express our profound gratitude and deep regards our advisor Ms.Asanthika Imbulpitiya for her exemplary guidance, monitoring and constant encouragement throughout the project. We are also grateful to Ms.Laksri Wijeratne and Ms.Geethanjali Wimalaratne for the guidance and encouragement given thorough out this project.

Last but not the least we express our sincere thanks to all of our friends and our parents who have patiently extended all sorts of help for accomplishing this project.

Declaration

We declare that the this project report or part of it was not a copy of a document done by any organization, university any other institute or a previous student project group at SLIIT and was not copied from the Internet or other sources.

Project Details

Project Title	Filling-Service Station Management System
Project ID	ITP_2015_B2_02

Group Members

Reg. No	Name	Signature
IT14119118	T.K.H.Nimeshika	
IT14118746	L.A.Ranasinghe	
IT14127342	K.B.P.Thabrew	
IT14118296	A.A.M.A.S.S.Perera	
IT14124990	K.S.N.Sucharitharathne	
IT14130762	R.S.K.I.P.Perdinandis	
IT14118364	R.C.P.Dissanayaka	
IT14105012	H.D.Welikala	

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1. Introduction

1.1 Problem Statement

A.P.Gunawardhana and Company (Pvt) Ltd is a service -filling station which maintains a traditional file based system to fulfill its requirements. Recently they are facing various difficulties because of the rising number of customers as well as employees and stock. Hence, the efficiency and the performance of the system are gradually decreasing.

As solution to above problems the management has decided to computerize the system. The proposed system will increase the efficiency and improve the performance of the activities within the service-filling station. A proper database would be maintain for an efficient and secure approach in the process of storing data regarding to the daily activities which take place within the station.

1.2 Product Scope

The Service-Filling Station Management System is an automated system designed to manage tasks which are manually handled by of A.P.Gunawardhana and Company (Pvt) Ltd at present. This system can process information very quickly and perform detailed work without any mistake.

Our system is divided into sub-parts as given below.

- Fuel sales and stock Management
 - Fuel Sales detail management
 - Lubricant Sales Management
- Service Detail Management
 - Services type detail handling.
 - Service station Job assignment handling.
- Human Resources Management
 - Employee management
 - Leave management
 - Loan Management

- Payroll Management
 - Salary detail handling
 - Salary calculations
- General Account Management
 - Cash book management
 - Manage Mandatory expenses
- Spare Parts Inventory Management
 - Spare Parts sales management
 - Spare Parts stock management
- Machine Supply Controlling Management
 - Machine Management
 - Supplier Management
- Customer and Vehicle Management
 - Customer Management
 - Vehicle Management

Service-Filling Station Management System is a well - established system which currently uses a manual system to perform daily tasks within the system. Managers and other employees can corporate with the proposed system and perform their tasks with increased efficiency and convenience.

Our main objective of this software is to offer a mechanism by which all the operations of the Service station and filling station are executed reliably without any errors. It ensures that the operations carried out daily by the relevant personnel are continuously reviewed by the owner of the company.

In order to achieve such review notification systems are developed. To reduce the huge amount of time waste by deviating from the document based file management.

To make the system much more efficient by upgrading the manual system of the filling station and service station to a computerized system.

1.3 Project Report Structure

- Main topics are written using “Times New Roman” in 14pts font size.
- Sub topics under the main topics are written as “Times New Roman” bold letters in 13pts font size.
- Description under the each topics and sub topics are written using “Times New Roman” letters in 12pts font size and line spacing of 1.5pts.

2. Methodology

2.1 Requirements and Analysis

There are two main user levels in this system.

Manager

Manager basically has all the privileges when accessing the system. The manager can handle customer details, employee details , supplier details , service details, staff payment details , product order details , internal machines details , employee scheduled works details, spare parts and fuel stock details , cash book and account details. He can update, delete and edit information in appropriate inventory and the catalog. He can issue job card and bills. And also he is responsible for generate reports on filling station stock , spare parts stock , scheduled works and employee , customer details and cash book and expenses .

Employee

Employee can enter fuel meter reading and product details, apply leaves and mark the attendance. He is also responsible for issuing job card and bills. No special knowledge is expected from a user when using this system. An employee is not supposed to learn the commands or memorize them in order to use the system. A basic knowledge of the whole system is enough for a user to fulfill his requirements using the system.

Human resource management

Leave management, Loan management and employee information management.

Apply leaves, loans requests.

Approve /reject leaves,loan requests..

Employee registration. And Employee details

Report generating

User account and user role management.(User login creation)

Fuel sales and stock management

Sales billing details management.

Tank level management. And Message alerting.

Fuel type product details management and Lubricant stock management.

Inventory report management

Service station services type details management and billing

Create job /tasks for the employees relevant to the services.

Services billing and discounts.

Resource planning for the services.

Generate job card for service station employees for each customer.

Customer and vehicle management

Register new customers and customer details.

Customer service order details and booking, Product order details and delivery.

Credit customer credit details management

Payroll management, Daily attendance.

Employee category wise and shift wise salary details including overtime, bonus and no-pay.

Issue salary slip with EPF, ETF.

Machine Supply Controlling Management-

Replenishment management.

Machine maintenance, Warranty claims.

Managing and maintaining the machine purchases etc.

Generate account management

Managing and maintaining the expenses (tax, electricity/water .etc.) And total sales income.

Set daily targets and profit margins to compare differences, Final account report

Spare parts management

Managing stock level and ordering the spare parts and message alerting at critical levels.

Spare parts sales details and purchase order and supplier details management.

Spare parts reports.

USE CASE DIAGRAM



Figure 2.1.1 use case

2.2 Design

ACTIVITY DIAGRAMS

- **Human Resource Management.**

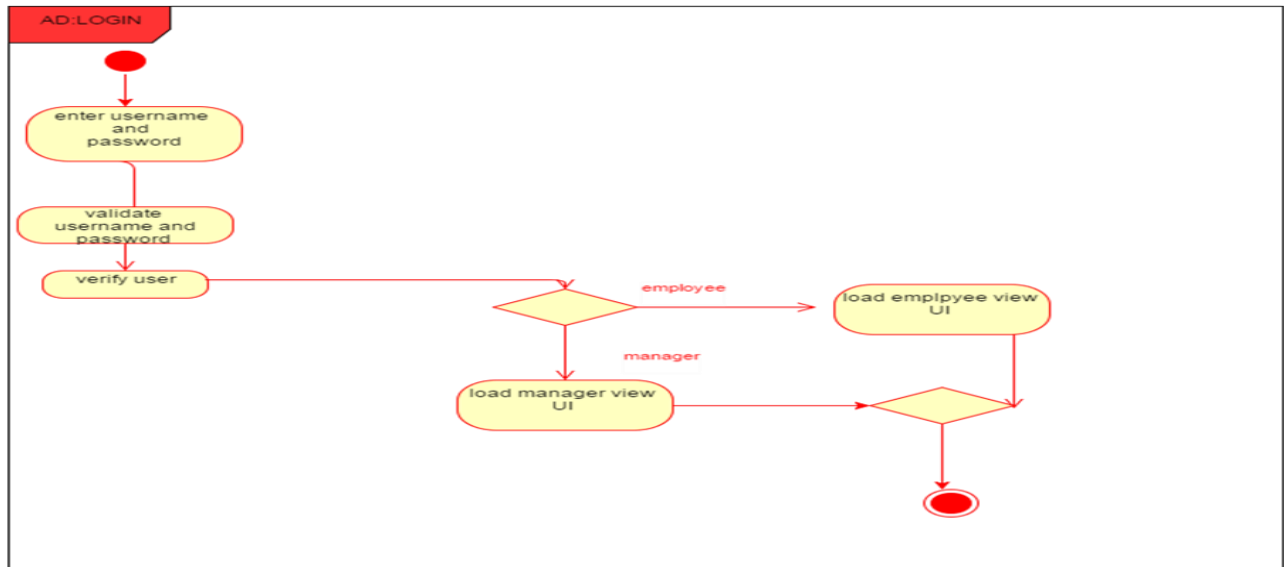


Figure 2.2.1 Activity diagram login

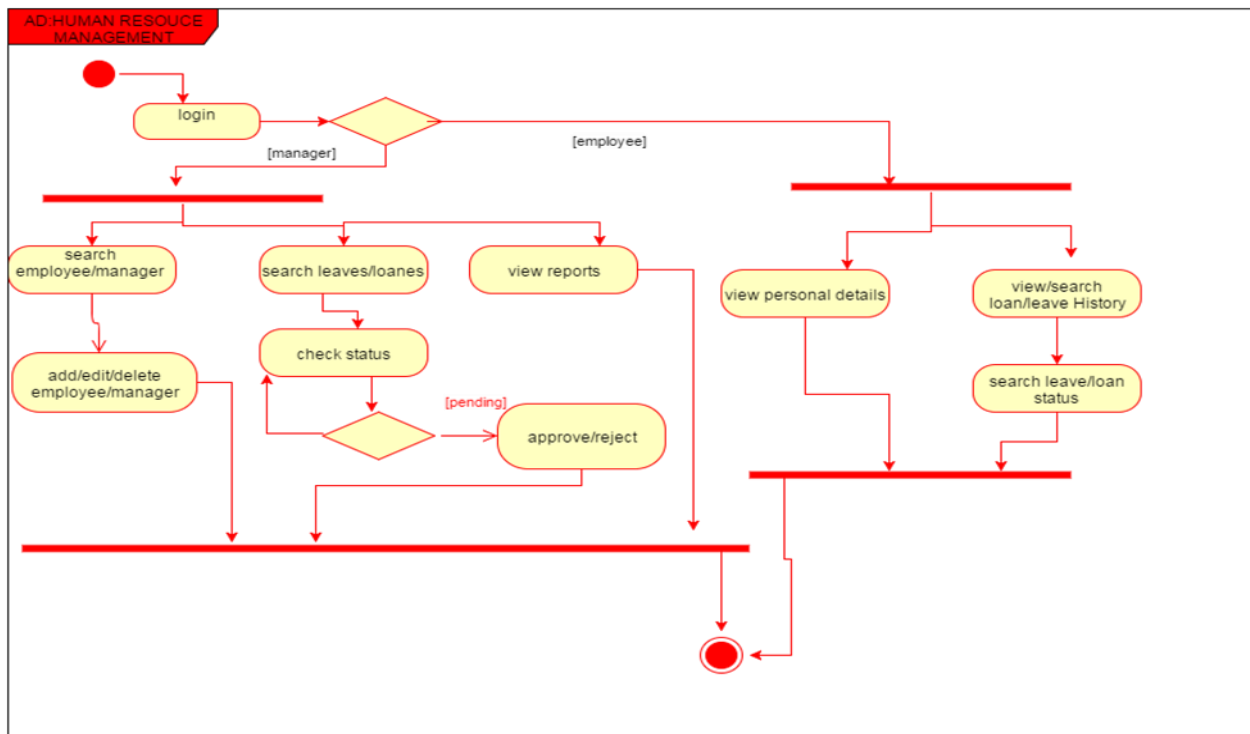


Figure 2.2.2Activity diagram HRM

- **Fuel and Stock level Management**

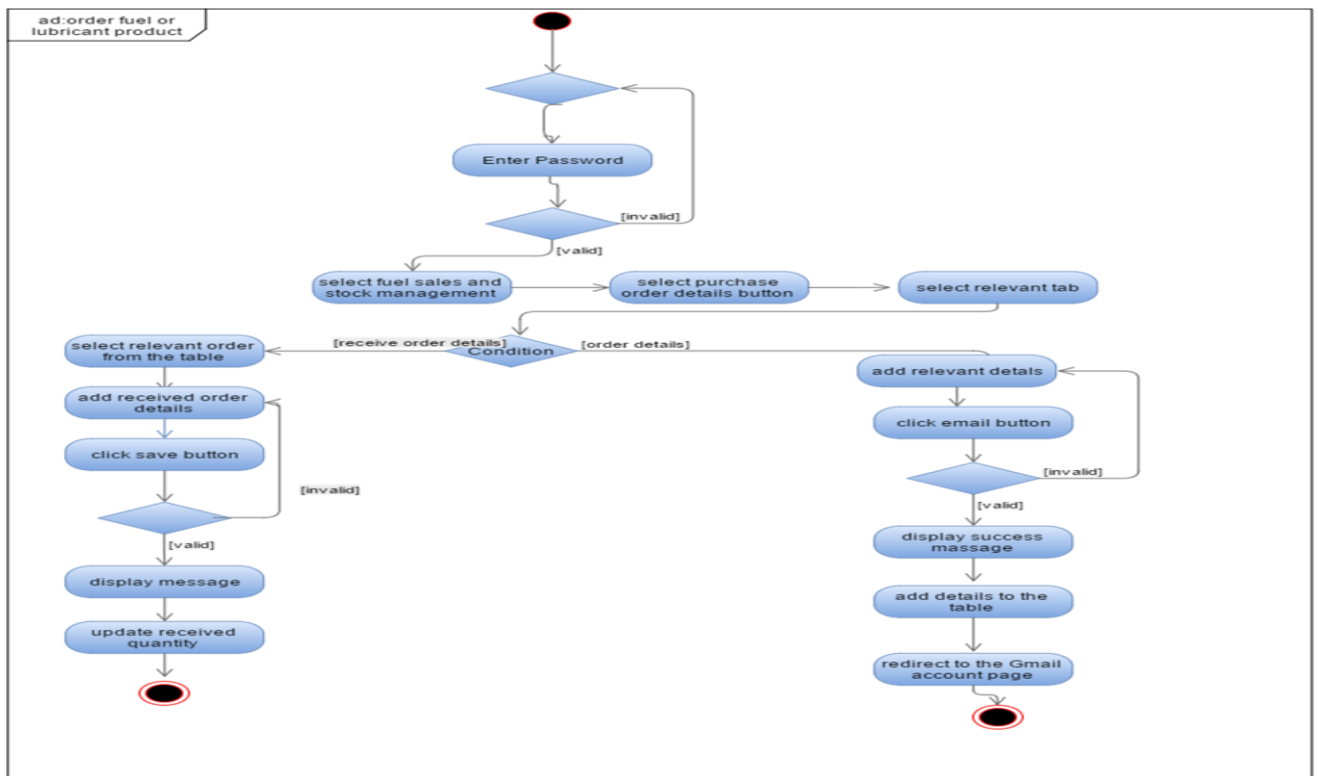


Figure 2.2.3 Activity diagram Order fuel or lubricant product

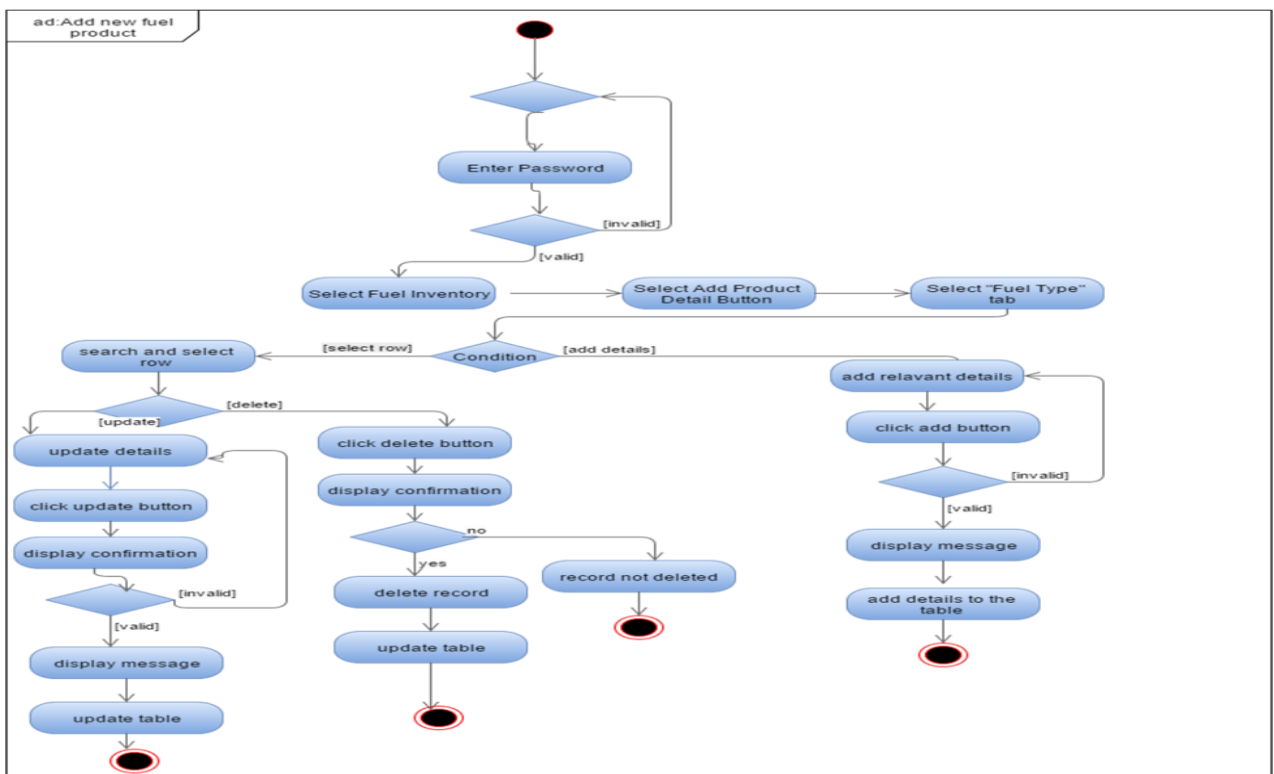


Figure 2.2.4 Activity diagram Add new fuel product

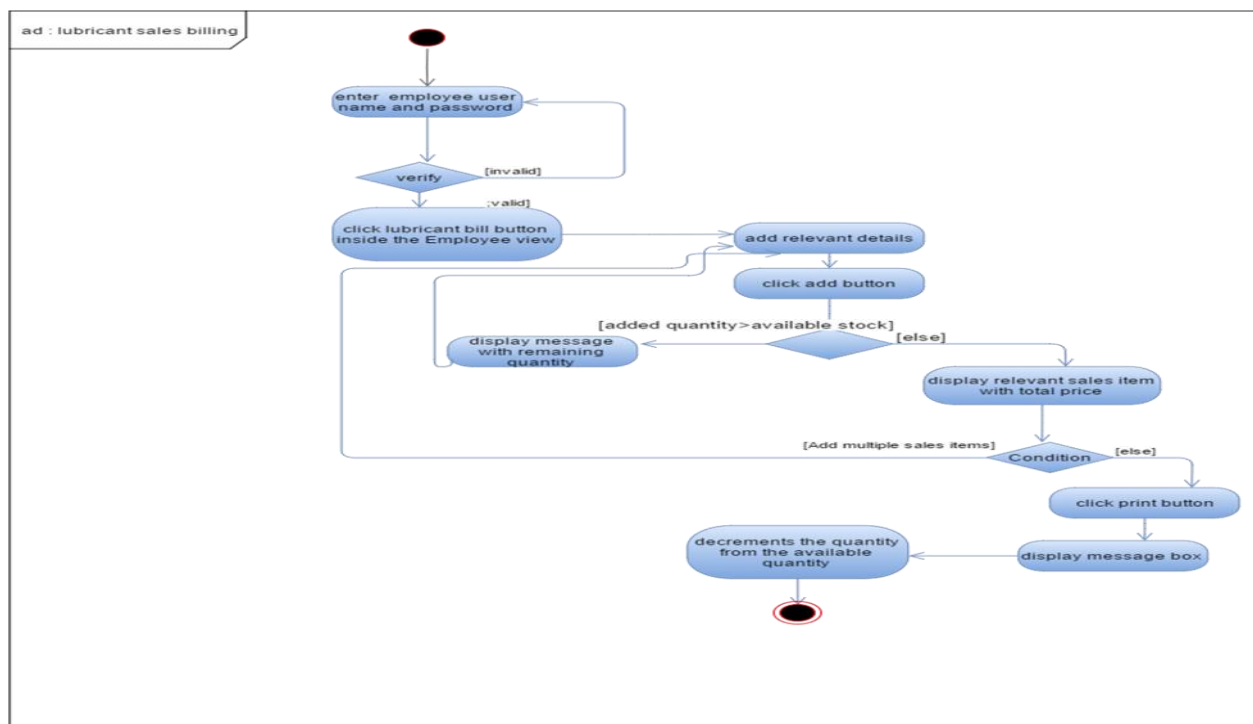


Figure 2.2.5 Activity diagram lubricants sales biling

- General Account Management

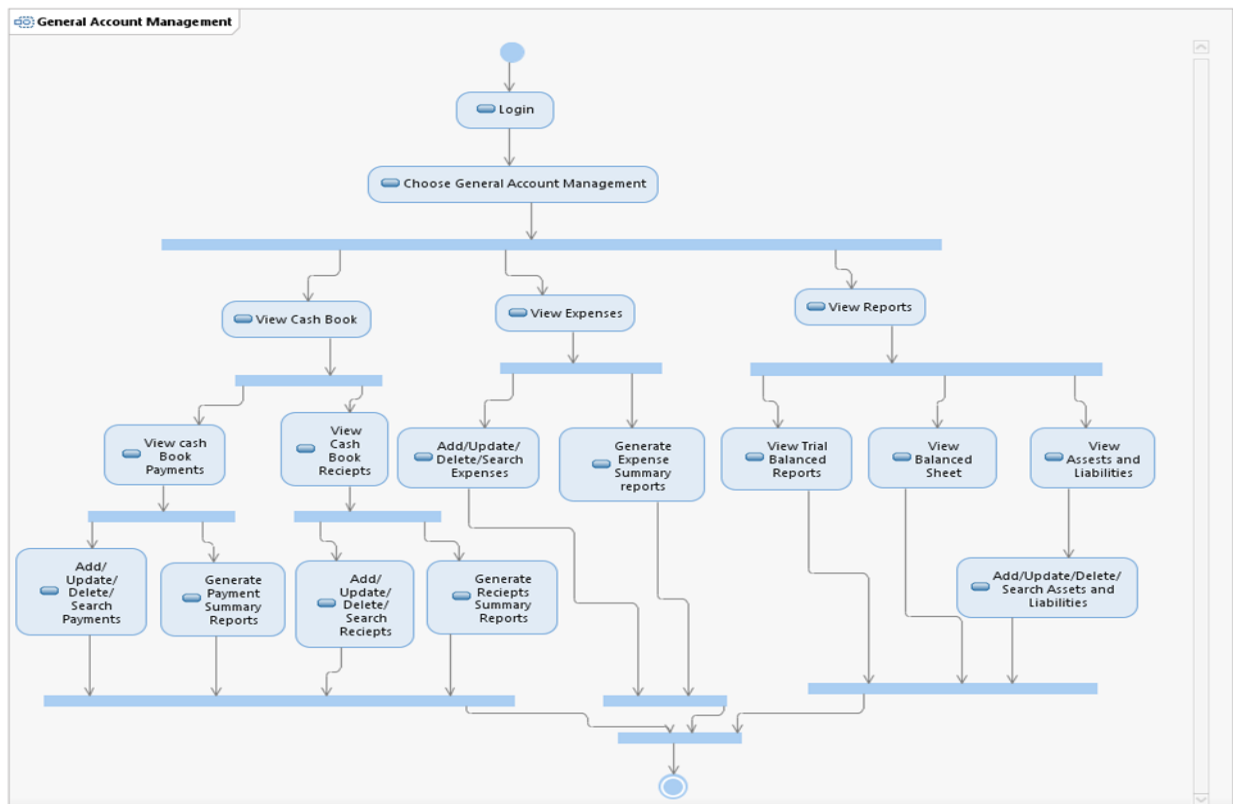


Figure 2.2.6 Activity diagram General Accounts Management

Payroll Management

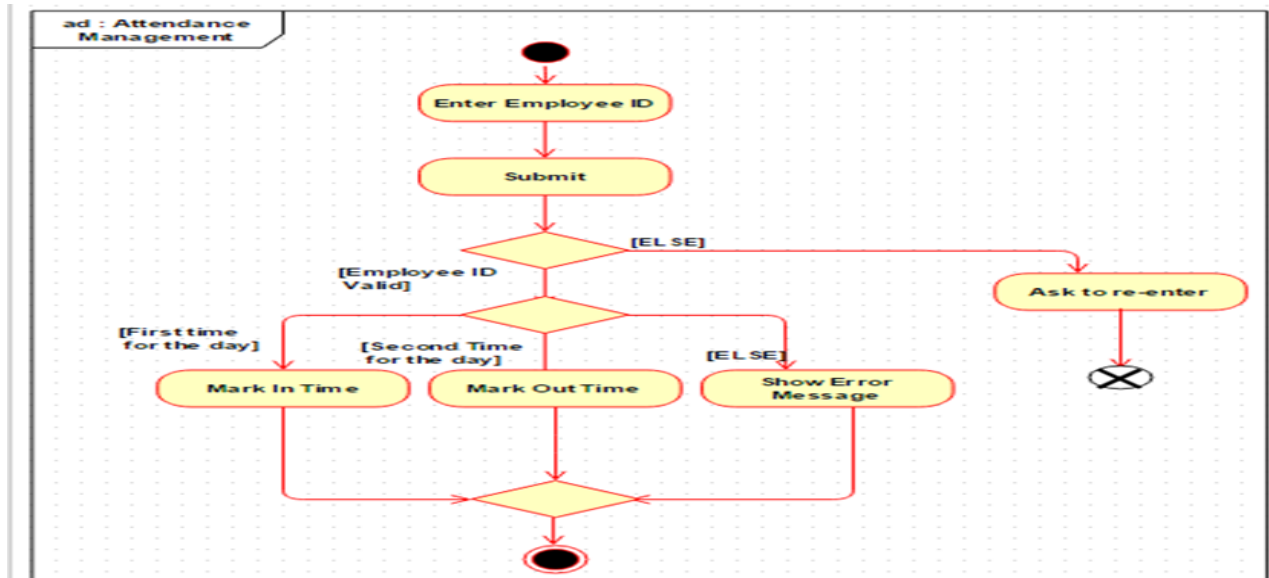


Figure 2.2.7 Activity diagram Attendance Management

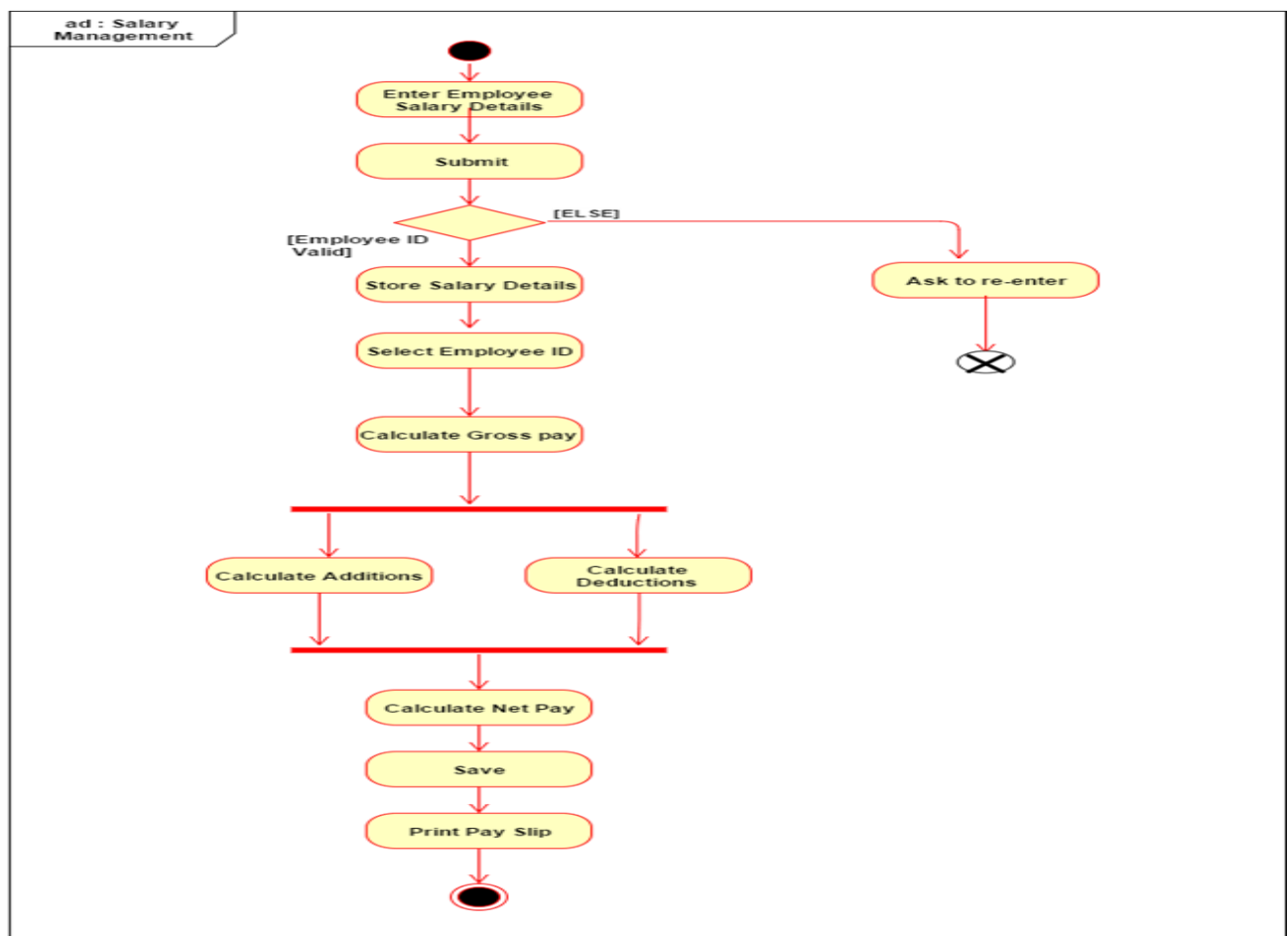


Figure 2.2.8 Activity diagram salary management

- Spare part Inventory and stock Management

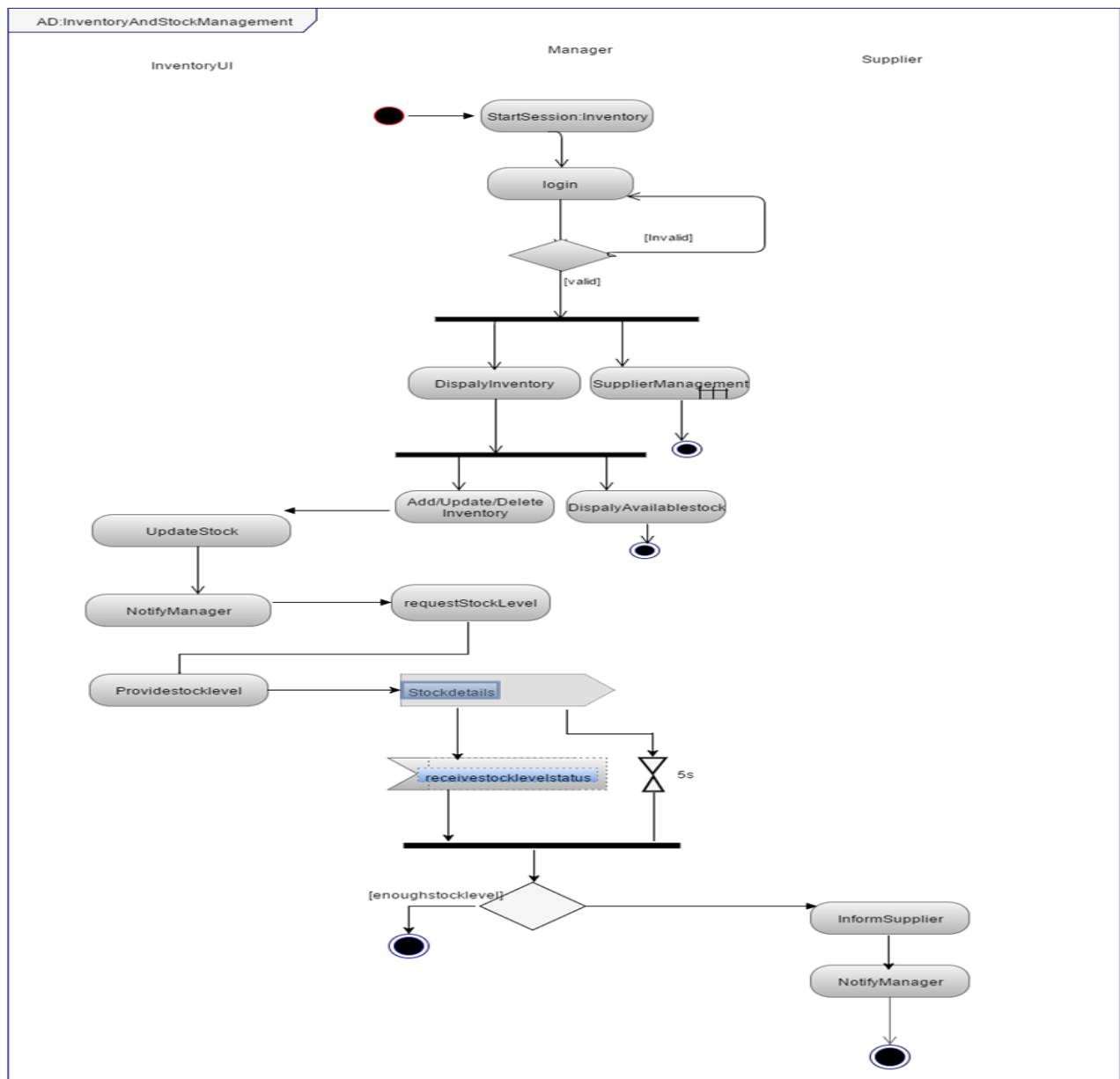


Figure 2.2.9 Activity diagram Inventory and stock management

- **Customer Service Management**

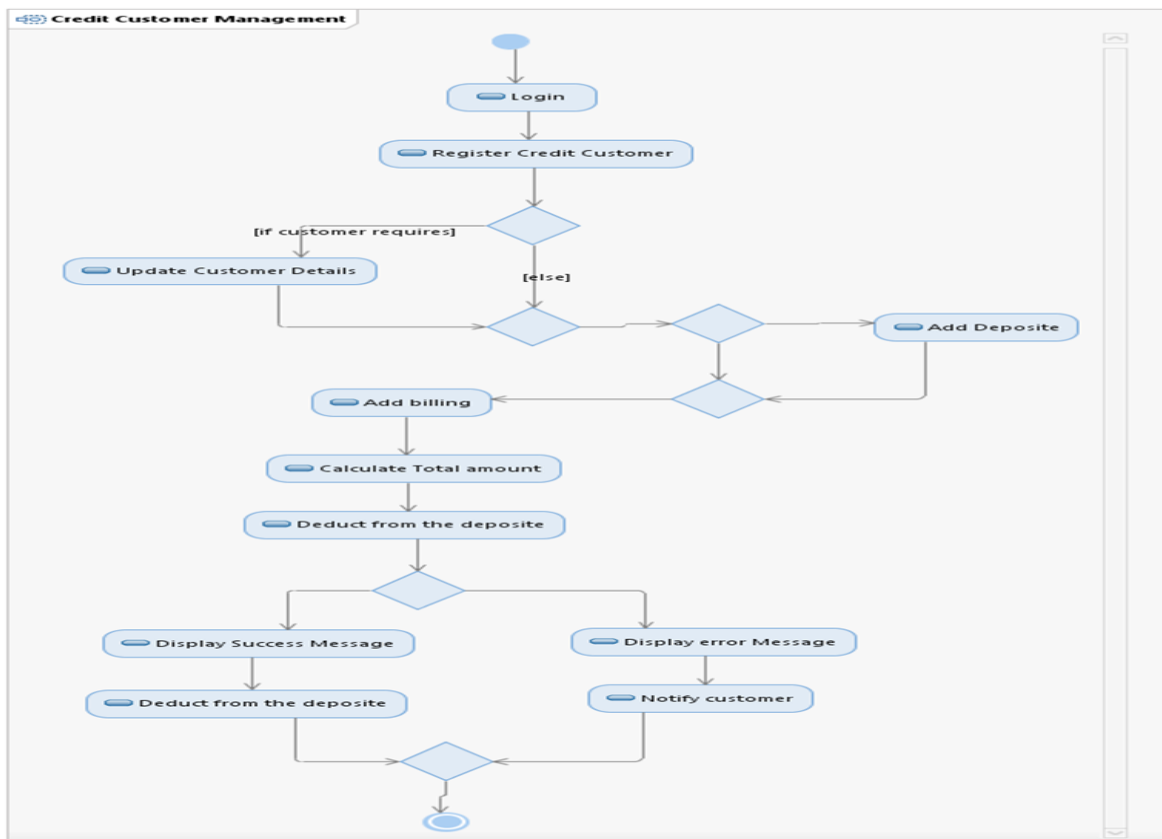


Figure 2.2.10 Activity diagram customer management

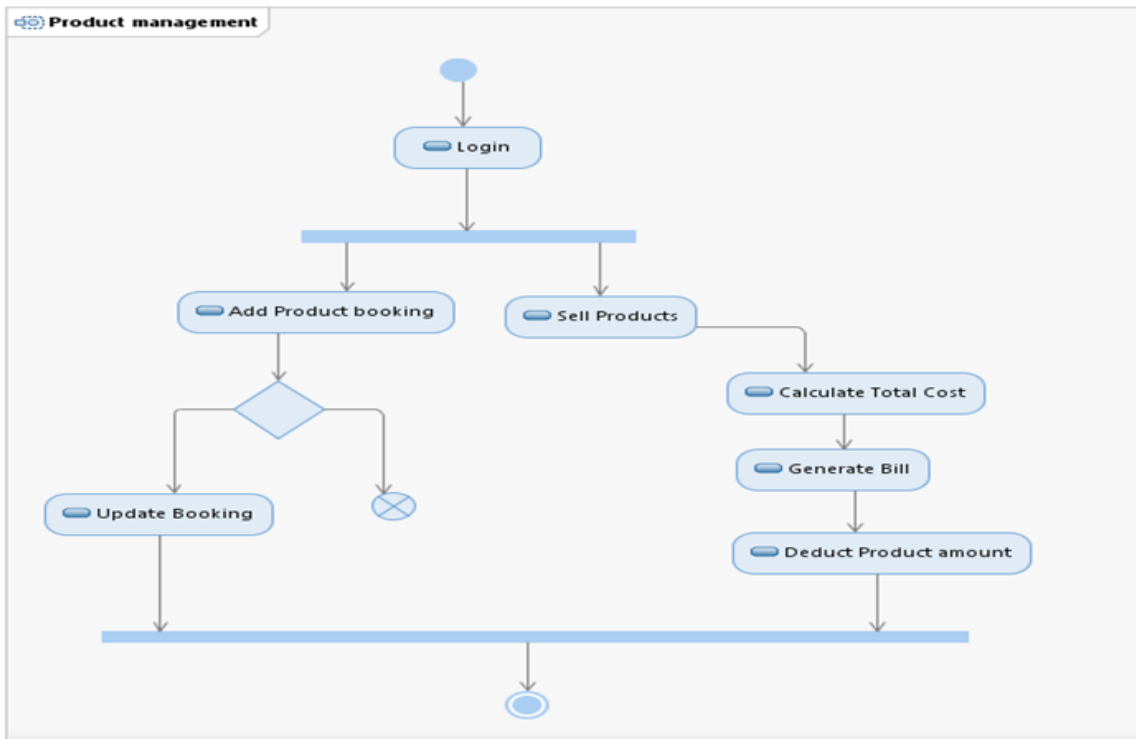


Figure 2.2.11 Activity diagram product management

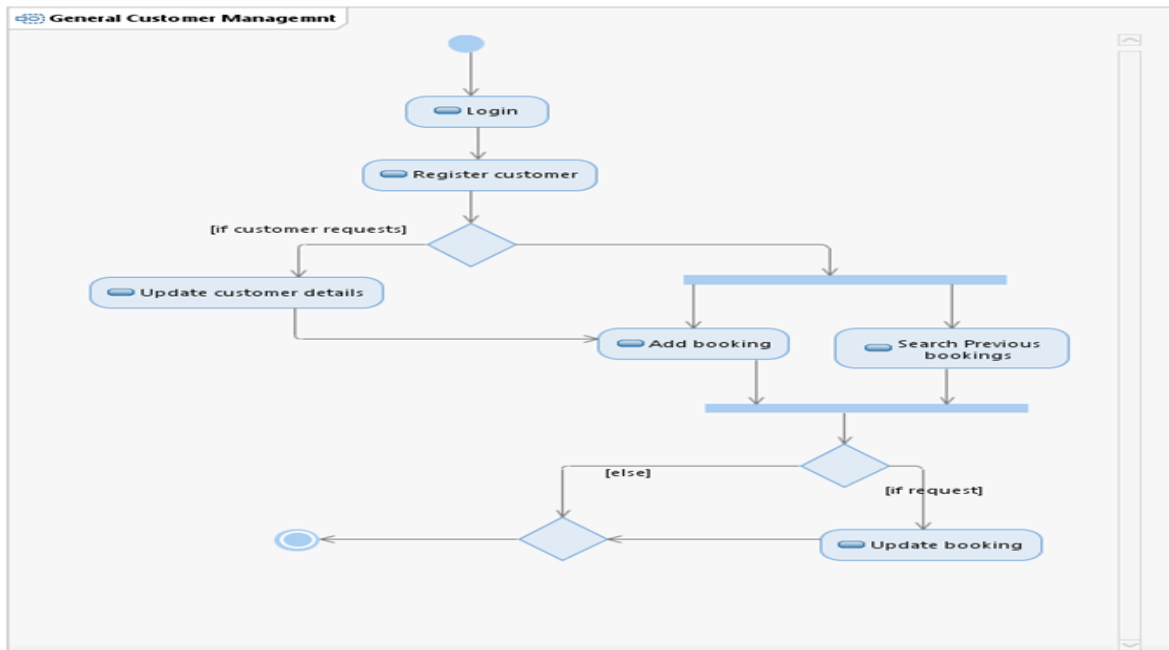


Figure 2.2.12 Activity diagram general customer management

- **Service Details Management**

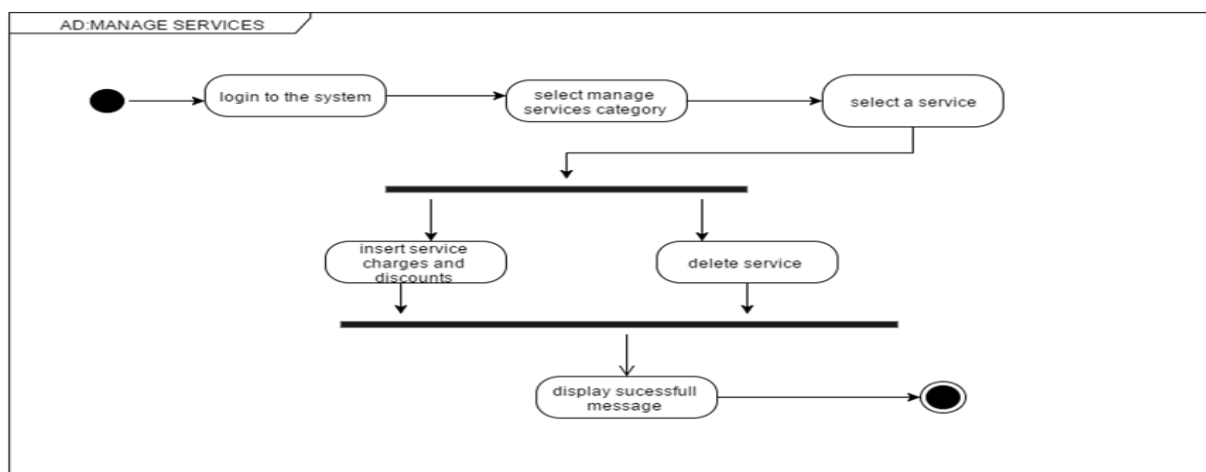


Figure 2.2.13 Activity diagram manage services

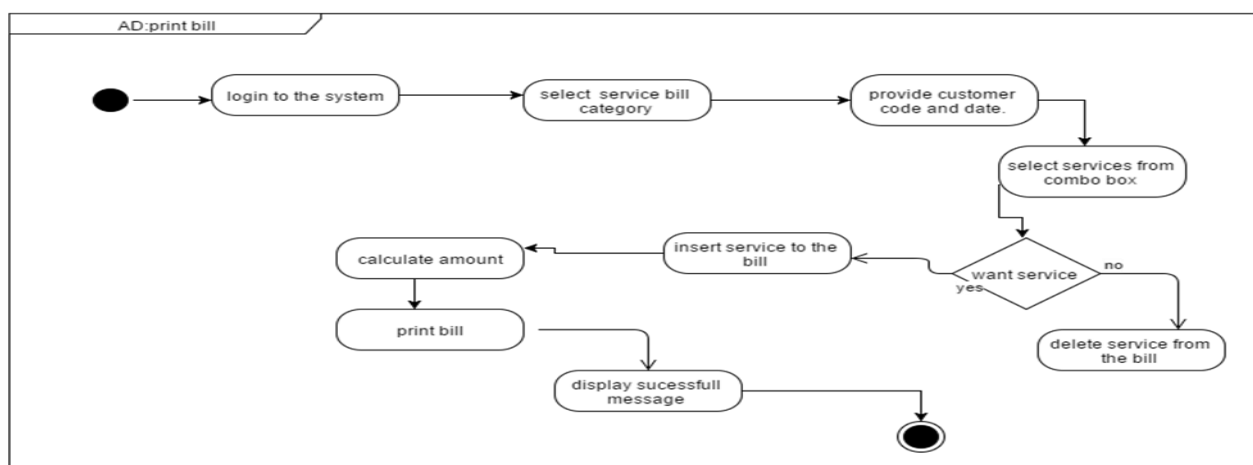


Figure 2.2.14 Activity diagram print bill

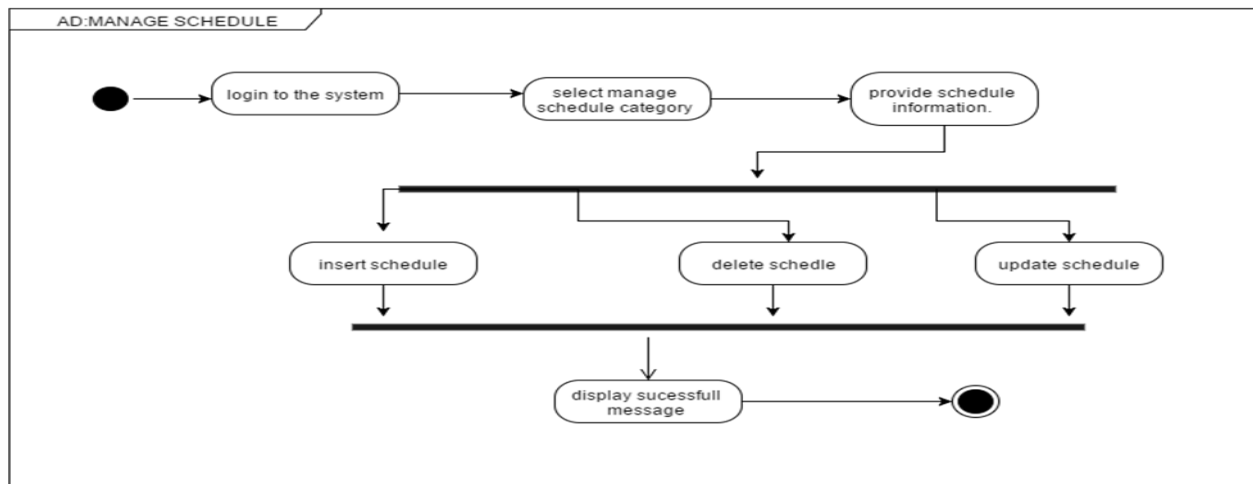


Figure 2.2.15 Activity diagram manage schedule

- **Machine Supply Management**

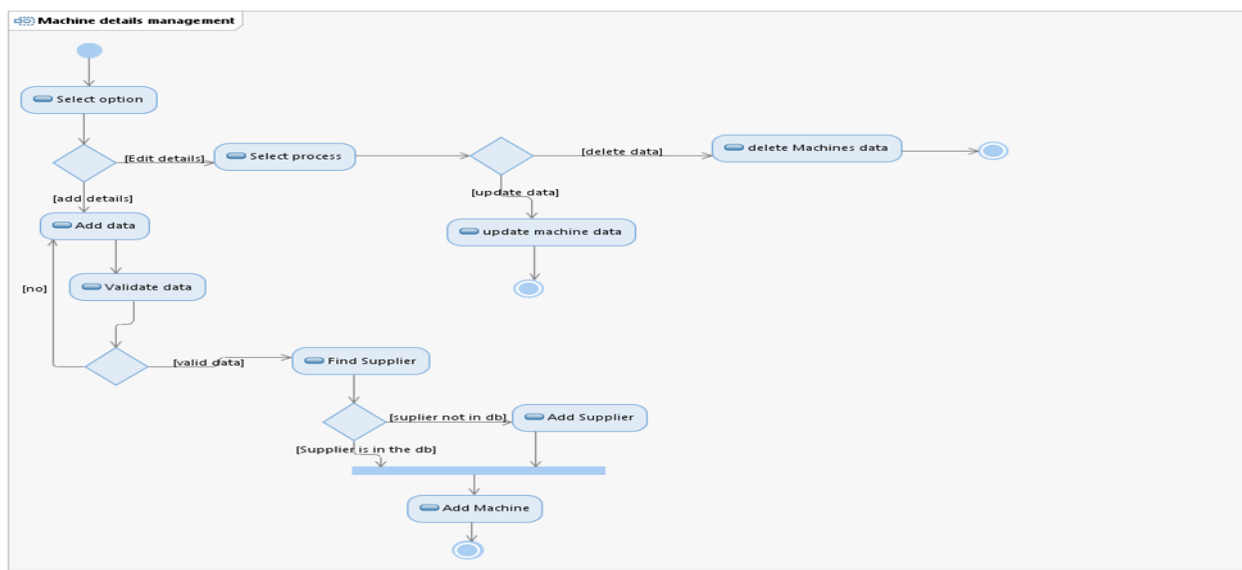


Figure 2.2.16 Activity diagram machine details management

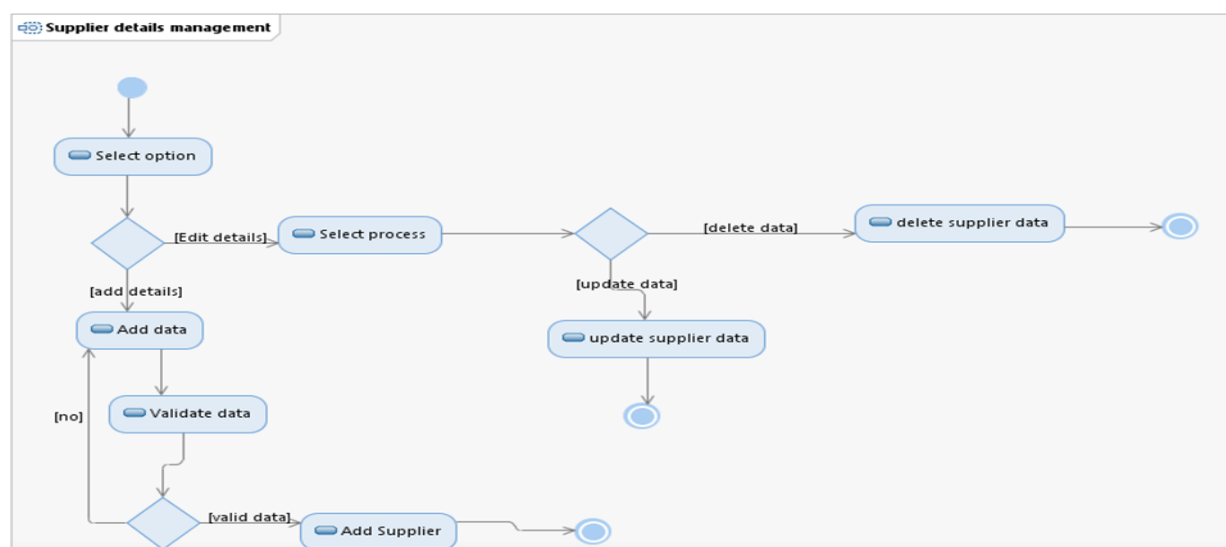


Figure 2.2.17 Activity diagram supplier details management

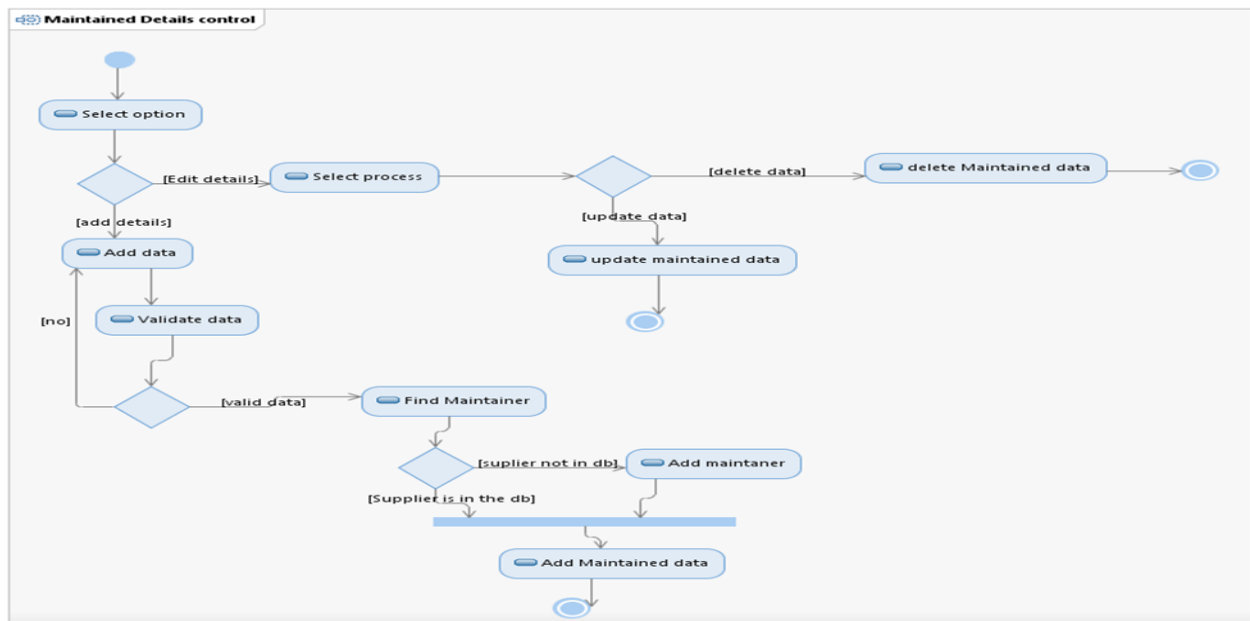


Figure 2.2.18 Activity diagram maintenance details control

SEQUENCE DIAGRAMS

- Human Resource Management

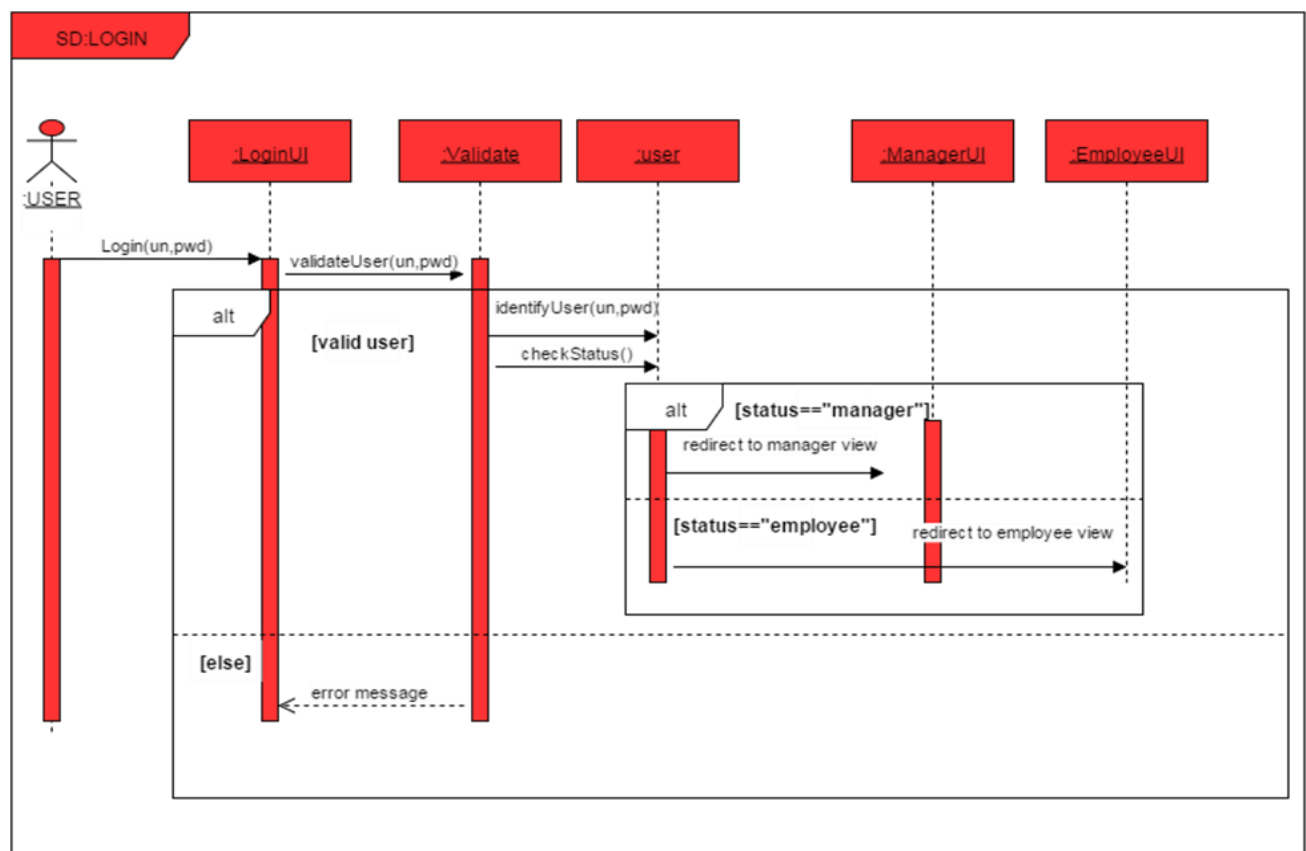


Figure 2.2.19 Sequence diagram login

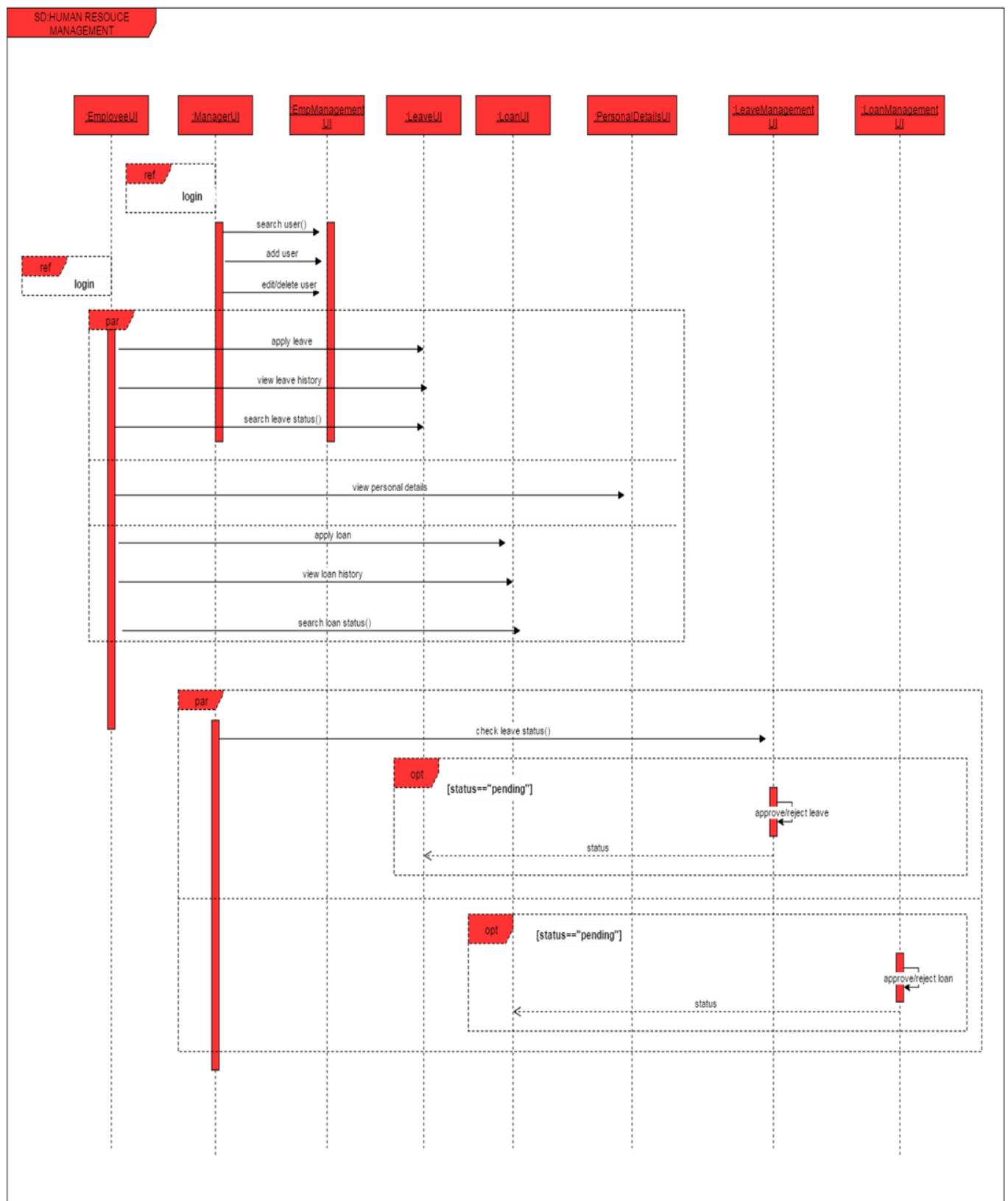


Figure 2.2.20 Sequence diagram HRM

- Fuel and Stock Level management

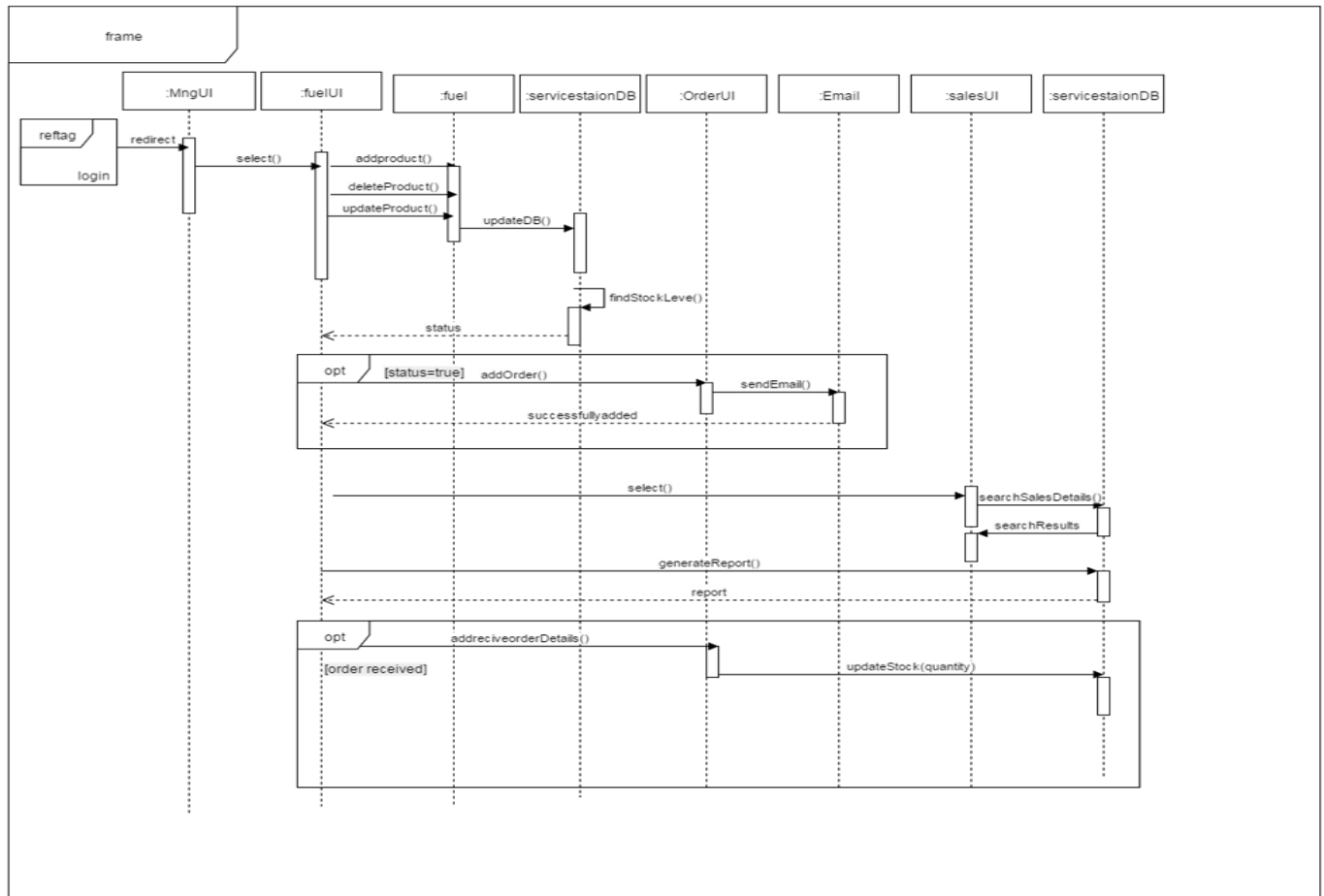


Figure 2.2.21 Sequence diagram stock level

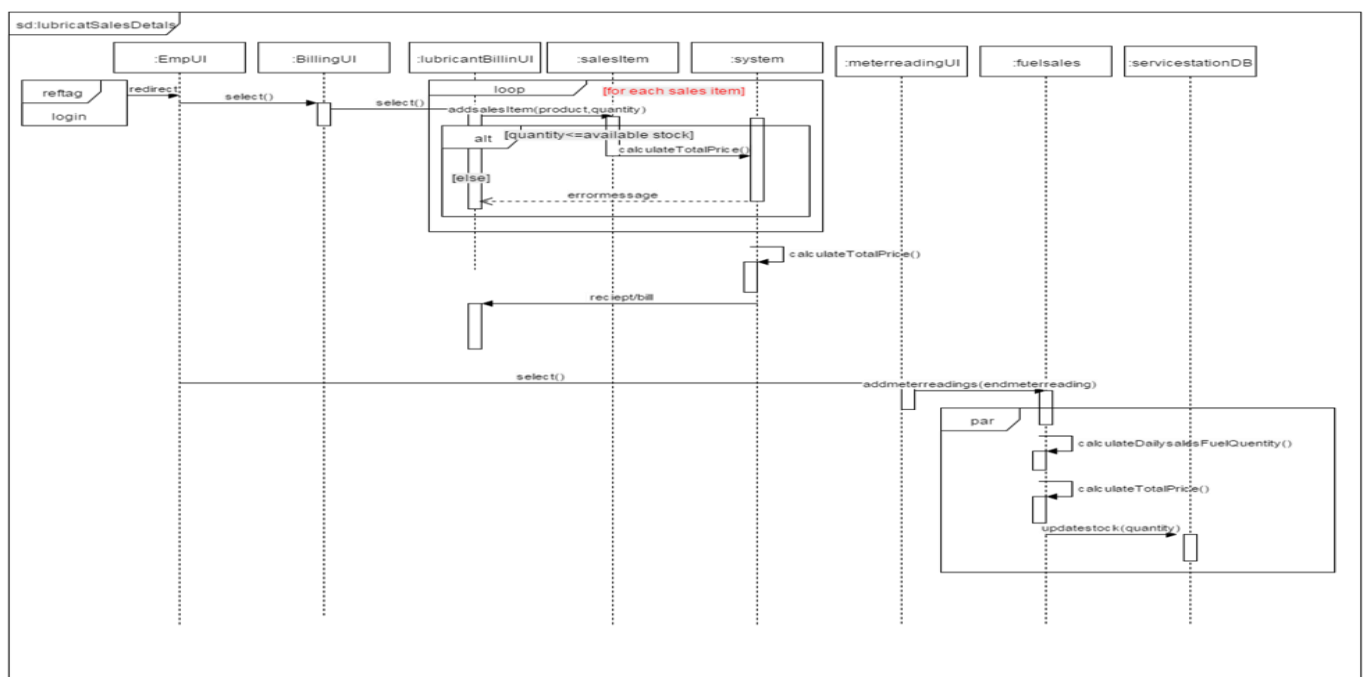


Figure 2.2.22 Sequence diagram lubricants sales details

- **General Account Management**

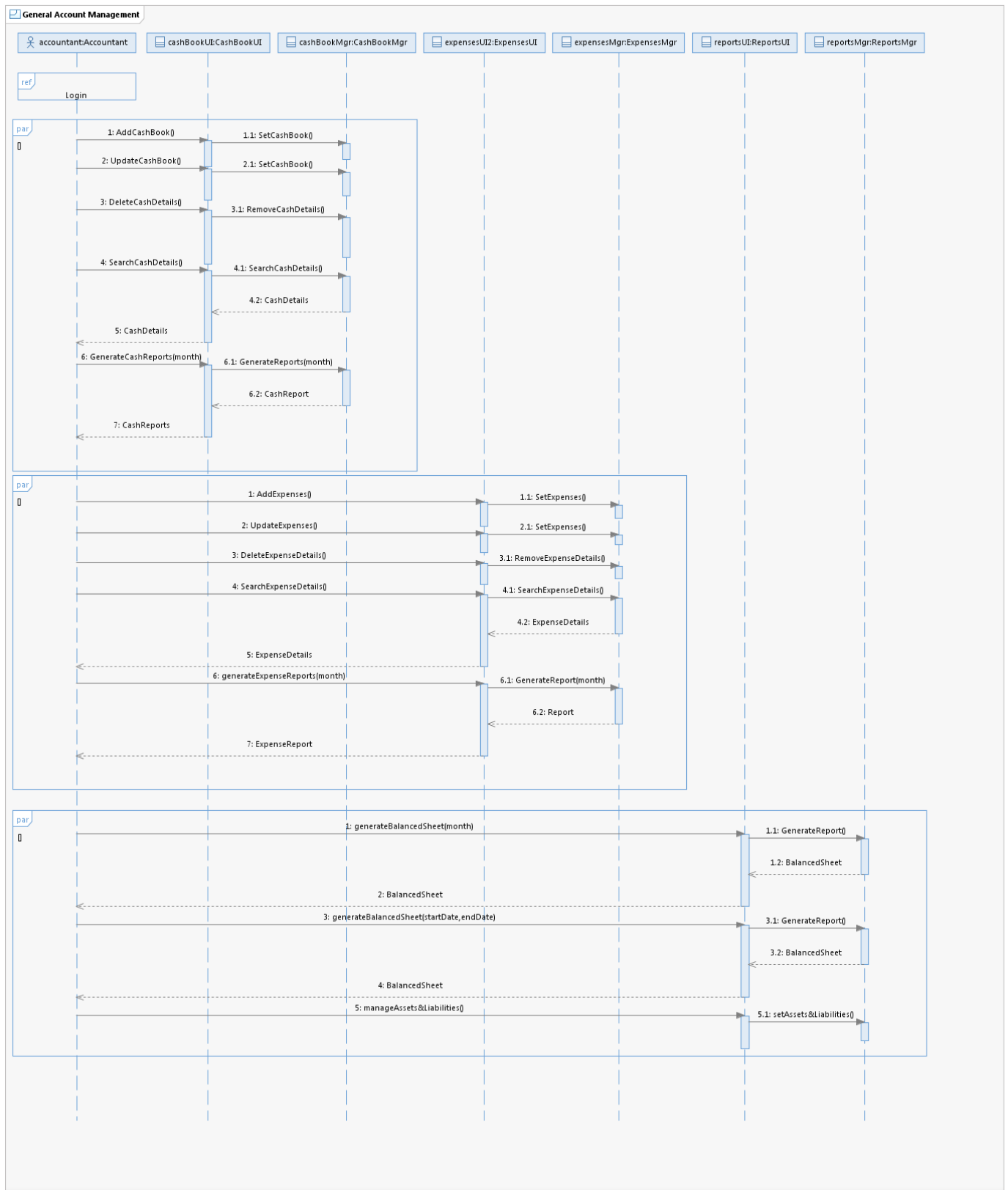


Figure 2.2.23 Sequence diagram general accounts management

- Payroll Management

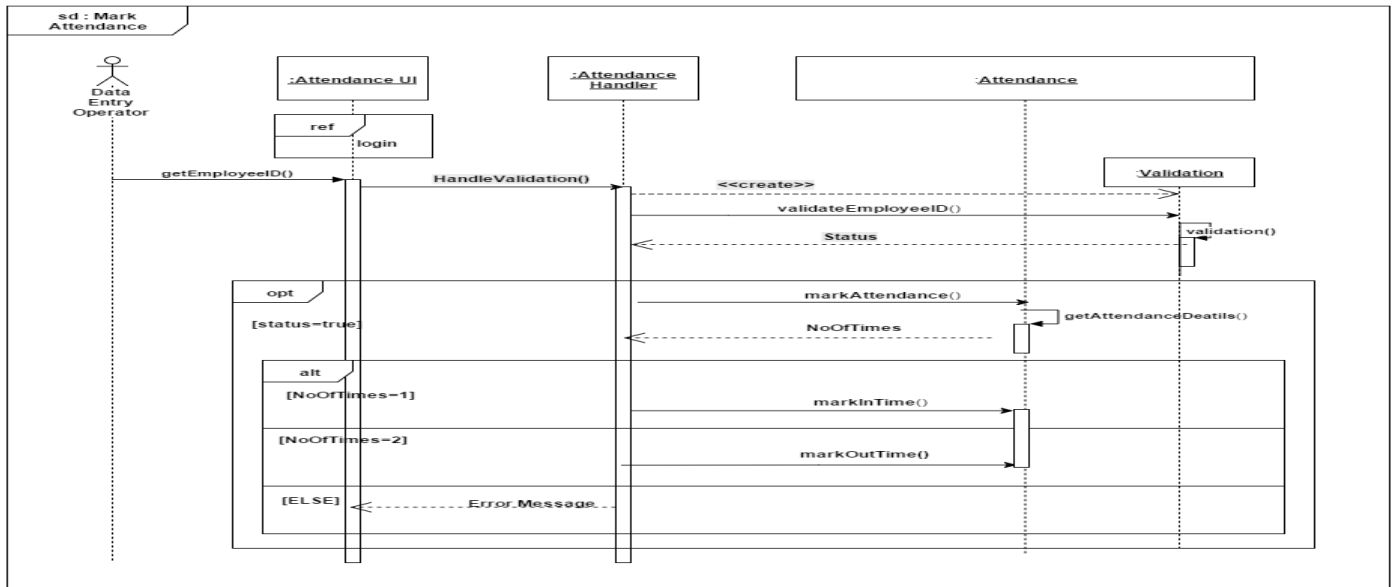


Figure 2.2.24 Sequence diagram mark an attendance

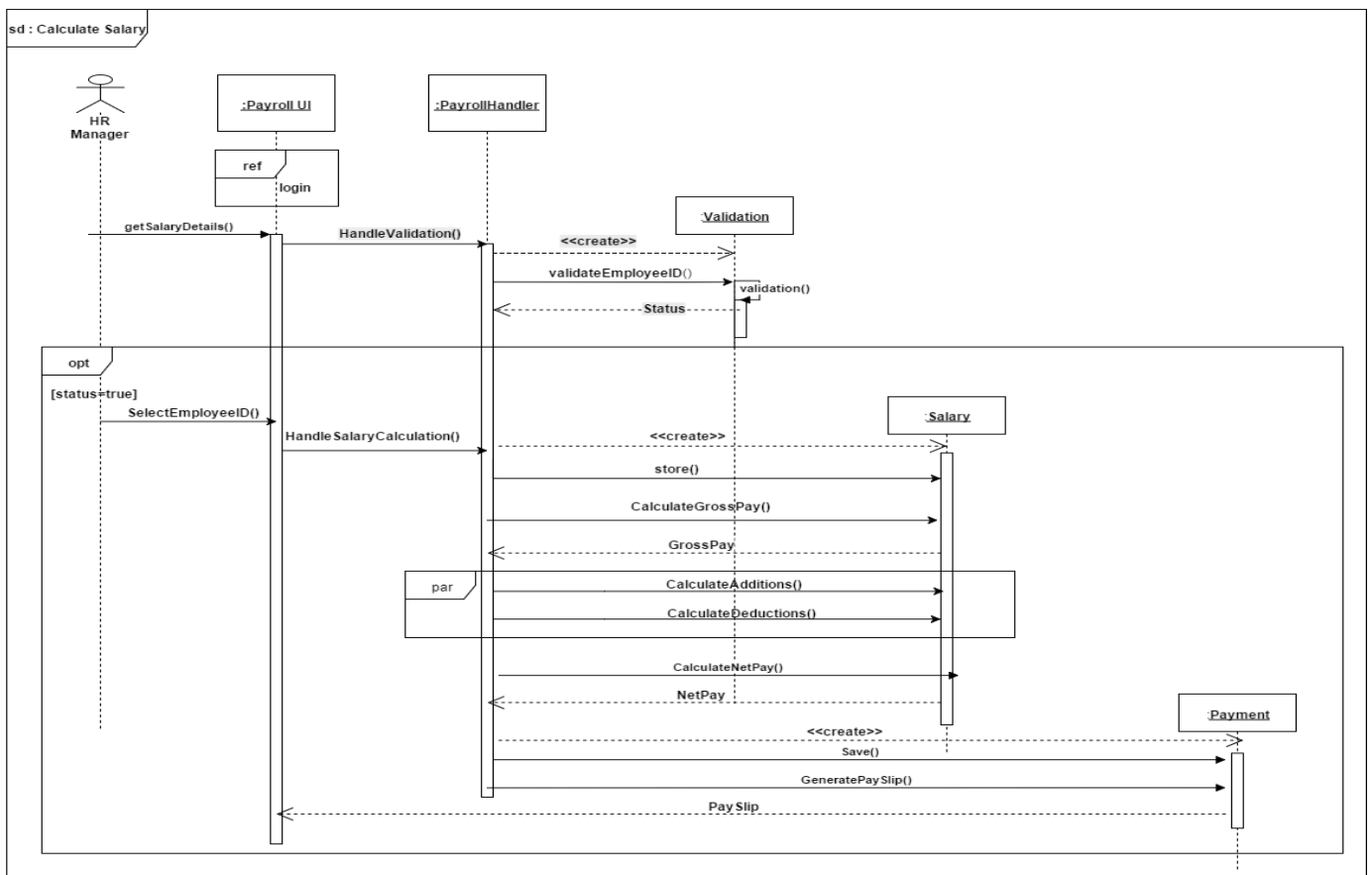


Figure 2.2.25 Sequence diagram calculate salary

- Spare Part Management

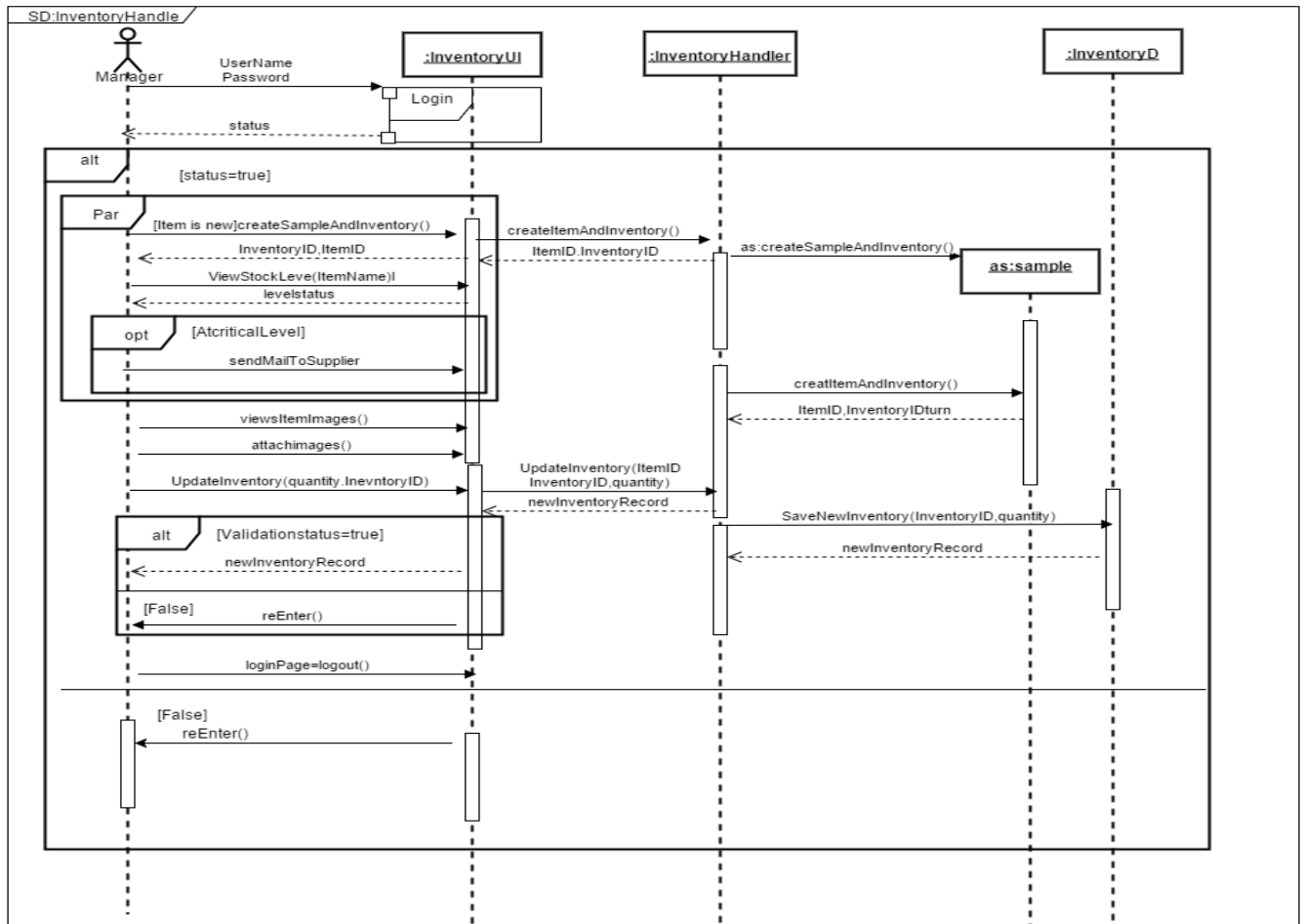


Figure 2.2.26 Sequence diagram Inventory Handle

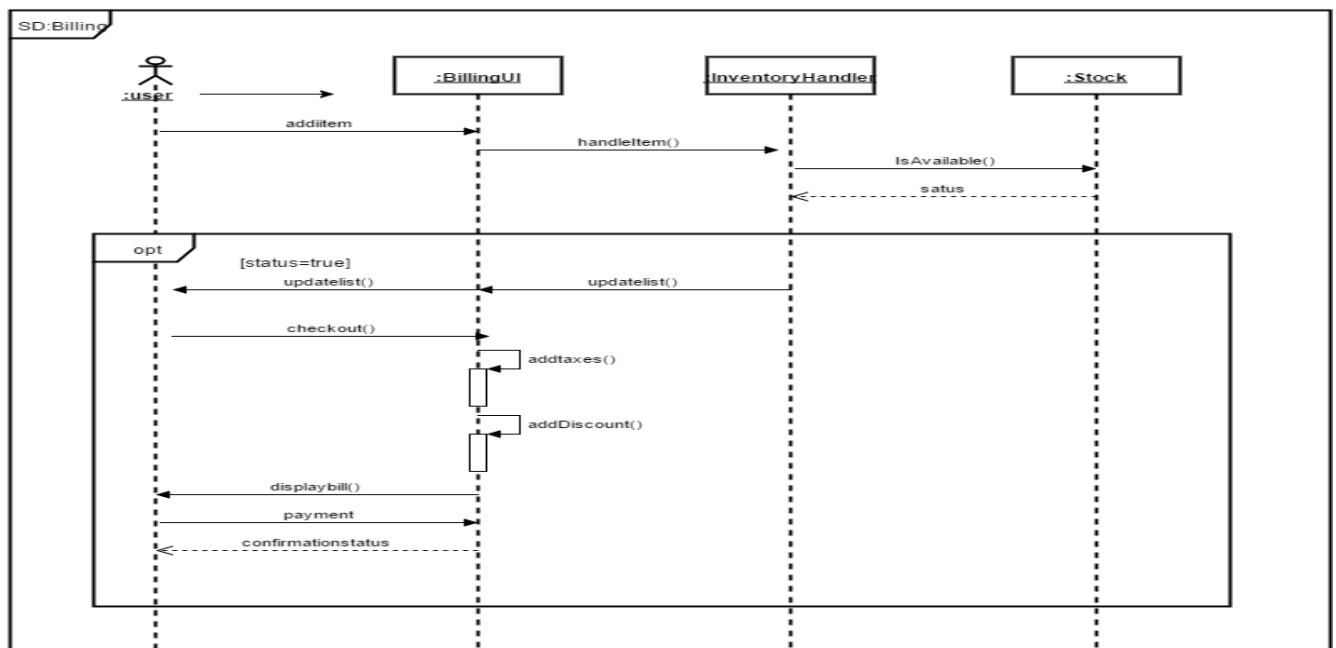


Figure 2.2.27 Sequence diagram billing

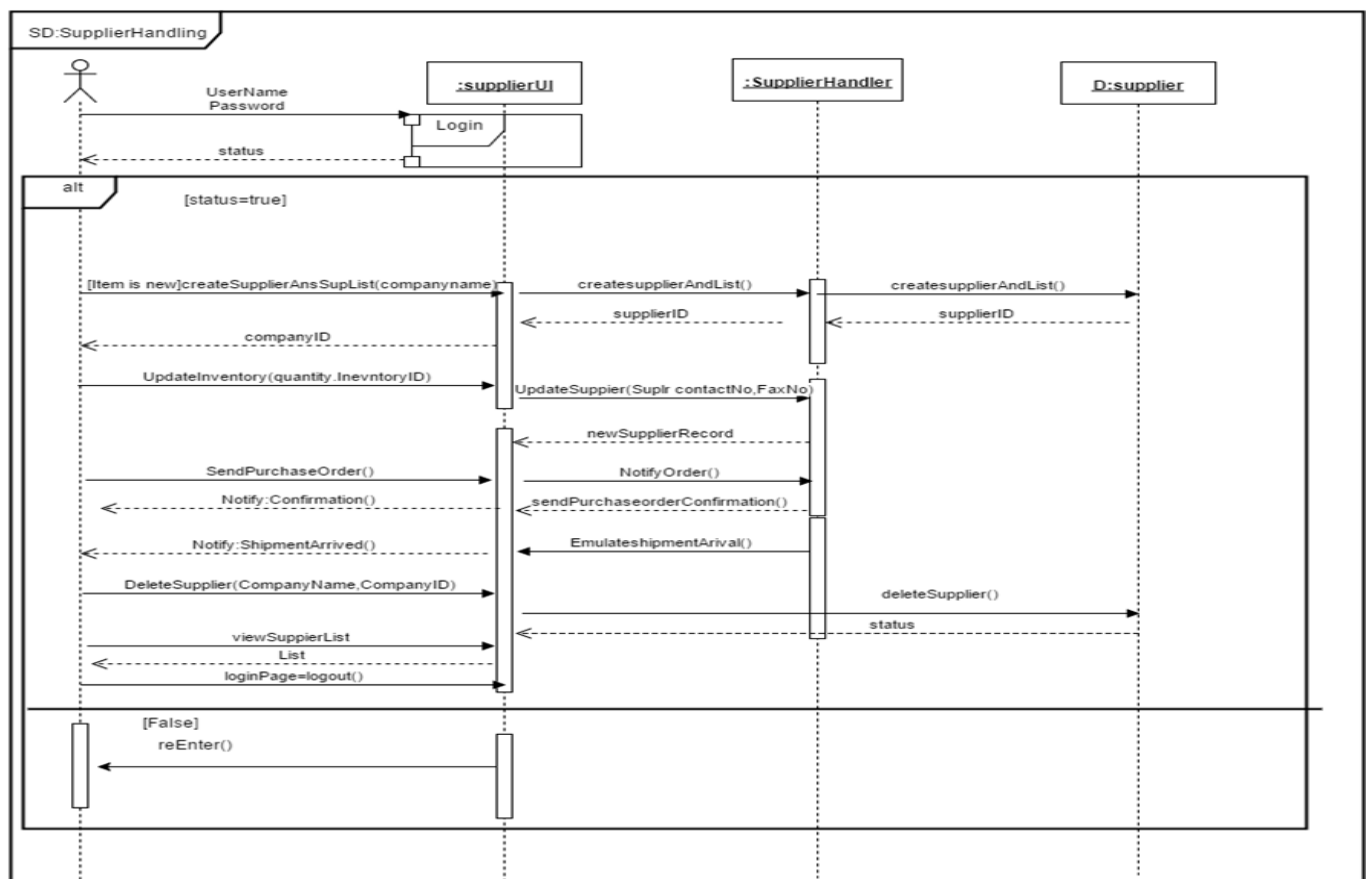


Figure 2.2.28 Sequence diagram supplier handling

• Customer Service Management

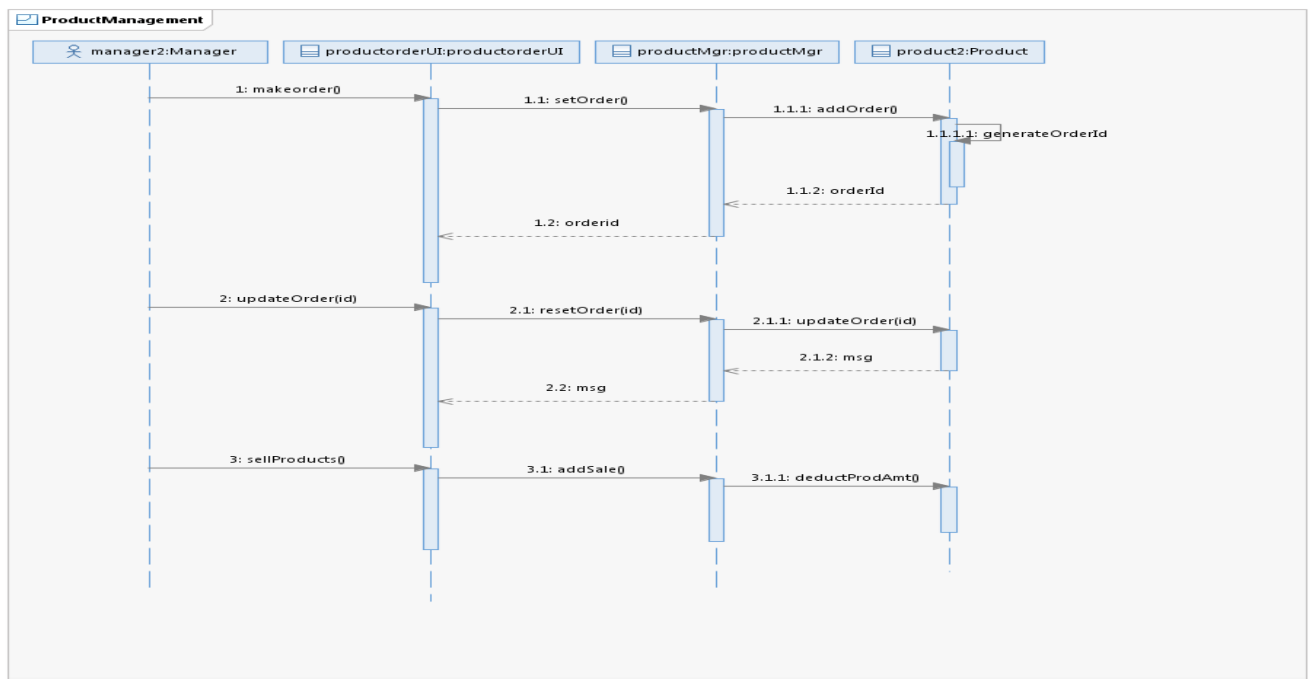


Figure 2.2.29 Sequence diagram product management

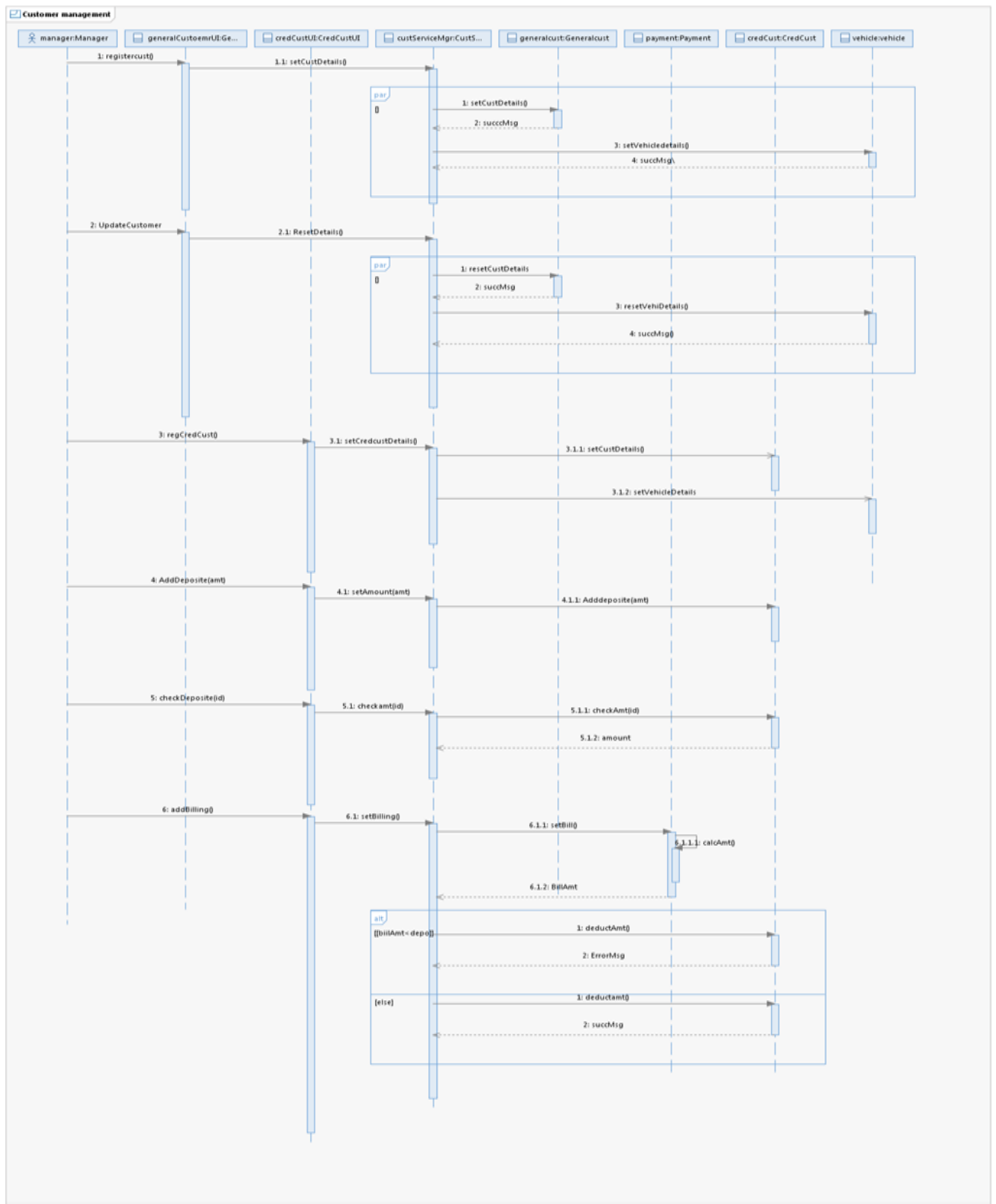


Figure 2.2.30 Sequence diagram customer management

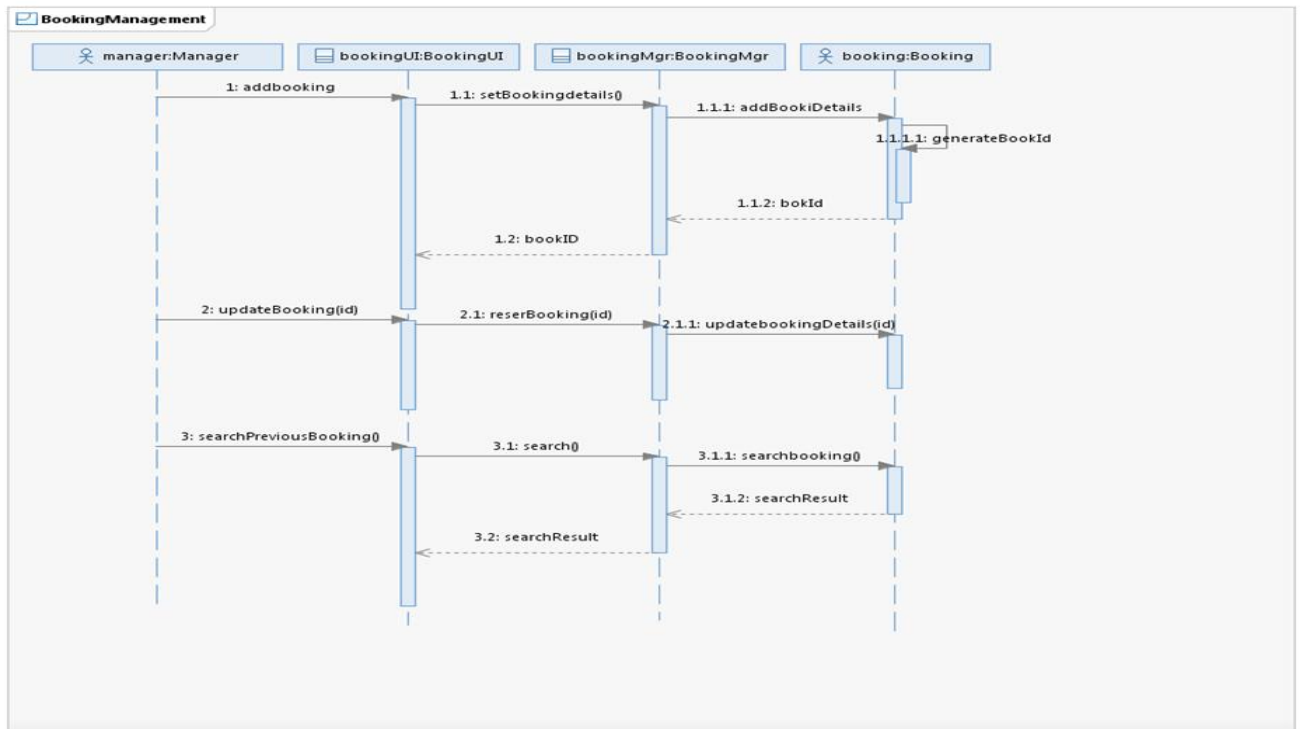


Figure 2.2.31 Sequence diagram booking management

- **Service Details Management**

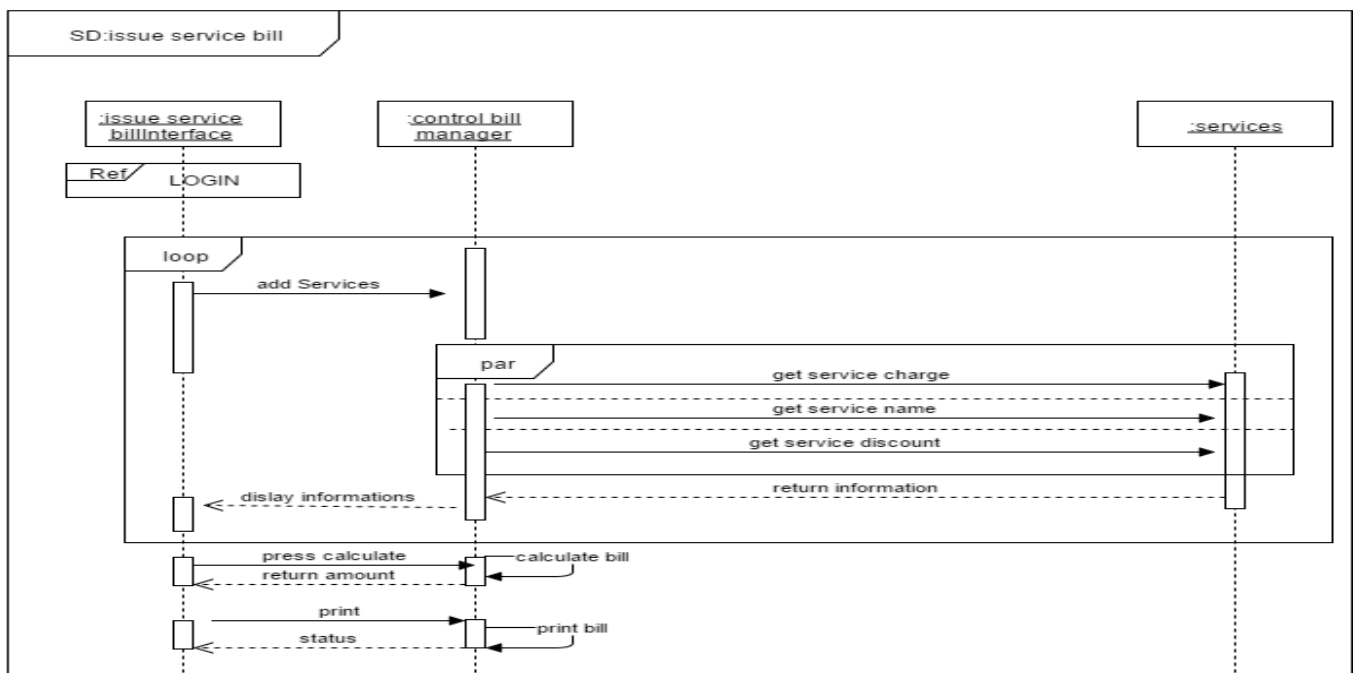


Figure 2.2.32 Sequence diagram issue service bill

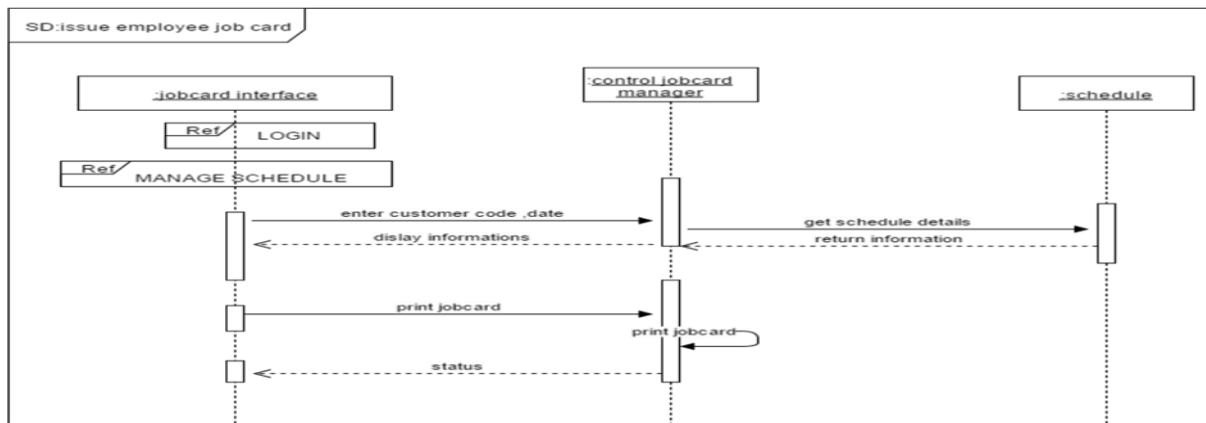


Figure 2.2.33 Sequence diagram employee job card

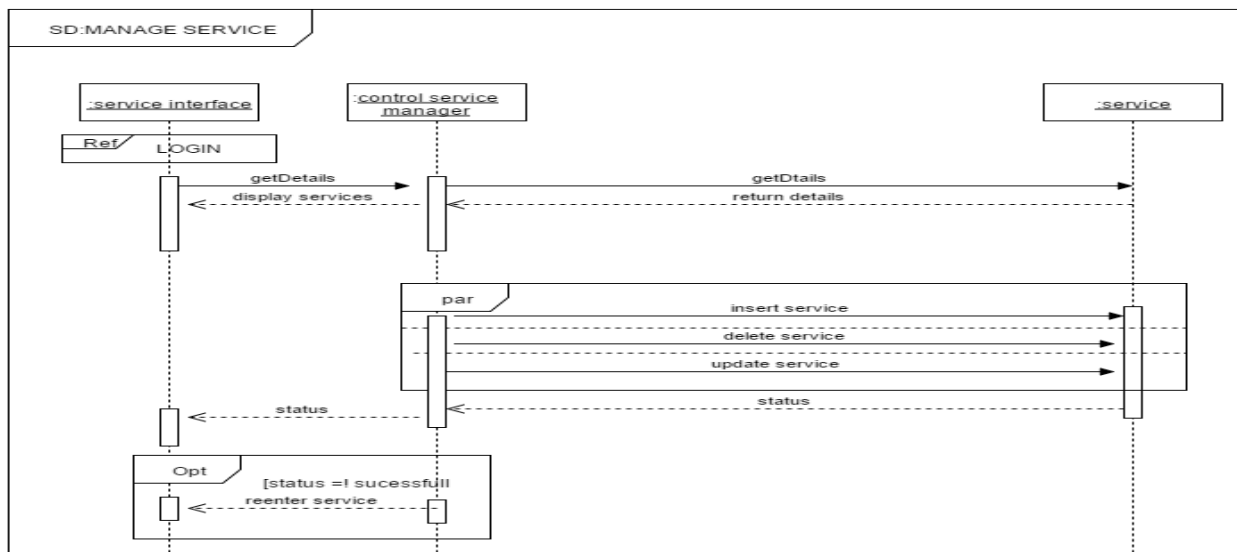


Figure 2.2.34 Sequence diagram manage service

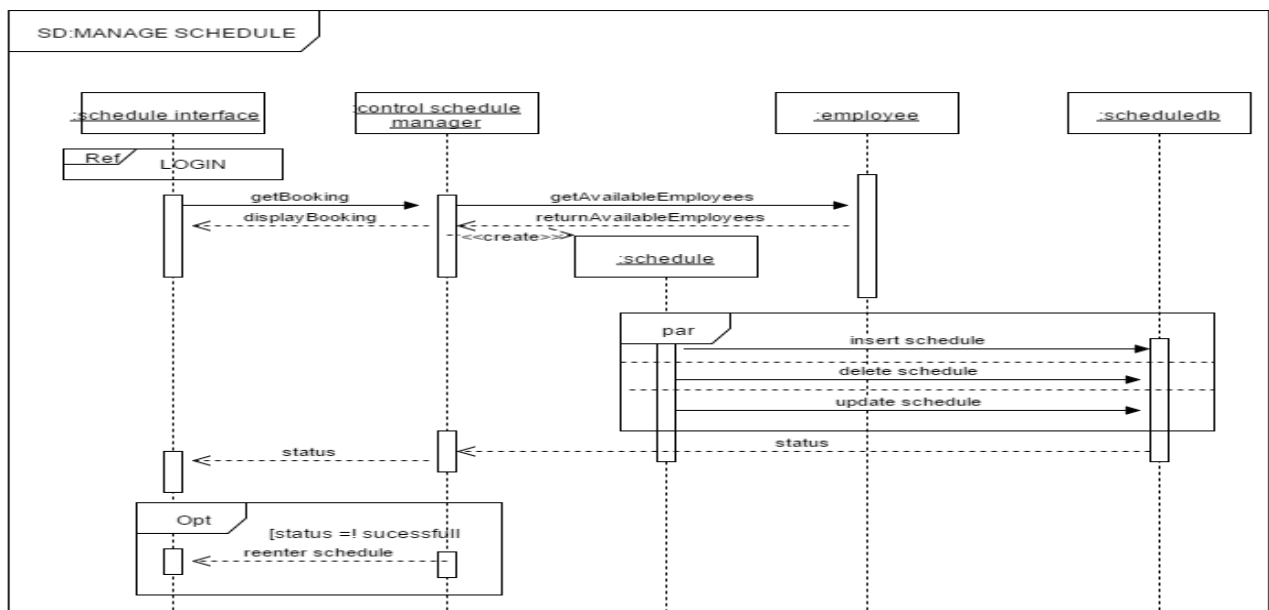


Figure 2.2.35 Sequence diagram manage schedule

Machine Supply Management

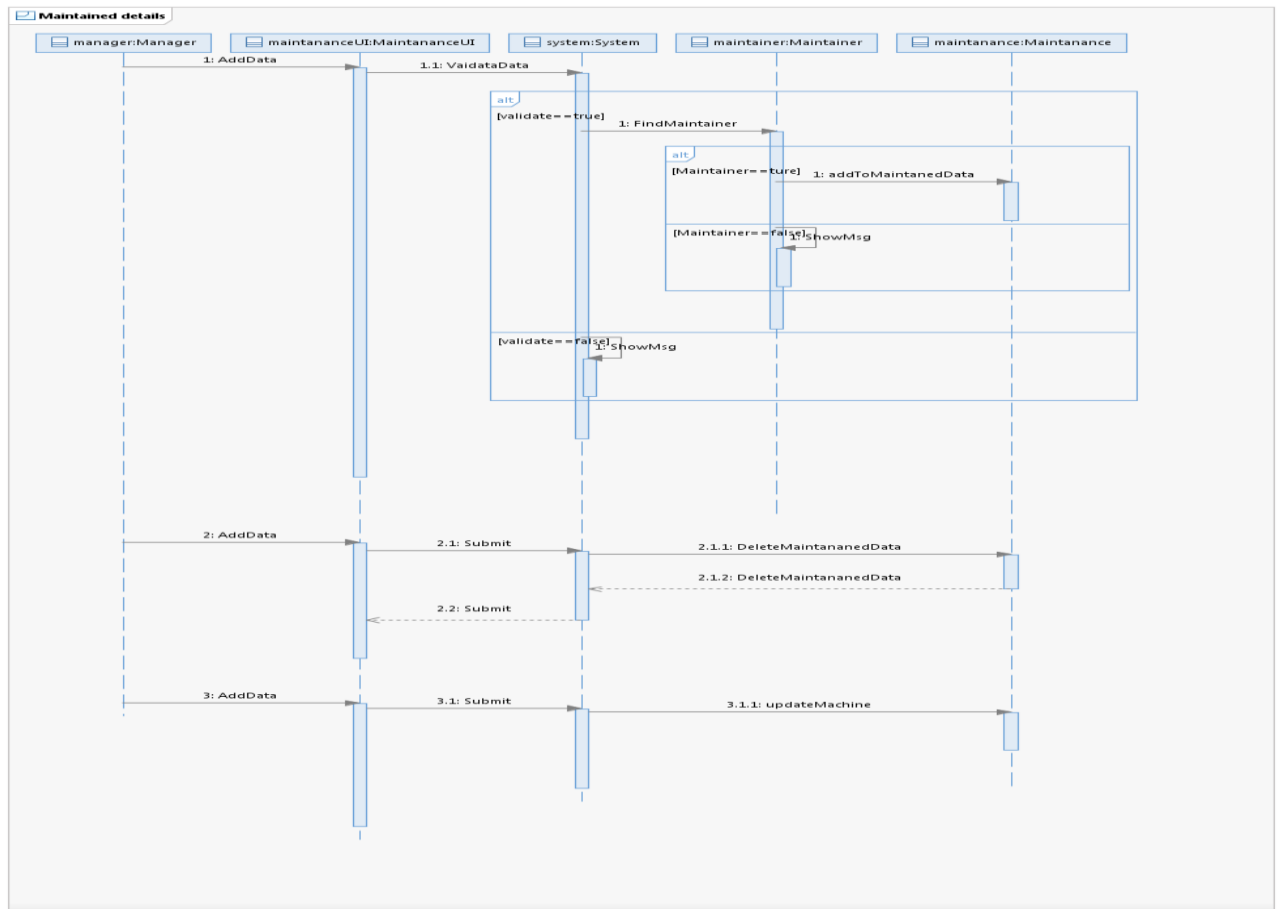


Figure 2.2.36 Sequence diagram maintenance details

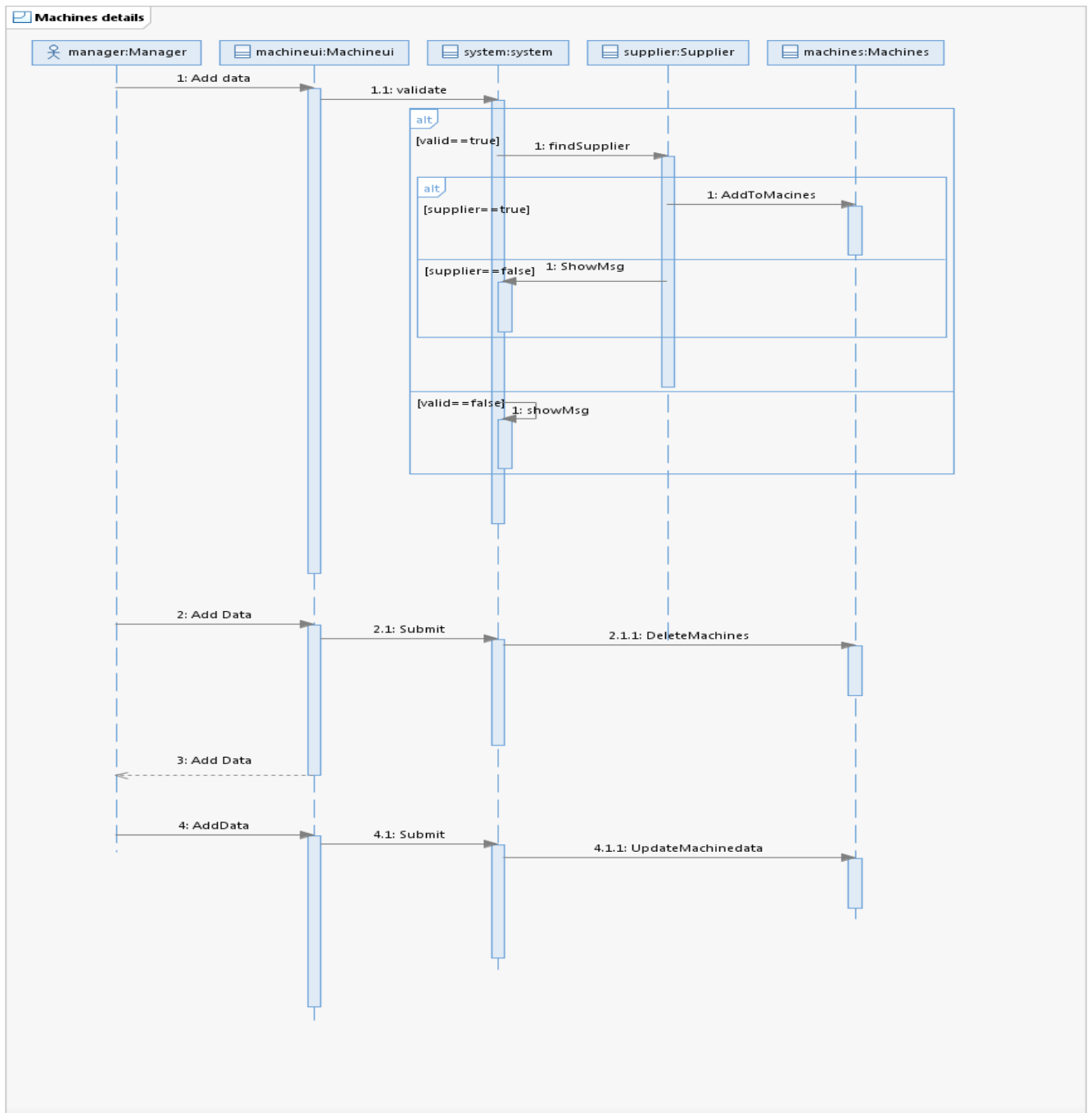


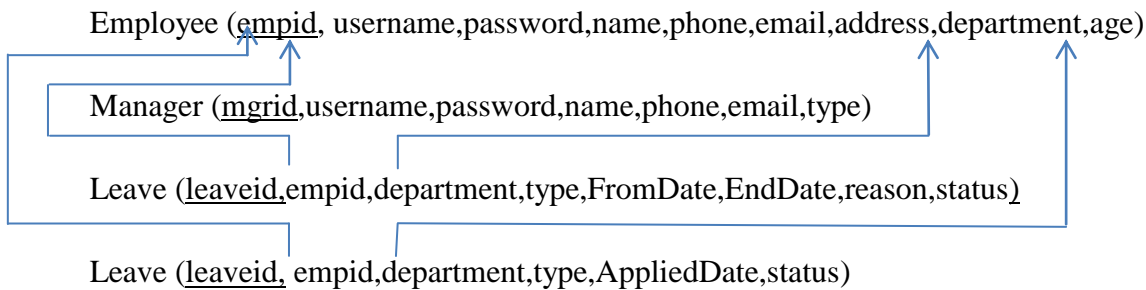
Figure 2.2.37 Sequence diagram machine details

DATABASE DESIGN

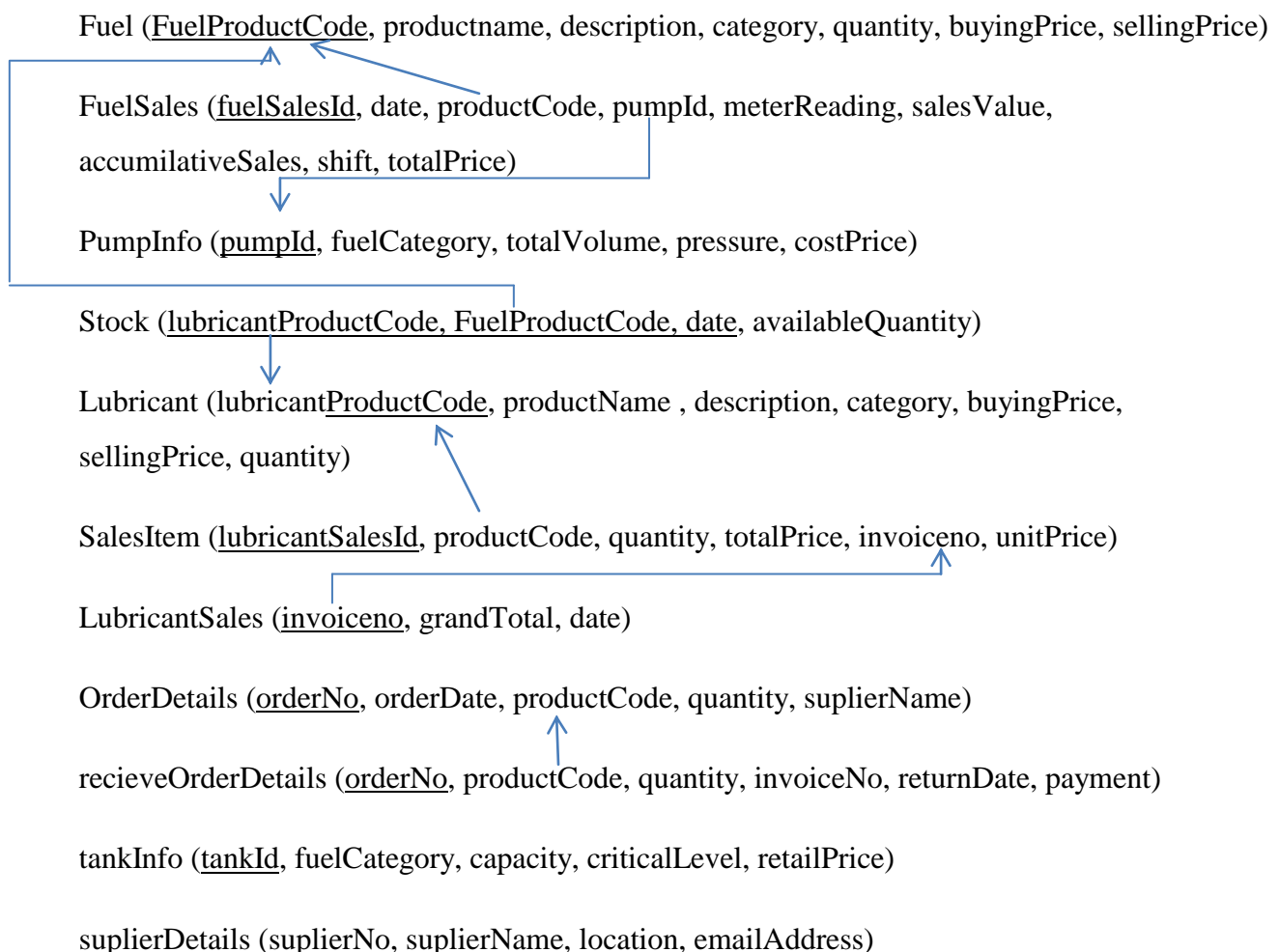
ER-DIAGRAM

RELATIONSHIP SCHEMA

HUMAN RESOURCE MANAGEMENT



FUEL SALES AND STOCK LEVEL MANAGEMENT



SPARE PARTS MANAGEMENT

Billing(Billno,ItemID,dealername,contactno1,contactno2,Manufacture,Currentdate,paymenttype,Quantity,unitcost,NetTotal)

SparepartsStock (ItemID, Iname, Brand, supplier,quantity,purchasePrice,PurchasedDate)

Supplier(CompanyName,supID,country,SupAddrs,Email,Contact1,Contact2,Fax,ItemID,CCod)

PurchaseOreders (PurchaseID, NoOfItems, ItemID, OrderedDate, CreatedBy, SubmittedBy, PaymentType, UnitCostSuplierName,SupID)

SERVICES DETAILMANAGEMENT

Scheduled work (shno, date, serviceno, customerid, 1stemployee, 2ndemployee, 3rdemployee, 4thmployee, startTime, endTime)

Services (serviceno, servicename, serviceCharge, discount)

Service_station_bill (billno, billdate, customercode, billamount)

PAYROLL MANAGEMENT

Payment (pid, sid,month,grosspay,netpay,ot)

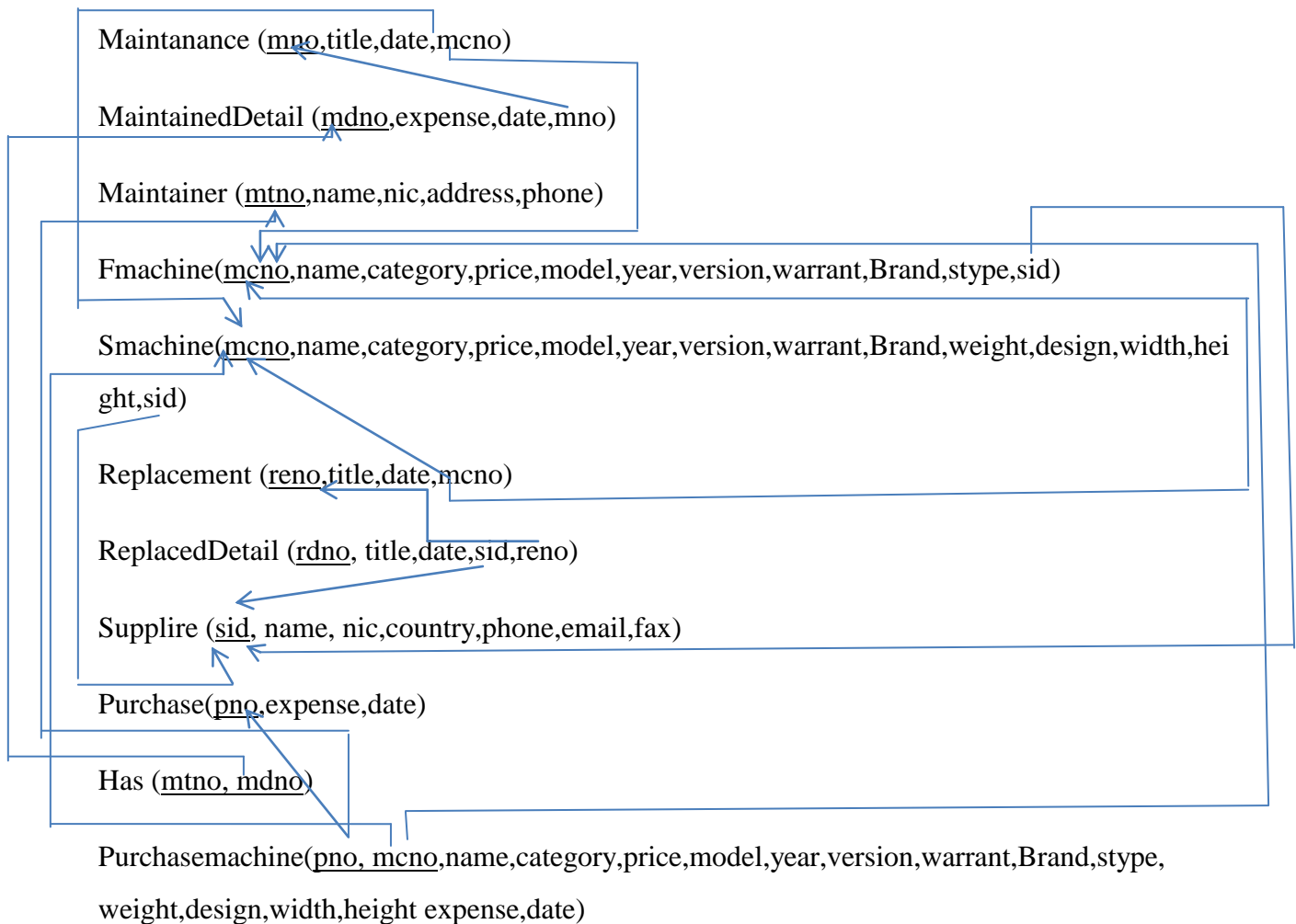
Rates (cid, category, medical_rate,supplementary_rate, ot_rate)

Salary (sid,eid,cid,name,basicsal,medical,supplementary)

Employee (eid...)

Attendance (aid,eid,date,in,out)

MACHINE SUPPLIER MANAGEMENT



GENERAL ACCOUNT MANAGEMRNT

Cashbook_payments (ID, Date, Description, Amount)

Cashbook_Receipts (ID, Date, Invoice/CheckNo, Description, Amount)

Expenses (ID, Date, Voucher_No, Description, Amount, Type)

Gen_Acc_Assets (ID, Description, Amount, Type, Notes)

Gen_Acc_Liabilities (ID, Description, Amount, Type, Notes)

CUSTOMER MANAGEMENT SYSTEM

Bookings (bookID, custID, custName, vehicleNumber, vehicleModel, dateOfBook, carwash, tyreRemove, seatShamp,

FullLubService, fullDetail, leatherSeatCare, autoDetail, interiorDet, repairs, wheelAlignment, extDetail, painting, wheelBalance, stdDetails)

Creditcustomer (creditCustID, custName, address, phone, email, regDate, initdeposit, deposit, lastDepositedDate)

Generalcustomer (custID, custName, address, phone, email, noOfVehicles, regDate)

Prodpurchase (id, dateOfPurchase, totalCost, noCarWashBott, noOilCans, noAirFilters, noFuelfill, noGreasecans, noPolishCloths, noPolishCans, noAirFreshners)

Productorder (prodOrderID, custID, custName, date, noCarWash, noOilCans, noAirFilters, noFuelfilters, noGrease, noPolishCloths, noPolishCans, noAirFreshners)

Servicestationproduct (prodID, prodName, supplierName, price, availableQTY)

Vehicledetails (vehicleID, vehicleNo, vehicleModel, custName)

CreditcutomerServicedetails(serviceId, custId, custname, vehicleNumber, vehicleModel, dateOfService, carwash, tyreRemove, seatShamp, fullLubService, fullDetail, leatherSeatCare, autoDetail, interiorDet, repairs, wheelAlignment, extDetail, painting, wheelBalance, stdDetails, totalCost)

CreditCustomerFueldetails (fuelserviceId, custId, custname, vehicleNumber, vehicleModel, dateOfService, amtOctane92, amtOctane72, amtDiesel, amtKerosine, totalCost)

2.3 Implementation

We have used NET Beans 8.0 as the main development IDE of our project. We selected this IDE since it is a highly facilitated IDE used by the leading professionals of the industry.

We decided to use java as our language as it is one of the most commonly used languages in the industry. Also it gives grate flexibility to the developer and most importantly it is a major OOP language.

As the database our system we selected and MYSQL due to several reasons. First of all, since the developed system is the windows based one, we expected that the vamp server would our system very well. Also it is relatively easy to build and maintain the database.

The client expected a very high level of analyzing of stored data and reporting features from the proposed system. This requirement led us to selecting very powerful and standard reporting tool.

We have chosen iReport 5.5 as the reporting tool of our system.

2.4 Testing

HUMAN RESOURCE MANAGEMENT

Test Case ID: 01

Module Name: System Login Access

Test Title: Verify login with valid username and password to Employee View

Description: Test the system login page

Pre-Conditions: User has valid user name and password

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Enter user name	1_EMP	User should be able to login to employee main interface	User is successfully logged in to Employee View GUI	Pass	
2	Enter password	111				
3	Press login button					
4	Enter invalid user name	2_EMP	User should not be able to login to employee main interface	Error message will be displayed	pass	

2	Enter invalid password	111				
3	Press login button					

Test Case ID: 02

Module Name: Employee Registration

Test Title: Add New Employee

Description: Test adding a new employee

Pre-Conditions:

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Enter Name, Age, Email, Address, Phone, department, username, password	Hasinie,23, hashi93rox@gmail.com, 0711234624, filling station, 5_EMP,555	Successfully added	User is successfully logged in to Manage View GUI	pass	
2	Press ADD button					
3	Enter Name, Age, Email, Address, Phone, department, username, password	Hasinie,23, hashi93rox@gmail.COM, 0711234624, filling station, 5_EMP,555	Error message will be displayed	Cannot add data successfully	pass	
4	Press ADD button					

Test Case ID: 03

Module Name: Leave Management

Test Title: Apply new leave

Description: Test applying a new leave

Pre-Conditions:

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Enter emp id,department, type,from date,end date,reason	1,service station,casual,2015_08_06,2015_08_07wedding	Successfully applied a leave	User is successfully logged in to Manage View GUI	pass	
2	Press Apply button					

Test Case ID: 04

Module Name: Leave Management

Test Title: View leave history

Description: Test checking leave status

Pre-Conditions: user should already applied a leave

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Load leave history tab					
2	Select leave status	Pending	Display pending leaves	User can view his pending leave requests	pass	

Test Case ID: 05

Module Name: Leave Management

Test Title: Approve/Reject leaves

Description: Test approving /rejecting leaves

Pre-Conditions: There should be already applied leaves

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Load leave management tab					
2	Select leave status	Pending	Display pending leaves	User can view pending leave requests		
3	Press Approve Leave button	Approved	Change leave status to approved	Pending leave request is approved	pass	

FUEL SALES AND STOCK LEVEL MANAGEMENT.

Test Case ID: 01

Module Name: Add product Details

Test Title: Add new fuel

Description: Test adding a new fuel product details

Pre-Conditions:

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Enter product id, product name, category, quantity, buying price, selling price, description	F011, Lanka Auto diesel, Diesel, 0, 120, 180, JASO MA2	Successfully added	User is successfully add product details	Pass	
2	Press ADD button					
3	Enter product id, product name, category, quantity, buying price, selling price, description	F012, Lanka Petrol 92 Octane, petrol, 0, 150F, 180, JASO FC	Error message will be displayed	Cannot add data successfully	pass	
4	Press ADD button					

Test Case ID: 02

Module Name: Order purchase Management

Test Title: Add new order

Description: Test adding a new order and send email

Pre-Conditions:

Steps	Test steps	Test Data	Expected Results	Actual Results	Status(Pass/Fail)	Notes
1	Enter Order no, order Date, Product Code, quantity, supplier Name	F001W, 2015-08-17, F011, 1000, A.A perera company (pvt) Ltd.	Redirected to the Gmail account page.	User able to send emails to the suppliers	pass	
2	Press Email button					

Test Case ID: 03

Module Name: Filling station Billing

Test Title: print lubricant bill

Description: Test printing a bill/receipt for lubricant sales

Pre-Conditions:

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Load lubricant bill interface in Employee view					
2	Enter date, product name, Quantity, invoice no	2015-18-17, Hyrax Cepetco samudra, 100,L22				
3	Press ADD button		Display total price for one Item/product separately in the table and display grand total value	User able to see total price for each items separately and finally grand total price	pass	

4	Press print button		Create a bill for the lubricant sale and save it to the pc	Print the bill or receipt	pass	
5	Enter date, product name, Quantity, invoice no	2015-18-17, Hyrax Cepetco 4T 20W40, 120000,L234				
6	Press Add button		Display error message with remaining quantity	User cannot add items that the available quantity is less than entered quantity	pass	

Test Case ID: 04

Module Name: Sales details

Test Title: View daily sales details

Description: Test checking daily sales details

Pre-Conditions: user should already add fuel and lubricant sales

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Load fuel sales tab					
2	Select date and press search button	2015-08-18	Display sales details in relevant data	User can view fuel sales details in relevant date	pass	

Test Case ID: 05

Module Name: fuel sales

Test Title: Add daily total sales of fuel

Description: Test adding end meter readings and calculating daily sales value and daily total price

Pre-Conditions:

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Load Meter Reading interface					
2	Enter date, pump no, product name, shift, end meter reading and press SAVE button	2015-08-17, p1, Lanka Auto Diesel, 1, 34100	Display successful message	User is successfully add correct meter reading to correct shift	pass	
3	Enter date, pump no, product name, shift, end meter reading and press SAVE button	2015-08-17, p1, Lanka Petrol 92 Octane, 2, 34004w	Display error message	User cannot add invalid values for meter readings	pass	

GENERAL ACCOUNT MANAGEMENT.

Test Case ID: 01

Module Name: Add cash book payments

Test Title: Add new payment

Description: Test adding a new payment details

Pre-Conditions:

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Enter Date, Description, Amount	2015-08-10, By Fuel Purchases, 140000	Successfully added	User is successfully add payment details	Pass	
2	Press ADD button					
3	Enter Date, Description, Amount	2015-08-10, By Fuel Purchases, 14000F	Error message will be displayed	Cannot add data successfully	Pass	
4	Press ADD button					

Test Case ID: 02

Module Name: Add cash book receipts

Test Title: Add new receipts

Description: Test adding a new receipt details

Pre-Conditions:

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Enter Date, Invoice/ CheckNo, Description, Amount	2015-08-22, 15082022, By Fuel Sales, 25850	Successfully added	User is successfully add payment details	Pass	
2	Press ADD button					
3	Enter Date, Invoice/ CheckNo, Description, Amount	2015-08-22, 15082022, By Fuel Sales, 258S0	Error message will be displayed	Cannot add data successfully	Pass	
4	Press ADD button					

Test Case ID: 03

Module Name: Add Expenses

Test Title: Add new Expense

Description: Test adding a new Expense details

Pre-Conditions:

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Enter Date, Voucher_No ,Description, Amount , Type	2015-08-12, 67468865, Company anniversary bonus, 4000, Welfare	Successfully added	User is successfully add payment details	Pass	
2	Press ADD button					
3	Enter Date,	2015-08-	Error	Cannot add	Pass	

	Voucher_No ,Description, Amount , Type	12, 67468865, Company anniversar y bonus, 40o0, Welfare	message will be displayed	data successfully		
4	Press ADD button					

Test Case ID: 04

Module Name: Add Assets

Test Title: Add new Assets

Description: Test adding a new Asset

Pre-Conditions:

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Enter Description, Amount ,Type, Notes	Inventory, 30000, Current Assets, Service station	Successfully added	User is successfully add payment details	Pass	
2	Press ADD button					
3	Enter Description, Amount ,Type, Notes	Inventory, 300F0, Current Assets, Service station	Error message will be displayed	Cannot add data successfully	Pass	
4	Press ADD button					

Test Case ID: 05

Module Name: Add Liabilities

Test Title: Add new Liability

Description: Test adding a new liability

Pre-Conditions:

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Enter Description,	Wages payable,	Successfully added	User is successfully	Pass	

	Amount ,Type, Notes	25000, Current Liabilities, Toyota		add payment details		
2	Press ADD button					
3	Enter Description, Amount ,Type, Notes	Wages payable, 250py0, Current Liabilities, Toyota	Error message will be displayed	Cannot add data successfully	Pass	
4	Press ADD button					

CUSTOMER SERVICE MANAGEMENT.

Test Case ID: 01

Module Name: General Customer Management

Test Title: Add New General Customer

Description: Test adding a new customer

Pre-Conditions:

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Enter customername ,address,email ,telephone,reg Date,vehiclenums and vehicle models,total numVehicles	Heshangi welikala, Kottawa,hesha@gmail.com,0727088560,12/10/2015,W1542,car,1	Successfully added	Data is successfully added.	pass	
	Press ADD button					
3	Enter customername ,email,telephone,regDate,vehiclenums and vehicle models,total Vehicles	Heshangi welikala, hesha@gmail.com ,0727088560,12/10/2015,W1542,car ,1	Error message will be displayed	Address field is empty.	Pass	
4	Press ADD button					

Test Case ID: 02

Module Name: General Customer Management

Test Title: Update General Customer

Description: Test updating a new customer

Pre-Conditions:

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Select a row in the customer details table.		Successfully updated	Data is successfully updated	pass	
2	Replace relevant places with new data	Heshangi welikala, Mattegoda,hesha@gmail.com,0727088560,12/10/2015,W1542,car,1				
3	Press update button					
4	Select a row in the customer details table.		Successfully deleted	Successfully deleted	pass	
5	Press Delete button					

Test Case ID: 03

Module Name: Credit Customer Management

Test Title: Add new General Customer

Description: Test adding a new credit customer

Pre-Conditions:

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Enter customername ,address,email ,telephone,reg Date,vehiclenums and vehicle models,total numVehicles	Heshangi welikala, Kottawa,hesha@gmail.com,0727088560,12/10/2015,W1542,car,1	Successfully added	Data is successfully added.	pass	

2	Press ADD button					
3	Enter customername ,email,telphone,regDate,vehiclenums and vehicle models,total Vehicles	Heshangi welikala, hesha@gmail.com ,0727088560,12/10/2015,W1542,car ,1	Error message will be displayed	Address field is empty.	Pass	
4	Press ADD button					

Test Case ID: 04

Module Name: Credit Customer Management

Test Title: Add Deposit Amount

Description: Test adding a deposit amount

Pre-Conditions:

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Add customer id,date,customer name,amount and confirm amount	1,12/10/2015,heshangi,1000,1000	Deposit amount is successfully added	Deposit amount is successfully added	Pass	
2	Press Add Deposit button					
3	Add customer id,date,customer name,amount and confirm amount	1,12/10/2015,heshangi,1000,200	Deposit amount is successfully added	Deposit amount and confirmed deposit amount are non matching	Pass	
4	Press Add Deposit button					

Test Case ID: 05

Module Name: Credit Customer Management

Test Title: Credit customer billing

Description: Test credit customer billing

Pre-Conditions:

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Enter custId,cutName,vehicle num,model, select services,select fuel types and amount	1,heshangi,1254,lorry,car wash,interior cleaning,octane92,52	Total cost is displayed	Total cost is displayed	pass	
2	Press calculate button					
3	Enter custId,cutName, select services,select fuel types and amount	1,heshangi, car wash,interior cleaning,octane92,52	Total cost is displayed	“Vehicle details are not entered”message	Pass	
4	Press calculate button					

Test Case ID: 06

Module Name: Manage Booking

Test Title: Add new booking

Description: Test adding new booking

Pre-Conditions:

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Add custId,custName,vehicle No,vehiModel,services	1,heshangi,2563, van, interior cleaning	Booking Successfully added	Booking Successfully added	pass	
2	Press Add button					

3	Add custId, vehicleNo, vehicleModel, services	1,heshangi,2563,van, interior cleaning	Booking Successfully added	Error"Customer name is not available"	Pass	
4	Press Add button					

Test Case ID: 07

Module Name: Product Management

Test Title: Add new product order

Description: Test adding new product order

Pre-Conditions:

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Add custId,customerName,products,amount	1,heshangi,polish,2,arwash,3	Order successfully added	Order successfully added	pass	
2	Press Add button					
3	Add custId, products,amount	1, polish,2,arwash,3	Order successfully added	Error"Customer name is not available"	Pass	
4	Press Add button					

Test Case ID: 08

Module Name: Product Management

Test Title: Product sale

Description: Test adding new product sale

Pre-Conditions:

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Add date,products,amount	12/10/2015,polish,2,arwash,3	Total cost is displayed	Total cost is displayed	pass	
2	Press Calculate button					
3	Add products,amount	polish,2,arwash,3	Total cost is displayed	Error "date is not available"	Pass	

4	Press Calculate button					
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SPARE PARTS MANAGEMENT.

Test Case ID: 01

Module Name:InventoryHandling

Test Title: Verify login and stock Management

Description: Test Inventory Interface

Pre-Conditions: valid user view the inventory interface.

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pas s/fail)	Notes
1	select Item Brand, supplier	Mazda Clutch Part Toyota	User should be able to select these by combo boxes.	User can successfully Select these choices.	Pass	
2	Enter the quantity ,purchased price an press net total button	10 25000 = 250000/=	By multiplication the Quantity and purchase Net total will be shown by system. And reject character values by making beep sound and prompting error message.	User can see the Net Price.	Pass	
3	Click the specific record of table load ,do specific updates and press update button	Brand=Honda instead of Mazda.	Get Successful message and show those updates in the table.	User can do the updates	Pass	
4	Go to the view spare parts bar and view images and add new images	-	Attachments have to working properly and see the available spare parts items	User can attachments and see the images successfully	Pass	
5	Enter Item Name	Switches	Item Name and available quantity	Show available stock	Pass	
6	Send mail at critical level of stocks	-	Successfully connect to the Gmail Account	Connect to the relevant Gmail Account	Pass	

Test Case ID: 02

Module Name: Prepare a Bill and view Bill History

Test Title: Prepare a successful Bill see Bill history

Description: Test Bill Interface with two tabs

Pre-Conditions: valid user login access to bill interface

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Enter Dealer Name, Phone number, select the payment type, and current date will be already in the interface.	Rupus Dissanayaka 0774567345 Cash 2015/9/18	Successfully added details, successful messages and date in the text box	User can added details successfully and current system date is already shown in the date box	pass	
2	Select the specific items and no of items by Jspinners and press calculate total button	FuelPump -4 Clutch part - 3	Net total appears in the total box	Net total will be calculated by deducting taxes and adding discounts	Pass	
3	View bill histories of a dealer name by entering the dealer name and press search button.	Raveen dissanayaka	All the bills of that particular customer will be shown.	All the bills of that particular customer will be shown in the table.	Pass	

Test Case ID: 03

Module Name: Purchased Order Details Management

Test Title: Verify login and Purchases Orders Management

Description: Test Purchased Order Interface

Pre-Conditions: valid user view the Purchased Order interface.

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	select supplier, payment type, purchaseID(Invoice Number),createdBy,submittedBy, order status, no of items and date	NISSAN Cash 100000167 Rupus Dissanayaka Champika Dissanayaka Received	User should be able to select these by combo boxes and date chooser.	User can successfully Select these choices and date.	Pass	

	from date picker	5 2015/10/23				
2	Select the specific items and no of items by Jspinners and press calculate total button	FuelPump -4 Clutch part - 3	Net total appears in the total box	Net total will be calculated.	Pass	
3	Once added no of items according to relevant ItemID no of items of stock will be increased	5(new stock qty) 5+(10 previous stock qty)=15	Stock will be increased for particular ItemID	Stock will be increased for particular ItemID	Pass	
4	Go to the view purchased orders bar and press view all button	-	All the purchases details will be appear by table loading.	Purchase orders history appears.	Pass	
5	Go to the search order bar and the Enter purchase ID	100000167	Specific Purchase order Details appears.	Specific Purchase order Details appears.	Pass	

Test Case ID: 04

Module Name: supplier Details Management

Test Title: Verify login and supplier Details Management

Description: Test supplier Details Interface

Pre-Conditions: valid user view the supplier Details interface.

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Select company name, country, company ID, country code and enter company address, email, contact numbers and faxes.	NISSAN Japan 18892 Wattala branch toyotawattala@gmail.com 011236357	User should be able to select these by combo boxes, enter numbers and enter valid email address Get successfully added message.	User can successfully Select these choices and enter only valid email addresses and valid contact numbers. And get Successful message.	Pass	
2	Select the table and update supplier details.	toyotacolombo@gmail.com instead of toyotawattala@gmail.com	Get successful message and updated table will be appears.	Get successful message and updated table will be appears	Pass	

3	Go to the delete supplier button and that will be redirect to delete supplier interface. Enter company name and company Id	ISUZU Colombo 00172672	Get successful delete message and that particular record will be deleted from table.	Get successful delete message and that particular record will be deleted from table	Pass	
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EMPLOYEE SALARY MANAGEMENT

Test Case ID: 01

Module Name: Salary Details Management

Test Title: Add new employee salary details

Description: Test adding new employee salary details

Pre-Conditions:

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass /fail)	Notes
1	Enter Employee ID, name, basic salary,salary category	111,Sunil Perera, 12000,Pump Operator	Successfully added	New employee salary details added successfully	Pass	
2	Press ADD button					
3	Enter Employee ID, name, basic salary,salary category	111RT, Amal Fernando, 45000, Manager	Error message will be displayed	Cannot add data successfully	Pass	
4	Press ADD button					

Test Case ID: 02

Module Name: Salary Calculation

Test Title: Calculate Salary For an Employee

Description: Test calculating salary

Pre-Conditions:

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Select Employee ID and press Calculate Gross Pay button,press Calculate Addition Button, press calculate deductions button, Press calculate net pay button	111,	Calculate and Display Gross Pay,Additions, deductions, net pay	Gross Pay,Additions, deductions, net pay calculated and displayed successfully	Pass	System date,month will be used
2	Press save button					
3	Select Employee ID and press Calculate Gross Pay button,press Calculate Addition Button, press calculate deductions button, Press calculate net pay button	111,	Cannot calculate salary twice for a employee in a specific month	Cannot add calculate salary	Pass	System date,month will be used
4	Press Save button					

Test Case ID: 03

Module Name: Attendance Management

Test Title: Mark Attendance

Description: Test marking attendance

Pre-Conditions:

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Enter Employee ID, press in button	111	Mark In Time	In time Marked Successfully	Pass	system time and date will be used

2	Enter Employee ID, press in button	111	Cannot mark in time twice a day	In time marking failed	Pass	system time and date will be used
3	Enter Employee ID, press out button	111	Mark Out Time	Out time Marked Successfully	pass	system time and date will be used
4	Enter Employee ID, press in button	111	Cannot mark Out time twice a day	Out time marking failed	Pass	system time and date will be used

MACHINE SUPPLY MANAGEMENT

Test Case ID: 01

Module Name: Add Machine Details

Test Title: Add new filling machine

Description: Test adding new Filling Machine details.

Pre-Conditions:

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Enter machine name, Category, price, Model, Year, version, warrant, Brand, Stype, Supplier	Feed Tank syringe Filling machine, Semi auto, 412800, 1000, 2009, 2, 10, Sky men Luer slip, A.Perera	Successfully added If Supplier not in the Database Show msg box Show machine id	Successfully Added machine details.	Pass	
2	Press Insert fmachine button					
3	Enter machine name, Category, price, Model, Year, version,	Syringe Filling System, Semi auto, FiveThousand 1000, 2009,	Error msg	Data not added to database	Pass	

	warrant, Brand, Stype, Supplier description	new 10 Vanrai Oral slip, L.Niyam				
4	Press Insert fmachine button					

Test Case ID: 02

Module Name: Machine Management

Test Title: Add new Service Machine

Description: Add details of Service machines

Pre-Conditions:

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pas s/fail)	Notes
1	Enter machine name, Category, price, Model, Year, version, warrant, Brand, Height,weight, Width,design Supplier	Vaccume Thermoforming, Vaccum machine, 200000 #1000 2012 2 4 Sunmine 0,0 0,0 Four post R.Sumanasekara	Successfully added If Supplier not in the Database Show msg box Show machine id	Successfully Added machine details.	Pass	
2	Press Insert smachine button					
3	Enter machine name, Category, price, Model, Year, version, warrant, Brand, Height,weight, Width,design Supplier	Car carbon cleaning, Oxyhydrogen, Thousand, HHO100 2010 3 4 HHO 910 740 D.Antoney	Error msg	Data not added to database	Pass	
4	Press Insert smachine button					

Test Case ID: 03

Module Name: Supplier Management

Test Title: Insert supplier Information

Description: Testing for supplier details adding.

Pre-Conditions:

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Enter name, Nic, address, country, phone, e-mail,fax	W.Rupasinghe 567823490v Colombo Srilanka 0112345672 Ru@gmail.com 0112345678	Successfully added Display supplier id	Successfully Added Supplier details	Pass	
2	Press Insert Supplier Button					
3	Enter name, Nic, address, country, phone, e-mail,fax	S.Aberathna 658723490v Kalutatra Srilanka 0342225112 s.com 0342225112	Error msg	Data not added to database	Pass	
4	Press Insert Supplier button					

Test Case ID: 04

Module Name: Maintanance Detail Management

Test Title: add maintenance details

Description: Adding details for maintenance table

Pre-Conditions: Machine details should be in the data base.

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Enter Title,date,machine	Pump malfunctioning, 1/2/2015, Feed tank syringe filling system	Successfuly added Display, Maintenance Id	Successfully Added Maintenance details	Pass	

2	Press Insert Maintenance Button					
3	Enter Title,date,machine number	1/2/2015	Error mgs	Data not added to database	Pass	
4	Press Insert Maintenance Button					

Test Case ID: 05

Module Name: Maintained details management

Test Title: Add machine maintained status

Description: Machine maintaining record will be added.

Pre-Conditions: Machines should maintain.

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Expenses, date, maintainer	10000 1/2/2015 A.Jayasekara	Successfully added If Maintainer not in the Database Show msg box Show Maintained id	Successfully Added Maintained details.	Pass	
2	Press Insert button					
3	Expenses,date, maintainer	tenThousand 1/2/2015 A.Jayasekara	Error msg	Data not added to database	Pass	
4	Press Insert Button					

Test Case ID: 06

Module Name: Purchase detail Management

Test Title: Insert purchase Information

Description: Testing for purchasing details adding.

Pre-Conditions:

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Expenses, date	45000 3/8/2004	Successfully added Display purchase id,	Successfully Added purchase details	Pass	
2	Press Insert button					

3	Expenses,date	Forty-five Thousand	Error msg	Data not added to database	Pass	
4	Press Insert button					

Test Case ID: 07

Module Name: Replace Detail Management

Test Title: add replace details

Description: Adding details for replacement table

Pre-Conditions: Machine details should be in the data base.

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Enter Title,date,machine	Repair lift Replacement, 2/10/2014 Car Repair Lift - Harchie	Successfully added Display, Replace Id	Successfully Added Replace details	Pass	
2	Press Insert Button					
3	Enter Title,date,machine number		Error msg	Data not added to database	Pass	
4	Press Insert Button					

Test Case ID: 08

Module Name: Replaced details management

Test Title: Add replaced Machine details

Description: Machine replaced record will be added.

Pre-Conditions: Machines should replace.

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Expenses,date, Supplier	60000 3/4/2015 W.Melvin	Successfully added .If Supplier not in theDatabase Show msg box Show Replaced id	Successfully Added Replaced details.	Pass	
2	Press Insert button					
3	Expenses,date, maintainer	Sixty Thousand	Error msg	Data not added to database	Pass	
4	Press Insert Button					

SERVICE DETAILS MANAGEMENT

Test Case ID: 01

Module Name: Manage employee job schedule.

Test Title: Add a new schedule.

Description: Test adding a new schedule to the system.

Pre-Conditions: User has logged in to the system and select a date from date chooser

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Press view customer booking button		User should be able to see all the booking details of that selected date up to current time.	User can view all the booking details.	Pass	
2	Press view available employees button	Select a time slot using combo boxes.	User should be able to see all the Available employees.	User can view all the available employees' details.		Still implementing.
3	Enter details.	Select suitable data from combo boxes		Successful message will be displayed	Pass	
4	Press save button			Successful message will be displayed	pass	

Test Case ID: 02

Module Name: Manage services

Test Title: Add new service

Description: Test adding a new employee

Pre-Conditions: User has logged in to the system and select a manage services and insert new service tab.

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Enter service name, charge and discount	1,carwash,400,50				
2	Press add button		Successfully added message	User is successfully added service message.	pass	

Test Case ID: 03

Module Name: Manage services

Test Title: Edit service.

Description: Test editing a service

Pre-Conditions: User has logged in to the system and select a manage services and edit service tab.

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Select the row to edit	Select carwash service.	Fill appropriate text fields.	Fill appropriate text fields.	pass	
2	Edit service charges and discounts	500,25				
3	Press edit service button.		Successful message.	Successful message	pass	

Test Case ID: 04

Module Name: Issue job card

Test Title: issuing a job card

Description: Test checking issuing job card for a customer.

Pre-Conditions: user should already logged in to the system and create a schedule for the services of that particular customer.

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Enter customer code and date.	1,2015.08.01				
2	Press enter button.		Form should be automatically filled with relevant data.	Form is filled with actual data.	Pass	
3	Press print job card button.		Successful message.	Successful message.	Pass	

Test Case ID: 05

Module Name: Service station billing

Test Title: issue bill.

Description: Test issuing a bill.

Pre-Conditions: user should already logged in to the system.

Steps	Test Steps	Test Data	Expected Result	Actual Result	Status(pass/fail)	Notes
1	Select issue bill.					
2	Enter customer code and bill date.					
3	Select services from combo box and press add to bill button.	Carwash, tire remove	Display service name, charge and discount in jtable.	User can view selected service including service charges and discounts.	pass	
4	Press calculate total button.		Display total cost.	Display total cost.	Pass	

3. Evaluation

3.1 Assessment of the Project results

One of the major task of this system, expect for the increased performance, sensitive stock level management and efficiency is to provide the client with useful reports so as to come up with certain predictions.

Below shown are a list of reports that would be generated by the system.

- Reports about inventory handling of both filling and service station.
- Report about sales and Stock level details
- Reports about expenses, extra expenses and income
- Reports about clients and client orders
- Reports about Human resources management

3.2 Lessons Learned

The most important lesson we learned from this project is the experience of doing an actual industry based project for a real client. Satisfying a real client's requirement needs knowledge and sense which cannot be gained from the text books or lectures only.

We have gone through the difficulties and problems that a professional group of developer would encounter every day in their careers. All in all this is a very crucial and valuable work experience we have gathered

The success of the project is largely depend on the skills and strengthens of the people involved. Therefor we learn that the project needs to have a dedicated , talented set of individuals working towards a common goal.

Keeping a close relationship with the client is crucial for producing software in line with the cline's requirements. Development team should try to report the progress of the project to the client as much as possible.

Project has success and failures at different points in the project life cycle. We learned that the key to successful project is to learn from past project failures and to put those lessons learned into action.

3.3 Future Work

We are planning to upgrade the system at regular intervals so as to provide the maintenance facility for our client. Maintenance takes up to 40%-60% of the development life cycle and hence a greater attention is paid in order to obtain good results.

The system can be extended to handle the delivery and online booking management system. This would greatly help the client to get the service.

Help documentation should be improved to address more frequent queries. To do this gathering client's feedback would be a must.

4. Conclusion

The current manual system of A.P.Gunawardhane Company (pvt) Ltd is unfavorable for the proper functioning of the company procedures in many ways. All the tasks are currently handled through paper based methods which are time consuming and very less efficient.

So we developed this automated system to avoid those difficulties.

In order to make this project worth, we must maintain a good profit, better member attraction and less production cost with a good service. From this we can be more efficient and have much better security. In this system by a one staff member can complete those tasks of their own, the service-filling station requires less employees, and also less time consuming. Therefore we make this project user friendly, plus easy to browse through.

As the main processes completely do by stand alone java application, the service-filling station can eliminate the unnecessary paper work.

5. References

[1] Stackoverflow.com, 'Stack Overflow', 2015. [Online]. Available: <http://www.stackoverflow.com>. [Accessed: 22- Sep- 2015].

[2]m. Key, m. Key, S. site, d. server and C. color, 'DaniWeb IT Discussion Community', *DaniWeb*, 2015. [Online]. Available: <http://www.daniweb.com> [Accessed:22-Sep-2015].

[3]Z.Raihan. Z.Raihan, K.Rane and K. Rane. 'Home-Software Testing Courses' Software Testing Courses. 2015. [Online]. Available: <http://university.utest.com> , [Accessed: 22-Sep-2015]

[4].R. Mall, Fundamentals of software engineering. New Delhi: PHI Learning, 2009

Appendix A: Selected Code Listings

Print

```
if(""".equals(id1.getText())||"".equals(name1.getText())||"".equals(dep1.getText())||"".equals(un1.g
etText())||"".equals(pwd1.getText()))
{
    JOptionPane.showMessageDialog(null, "Fields are having null values cannot print the
identity card"
        + " ");
}

else {
    try {
        // TODO add your handling code here:
        Document doc = new Document();
        try {
            PdfWriter.getInstance(doc, new FileOutputStream("EMPLOYEE
IDENTITY_CARD.pdf"));
        } catch (FileNotFoundException ex) {

        }
        doc.open();
        doc.add(new Paragraph("*****EMPLOYEE IDENTITY
CARD*****"));
        doc.add (new Paragraph (" "));
        doc.add(new Paragraph ("EMPLOYEE ID      : "+id1.getText().toString()));
        doc.add (new Paragraph (" "));
        doc.add (new Paragraph ("EMPLOYEE NAME      : "+name1.getText().toString()));
        doc.add(new Paragraph("DEPARTMENT      : "+dep1.getText().toString()));
        doc.add(new Paragraph(" "));
        doc.add(new Paragraph("USER NAME      : "+un1.getText().toString()));
        doc.add (new Paragraph (" "));
```

```

doc.add (new Paragraph ("PASSWORD      : "+pwd1.getText().toString()));

doc.add (new Paragraph (" "));

doc.add (new Paragraph
("*****
"));

doc.close ();
} catch (DocumentException ex) {
    }

}

```