Faculty of Science

University of Kelaniya

Inventory Control System

for

Gunawardena Book Shop

Project Development Report

Subject Code : **COST 31153**

Subject : **Visual Programming**

Reg No	Name
PS/2013/277	R.R.A.M.P.Jayawardena
PS/2013/375	W.L.M.Senevirathne
PS/2013/404	W.N.C. Fernando
PS/2013/064	A.P.K.Gunathilake
PS/2013/364	W.A.C.Madhushani

Table of Contents

1.Introduction

1.1 Purpose

Gunawardene Book Shop is a well-known book shop which located in Maharagama. The bookshop carries an extensive collection of books and magazines to cater their broad and diver customer base. The management needed an inventory control system to update and analyze sales. They used to keep a book on inventory but with the increasement of their sales it has become somewhat difficult to keeping tracks on the inventory. So they wanted to use a database management system with a GUI which can be easily updated by the storekeeper.

1.2 Intended Audience and Reading Suggestions

This document contains the functional requirements, and nonfunctional requirements of the system. Most of these requirements are depicted in the diagrams included in this document like the ER Diagram used in designing the Database,DFD(Document Flow Diagram) which clearly show the functional requirements of the system. It also exhibits the non-functional requirements of the system.

The intended users of the system are:

- Developers – Referring to the content of this document will make it easy for the developers to understand the requirements of the system, and in making sure that they have developed all the functions of the system, so that the system meets with all the requirements of the client.
- Project Managers – It will help the project managers to keep track of the progress of the project.
- Testers – This document can be used by testers during system testing to ensure that the system has met all the requirements of the client.
- Client – By going through the certain diagrams and the user interfaces, the client can get an idea on the scope of the new system we are developing, and he can provide us with useful feedback.

2. Overall Description

2.1 Product Perspective

As our client requested (Gunawardene Book Shop) we have made an easily accessible Inventory Control System. To access a relevant function, relevant operator should login to the system. A unique username and password will be provided for every operator which operating the system. All the functionalities can be accessed by the administrator. Only the administrator will be having the privilege to add each user to the system, change their usernames, reset passwords and remove users when they leave the company.

The software was built using Visual Basic. We have implemented all the interfaces very user friendly. All the basic functionalities required by the client have separately developed as modules and these modules will be tested for its proper functioning. Only the basic computer literacy will be required to handle this system.

There are several operators for different functions. Those are shown in below diagram (Figure 2.1)

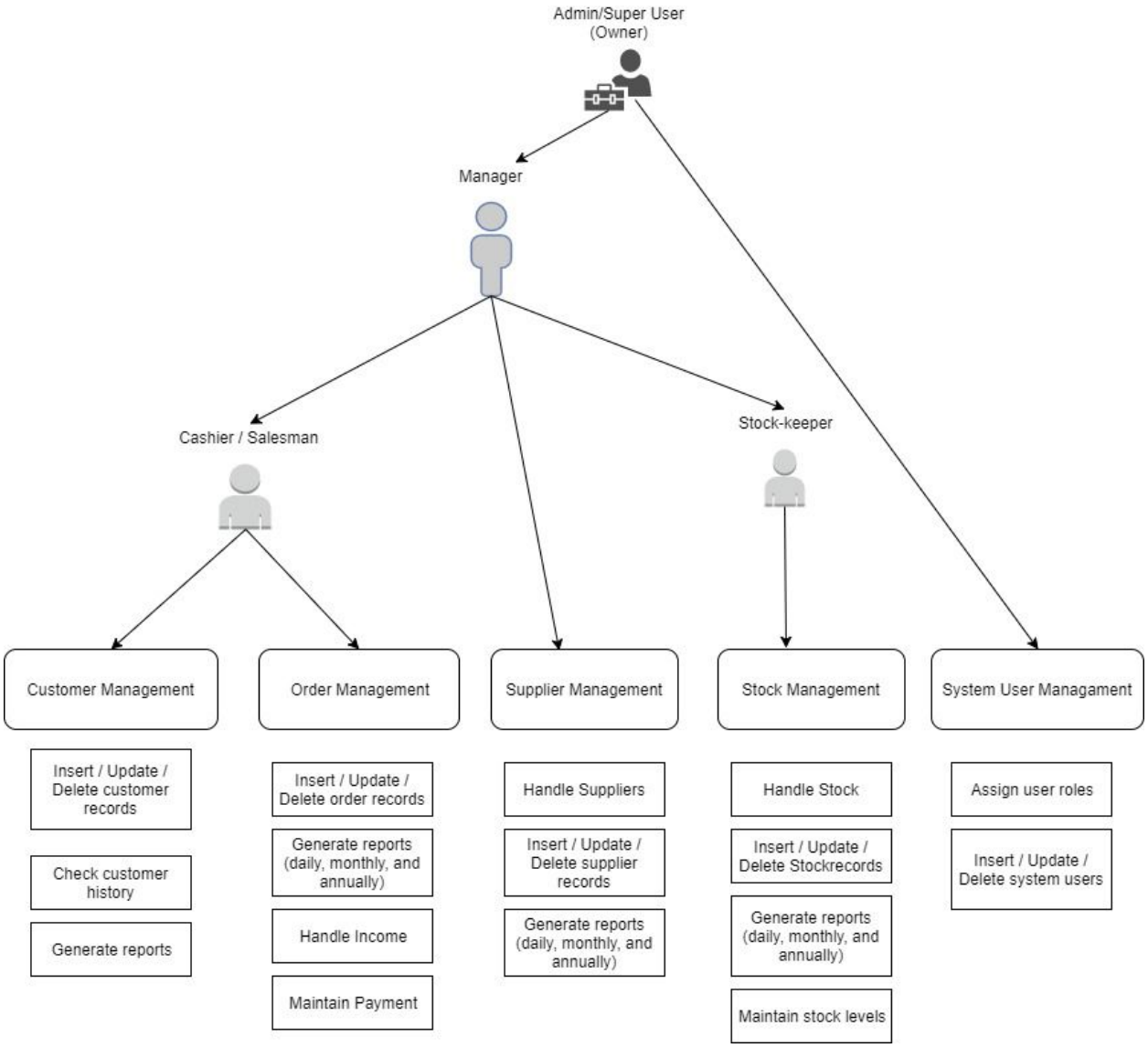

Admin/Super User
(Owner)
Manager
Cashier / Salesman
Stock-keeper
Customer Management
Order Management
Supplier Management
Stock Management
System User Managament
Insert / Update / Delete customer records
Check customer history
Generate reports
Insert / Update / Delete order records
Generate reports (daily, monthly, and annually)
Handle Income
Maintain Payment
Handle Suppliers
Insert / Update / Delete supplier records
Generate reports (daily, monthly, and annually)
Handle Stock
Insert / Update / Delete Stockrecords
Generate reports (daily, monthly, and annually)
Maintain stock levels
Assign user roles
Insert / Update / Delete system users

Figure 2.1

2.2 Product Functions

There are four different types of users who will be using this product:

a) The Administrator of the system.

b) Salesmen who manages the orders.

c) Stock Keeper who manages the stock.

d) Manager who manages the distribution stocks,orders,suppliers and customers.

1. Administrator Privileges:

    -Insert new employee records.

    -Update employee details.

    -Delete employee records.

    -Assign user roles for the system

    -Generate reports.

2. The features that are available for the Salesmen:

    -Calculate sales (daily, monthly, and annually)

    -Maintain Payment Details.

    -Manage Orders.

    -Check customer history.

    -Register customer.

    -Handle Income.

3. The features that are available for the Stock Keeper:

    -Check items.

    -Handling return items.

    -Check stock availability

    -If stocks goes below than minimum level notify to the manager

4. The features that are available for the Manager:

    - Insert, delete, update stocks,orders,suppliers and customers details.

    - Handle suppliers

2.3 Design and Implementation Constraints

- The system should be developed within 7 weeks.
- Difficult to manage the system because this system should developed as distributed manner.

2.4 Assumptions and Dependencies

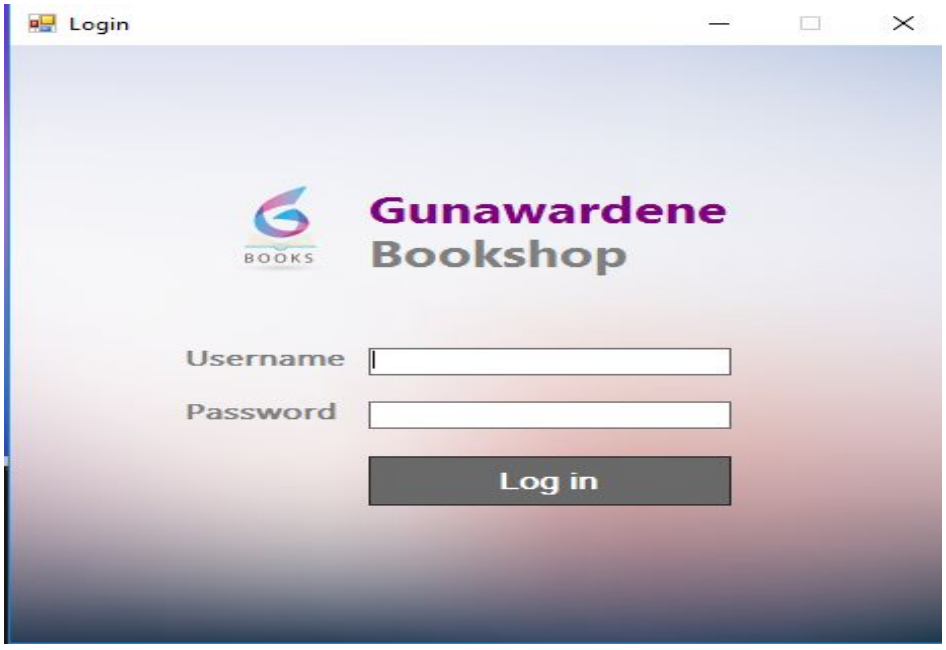
The system we will be developing will only run in Windows environment as Windows is the most common operating software in Sri Lanka. We use Visual Studio 2015 IDE to develop the software as it is easy to code Visual Basic using that IDE. Also we will be using Microsoft Sql Server as the database server as it is quite safe and easy to manage.

3. External Requirements

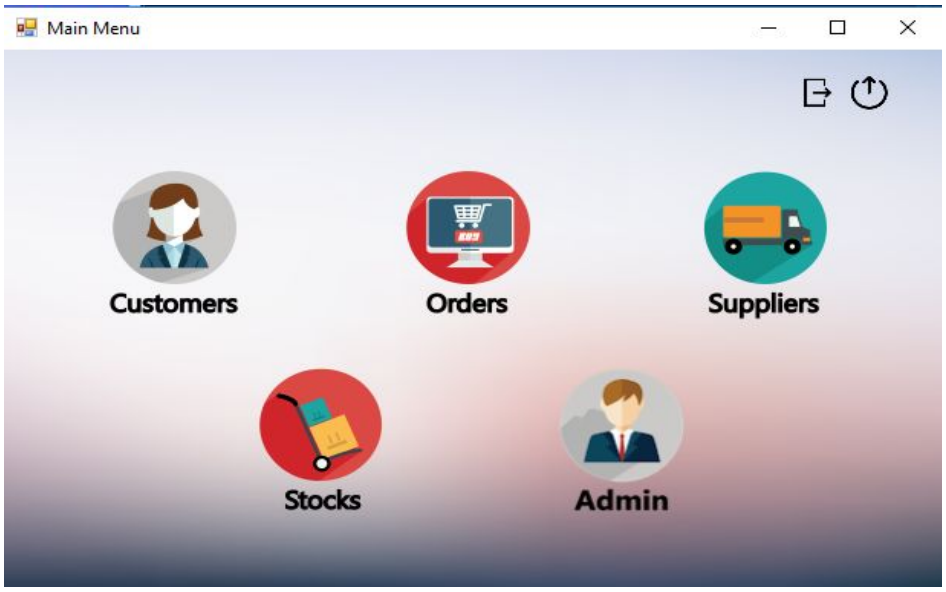
3.1 User Interfaces

3.1.1 Splash

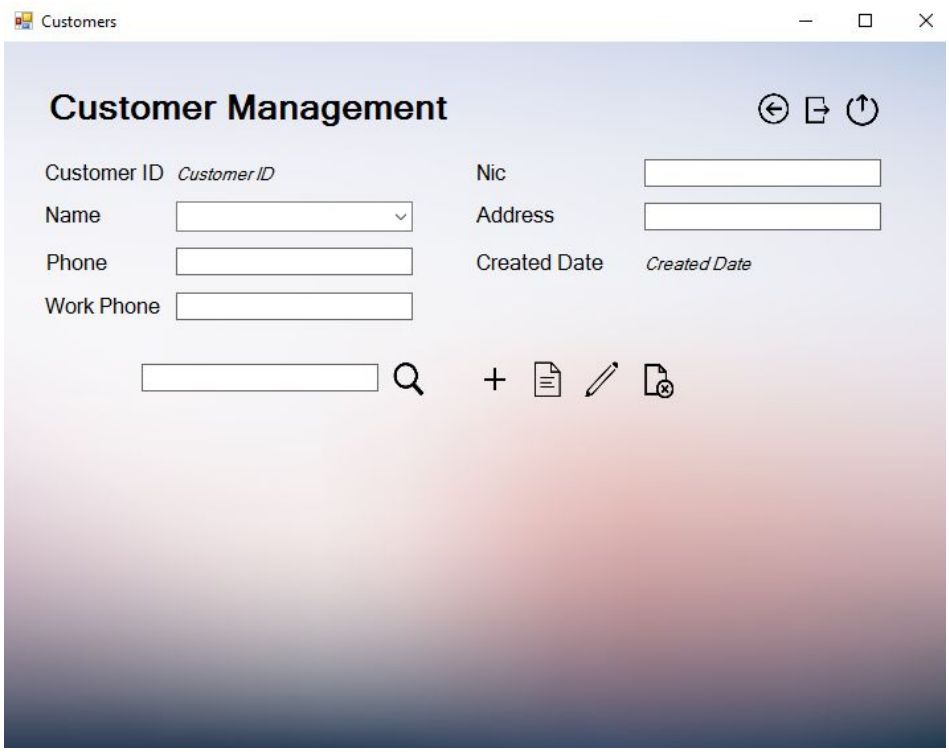
3.1.2 Login



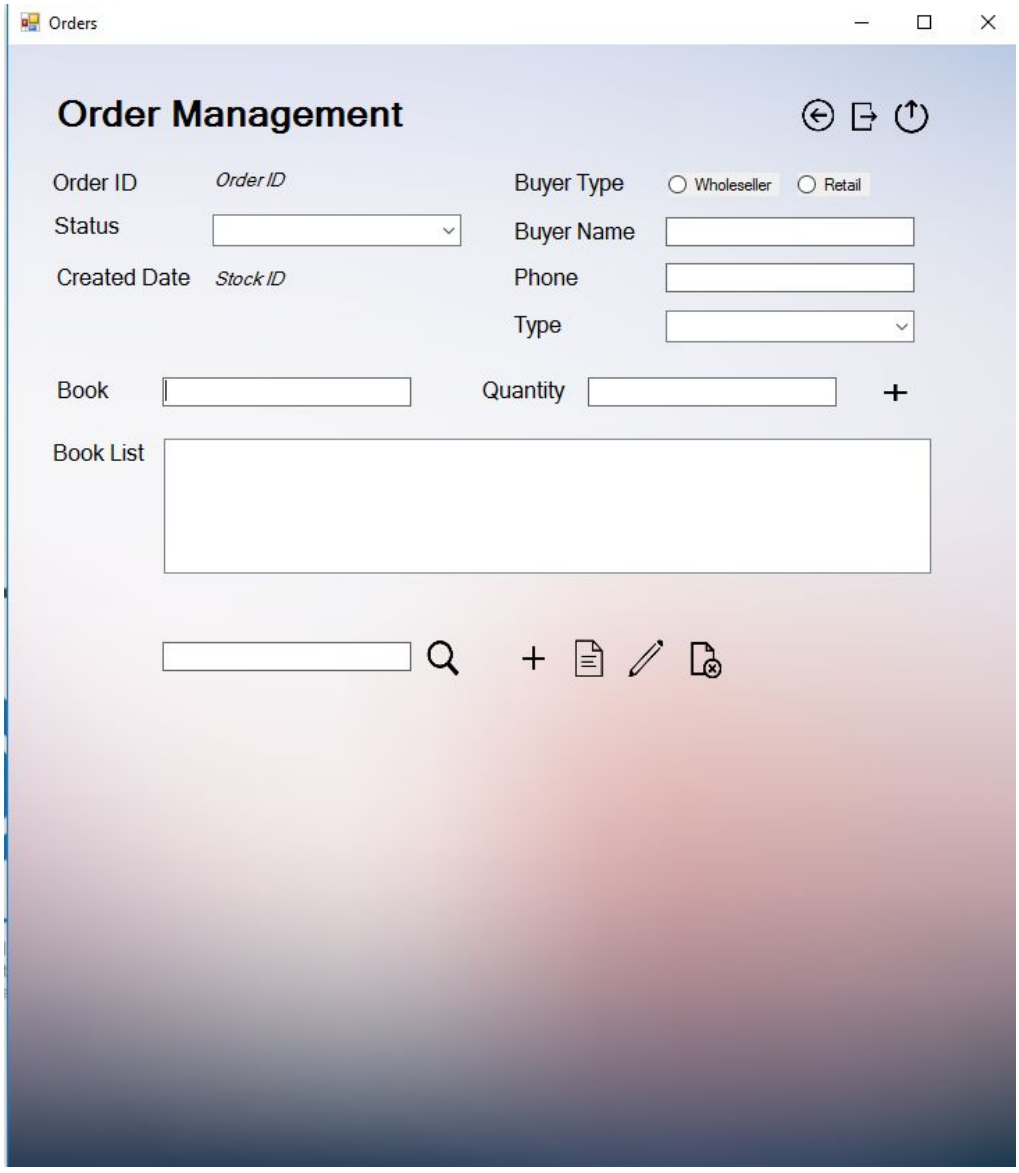
3.1.3 Main Menu



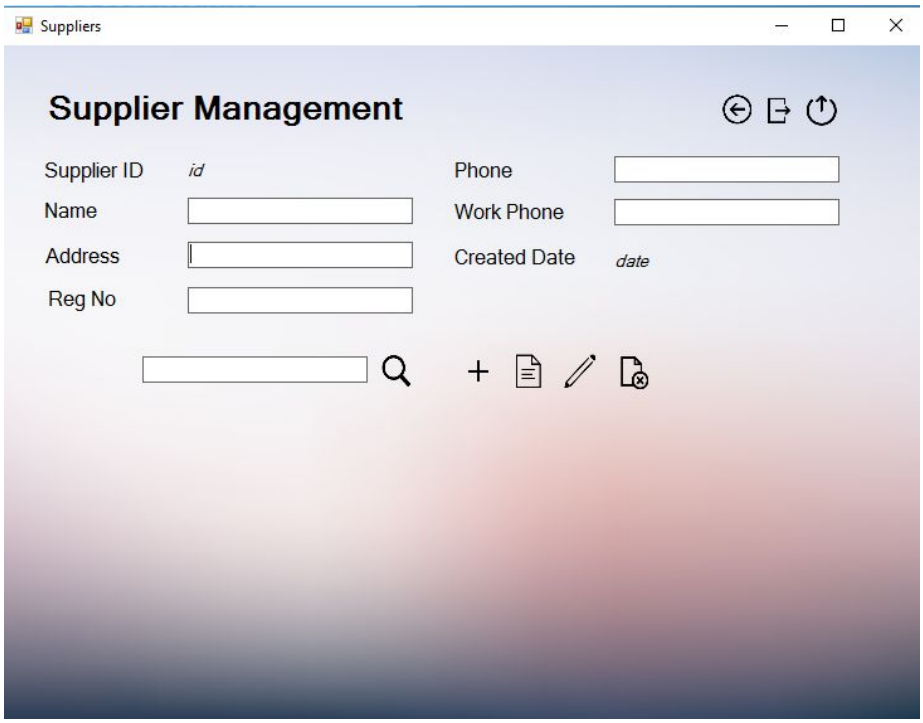
3.1.4 Customer Management(Wholesalers)



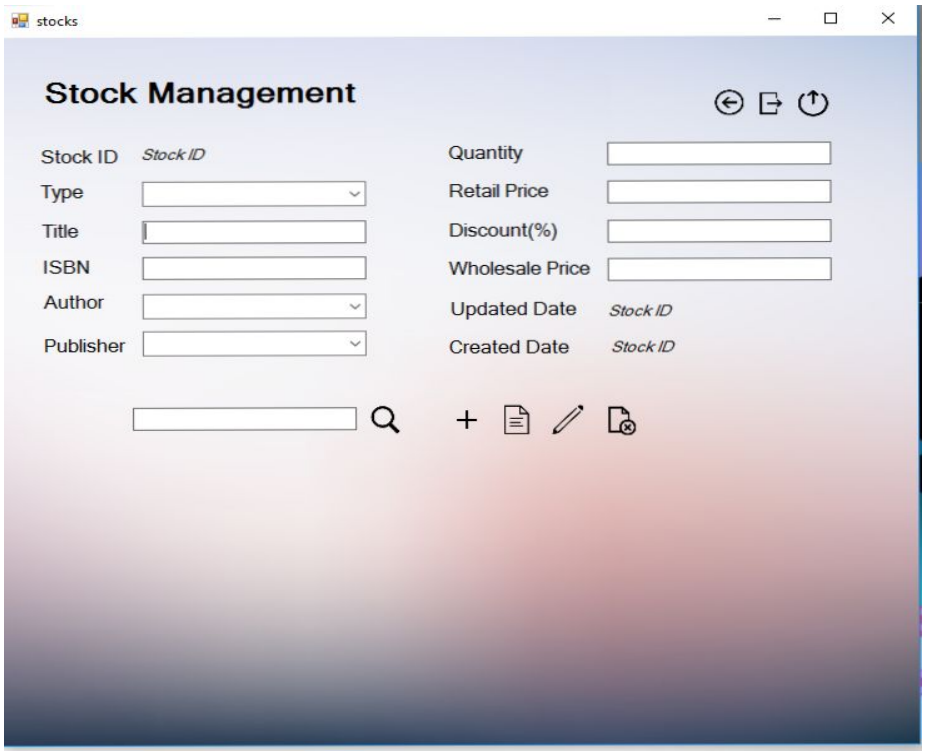
3.1.5 Order Management



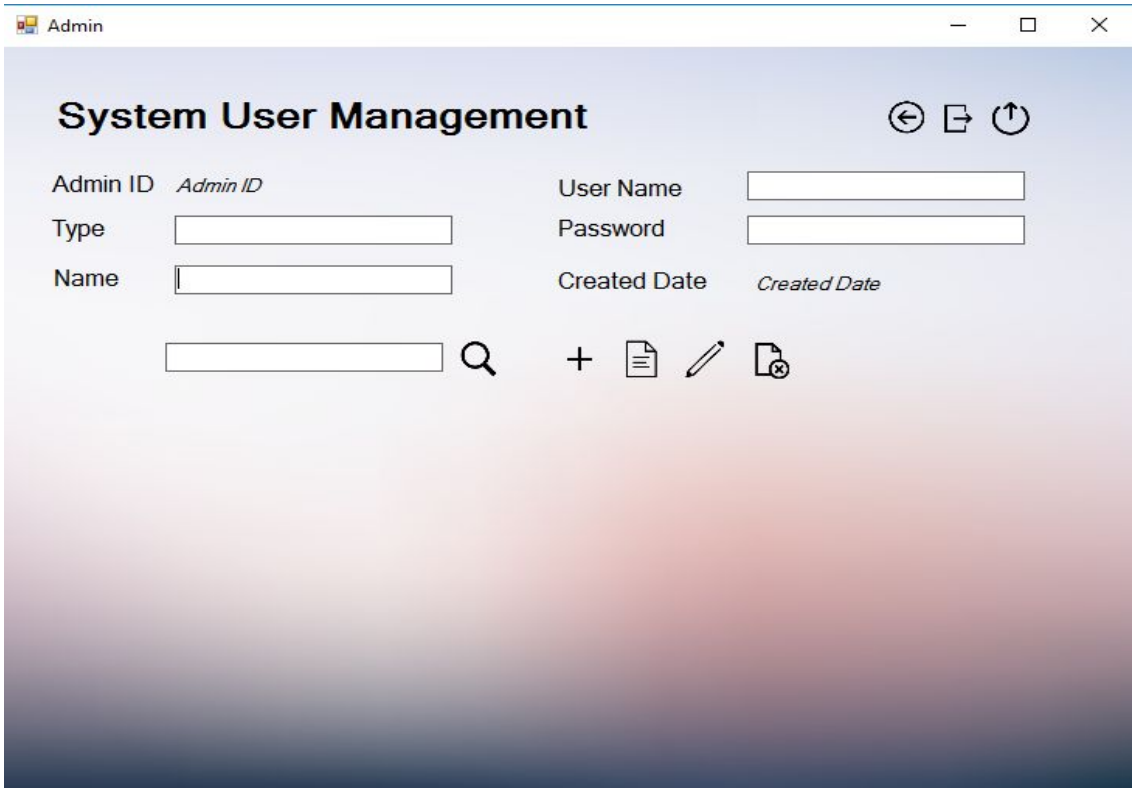
3.1.6 Supplier Management



3.1.7 Stock Management



3.1.8 System User Management



3.2 Hardware Requirements

	Developer Computer	Client Computer
PC Requirement Type	**Minimum Requirement**	**Minimum Requirement**
Processor Type	Core i3 or higher	Dual Core or higher
Processor speed	2.8Ghz or higher	1.8Ghz or higher
Memory (RAM)	4096 MB or more	2084 MB or more
VGA	256MB or more	128MB or more
Display Resolution	1366x 768 or higher	1366 x 768 or higher
Minimum Hard Disc Space	20GB	2GB

3.3 Software Requirements

3.3.1 Development

Operating System	Microsoft Windows 10
Database	Microsoft Sql Server 2014
Version Controlling	Github.com (https://github.com/MayanthaJ/VB-Inventory-control-system-COST31153.git)
Development IDE	Visual Studio 2015
Graphic Designs	Adobe Photoshop cc/ Adobe Illustrator
Documentation	Google Docs
Diagrams	Draw.io

3.3.1 Client

Operating System	Microsoft Windows XP or Higher
Database	Connected to online database server(AWS or Azure)

3.4 Communications Interfaces

We are using Simple Mail Transfer Protocol (SMTP) to send the messages. Also we use Printers, which is use to print the Bills, Invoices and Reports for Customers and Manager.

4. Functional Requirements

The Inventory Control System is an automated system designed to manage internal functions which currently handled by Gunawardena Book Shop (pvt) Ltd, manually. This system will resolve many existing problems and we are introducing many flexible and convenient features which allow the employee/owner of the company to enjoy a satisfactory and convenient workflow. The main functionalities are categorized into 5, for the ease of implementation.

1. Customer Management
    a. Wholesale Customers

        As mentioned earlier client is doing sales on retail and whole. When managing customers management has to keep records on wholesale and retail customers separately.

        System shall be able to keep records on wholesale customers.

    b. Retail Customers

        System shall be able to keep records on retail customers.

2. Suppliers Management

    System should be able to keep records of suppliers, supplying items.

3. Order Management

    System should be able to keep records of orders and order items.

    System should be able to keep records of buyers.

4. Stock Management

    Manage stock details ,stocks,re order levels.

5. System User Account Management

    Manage users who are access the system,and user role management.

5. Nonfunctional Requirements

5.1 Performance Requirements

Defined in this section are the extents to which the functions of the stand-alone application must be executed. The performance requirements are as follows;

- System should be able to detect login details and response within 5 seconds.
- Record additions, updates and deletions should be done within 2 seconds.
- Interfaces must load within 2 seconds.
- System should respond for requests within less than 5 seconds.
- Search results must be previewed within less than 2 seconds.
- Reports must be generated within 2 seconds.

5.2 Safety Requirements

Our system is a stand-alone system. But database should be hosted in external server (AWS)

5.3 Security Requirements

The system maintains access permission. Therefore users should log into system by using their username and password .Admin can access the whole system by login to his system. But the others can access only to some limits.

5.4 Software Quality Attributes

The system designed to access accurate data efficiently. And the interfaces are designed in a user friendly and simple way as much as possible.

Table 1

Appendix A: Analysis Models

System login actions

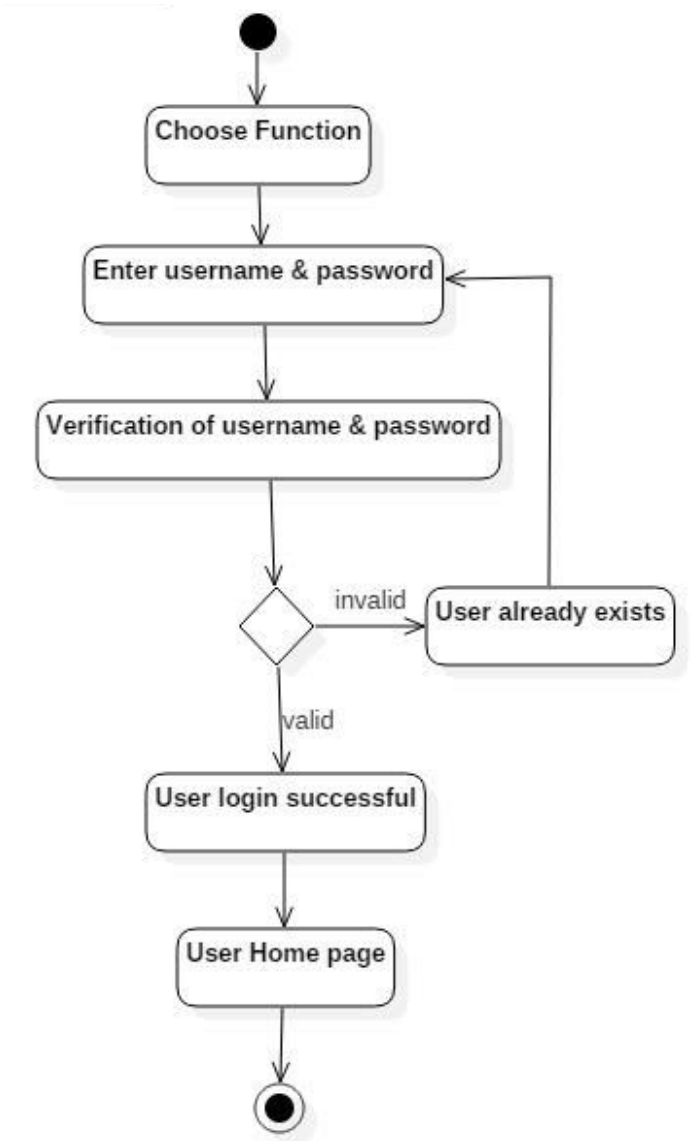
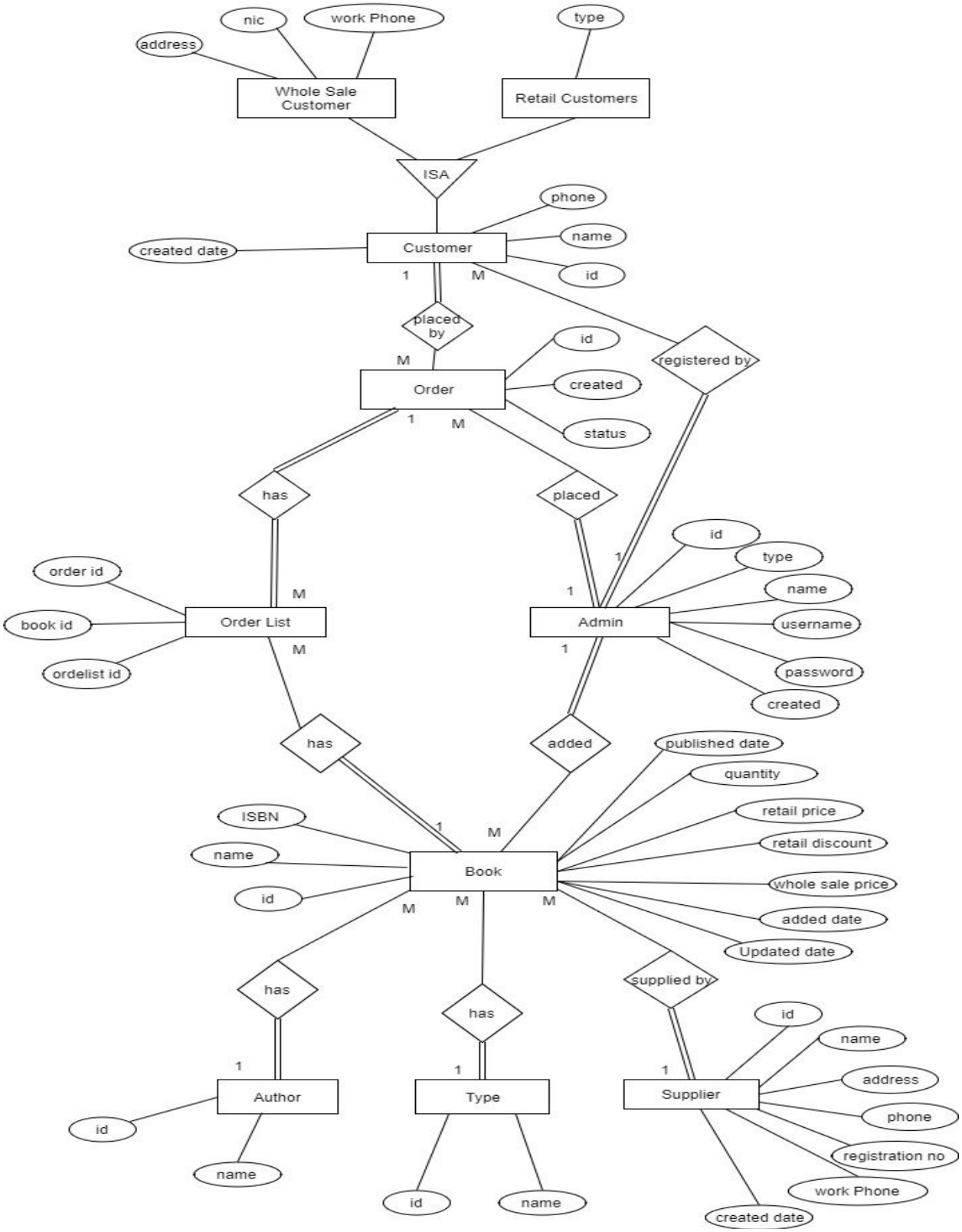


Figure 1

ER Diagram


nic
work Phone
address
Whole Sale Customer
type
Retail Customers
ISA
phone
name
id
created date
Customer
1
M
placed by
M
id
created
status
Order
registered by
1
M
has
placed
id
type
name
username
password
created
1
1
order id
book id
ordelist id
M
M
Order List
Admin
1
has
added
published date
quantity
retail price
retail discount
whole sale price
added date
Updated date
ISBN
name
id
1
M
Book
M
M
M
has
has
supplied by
1
1
1
Author
Type
Supplier
id
name
address
phone
registration no
work Phone
created date
id
name
id
name

Context Diagram

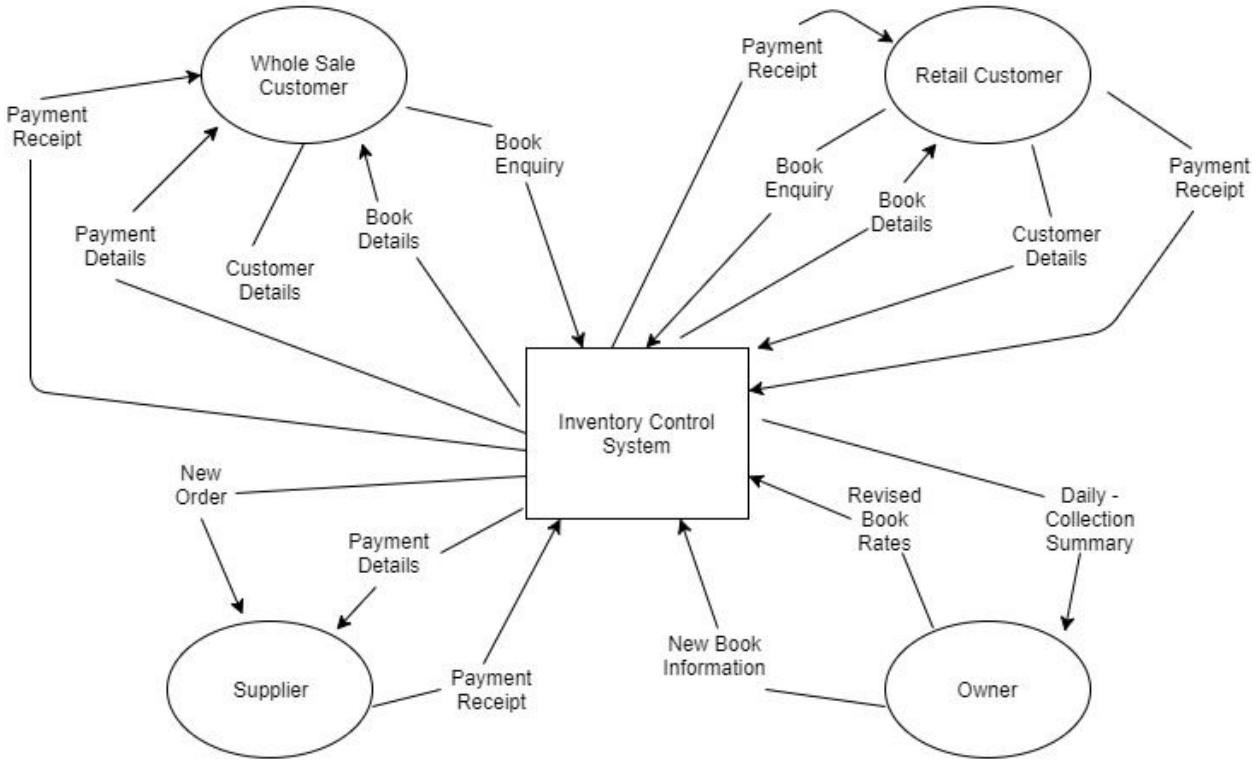
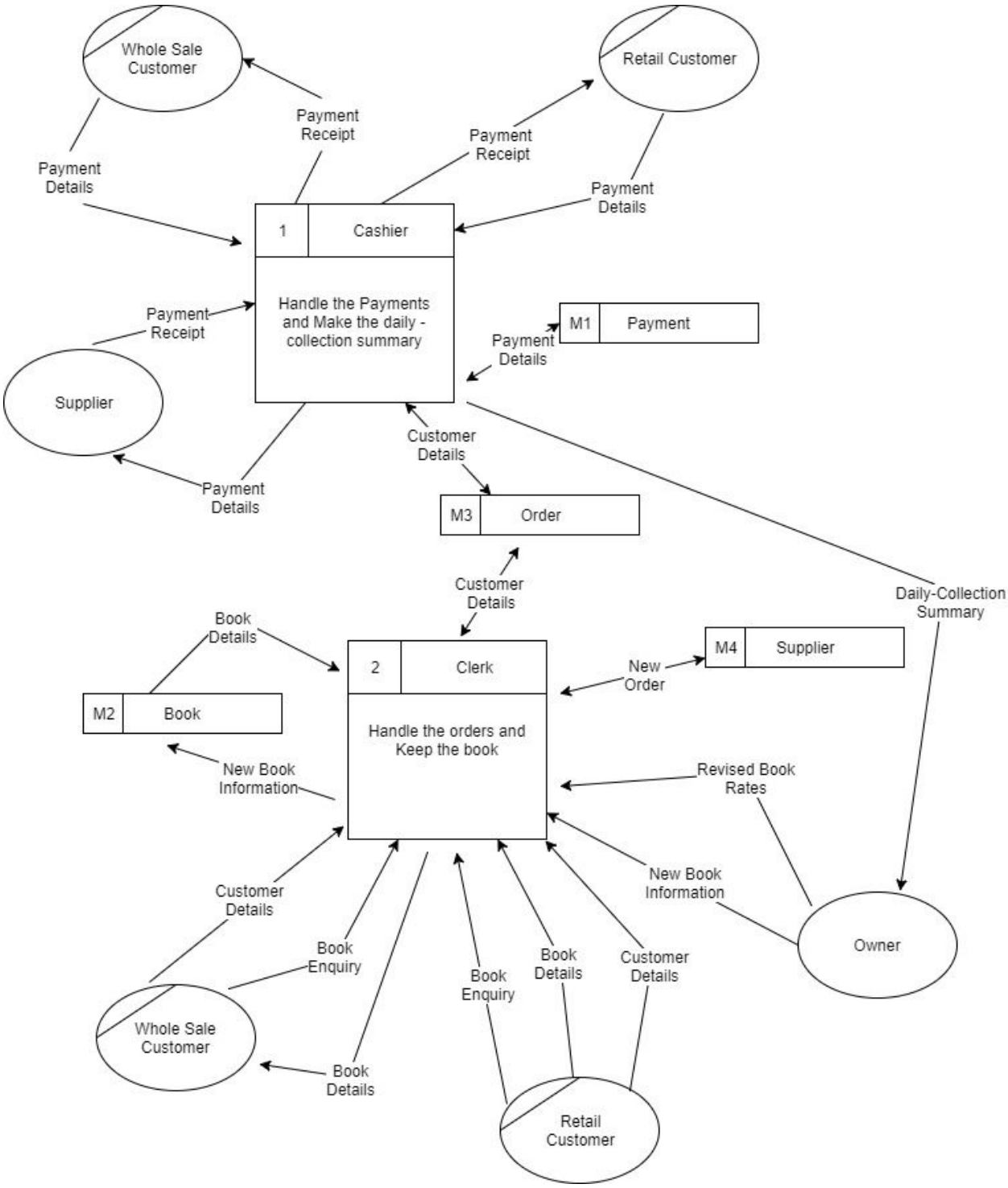


Figure - Context Diagram

Data Flow Diagram



Appendix B: Project Progress

To Be Determined List			
TBD Item	**Status**	**Start date**	**End date**
System Modeling	This includes analyzing the project specification and representations of ER diagrams.	21/06/2017	04/05/2017
Database Design	Local databases are deployed in this phase.	04/06/2017	11/06/2017
Development Phase	Member understanding about the development methodology and technical background. development of application documentation will commence.	11/06/2017	02/07/2017
Testing & Correction Phase	Testing each and every component individually and the system as a whole.	02/07/2017	09/07/2017
Project Delivery	The solution is finalized and brought to a state where it is ready to be delivered to the client.	09/07/2017	14/07/2017

Table 1

Appendix C: Glossary

Term/Reference	Definition
Entity	Is a single of person , thing and object which store in a database
Attribute	Character of Entity
Client	Which is only used to access data.
Database	Collection of all the data and information in this system.
Functional Requirements	They describe the observable behaviors the system will exhibit.
Non-Functional Requirements	Requirements that not requested by the client
ER Diagram	Entity Relationship diagram - shows the relationships of entity sets stored in a database
Context Diagram	That defines the boundary between the system
DFD	Data flow diagram - shows dataflows of the system

Table 1

Appendix D: References

- “Visual Basic Programming Guide,” *microsoft*. [Online]. Available: https://docs.microsoft.com/en-us/dotnet/visual-basic/programming-guide/.

- “Visual Basic Tutorial.” [Online]. Available: https://www.youtube.com/watch?v=mM3zB3QWuv8&list=PLC601DEA22187BBF1.

- “Visual Basic Tutorial 2017.” [Online]. Available: https://www.youtube.com/watch?v=3FkWddODLno.

- “Sql server 2008 .” [Online]. Available: https://www.youtube.com/watch?v=ZNObiptSMSI&list=PL08903FB7ACA1C2FB.

- “Connect Visual basic to SQL server.” [Online]. Available: https://www.youtube.com/watch?v=YrRMdOXLNjA.

- “Visual Basic 2015 Tutorial,” *vbtutor.net*. [Online]. Available: http://www.vbtutor.net/index.php/visual-basic-2015-tutorial/.

- J. Ky, *Visual basic: a beginners tutorial*. Brussard, Quebec, Canada: Brainy Software, 2014.

- W. qing ping and C. ning, *Visual Basic*. Guang zhou: Ling nan mei zhu chu ban she, 2000.

- R. D. Schneider and D. Gibson, *Microsoft SQL Server 2008: ALL-IN-ONE DESK REFERENCE FOR DUMMIES*. Hoboken, NJ: Wiley Publishing, Inc., 2008.

Appendix E: Contribution

Person	Contribution
PS/2013/277 R.R.A.M.P.Jayawardena	● Project ○ Visual Basic UI designs ○ Stock management ○ Sql Server DB design ● Project Report ○ 2. Overall Description ○ 3. External Requirements ○ 5.Non - Functional Requirements ○ Appendix A (Login Activity / ER Diagram)
PS/2013/375 W.L.M.Senevirathne	● Project ○ Visual Basic UI designs ○ Customer Management ○ Sql Server DB design ● Project Report ○ 1.Introduction ○ 4.Functional Requirements
PS/2013/404 W.N.C. Fernando	● Project ○ Suppliers Management ● Project Report ○ Appendix C: Glossary
PS/2013/064 A.P.K.Gunathilake	● Project ○ System User Account Management ● Project Report ○ Appendix B: Project Progress
PS/2013/364 W.A.C.Madhushani	● Project ○ Order Management ● Project Report ○ Appendix D: References ○ Appendix A (Context / DFD Diagrams)