



ONLINE REDISTRIBUTION MANAGEMENT SYSTEM FOR AXIA (PVT) LTD

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**This dissertation is submitted in partial fulfillment of the requirements of
the Degree of Bachelor of Information Technology (External) of the
University of Colombo School of Computing**

DECLARATION


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ABSTRACT

Axia (Pvt) Ltd is a pharmaceutical company in Sri Lanka. Its main business is to retail pharmacy and import of professional and home care medical equipment. Presently Axia Pvt Ltd cater to over 5000 prescription a day from their three outlets in Colombo.

There is no a online system to store data and they are using a standalone system. It is hard to handle a standalone system because there are many distributors and more transactions and functions such as tracking distributor level RD sales, tracking of brands / product level RD sales, tracking of area / town level RD sales, tracking outlet level RD sales, ...etc. The system helps to manage their day-to-day processes such as ordering goods, receiving goods, invoicing, paying using cheque or cash, returning sales, adjusting stocks, transferring stocks, putting cheque or cash receipts, ...etc. They can get annually, monthly or from selecting relevant data range report like sales reports, moving sales reports, stock reports and reference reports which help to get top level decisions to the management. This system will help to enhance the performance of the organization and to solve up all problems involve with this standalone system. The company can check the all transactions of all distributors and more using this system easily. This system will provide a user friendly and simple interface to the users. Then it will help to them to provide a reliable, quick and effective service to their members. Further, the best part of the online system makes it possible to monitor the Axia (Pvt) Ltd processes from any location via the internet and it also could be operated either in Windows or Linux environment.

This system follows ASP.Net normal form architecture and use C# language with Object Oriented Techniques. Visual Studio 2010 IDE was used to implement the system. MSSQL Server 2008 was used as a DBMS in windows environment.

At the end, the system implemented successfully and it was hosted and also this online system achieved client requirements successfully.

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LIST OF ACRONYMS

CRUD	-	CREATE, READ, UPDATE, DELETE
DFD	-	DATA FLOW DIAGRAM
GRN	-	GOOD RECEIVE NOTE
GRNR	-	GOOD RECEIVE NOTE RETURN
GUI	-	GRAPHICAL USER INTERFACE
HTML	-	HYPertext MARKUP LANGUAGE
IDE	-	INTEGRATED DEVELOPMENT ENVIRONMENT
ASP	-	ACTIVE SERVER PAGE
API	-	APPLICATION PROGRAMMING INTERFACE
ODBMS	-	OBJECT DATABASE MANAGEMENT SYSTEM
OOAD	-	OBJECT ORIENTED ANALYSIS AND DESIGN
ORM	-	OBJECT-RELATIONAL MAPPING
OS	-	OPERATING SYSTEM
PO	-	PURCHASE ORDER
CSS	-	CASCADING STYLE SHEET
RDBMS	-	RELATION DATABASE MANAGEMENT SYSTEM
RUP	-	RATIONAL UNIFIED PROCESS
SQL	-	STRUCTURED QUERY LANGUAGE
UML	-	UNIFIED MODELING LANGUAGE
RD	-	REDISTRIBUTION

CHAPTER 1 – INTRODUCTION

1.1 BACKGROUND

Axia (Pvt) Ltd is a pharmaceutical company situated in Colombo which is retailing pharmacy and importing of professional and home care medical equipment, catering over 5000 prescription a day from their three outlets in Colombo and supply the major government and private hospitals in the island.

Until this, more than 7000 customers had been joined and do their needs more successfully now under more than 15 distributors. So company need to connect their all distributors. As a solution Axia decided to establish a online redistribution management system to support the distributors who are going to work properly.

1.2 MOTIVATION

Axia (Pvt) Ltd don't have existing online redistribution management system to check their distributors' day to day transactional activities. By introducing new online system the company will check the transactional work of the distributors at once. Therefore the distributors must interact with reliable, and effective online management system which distributors to put invoices, purchasing orders, goods receiving notes, sales return and so on.

The system will provide the above requirements successfully and it can be developed lower budget and high efficiency. The system will provide user-friendly and simple interface to the distributors. Then it will help them to provide a reliable, quick and effective service to the company.

Therefore having an experience of developing a online redistribution management system will be a huge benefit in my future career.

1.3 EXISTING SYSTEM

Axia (Pvt) Ltd had no any online redistribution management system until now. They managed carry on its process using standalone system.

The company was doing their process by using standalone system. All distributors must send a text file to the company which include distributor's transactions. Then the company needs to input that text file to the current system to check distributor's transactions.

1.4 PROPOSED SYSTEM

Proposed system will provide high effectiveness and efficient. Then they automatically motivate of their works.

1.5 OBJECTIVES AND SCOPE

1.5.1 OBJECTIVES

The followings are the objectives for the system.

- Improve Speed

Data entering to the proposed system is very easy and speedy. Because of available customer, supplier and stock reports can be used and also auto calculations help to minimize time wasting of manual methods also can generate reports according to user's requirement, for that system will take few seconds and auto generated reports after entering some details about user requirement.

- Improve Reliability

Reduce errors and duplication of entries. Automatically calculation will help to improve reliability. Better customer relationship will increase by fast customer service.

- Improve Security

Historical data entries of the company are very securer and they can be used as their need anytime. Also no need to use physical space for storing books and other data recording sheets because of now they can work without huge no of stationeries and they can store whole online server. Manual document can't keep multiple locations and many users can't use same time but system generated reports can store multiple place in online or off-line so many users can use same report in same time. By auto verification of duplications system will help to minimize data redundancy.

- Improve Simplicity

Management can monitor current system from the anywhere of the world. All data of the distributors are included in the system. So distributor can browse any type of report that they want.

1.5.2 SCOPE

Functions of the system are described below.

- Manage Day-to-day Transaction

Daily transactions of company like sales, debtors, creditors, customers can feed to system easily and accurately than manual methods before used and all daily reports can generate easily using system. It also help to generate daily reports.

- Manage Customer Details

There is a Debtor module and Axia (Pvt) Ltd can store about debtor details. Name, Address, Contact No's, Credit limit period etc... There are anytime, quickly can search who are in the outstanding list like options.

- Manage Distributor Details

Every distributor's details need to enter to the system. It was easy to browse distributor details.

- Produce Reports

Management can produce a variety of reports and get a clear idea about their distributors currently going on.

- Manage Distributor's Job Operation

System facilitates to manage their all distributor wise operations.

1.6 USER REQUIREMENT

Stakeholders in this company.

- Super Administrator
- RD Admin
- RD User
- Distributor Admin
- Distributor User
- Sales Rep

Major requirement of this system is handling Stock and Sales of this Company and moreover this system provide following functionalities.

- Tracking of Brand / Product Level RD Sales
- Tracking of Area/ Town Level RD Sales
- Tracking Outlet Level RD Sales
- Outlet Coverage Analysis
- Tracking Distributor Level RD Sales
- Country Sales / Van Sales Invoicing
- Ordering Goods (Purchase Order)
- Receiving Goods (GRN)
- Sales Return
- Track of Stock Control
- Track of Outstanding Invoices
- Report generating

1.7 SYSTEM REQUIREMENT

- For software operating system should be window 7, window 8.
- Should have Crystal report 13.0.5

- Database management system is MSSQL 2008 R2 Express
- Browsers like Google Chrome, Mozilla Firefox or Internet Explorer
- For hardware system configuration should be Intel (R) Core (TM) i5 3210 CPU
2.5GHz , 4GB RAM, 500GB Hard drive.
- Suitable printer.

1.8 STRUCTURE OF DISSERTATION

CHAPTER 02 - ANALYSIS

In this chapter include requirements gathering techniques, current system details, details description of functional and non-functional requirements of the system and weakness of current system.

CHAPTER 03 - DESIGN

This chapter gives the design model of Online Redistribution Management System, which includes the structure of the overall system and describes software architecture of the system, design diagrams, about selected process model and user interface design.

CHAPTER 04 – IMPLEMENTATION

In this phase describes system developed environment, development tools and techniques, all the major codes listing and reused code modules.

CHAPTER 05 – EVALUATION

This chapter explains all the testing done with the system, which methodologies used for testing, test cases used and their results and what errors were found. User evaluation also describes in this chapter.

CHAPTER 06 – CONCLUSION

This chapter delivers summery of the successes of this system, lessons learnt and suggestion for future improvements.

CHAPTER 2 – ANALYSIS

In this chapter, two mainly discusses the functional and non-functional requirements. Requirement Analysis is one of the main parts of any kind of project and project management. Therefore, a significant amount of time and effort were put in this segment to reach a higher success rate of the project.

2.1 CURRENT SYSTEM

They do their all transactions using the standalone system. Axia wants to take the text files from their distributors monthly and the text files must insert to the system to get distributor wise sales reports. The distributors send their text files via email.

Figure 2.1 shows the use case diagram for the current system

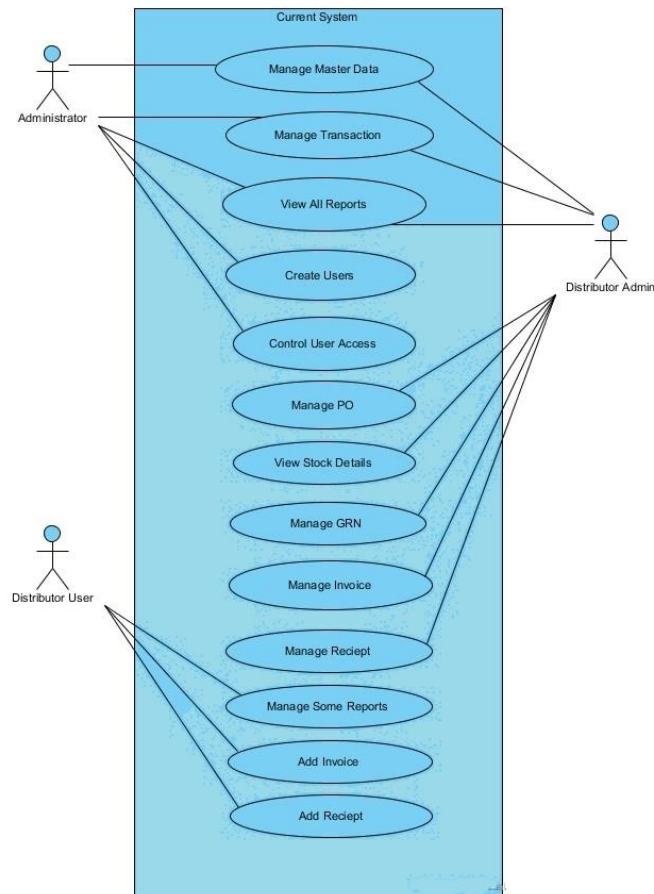


Figure 2.1: Use Case Diagram in Axia (Pvt) Ltd

2.2 WEAKNESSESS OF CURRENT SYSTEM

The followings are the weaknesses of the current system.

- Distributor must send the text file to check their transactions via email.
- Standalone system is most helpful to doing fraud & error.
- If someone done errors or fraud, that found is very difficult. Inconsistency in data entry.
- Analysis of company current & past position is very difficult because of they need most of transaction about company very past to current. But company can't catch that information quickly by using standalone system. Cannot produce report as management wants.
- No data backup system..
- Management cannot monitor and access current process any time they want.

2.3 REQUIREMENT GATHERING

Requirement gathering is the most important part of the software development life cycle. System is made by using user requirements. Otherwise it was difficult to develop a good system. In this project interviewing and discussion are the main requirement gathering techniques.

2.4 REQUIREMENT GATHERING TECHNIQUES

Following requirement gathering techniques were used.

2.4.1 INTERVIEW

USER Interviews are a common techniques used in requirement gathering. By using interview can get clear idea about business process currently going on. Using this technique can interview different level of users that means can interview top level management to low level sales staff.

2.4.2 OBSERVATION

Observation mean gathered information from learning their manual habits

2.4.3 DOCUMENT ANALYSIS

Before the system design have to analysis past manual bills of their old system. This will help to get the domain knowledge of the system.

2.4.4 PROTOTYPING

Build simple working model and show it to users and asked what their wants, changes of system are. Prototyping is good when the user don't have clear idea about system.

2.5 REQUIREMENT ANALYSIS

After collecting requirement it was carefully analyzed. Many requirement analysis technique of this project is use case diagrams. Using use case diagrams can analyze project actions and it clarifies the system. Actor are the main character of the business process and use cases are the functions that they are done. Use case diagram is a relationship between the actors and use cases. Using these diagrams can get a quick idea of the system.

2.6 FUNCTIONAL REQUIREMENTS OF THE SYSTEM

Functional requirement describes what the system should do. It is described the behavior of the system as it relates to the system's functionality.

- **Manage Item Details**

System is smoothed to add new item, update existing item details or delete an item. Specially, it is helped to remind re-order level of quantity and it is described about minimum level of quantity that organization should maintaining till re-order. Items are categorized for generate reports easily. Sales price and unit of measurements details also can be updated in the item master file.

- **Manage Purchase Details**

System helps to generate their purchase orders and goods receive notes quickly. Every purchase items are saved in the system batch wisely. Then they can issue items to the workshop according to the FIFO (First In First Out) method. System gives various reports to find purchase history including which kinds of items were purchased in selected period, from whom purchased and available stock like etc.

- **Manage Suppliers Details**

User can be able to add a new supplier to the system, edit existing supplier's details or can delete supplier's details. Anytime users can search supplier's payment history, contact details and outstanding details.

- **Manage Customers Details**

Maintaining customer's details including contact details, payment history, outstanding history, credit limits and credit limit periods. Also can create a new customer and modify existing customer details. Customer payments can be done in the system.

- **Manage Sales Details**

Invoices can be generated through the system. System users can search day to day sales details or selected periodically sales details very quickly by using sales reports. System is facilitated to make their sales on cash or credit. There are several reports to identify their sales profit or loss and helps to take decision making for management.

2.7 NON-FUNCTIONAL REQUIREMENTS OF THE SYSTEM

Systems engineering and requirements engineering, a non-functional requirement is a requirement that specifies criteria that can be used to judge the operation of a system, rather than specific behaviors. This should be contrasted with functional requirements that define specific behavior or functions.

- **Reliability** – Since the system handles important data related to a business Process, it should be trustworthy and all information provided is accurate. Confidential data should be under lock and key.

- **Availability** –The time taken to restart after failure, percentage of events causing Failure and probability of data corruption on failure should be minimal. In a failure, the system should change within a short period of time while the occurrence of failure should be to a minimum.

- **Accessibility** - The system is web based so it should be accessible from anywhere via WWW to facilitate different branches.

- **Portability** - Technologies used should be platform-independent. Thereby, the system can be transferred from one platform to another.

➤ **The interoperability** - System should be compatible with most of the current web browsers and operating systems. The system should be compatible with other System software running on any platform utilizing a minimal number of computer resources.

Other non-functional requirements

- User friendly
- Simple interfaces
- Easy to install
- Can run low configuration machines
- Security options
- Print reports

2.8 EXISTING SIMILAR SYSTEM

When Considering the redistribution management systems for the company. There is no online system to fulfill the necessary requirements to Axia (Pvt) Ltd. So that best option to is to implement the online redistribution management system to match with the client's requirements.

CHAPTER 3 – DESIGN

Design is also an important part of software development project. Clear and real design is essential for a successful software product. A main activity of the design stage of the project was determining detailed requirements. Design of data and information flow, design of user interfaces, design of database and design of hardware software configuration.

3.1 ALTERNATE SOLUTIONS

There are two different alternates identify for the Online Redistribution Management System for the Axia (Pvt) Ltd during the requirement analysis. Those suggested alternates are,.

- **Web Based System**

Web Based System is usually made on client-server architecture and use a web browser as the client interface. Web based systems need to be installed only once on a machine. So modifying the system is easy. Users can access the system from any location using the internet.

- **Buy a Readymade Software**

There are lots of Readymade Software's in the market. It is low cost and users need to work according to that software. Once purchased, if user needs any customization, user has to pay high amount of money for the vendor.

3.2 SELECTING A SOLUTIONS

Web based System was chosen from the above mentioned two alternatives. This program will not be running on computers in the same building. The management of the Axia (Pvt) Ltd did not want a readymade system because it complicated to customize. Because of that reason decided to develop a web based system for their company

Buy a Readymade Software: -

- Can buy for reasonable amounts, but after sales services will be very high cost.
- To maintain software knowledge need to recruit a dedicated person.
- Customization will be high cost.
- Must change organization process to available processes in purchased software.

That the above reasons are effected to chosen the web based system. Axia (Pvt) Ltd is running their operation in several premises, The system would be platform independent. Maintenance is easy, because the database is centralized and everything is synchronized.

3.3 SOFTWARE DEVELOPMENT PROCESS MODELS

“A software development process is a framework imposed on the development of a software product. Synonyms include software life cycle and software process. There are several models for such processes, each describing approaches to a variety of tasks or activities that take place during the process [1].”

There are several types of software development process models such as

- Waterfall Model
- Prototype Model
- Rapid Application Development (RAD)
- Spiral Development
- Incremental Development
- Object Oriented Analysis and Designing (OOAD)

3.4 METHODOLOGY FOR THE PROPOSED SYSTEM

Object Oriented Analysis and Designing (OOAD) were chosen from the above mentioned models. Because of requirements were not clearly identified hence system cannot develop rapidly.

“Object-oriented analysis and design (OOAD) is a software engineering approach that models a system as a group of interacting objects. Each object represents some entity of interest in the system being modeled, and is characterized by its class, its state (data elements), and its behavior. Various models can be created to show the static structure, dynamic behavior, and run-time deployment of these collaborating objects. There are a number of different notations for representing these models [2].”

Following models were used to develop a process of the system

- Use Case Diagram
- Activity Diagram
- Database Design Diagram
- Class Diagram

3.5 USE CASE DIAGRAM

Use case diagram offers a view of the core functionalities of stakeholders. From that it is easier to identify the system requirements and design phase. Other than that co- relation of the stakeholders and their functionalities describe clearly. More details about use case diagrams can be presented by using use case descriptions, they provide more detail overview of the mentioned use case such as who are the actors for a specific use case, flow of events.

“A **use case diagram** at its simplest is a representation of a user's interaction with the system that shows the relationship between the user and the different use cases in which the user is involved. A use case diagram can identify the different types of users of a system and the different use cases and will often be accompanied by other types of diagrams as well [3].”

Figure 3.1 shows high level use case diagram for system login.

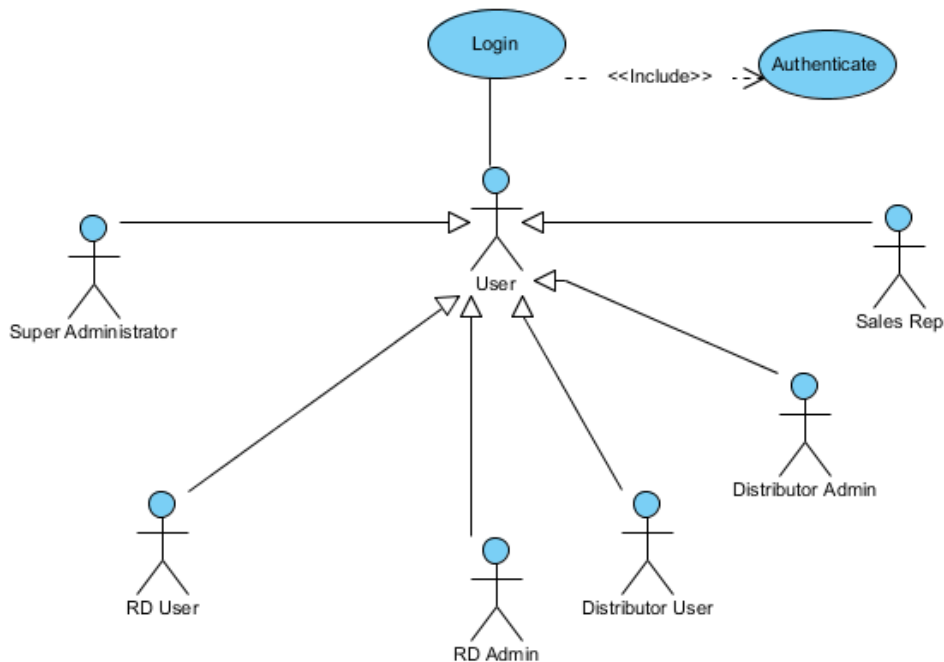


Figure 3.2: High Level Use Case Diagram for the System Login.

Figure 3.2 to 3.4 shown high level use case diagrams for Axia (Pvt) Ltd.

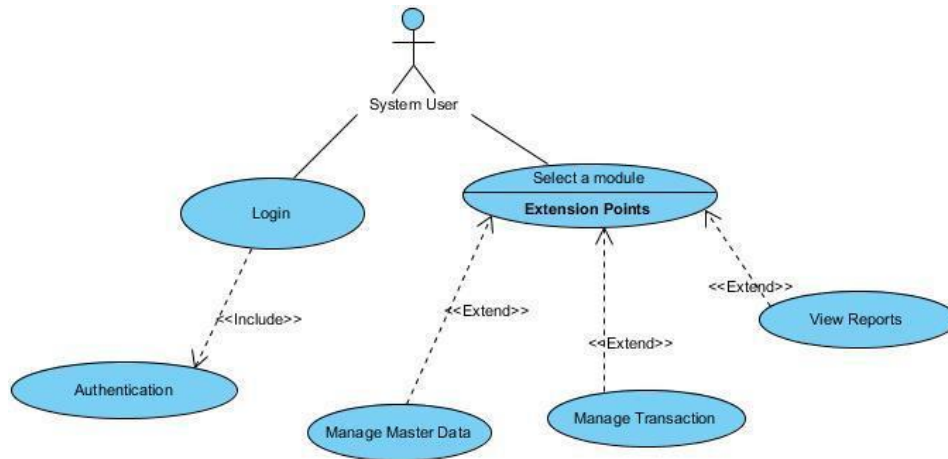


Figure 3.2: High Level Use Case Diagram for the System User.

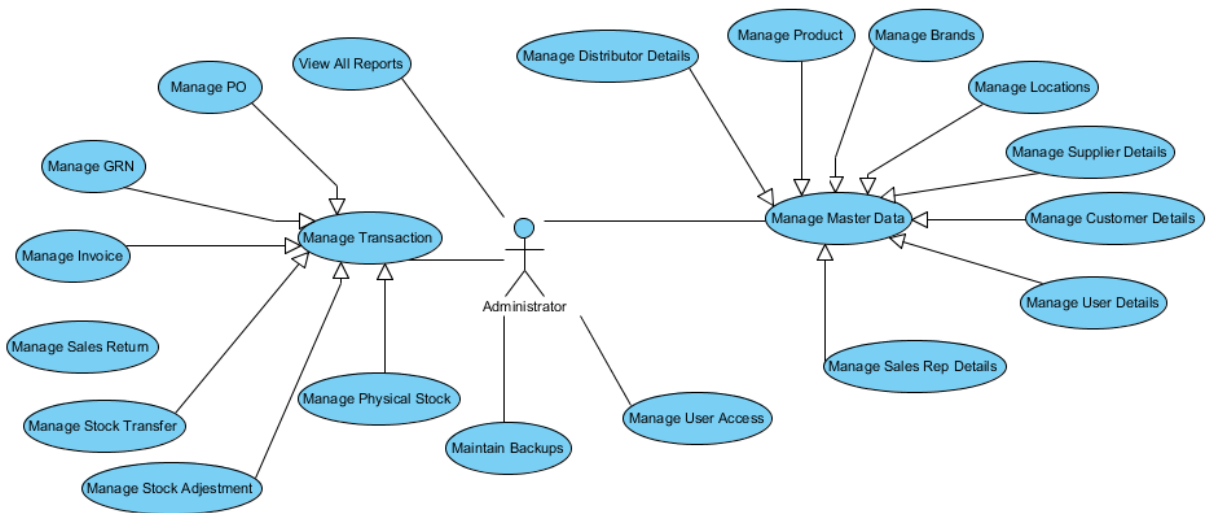


Figure 3.3: High Level Use Case Diagram for the System Administrator.

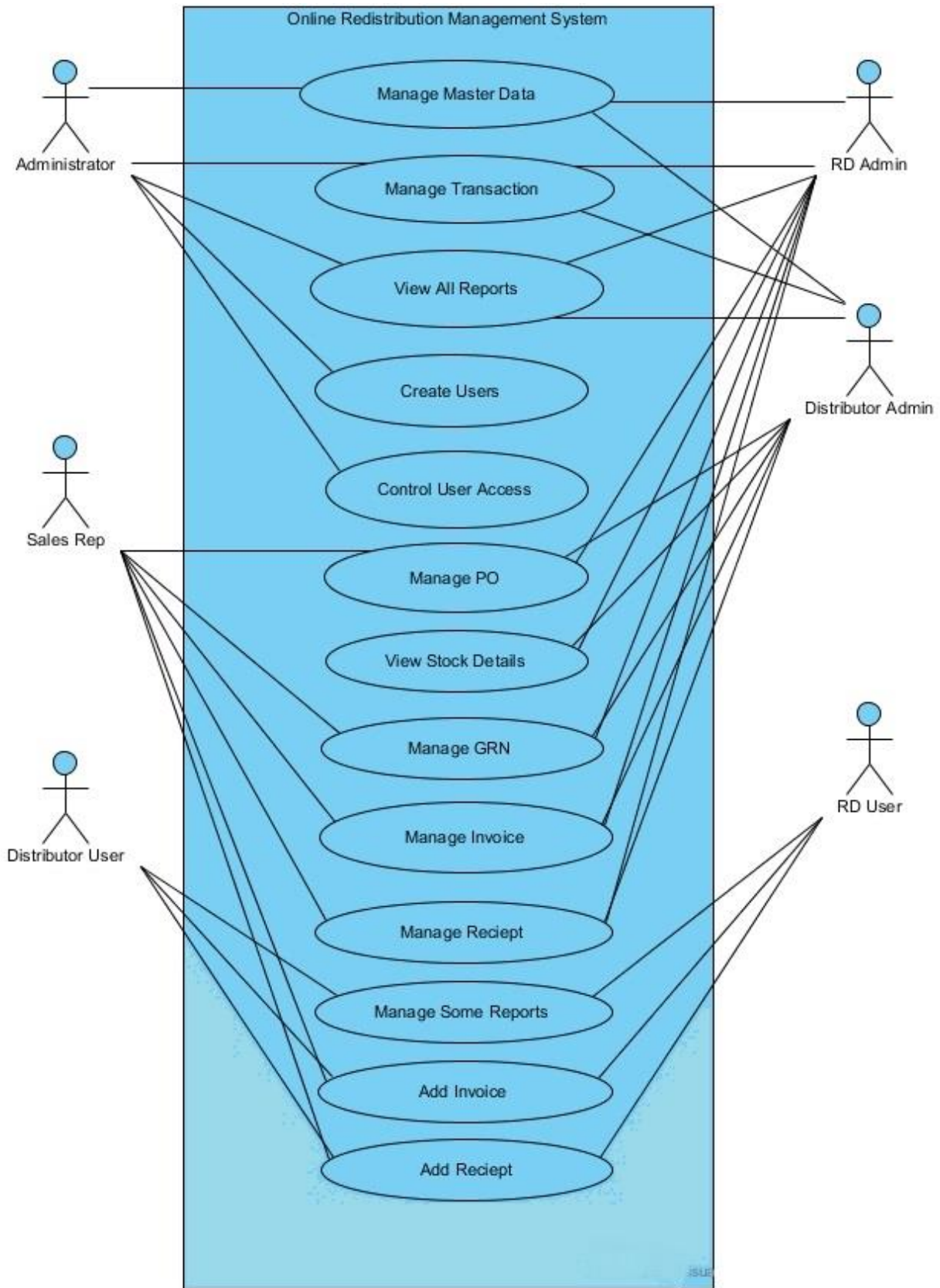


Figure 3.4: High Level Use Case Diagram for Overall System.

Use case narratives provided better idea about the use case diagram. It's including overview, precondition, flow of events, post conditions. Table 3.1 to 3.6 shown some use case narratives.

Use Case Name	Login
Actor	All users
Overview	
Register users can login to the system.	
Precondition	
User must register and have username and password to login to the system.	
Flow of Events	
Enter user detail, Validate user, Login to the system	
Post Condition	
Invalid user show error message and reject	

Table 3.1: Login Details Use case

Use Case Name	Add Master Data
Actor	Super Administrator, Distributor Admin, RD Admin
Overview	
Add new master data in to the system. (Master data includes Item, Category, Location and Unit of Measurements details.)	
Precondition	
User should be an authorized person.	
Flow of Events	
Select item master data and enter item details.	
Post Condition	
Despair master data.	

Table 3.2: Add Master Data Details Use case

Use Case Name	Add New Transaction.
Actor	Super Administrator, RD and Distributor Admin, RD and Distributor User, Sales Rep
Overview	
Add new Transaction in to the system. (Transaction includes Purchase Order, Good Receive Note, Invoices, Receipts, etc...)	
Precondition	
User should be an authorized person.	
Flow of Events	
Select a module and then select transactions. After that select suitable transaction and add Transaction details.	
Post Condition	
Print Transaction details.	

Table 3.3: Add Transaction Details Use case

Use Case Name	Manage User Details.
Actor	Super Administrator
Overview	
Manage User details. (Add, Update and Inactive user details.)	
Precondition	
User should be an authorized person.	
Flow of Events	
Go to system Go to user detail and enter user detail Press add user to add new user. Select Edit button to update user details.	
Post Condition	
Show, new or modify record in the table grid.	

Table 3.4: Manage User Details Use case

Use Case Name	View Item
Actor	Super Administrator, RD Admin and User, Distributor Admin And User, Sales Rep
Overview	View item in the system.
Precondition	User should be an authorized person.
Flow of Events	Select item master data, select item and then can view item details.
Post Condition	

Table 3.5: View Item Details Use case

Use Case Name	View Report
Actor	Super Administrator, RD Admin, Distributor Admin
Overview	View reports in the system.
Precondition	User should be an authorized person.
Flow of Events	Select Report type and fill relevant areas and click print button.
Post Condition	Print report.

Table 3.6: View Report Details Use case

3.6 ACTIVITY DIAGRAM

Activity diagram is also very important diagram to describe dynamic aspect of the system. This diagrams describes the flow from one activity to another activity. This flow can be sequential, separated or concurrent. Figure 3.5 shows activity diagram for create new user ID in the system.

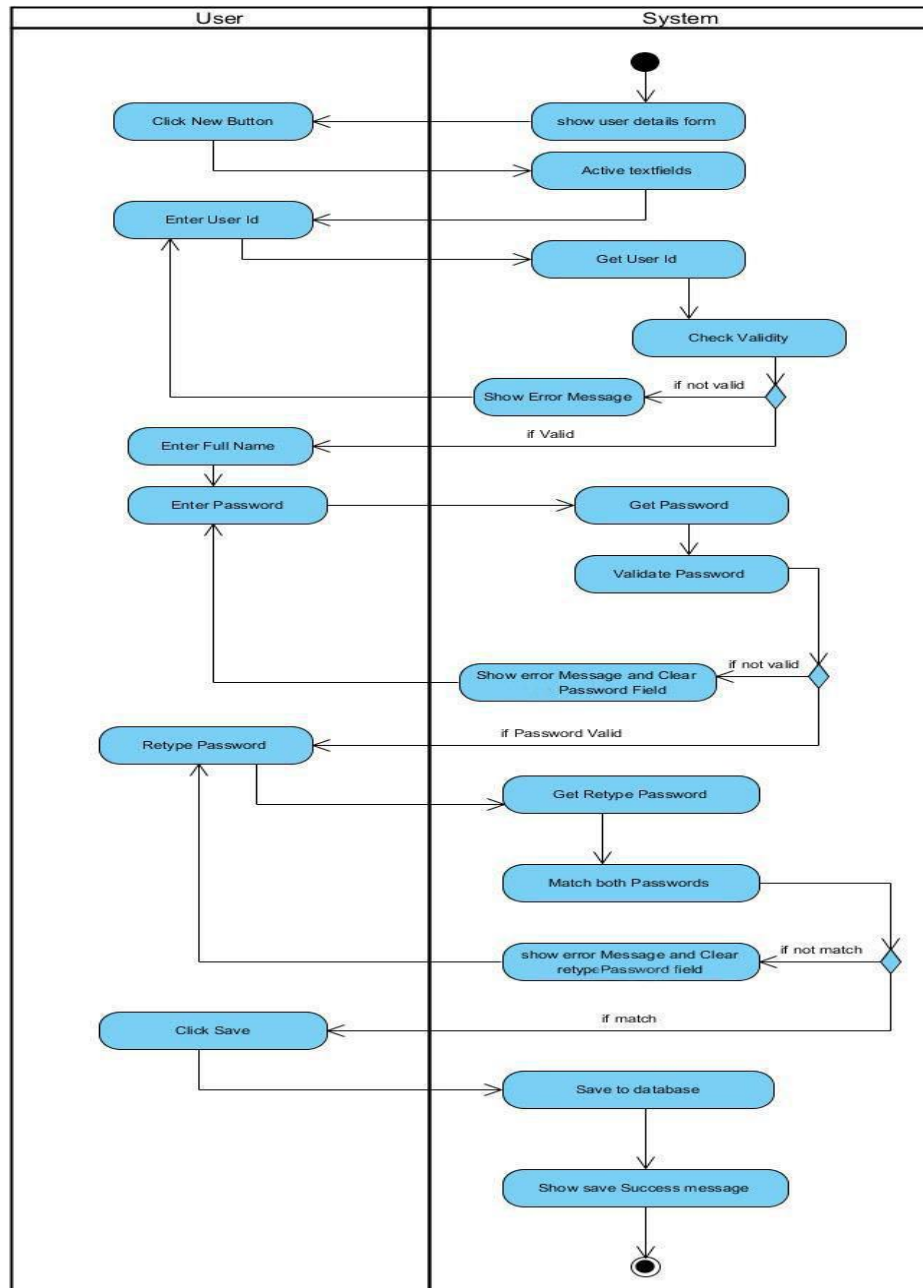


Figure 3.5: Activity Diagram for the Create New User Id.

3.7 DATABASE DESIGN DIAGRAM

“Database design is the process of producing a detailed data model of a database. This logical data model contains all the needed logical and physical design choices and physical storage parameters needed to generate a design in a Data Definition Language, which can then be used to create a database. A fully attributed data model contains detailed attributes for each entity [4].”

Figure 3.6 shows database design diagram for the system.

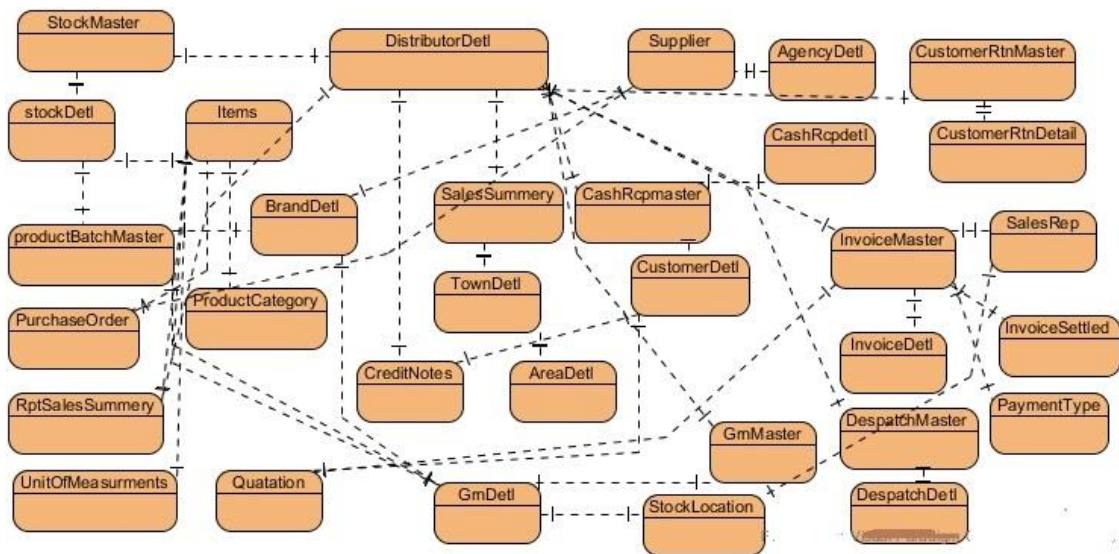


Figure 3.6: Database Diagram for the System.

3.8 CLASS DIAGRAM

“In software engineering, a class diagram in the Unified Modeling Language (UML) is a type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations (or methods), and the relationships among the objects [5].”

Figure 3.7 shows the high level class diagram of the Online Redistribution Management System for Axia (Pvt) Ltd.

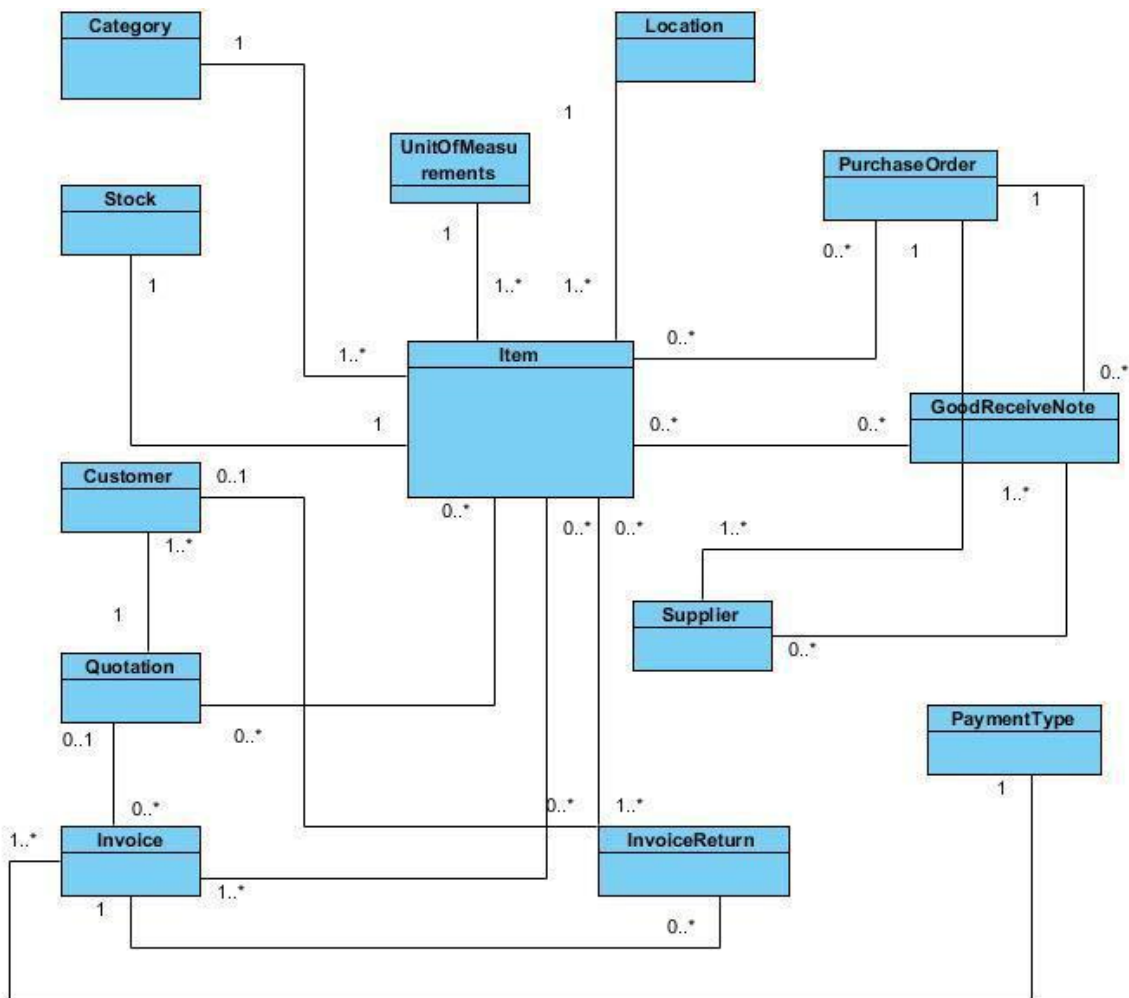


Figure 3.7: Class Diagram for the Axia (Pvt) Ltd.

3.9 USER INTERFACE DESIGN

“User Interface Design is important as a discipline of user experience engineering that focuses on interaction between the user and the parts of an application that facilitate the user’s desires. To put it simply, UI design allows the user to achieve goals quickly and easily, turning any application no matter how sophisticated into a seamless environment that responds intuitively to the user. Truly effective User Interface Design means the user will only rarely need to look at help files, either online or written, because the software is structured to respond to a natural human thought process [6].”

Figure 3.8 shows system invoice detail interface in the Axia (Pvt) Ltd system.

The screenshot displays the 'Invoice Details' user interface. At the top left is the Axia Private Limited logo. The top right shows the user 'Reliance' and their level 'Super Administrator'. A navigation menu includes HOME, MASTER FILES, OPERATIONS, REPORTS, and SYSTEM. The main content area features a table with the following data:

Inv.No	Date	Customer	Ref.	Amount	Content Control
002570	11/2/2017	Sethsan Pharmaceuticals	23269	58254.00	Delete
002571	11/2/2017	The New Pharmacy (Kandy Road) Kurunegala	23270	12896.25	Delete
002572	11/6/2017	New Lanka Pharmacy Ibbagamuwa	23271	18948.00	Delete
002573	11/6/2017	Ibbagamuwa Medicals Ibbagamuwa	23272	26125.50	Delete
002574	11/6/2017	Co-op Pharmacy Puttlam Road kurunegala	23273	10692.00	Delete
002575	11/6/2017	Central Pharmacy Mallawapitiya	23274	1700.00	Delete
002576	11/8/2017	Rinsi Enterprises (pvt) Ltd Kurunegala	23277	74000.00	Delete
002577	11/8/2017	Mahajana Pharmacy Rideegama	23278	4773.20	Delete
002578	11/8/2017	Piumi Pharmacy Ibbagamuwa	23279	8887.10	Delete
002579	11/8/2017	Rideegama Pharmacy Rideegama	23280	2194.95	Delete

Below the table, it indicates 'Showing 1 to 10 of 122 entries' and provides pagination controls (Previous, 1, 2, 3, 4, 5, Next). To the right of the table is a 'ShortCuts' panel with a 'Distributor' dropdown menu (currently showing 'Dinsu distributors'), a 'Rep' dropdown menu (currently showing 'Amila - D'), and a 'Create Invoice' button.

Figure 3.8: Invoice Detail user interface.

The figure 3.9 shows the user interface which will be used as GRN Detail Window. It shows all the GRN fed of the system and allows users to navigate through the system easily. Here, the grid view is used to control the data which fed by users. Also it shows drop down list as Distributor.

GRN Detail

10 records per page Search

GRN.No	Date	Supplier	Com.Ref	Amount	Content Control
000001	1/1/2017 12	Axia Private Limited	00001	32402925.10	
000002	1/1/2017 12	Axia Private Limited	00002	4158000.00	
000003	1/1/2017 12	Axia Private Limited	000003	123700.00	
000004	1/1/2017 12	Axia Private Limited	00004	93040.00	
000005	1/1/2017 12	Axia Private Limited	00005	14137.50	
000006	1/1/2017 12	Axia Private Limited	00006	5655.00	
000007	1/6/2017 12	Axia Private Limited	00007	115000.00	
000008	2/1/2017 12	Axia Private Limited	00008	881250.00	
000009	2/1/2017 12	Axia Private Limited	00009	269885.00	
000010	3/1/2017 12	Axia Private Limited	000010	17611829.00	

Showing 1 to 10 of 72 entries ← Previous 1 2 3 4 5 Next →

ShortCuts

Distributor

+ Create GRN

Figure 3.9: GRN Detail User Interface.

Figure 3.10 shows the user interface which will be used for entering the invoice details. Create invoice form provides the facility to create, print invoice details. Also system validation is carried out to ensure correctness and consistency of the user inputs.

Direct Sales Invoice - Create Invoice

Customer: Order #:

Address: Date:

Stock Location: OS Invoices:

Remarks: Sales rep:

Bill No:

Description	Batch No	Exp. Date	Qty Stock	Price	Quantity	F/I	Discount	VAT	Value	Action
<input type="text" value="Select an Option"/>	<input type="text" value="Select an Option"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="button" value="Add"/>

Total:

Overall Discount %:

Net value:

Credit Balance:

Vat Amount:

Payable Amount:

© Redistribution System 2017

Figure 3.10: Create invoice user interface.

Figure 3.11 shows user interface of creating supplier detail.

Figure 3.11: Add New Supplier Interface.

Figure 3.12 shows user interface of Creating GRN.

Figure 3.12: Creating GRN Interface.

CHAPTER 4 – IMPLEMENTATION

Implementation also main activity in system development process. In this phase, system design phase convert to an executable system which satisfy the client requirements. In this chapter, describe the implementation process, code and module structure, development tools.

4.1 IMPLEMENTED ENVIRONMENT

The environment of the business organization and the functional and non-functional requirements of the proposed system were taken into consideration when the selection of the set of software tools and other resources. Ensure of the high performance, technology feasibility, maintainability and the user friendliness was the important aspects of the selection process.

Hardware and Software configuration used,

Hardware Requirements:

- Intel Core i3 Processor 2.30GHz
- RAM with 4 GB.
- Hard Disk with 500 GB.

Software Requirements:

- MSSQL Server 2008 R2
- Crystal Report 13.0.5
- Visual Studio IDE 2010
- Adobe Photoshop CS6
- Windows 7
- Visual Paradigm
- Google Chrome/ Mozilla Firefox/ Internet Explorer

4.2 DEVELOPMENT TOOLS

4.2.1 Visual Studio 2010

Microsoft Visual Studio is an integrated development environment (IDE) from Microsoft. It is used to develop computer programs for Microsoft Windows, as well as web sites, web apps, web services and mobile apps. Visual Studio uses Microsoft software development platforms such as Windows API, Windows Forms, Windows Presentation Foundation, Windows Store and Microsoft Silverlight. It can produce both native code and managed code.

4.2.2 C# Language

C# which is an object oriented language was used as programming language for develop this project. C# is platform independent. C# programming language first released by Microsoft. C# is fast, secure and reliable.

4.2.3 MSSQL SERVER

MSSQL Server was used for this project. MSSQL is a relational database management system (RDBMS) and ships with no GUI tools to administer MSSQL databases or manage data contained within the databases. MSSQL was helped for creating, executing, and optimizing SQL queries.

4.2.4 VISUAL PARADIGM

“Visual Paradigm is a UML design tool and UML CASE tool designed to aid software development. Visual Paradigm supports key industry modeling languages and standards such as Unified Modeling Language (UML), SysML, BPMN, XMI, etc. It offers complete tool-set software companies need for requirements capturing, software planning, test planning, class modeling, data modeling, and etc. [7].”

4.2.5 ASP.Net

“ASP.NET is an open-source server-side web application framework designed for web development to produce dynamic web pages. ... ASP.NET is built on the Common Language Runtime (CLR), allowing programmers to write ASP.NET code using any supported .NET language [8].”

4.2.6 Crystal Reports

Crystal Reports was used for Axia (Pvt) Ltd System. Crystal Reports can be embedded to Visual Studio 2010 IDE. Crystal Reports provides necessary features to generate dynamic reports, including data retrieval using ADO (ActiveX Data Objects), as well as support for parameters, expressions, variables, and groups.

4.3 IMPLEMENTATION

Implementation is the process of building the propose system. The selection of suitable development tools is very important. This chapter describes the implementation of Online Redistribution System.

ASP.NET is an open-source server-side web application framework designed for web development to produce dynamic web pages. ... ASP.NET is built on the Common Language Runtime (CLR), allowing programmers to write ASP.NET code using any supported .NET language.

4.4 ACTIVE SERVER PAGE IMPLEMENTATION

A file with the **ASPX** file extension is an Active Server Page Extended file that's designed for Microsoft's ASP.NET framework. **ASPX** files are generated by a web server and contain scripts and source codes that help communicate to a browser how a web page should be opened and displayed.

4.4.1 CODE BEHIND FILE IMPLEMENTATION

“ASP.NET Pages in a VS 2003 web project have two files associated with them -- one is a .aspx file that contains the html and declarative server control markup, and the other is a .cs "code-behind" file that contains the UI logic for the page: Control markup declarations are defined within the .aspx file itself [9].”

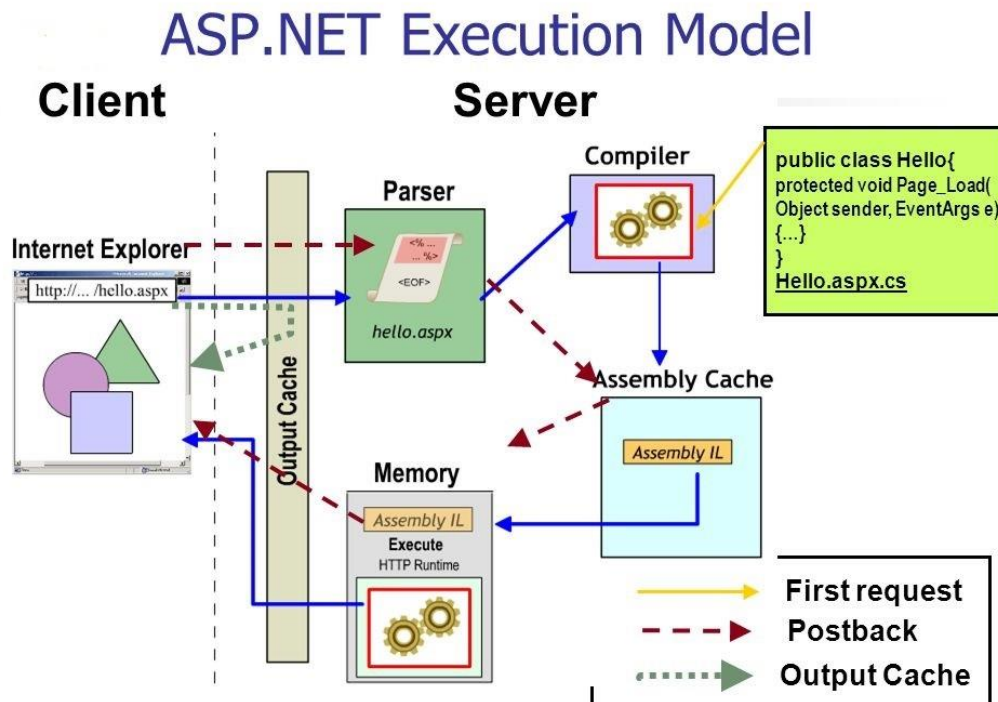


Figure 3.13: Code And Module Structure for the System.

Code 4.1 shows the aspx file codes used in this project.

```
<%@ Page Language="C#" AutoEventWireup="true" CodeBehind="Login.aspx.cs" Inherits="ORDS.Login1" %>

<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
"http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">

<html xmlns="http://www.w3.org/1999/xhtml">
<head id="Head1" runat="server">
<link rel="shortcut icon" href="/images/sys_logo_title.png" type="image/x-icon" />
  <meta charset="utf-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width, initial-scale=1">
    <title>Ecnailer - Login</title>

    <!-- CSS -->
    <link rel="stylesheet"
href="http://fonts.googleapis.com/css?family=Roboto:400,100,300,500">
    <link rel="stylesheet" href="assets/bootstrap/css/bootstrap.min.css">
    <link rel="stylesheet" href="assets/font-awesome/css/font-awesome.min.css">
    <link rel="stylesheet" href="assets/css/form-elements.css">
    <link rel="stylesheet" href="assets/css/style.css">
    <link rel="stylesheet" type="text/css" href="./Styles/Login/css/style.css" />

</head>
<body>
  <div class="container">

    <header>

    <div class = "log_error"></div>
    </header>

    <section class="main">
    <%-- body new form--%>
    <div class="row">

      <div class="col-sm-4 col-sm-offset-4 form-box">

        <div class="form-top">
          <div class="form-top-left">
            <h3><img src = "/Images/axia_logo.png"/></h3>
            <p>User Login</p>
          </div>
```

```

    <script src="assets/js/scripts.js"></script>
  </body>
</html>

```

Code 4.1: login.aspx

4.4.2 CREATE C# CLASSES

A **class** is a construct that enables you to create your own custom types by grouping together variables of other types, methods and events. A **class** is like a blueprint. It defines the data and behavior of a type.

Code 4.2 shows a part of encrypt and decrypt class in the system.

```

using System;
using System.IO;
using System.Text;
using System.Security.Cryptography;

namespace ORSDL
{
    public class ClsEncryptDecrypt
    {
        string plainText;
        string passPhrase = "Pas5pr@se";           // can be any string
        string saltValue = "s@1tValue";           // can be any string
        string hashAlgorithm = "SHA1";             // can be "MD5"
        int passwordIterations = 2;                // can be any number
        string initVector = "@1B2c3D4e5F6g7H8";   // must be 16 bytes
        int keySize = 256;

        public string Encrypt(string plainText)
        {
            byte[] initVectorBytes = Encoding.ASCII.GetBytes(initVector);
            byte[] saltValueBytes = Encoding.ASCII.GetBytes(saltValue);

            byte[] plainTextBytes = Encoding.UTF8.GetBytes(plainText);

            PasswordDeriveBytes password = new PasswordDeriveBytes(
                passPhrase,
                saltValueBytes,
                hashAlgorithm,
                passwordIterations);

            // Use the password to generate pseudo-random bytes for the encryption
            // key. Specify the size of the key in bytes (instead of bits).
            byte[] keyBytes = password.GetBytes(keySize / 8);

```

```

        // Convert decrypted data into a string.
        // Let us assume that the original plaintext string was UTF8-encoded.
        string plainText = Encoding.UTF8.GetString(plainTextBytes,
                                                    0,
                                                    decryptedByteCount);

        // Return decrypted string.
        return plainText;
    }
}

```

Code 4.2: *ClsEncryptDecrypt.cs*

Code 4.3 shows a part of distributor detail aspx class in the system.

```

using System;
using System.Web.UI.WebControls;
using System.Data;
using ORSDL;
using System.Configuration;
using System.Web.UI;

namespace ORDS
{
    public partial class DistributorDetails : System.Web.UI.Page
    {
        DataHelp objDataHelp;

        DataSet ds = new System.Data.DataSet();
        DataSet ds1 = new System.Data.DataSet();

        public static string str_ConStringName = "ConnString";
        string strConn =
ConfigurationManager.ConnectionStrings[str_ConStringName].ConnectionString;
        string comCode;
        string strSql;
        string strId;
        string nextCode;
        string strMenuID;
        string strLocCode;

        ClsCommon objCommon = new ClsCommon();

        protected void Page_Load(object sender, EventArgs e)
        {
            strId = "";
            Session["prevUrl"] = Request.Url;

            if (Session["UserName"] == null)
            {
                Response.Redirect("~/Login.aspx");
            }
        }
    }
}

```

```

else
{
    if (!Page.IsPostBack)
    {
        if (Session["UserName"].ToString() != "")
        {
            fillLoc();
            lblError.Text = "";
            lblSuccess.Text = "";
        }
    }
}

public bool IsAuth(string strOPType)
{
    string strChkMenuID;
    string strChkUserID;
    string strChkUserLevID;

    strChkMenuID = Request["menu_id"];
    strChkUserID = Session["UserName"].ToString();
    strChkUserLevID = Session["UserLevel"].ToString();

    if (strChkUserLevID == "00")
        return true;

    if (objCommon.AuthOpt(strChkMenuID, strOPType, strChkUserID))
        return true;

    return false;
}

private void CheckAuth()
{
    string strChkMenuID;
    string strChkUserID;
    string strChkUserLevID;

    strChkMenuID = Request["menu_id"];
    strChkUserID = Session["UserName"].ToString();
    strChkUserLevID = Session["UserLevel"].ToString();

    if (strChkUserLevID == "00")
        return;

    if (!objCommon.AuthOpt(strChkMenuID, "view", strChkUserID))
        Response.Redirect("~/Home.aspx");
}

```

```

public string SearchText()
{
    string strSText = "";

    string strProdName;
    string strSearchText;

    strSearchText = Request["search"];
    strProdName = Request["srctext"];

    if (!(String.IsNullOrEmpty(strSearchText)) &&
        (!(String.IsNullOrEmpty(strProdName))))
        strSText = "Search Results of Customer &quot;" + strProdName +
        "&quot;";

    return strSText;
}

public bool IsSearchMode()
{
    string strName;
    string strSearchText;

    strSearchText = Request["search"];
    strName = Request["srctext"];

    if (!(String.IsNullOrEmpty(strSearchText)) &&
        (!(String.IsNullOrEmpty(strName))))
        return true;

    return false;
}

public bool deleteData()
{
    return false;
}

public string getWhileLoopData()
{
    string sql;

    string strDisCode;
    string strDisName;
    string strYear;
    string strMonth;

    string strSearchText;

    string strString = "";

    int intLimit = 15;
    int intStart;

    int intSetLimit = 0;

```

```

string strPage = Request["page"];
strId = Request["id"]; //Form ID
strMenuID = Request["menu_id"];

intStart = 0;
if (!(String.IsNullOrEmpty(strPage)))
{
    intStart = (int.Parse(strPage) - 1) * intLimit;
}

intSetLimit = intSetLimit + intStart;

strSearchText = Request["search"];
strDisName = Request["srctext"];

string strChkUserLevID;
string strChkUserID;
strChkUserID = Session["UserName"].ToString();
strChkUserLevID = Session["UserLevel"].ToString();

if (strChkUserLevID == "03" || strChkUserLevID == "04" ||
strChkUserLevID == "05")
{
    sql = "SELECT d.* FROM DistributorDet1 AS d INNER JOIN " +
        "UserList AS u ON d.DistCode = u.DistCode WHERE u.role_id
= '" + strChkUserLevID + "' AND u.US_UID = '" + strChkUserID + "'";
}
else
{
    sql = "SELECT * FROM DistributorDet1 ORDER BY DISTNAME";
}

list = null;
}
objDataHelp = new DataHelp(strConn);
ds = objDataHelp.SELECT_Command(sql);

if (ds.Tables[0].Rows.Count > 0)
{
    for (int i = 0; i < ds.Tables[0].Rows.Count; i++)
    {
        strDisCode = "";
        strDisName = "";
        strYear = "";
        strMonth = "";

        strDisCode = ds.Tables[0].Rows[i]["DistCode"].ToString();
        strDisName = ds.Tables[0].Rows[i]["DISTNAME"].ToString();

        strYear = ds.Tables[0].Rows[i]["Acc_year"].ToString();
        strMonth = ds.Tables[0].Rows[i]["Acc_month"].ToString();
    }
}

```



```

strString += "<tr>" +
            "<td><h3><a href =
'ViewDistributorDetails.aspx?menu_id=" + strMenuID + "&id=" + strId + "&Dis_id=" +
strDisCode + "'>" + strDisName + "</a></h3></td>" +
            "<td>" + strYear + "</td>" +
            "<td>" + strMonth + "</td><td>";

            if (IsAuth("delete"))
            {
                strString += "<a href = 'DistributorDetails.aspx?menu_id="
+ strMenuID + "&id=" + strId + "&Dis_id=" + strDisCode + "&action=delete"
class='ico del' " +
                            "onclick='return ConfirmDialog(this, \"Are you sure
want to delete?\");'>Delete</a>";
            }
            if (IsAuth("edit"))
            {
                strString += "<a
href='EditDistributorDetails.aspx?menu_id=" + strMenuID + "&id=" + strId +
"&Dis_id=" + strDisCode + "' class='ico edit'>Edit</a>";
            }

            strString += "</td></tr>";
        }
    }

return strString;
}

protected void drpLoc_SelectedIndexChanged(object sender, EventArgs e)
{
    //strLocCode = drpLoc.SelectedValue.ToString();

    string straction = Request["action"];
    strMenuID = Request["menu_id"];
    strId = Request["id"]; //Form ID

    if (!String.IsNullOrEmpty(straction))
        Response.Redirect("~/DistributorDetails.aspx?menu_id=" + strMenuID
+ "&id=" + strId + "");

    getWhileLoopData();
}
}
}

```

Code 4.3: DistributorDetails.aspx.cs

CHAPTER 5 - EVALUATION

“Testing is the process of evaluating a system or its component(s) with the intent to find that whether it satisfies the specified requirements or not. Testing is executing a system in order to identify any gaps, errors or missing requirements in contrary to the actual desire or requirements [11].”

5.1 TEST STRATEGIES

Online Redistribution Management System for the Axia (Pvt) Ltd was tested following strict test plan in order to ensure the ultimate product is more reliable. Testing was implemented while development progresses going on. Investigation of test cases and test data was carried out following prototyping.

5.1.1 UNIT TESTING

“In computer programming, **unit testing** is a software **testing** method by which individual units of source code, sets of one or more computer program modules together with associated control data, usage procedures, and operating procedures are tested to determine if they are fit for use [12].”

5.1.2 INTEGRATION TESTING

“Integration testing (sometimes called integration and testing, abbreviated I &T) is the phase in software testing in which individual software modules are combined and tested as a group. It occurs after unit testing and before validation testing. Integration testing takes as its input modules that have been unit tested, groups them in larger aggregates, applies tests defined in an integration test plan to those aggregates, and delivers as its output the integrated system ready for system testing [13].”

5.1.3 SYSTEM TESTING

“The process of performing a variety of tests on a system to explore functionality or to identify problems. System testing is usually required before and after a system is put in place. A series of systematic procedures are referred to while testing is being performed. These procedures tell the tester how the system should perform and where common mistakes may be found. Testers usually try to "break the system" by entering data that may cause the system to malfunction or return incorrect information. For example, a tester may put in a city in a search engine designed to only accept states, to see how the system will respond to the incorrect input [14].”

5.2 TEST CASES

“A test case, in software engineering, is a set of conditions or variables under which a tester will determine whether an application, software system or one of its features is working as it was originally established for it to do. The mechanism for determining whether a software program or system has passed or failed such a test is known as a *test oracle*. In some settings, an oracle could be a requirement or use case, while in others it could be a heuristic. It may take many test cases to determine that a software program or system is considered sufficiently scrutinized to be released. Test cases are often referred to as *test scripts*, particularly when written-when they are usually collected into test suites [15].”

Table 5.1 to 5.3 shown used test cases for the Online Redistribution Management System

No	Test Case	Expected Output	Status
01	When user press login button without entering username and password.	Show error message.	Pass.
02	When user press login button with invalid username and password.	Show error message and clear text fields.	Pass.
03	When user press login button with correct username only.	Show error message and clear text fields.	Pass.
04	When user press login button with correct password only.	Show error message and clear text fields.	Pass.
05	When user press login button with correct username and invalid password.	Show error message and clear text fields.	Pass.
06	When user press login button with invalid username and correct password.	Show error message and clear text fields.	Pass.
07	When user press login button with correct username and password.	Load main menu in the system.	Pass.

Table 5.1: Test cases of system login form.

No	Test Case	Expected Output	Status
01	User press save button without entering code and name.	Cannot save. Show error message.	Pass.
02	User press save button only entering code.	Cannot save. Show error message.	Pass.
03	User press save button only entering name.	Cannot save. Show error message.	Pass.
04	User press save button with code and name.	Save record and show it via message. Also display in the table.	Pass.
05	User click on a table row.	Selected row data will appear in text fields. Edit and Delete button will active.	Pass.
06	User click on edit button.	Name field will activate to edit and update button will active.	Pass.
07	User click on delete button.	Show confirm message (Are you sure want to delete)	Pass.

Table 5.2: Test cases of Add Category.

No	Test Case	Expected Output	Status
01	User press create button without entering name, invoice type or reference type.	Cannot save. Show error message.	Pass.
02	User press create button only entering reference code.	Cannot save. Show error message.	Pass.
03	User press create button only entering invoice type.	Cannot save. Show error message.	Pass.
04	User change a distributor	Distributor name and relevant stock locations appear in combo boxes.	Pass.
05	User press create button Without check area.	Cannot save. Show error message.	Pass.
06	User press create button Without check agency.	Cannot save. Show error message.	Pass.
07	User press save button after enter data	Prompt save success message.	Pass.

Table 5.3: Test cases of creating sales rep.

5.3 USER EVALUATION

As the final product obtained, intended Online Redistribution Management System for Axia (Pvt) Ltd was tested by the client. By that process I understood they satisfied with this system. But the case was when introduce this to them, they dislike to use a system. But finally they understood system help to increase their business process efficiency and effectiveness. Now they work on the system happily. Table 5.5 shows the feedback left by the proprietor.

ONLINE REDISTRIBUTION MANAGEMENT SYSTEM FOR AXIA (PVT) LTD					
NO	Criteria	Rating			
		Excellent	Good	Average	Weak
01	Completion of required functionalities	√			
02	Easy to use		√		
03	Easy to learn	√			
04	User Interfaces		√		
05	Usefulness		√		
06	User-friendliness		√		
07	Easy to installation			√	
08	Respond speed		√		
09	Understandability	√			
10	Authentication		√		

Table 5.5: Client feedback.

CHAPTER 6 – CONCLUSION

Axia (Pvt) Ltd faced lot of inconveniences with manual system. But now they can find easily, earlier period transactions details, stock details, supplier details, customer details, outstanding details etc. Hence they do not need waste their valuable time for above operations. This system will helps to increase their efficiency and effectiveness. Also system gives various reports for their decision making.

6.1 LESSONS LEARNT

It was an opportunity to get wide-ranging knowledge on ASP.Net , Crystal Reports, C#, Java Script, SQL management. Vast ranges of technologies also have been improved to make high quality product. From the primary stage of the system development life cycle there were more skills to develop like investigating facts in feasibility studies, effective communicating with people, time management, project planning, report writing, training people to new system environment & many valuable capabilities.

6.2 FUTUER IMPROVEMENTS

In future I hope to add following features for the improvement of newly built system.

- Hope to add accounting part to the Online Redistribution Management System.
- To introduce a app of Online Redistribution Management System. Then reps can use tabs easily using the system.
- Sales rep location tracking system to be introduced to get more value to the system.

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APPENDIX A – SYSTEM DOCUMENTATION

This section contains information and steps about system installation, configuration Hardware and Software configuration requirements.

Hardware Requirements:

- Personal Computer with processing power similar or higher than 3.06 GHz
- RAM with 4 GB or above capacity.
- Hard Disk with 500 GB or above capacity.
- Printer

Software Requirements:

- MSSQL Server 2008 R2
- Visual Studio 2010 IDE
- Windows XP / 7 / 8 (one of this operating system)

A.1 HOW TO SETUP

A.1.1 INSTALL CRYSTAL REPORT TO SERVER MACHINE

Figure A.1 to A.3 shown some important screenshots of installing crystal reports on server machine.

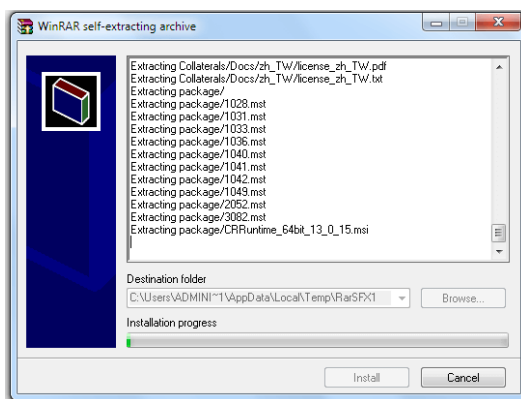


Figure A.1: Installation Progress Of Crystal Report (Step1)

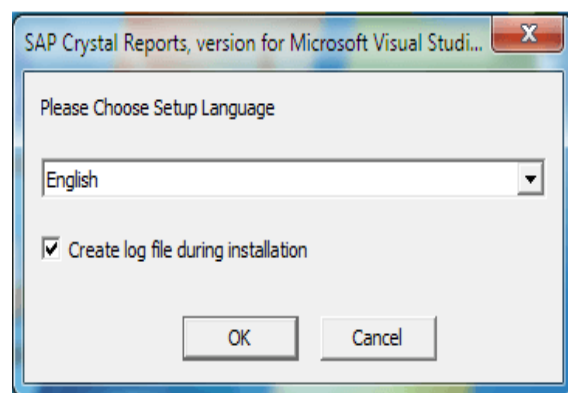


Figure A.2: Installation Progress Of Crystal Report (Step2)

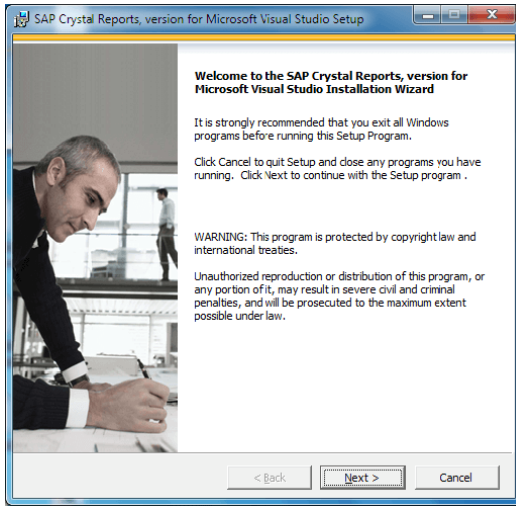


Figure A.3: Installation Progress Of Crystal Report (Step3)

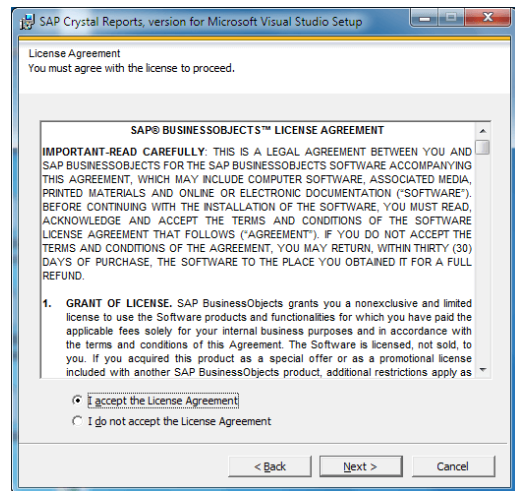


Figure A.4: Installation Progress Of Crystal Report (Step4)

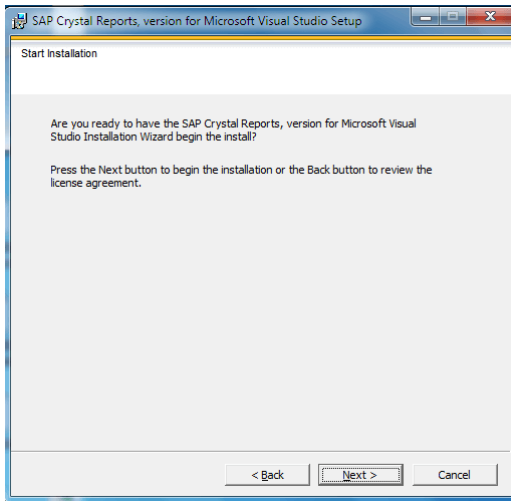


Figure A.5: Installation Progress Of Crystal Report (Step5)

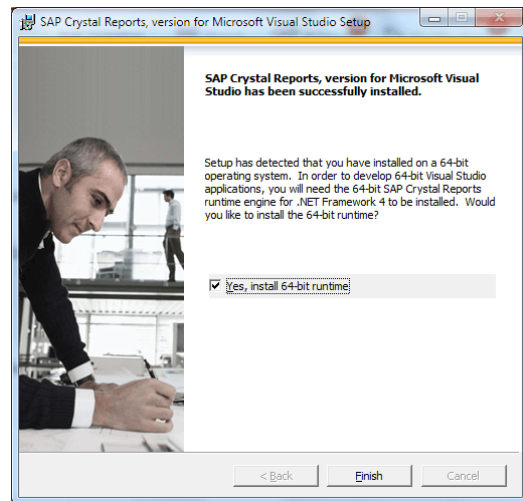


Figure A.6: Installation Progress Of Crystal Report (Step6)

A.1.2 INSTALLING MSSQL SERVER 2008 R2

Step 1: Download MSSQL Server 2008 R2 installation file appropriate for the Platform. Open installation file for MSSQL Server 2008 R2 and press “Next”.

Step 2: Choose “Typical” setup type, click “Next” and “Install”.

Figure A.4 to A.19 shown installing screenshots in MSSQL server software.

Figure A.7 to A.22 shown installing screenshots in MSSQL server software.



Figure A.7: Installation progress of MSSQL Server (Step1)

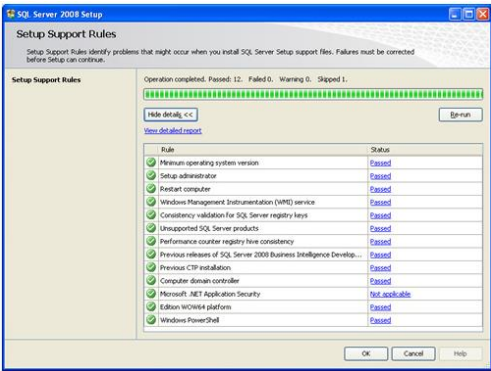


Figure A.8: Installation progress of MSSQL Server (Step2)

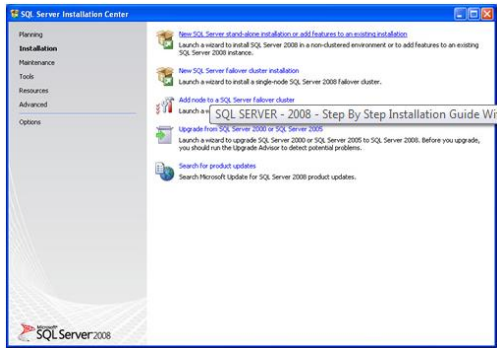


Figure A.9: Installation progress of MSSQL Server (Step3)

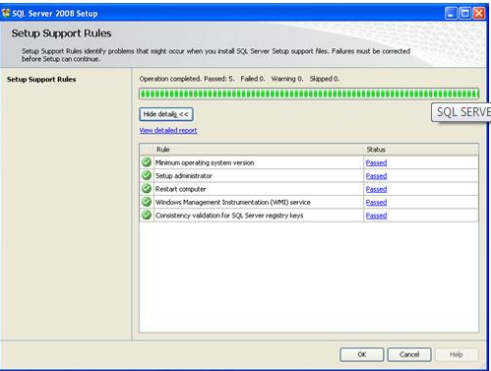


Figure A.10: Installation progress of MSSQL Server (Step4)

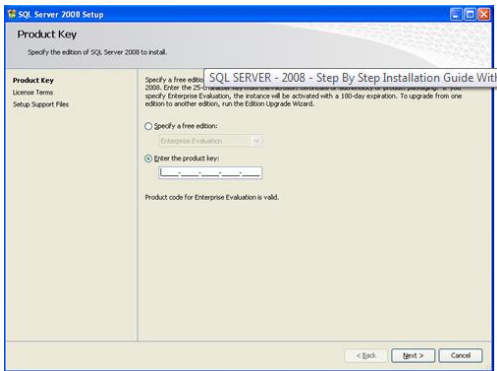


Figure A.11: Installation progress of MSSQL Server (Step5)



Figure A.12: Installation progress of MSSQL Server (Step6)

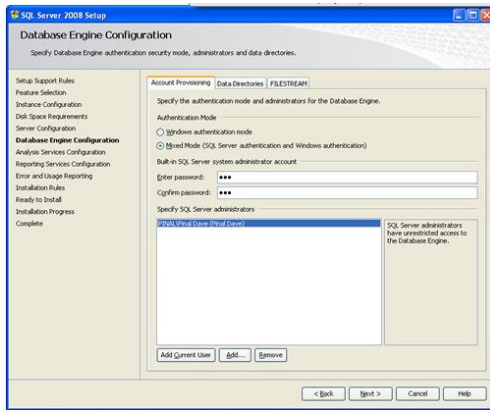


Figure A.13: Installation progress of MSSQL Server (Step7)

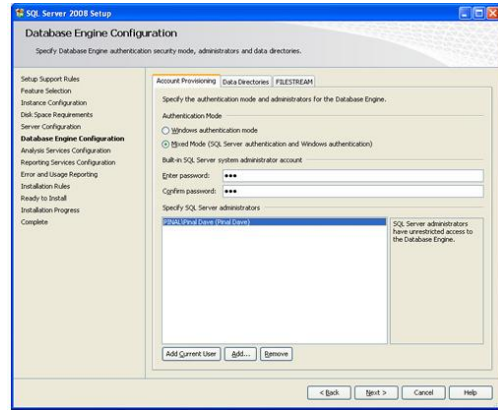


Figure A.14: Installation progress of MSSQL Server (Step8)

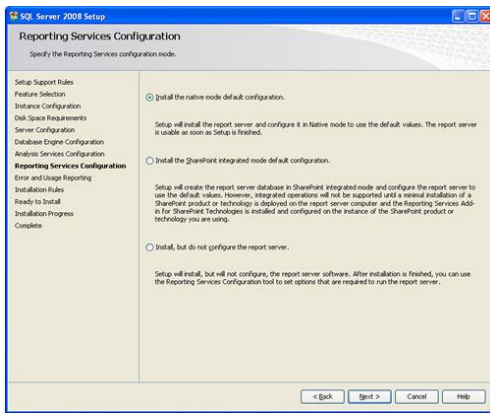


Figure A.15: Installation progress of MSSQL Server (Step9)

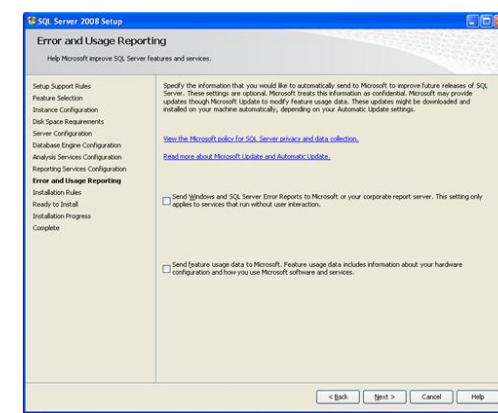


Figure A.16: Installation progress of MSSQL Server (Step10)

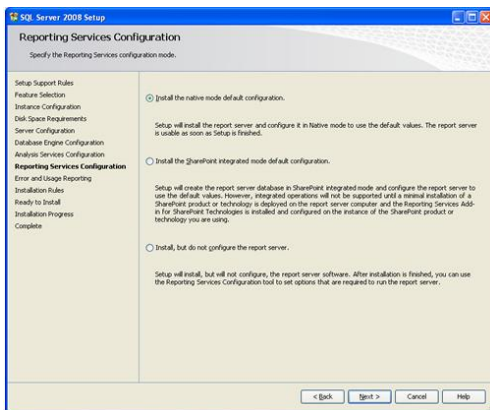


Figure A.17: Installation progress of MSSQL Server (Step11)

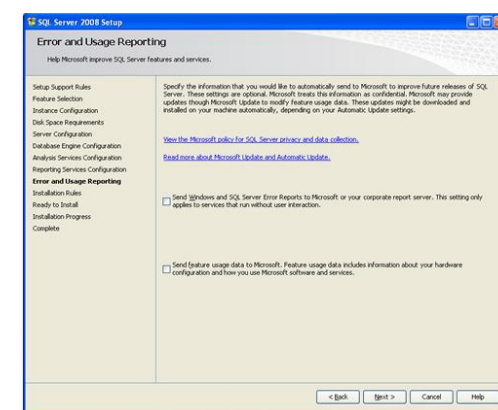


Figure A.18: Installation progress of MSSQL Server (Step12)

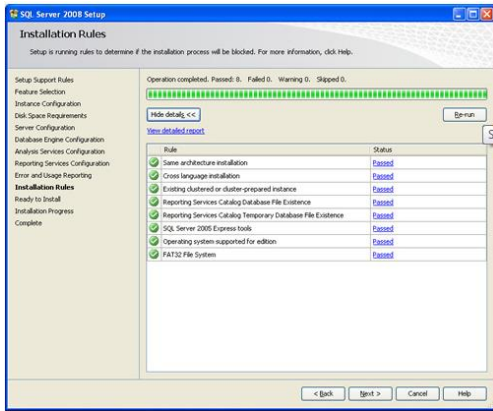


Figure A.19: Installation progress of MSSQL Server (Step13)

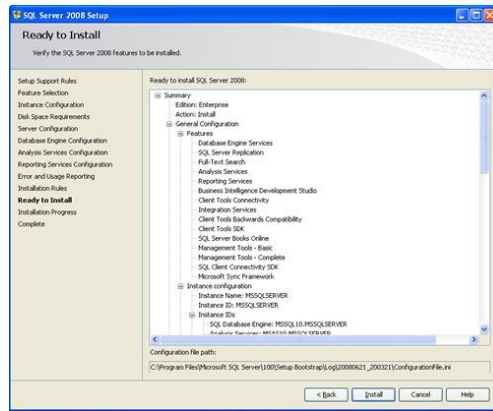


Figure A.20: Installation progress of MSSQL Server (Step14)

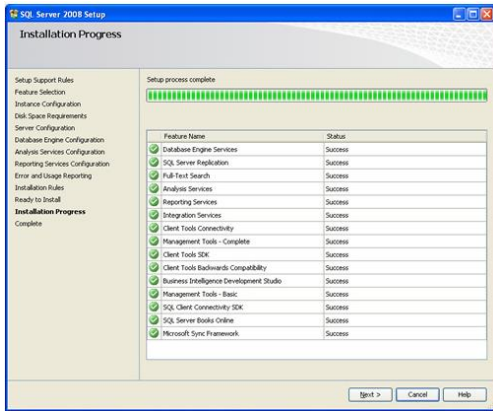


Figure A.21: Installation progress of MSSQL Server (Step15)

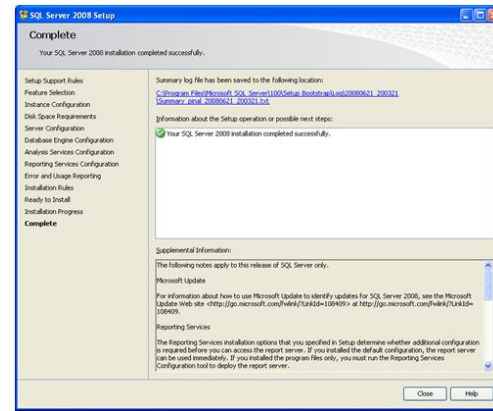


Figure A.22: Installation progress of MSSQL Server (Step16)

A.1.3 INSTALLING AXIA (PVT) LTD SYSTEM

- After setting up MSSQL, create database as axia_db.
- Then restore relevant database backup.
- Finally insert Axia (Pvt) Ltd System Installation CD and host the system using IIS server.

APPENDIX B - DESIGN DOCUMENTATION

B.1 ACTIVITY DIAGRAM

Figure B.1 shows activity diagram for Add Item in Axia (Pvt) Ltd.

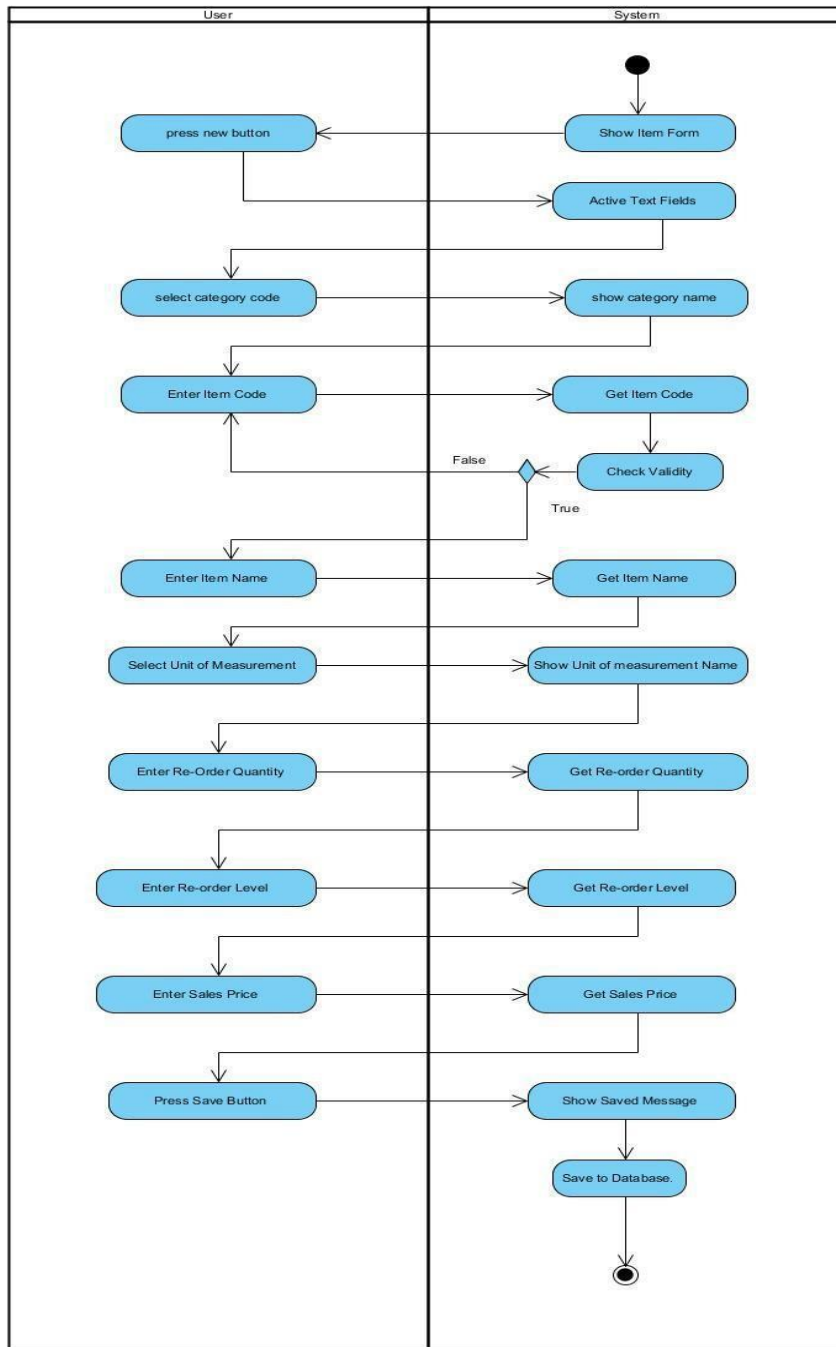


Figure B.1: Activity Diagram for Add Item.

B.2 DATABASE DESIGN

Figure B.2 shows the table design of the database of the system.

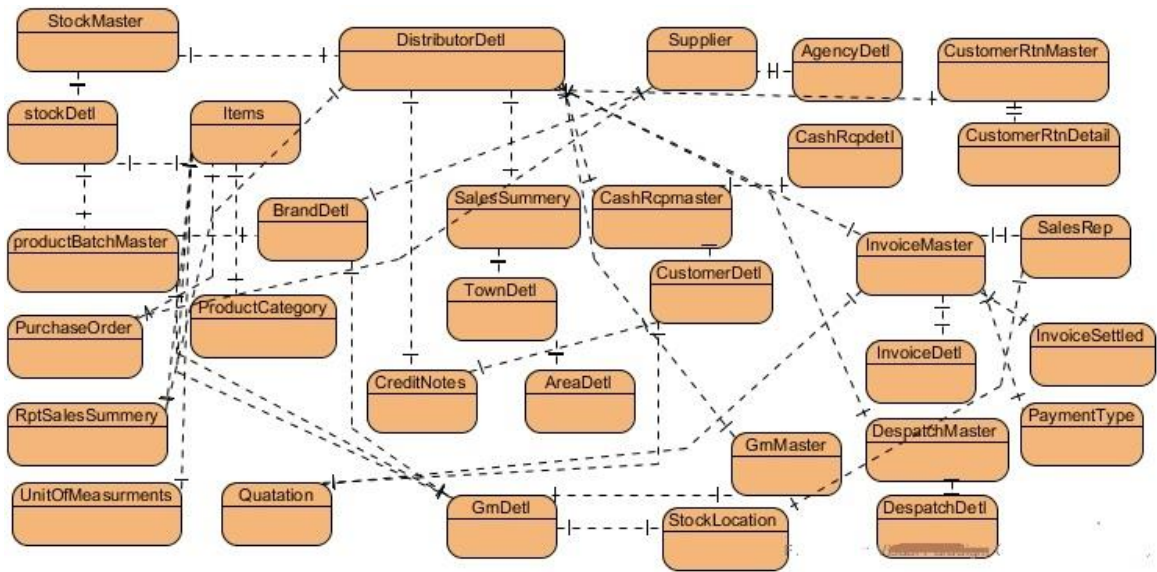


Figure B.2: Databases Design Diagram.

B.3 SEQUENCE DAIGRAM

Figure B.3 to B.4 shown in Sequence Diagrams for Axia (Pvt) Ltd.

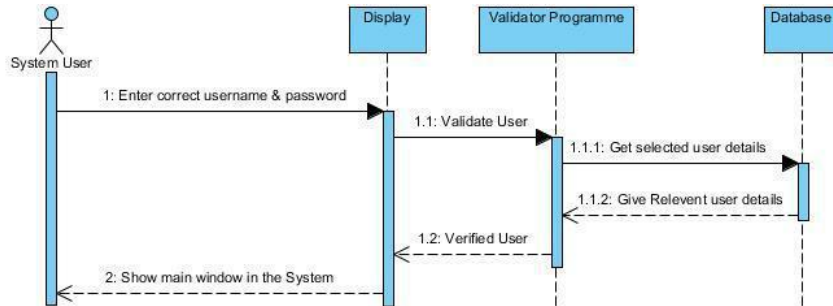


Figure B.3: Sequence Diagram for Login User.

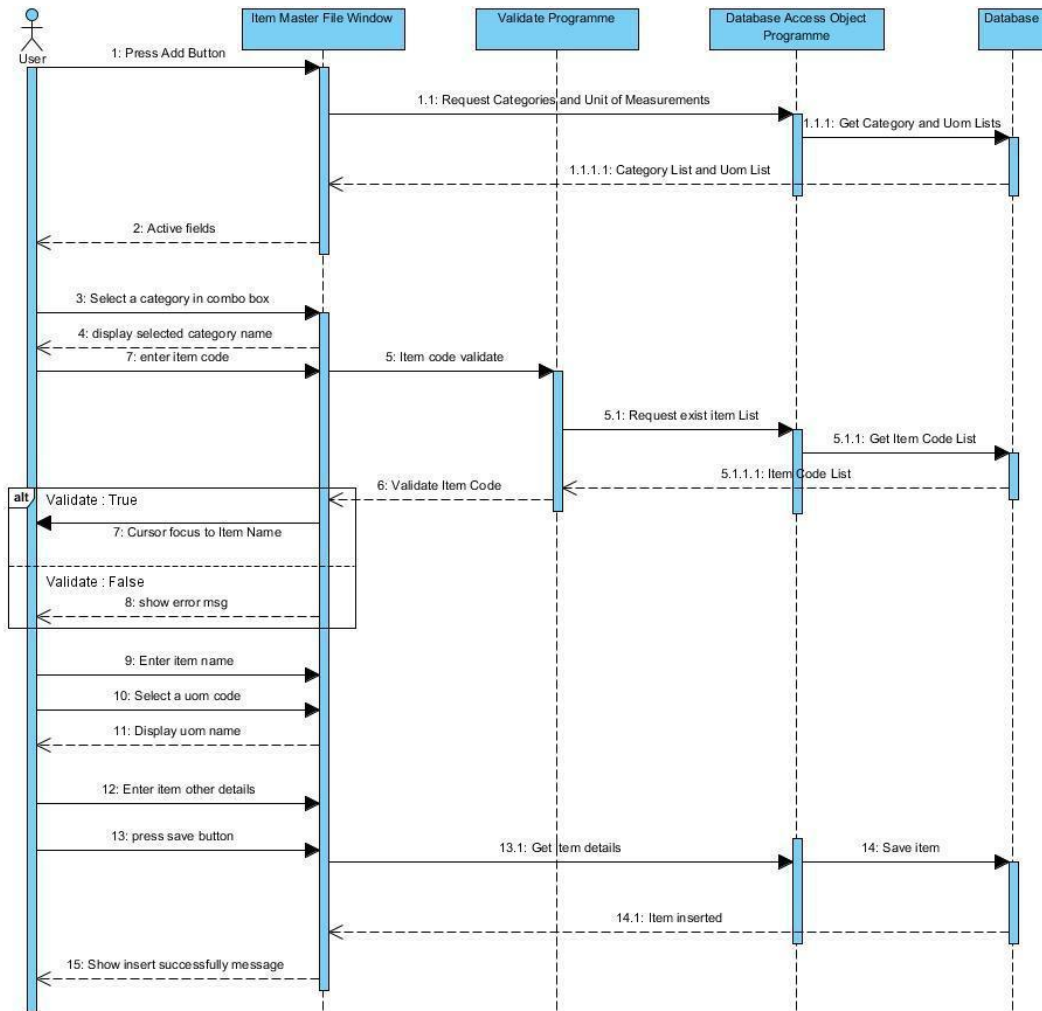


Figure B.4: Sequence Diagram for Add new Item.

B.4 CLASS DIAGRAM FOR AXIA (PVT) LTD.

Figure B.5 shows fully class diagram in the Axia (Pvt) Ltd System.

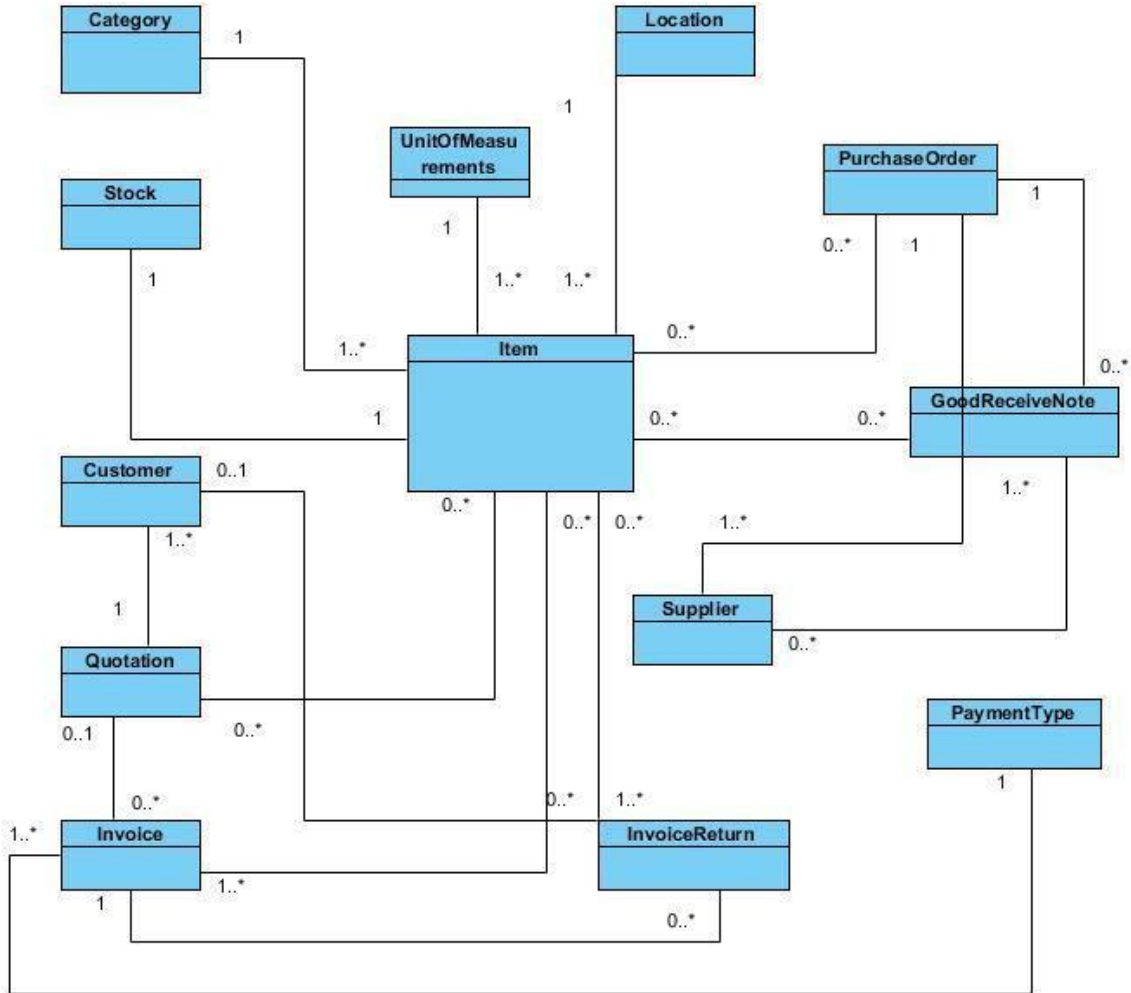


Figure B.5: Class Diagram for Axia (Pvt) Ltd.

B.5 DATABASE TABLE STRUCTURE FOR AXIA (PVT) LTD.

Database tables designs are shown in Figure B.6 to B.15.

Column Name	Data Type	Allow Nulls
ProductCode	nvarchar(6)	<input type="checkbox"/>
supp_code	nvarchar(4)	<input checked="" type="checkbox"/>
agen_code	nvarchar(4)	<input type="checkbox"/>
brand_code	nvarchar(4)	<input type="checkbox"/>
prcode_comp	nvarchar(15)	<input checked="" type="checkbox"/>
prod_desc	nvarchar(100)	<input type="checkbox"/>
prod_categ	nvarchar(4)	<input checked="" type="checkbox"/>
pack_size	nvarchar(10)	<input checked="" type="checkbox"/>
commission	float	<input checked="" type="checkbox"/>
purch_units	nvarchar(4)	<input checked="" type="checkbox"/>
stock_units	nvarchar(4)	<input checked="" type="checkbox"/>
conv_factor	smallint	<input checked="" type="checkbox"/>
price_ws	money	<input type="checkbox"/>
price_ret	money	<input checked="" type="checkbox"/>
reorder_lvl	int	<input checked="" type="checkbox"/>
reorder_qty	int	<input checked="" type="checkbox"/>
bonus_item	bit	<input checked="" type="checkbox"/>
adduser	nvarchar(15)	<input checked="" type="checkbox"/>
adduser	nvarchar(15)	<input checked="" type="checkbox"/>
adddate	datetime	<input checked="" type="checkbox"/>
chguser	nvarchar(15)	<input checked="" type="checkbox"/>
chgdate	datetime	<input checked="" type="checkbox"/>
lprchgcn	datetime	<input checked="" type="checkbox"/>
dist_special_price	money	<input checked="" type="checkbox"/>
ind_GST_on_purchases	int	<input checked="" type="checkbox"/>
unit_code	nvarchar(50)	<input checked="" type="checkbox"/>
is_notactive	bit	<input checked="" type="checkbox"/>
generic_code	nvarchar(4)	<input checked="" type="checkbox"/>
free_issue	bit	<input checked="" type="checkbox"/>
free_issu_ratio1	smallint	<input checked="" type="checkbox"/>
free_issu_ratio2	smallint	<input checked="" type="checkbox"/>
sales_rep	nvarchar(255)	<input checked="" type="checkbox"/>
is_inactive	bit	<input checked="" type="checkbox"/>
RatioCode	smallint	<input checked="" type="checkbox"/>
upsiz_ts	timestamp	<input checked="" type="checkbox"/>
Div_Code	varchar(2)	<input checked="" type="checkbox"/>
is_vat	int	<input checked="" type="checkbox"/>

Figure B.6: Product Table.

Column Name	Data Type	Allow Nulls
prod_categ	nvarchar(4)	<input type="checkbox"/>
procat_des	nvarchar(50)	<input type="checkbox"/>
adduser	nvarchar(30)	<input checked="" type="checkbox"/>
adddate	datetime	<input checked="" type="checkbox"/>
chguser	nvarchar(30)	<input checked="" type="checkbox"/>
chgdate	datetime	<input checked="" type="checkbox"/>

Figure B.7: Category Table.

Column Name	Data Type	Allow Nulls
supp_code	nvarchar(4)	<input type="checkbox"/>
agen_code	nvarchar(4)	<input type="checkbox"/>
brand_code	nvarchar(4)	<input type="checkbox"/>
brand_name	nvarchar(60)	<input checked="" type="checkbox"/>
adduser	nvarchar(30)	<input checked="" type="checkbox"/>
adddate	datetime	<input checked="" type="checkbox"/>
chguser	nvarchar(30)	<input checked="" type="checkbox"/>
chgdate	datetime	<input checked="" type="checkbox"/>
sequence_no	real	<input checked="" type="checkbox"/>
upsiz_ts	timestamp	<input checked="" type="checkbox"/>

Figure B.8: Brand Table.

Column Name	Data Type	Allow Nulls	Column Name	Data Type	Allow Nulls
supp_name	nvarchar(50)	<input checked="" type="checkbox"/>	supp_ref	nvarchar(10)	<input checked="" type="checkbox"/>
address1	nvarchar(30)	<input checked="" type="checkbox"/>	is_non_batch	bit	<input checked="" type="checkbox"/>
address2	nvarchar(30)	<input checked="" type="checkbox"/>	is_sys_batch	bit	<input checked="" type="checkbox"/>
address3	nvarchar(30)	<input checked="" type="checkbox"/>	is_user_batch	bit	<input checked="" type="checkbox"/>
tel	nvarchar(10)	<input checked="" type="checkbox"/>	chg_with_ws	bit	<input checked="" type="checkbox"/>
fax	nvarchar(10)	<input checked="" type="checkbox"/>	chg_with_spe	bit	<input checked="" type="checkbox"/>
email	nvarchar(50)	<input checked="" type="checkbox"/>	is_expire	bit	<input checked="" type="checkbox"/>
adduser	nvarchar(30)	<input checked="" type="checkbox"/>	batch_with_ws	bit	<input checked="" type="checkbox"/>
adddate	datetime	<input checked="" type="checkbox"/>	batch_with_spe	bit	<input checked="" type="checkbox"/>
chguser	nvarchar(30)	<input checked="" type="checkbox"/>	batch_with_ret	bit	<input checked="" type="checkbox"/>
chgdate	datetime	<input checked="" type="checkbox"/>	Dist_code	nvarchar(2)	<input checked="" type="checkbox"/>

Figure B.9: Supplier Table.

Column Name	Data Type	Allow Nulls	Column Name	Data Type	Allow Nulls
DistCode	nvarchar(2)	<input type="checkbox"/>	cred_balance	money	<input checked="" type="checkbox"/>
Invoice_Type	nvarchar(2)	<input checked="" type="checkbox"/>	retn_value	money	<input checked="" type="checkbox"/>
inv_num	nvarchar(6)	<input type="checkbox"/>	rtnote_num	nvarchar(6)	<input checked="" type="checkbox"/>
date_effec	datetime	<input type="checkbox"/>	cash_amount	money	<input checked="" type="checkbox"/>
comp_refno	nvarchar(6)	<input checked="" type="checkbox"/>	cashrcp_num	nvarchar(6)	<input checked="" type="checkbox"/>
inv_sub_type	nvarchar(1)	<input type="checkbox"/>	cheque_amount	money	<input checked="" type="checkbox"/>
sord_num	nvarchar(6)	<input checked="" type="checkbox"/>	chqrcp_num	nvarchar(6)	<input checked="" type="checkbox"/>
bill_number	nvarchar(6)	<input checked="" type="checkbox"/>	cheque_no	nvarchar(6)	<input checked="" type="checkbox"/>
bill_value	money	<input checked="" type="checkbox"/>	bank_code	nvarchar(4)	<input checked="" type="checkbox"/>
Stk_location	nvarchar(4)	<input type="checkbox"/>	bnbrk_code	nvarchar(4)	<input checked="" type="checkbox"/>
srep_code	nvarchar(6)	<input checked="" type="checkbox"/>	date_banking	datetime	<input checked="" type="checkbox"/>
cust_code	nvarchar(5)	<input type="checkbox"/>	payable_amount	money	<input checked="" type="checkbox"/>
town_code	nvarchar(4)	<input type="checkbox"/>	adduser	nvarchar(15)	<input checked="" type="checkbox"/>
total_value	money	<input checked="" type="checkbox"/>	adddate	datetime	<input checked="" type="checkbox"/>
ov_discount	real	<input checked="" type="checkbox"/>	is_cancelled	bit	<input type="checkbox"/>

Figure B.10: Invoice Table.

Column Name	Data Type	Allow Nulls	Column Name	Data Type	Allow Nulls
DistCode	nvarchar(2)	<input type="checkbox"/>	is_cancelled	bit	<input checked="" type="checkbox"/>
tran_type	nvarchar(2)	<input type="checkbox"/>	user_cancelled	nvarchar(8)	<input checked="" type="checkbox"/>
cashrcp_num	nvarchar(6)	<input type="checkbox"/>	date_cancelled	datetime	<input checked="" type="checkbox"/>
date_effec	datetime	<input type="checkbox"/>	book_code	int	<input checked="" type="checkbox"/>
is_withInvoice	bit	<input checked="" type="checkbox"/>	page_no	nvarchar(255)	<input checked="" type="checkbox"/>
cust_code	nvarchar(5)	<input checked="" type="checkbox"/>	book_no	nvarchar(255)	<input checked="" type="checkbox"/>
cash_amount	money	<input type="checkbox"/>	Collector_Code	nvarchar(4)	<input checked="" type="checkbox"/>
remarks	nvarchar(255)	<input checked="" type="checkbox"/>	is_confirm	bit	<input checked="" type="checkbox"/>
adduser	nvarchar(15)	<input checked="" type="checkbox"/>	user_confirm	nvarchar(50)	<input checked="" type="checkbox"/>
adddate	datetime	<input checked="" type="checkbox"/>	date_confirm	datetime	<input checked="" type="checkbox"/>

Figure B.11: Receipt Table.

Column Name	Data Type	Allow Nulls
DistCode	nvarchar(2)	<input type="checkbox"/>
sord_num	nvarchar(6)	<input type="checkbox"/>
Invoice_Type	nvarchar(2)	<input checked="" type="checkbox"/>
date_effec	datetime	<input type="checkbox"/>
srep_code	nvarchar(6)	<input checked="" type="checkbox"/>
cust_code	nvarchar(5)	<input type="checkbox"/>
ov_discount	real	<input checked="" type="checkbox"/>
cash_amount	money	<input checked="" type="checkbox"/>
cheque_amount	money	<input checked="" type="checkbox"/>
cheque_no	nvarchar(6)	<input checked="" type="checkbox"/>
bank_code	nvarchar(4)	<input checked="" type="checkbox"/>
bnbrk_code	nvarchar(3)	<input checked="" type="checkbox"/>
date_banking	datetime	<input checked="" type="checkbox"/>
adduser	nvarchar(15)	<input checked="" type="checkbox"/>

adddate	datetime	<input checked="" type="checkbox"/>
chguser	nvarchar(15)	<input checked="" type="checkbox"/>
chgdate	datetime	<input checked="" type="checkbox"/>
is_invoiced	bit	<input checked="" type="checkbox"/>
is_cancelled	bit	<input checked="" type="checkbox"/>
user_cancelled	nvarchar(15)	<input checked="" type="checkbox"/>
date_cancelled	datetime	<input checked="" type="checkbox"/>
upsized_ts	timestamp	<input checked="" type="checkbox"/>
location_latitude	float	<input checked="" type="checkbox"/>
location_longitude	float	<input checked="" type="checkbox"/>
rep_ref	nvarchar(4)	<input checked="" type="checkbox"/>
vat_amount	money	<input checked="" type="checkbox"/>
bill_number	nvarchar(6)	<input checked="" type="checkbox"/>

Figure B.12: Purchase Order Header Table.

Column Name	Data Type	Allow Nulls
DistCode	nvarchar(2)	<input type="checkbox"/>
sord_num	nvarchar(6)	<input type="checkbox"/>
ProductCode	nvarchar(6)	<input type="checkbox"/>
prod_batch_code	varchar(8)	<input type="checkbox"/>
qty_ordered	int	<input checked="" type="checkbox"/>
qty_recieved	int	<input checked="" type="checkbox"/>
prod_discount	real	<input checked="" type="checkbox"/>
qty_bonus	int	<input checked="" type="checkbox"/>
qty_bonus_recieved	int	<input checked="" type="checkbox"/>
upsized_ts	timestamp	<input checked="" type="checkbox"/>
eff_price	money	<input checked="" type="checkbox"/>
vat_price	money	<input checked="" type="checkbox"/>

Figure B.13: Purchase Order Details Table.

Column Name	Data Type	Allow Nulls
DistCode	nvarchar(2)	<input type="checkbox"/>
DistRef	nvarchar(2)	<input checked="" type="checkbox"/>
DISTNAME	nvarchar(50)	<input checked="" type="checkbox"/>
ADDRESS1	nvarchar(30)	<input checked="" type="checkbox"/>
ADDRESS2	nvarchar(30)	<input checked="" type="checkbox"/>
ADDRESS3	nvarchar(30)	<input checked="" type="checkbox"/>
TELEPHONE	nvarchar(25)	<input checked="" type="checkbox"/>
PFA	nvarchar(25)	<input checked="" type="checkbox"/>
EMAIL	nvarchar(30)	<input checked="" type="checkbox"/>
Acc_year	smallint	<input checked="" type="checkbox"/>
Acc_month	smallint	<input checked="" type="checkbox"/>
age_analysis_days_1	smallint	<input checked="" type="checkbox"/>
age_analysis_days_2	smallint	<input checked="" type="checkbox"/>
age_analysis_days_3	smallint	<input checked="" type="checkbox"/>
coll_analysis_days_1	smallint	<input checked="" type="checkbox"/>
coll_analysis_days_2	smallint	<input checked="" type="checkbox"/>
coll_analysis_days_3	smallint	<input checked="" type="checkbox"/>

auto_allocate_inv	bit	<input checked="" type="checkbox"/>
chk_deposit_daterange	int	<input checked="" type="checkbox"/>
Is_Confirm	bit	<input checked="" type="checkbox"/>
Is_edit_price	bit	<input checked="" type="checkbox"/>
is_Supp_Non_Filter	bit	<input checked="" type="checkbox"/>
is_Minus_Stock_onInv	bit	<input checked="" type="checkbox"/>
ExpDate	nvarchar(30)	<input checked="" type="checkbox"/>
IsExp	bit	<input checked="" type="checkbox"/>
adduser	varchar(15)	<input checked="" type="checkbox"/>
adddate	datetime	<input checked="" type="checkbox"/>
chguser	varchar(15)	<input checked="" type="checkbox"/>
chgdate	datetime	<input checked="" type="checkbox"/>
supp_code	nvarchar(4)	<input checked="" type="checkbox"/>

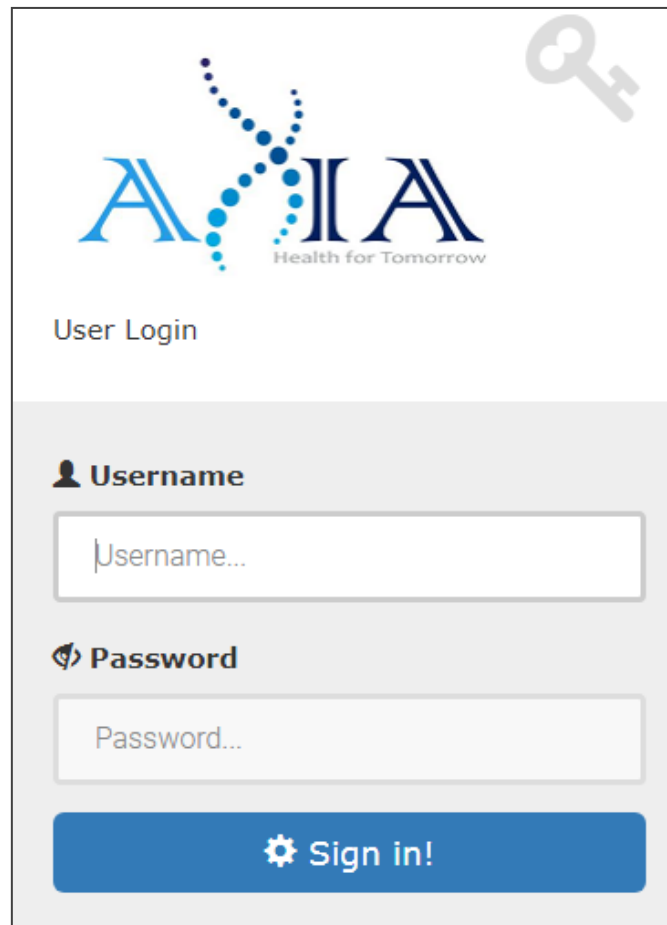
Figure B.14: Distributor Detail Table.

APPENDIX C - USER DOCUMENTATION

Figure C.1 to C.10 shown you, how to open a invoice from the system.

System Login Form

Figure C.1 shows user login form which allows users to system login. Every authorize users can see this when login to the system. User need to enter valid username and password for successfully login. If user entered invalid username or password system will give error message. If user entered correct username and password user can login in to the system.



The image shows a user login form for the AIIA system. At the top, there is the AIIA logo with the tagline "Health for Tomorrow" and a key icon in the top right corner. Below the logo, the text "User Login" is displayed. The form consists of two input fields: "Username" and "Password", both with placeholder text. A blue "Sign in!" button with a gear icon is located at the bottom of the form.

Figure C.1: User Login Form.

If user enter invalid username or password, text field will clear and show error message. Figure C.2 shows login form when entered invalid username or password.

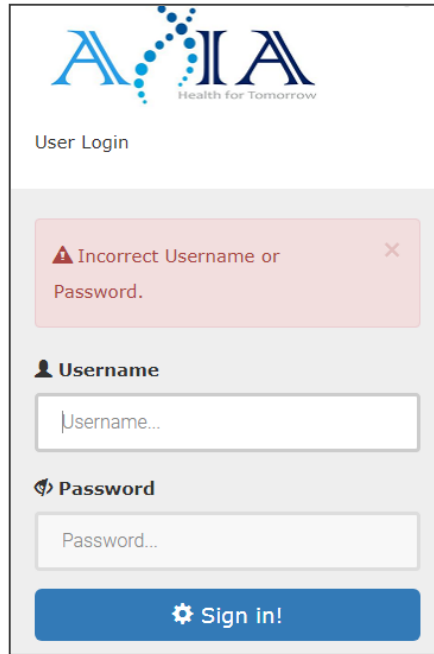


Figure C.2: User Login Form when entered invalid username or password.

If user enter valid username and password user can see main window in the system. Figure C.3 shows the main window in the system.

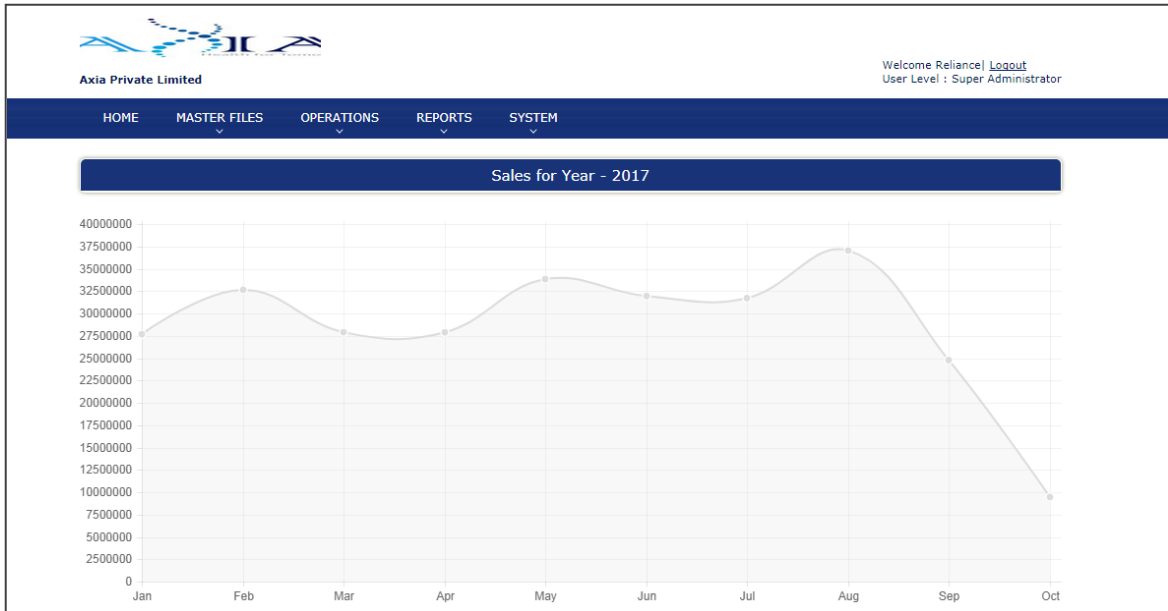


Figure C.3: Main Window.

There are three main operations in the system. They are Sales, Purchase, Inventory. When user select a one operation user can see sub operations in the selected operation. That five operations are shows like Figure C.3. Figure C.4 shows sub operations in sales operation.



Figure C.4: Sales Operation Main Form.

After that user have to click sales invoice link. Then user can see Figure C.5 and then user have to click CREATE INVOICE button to continue.

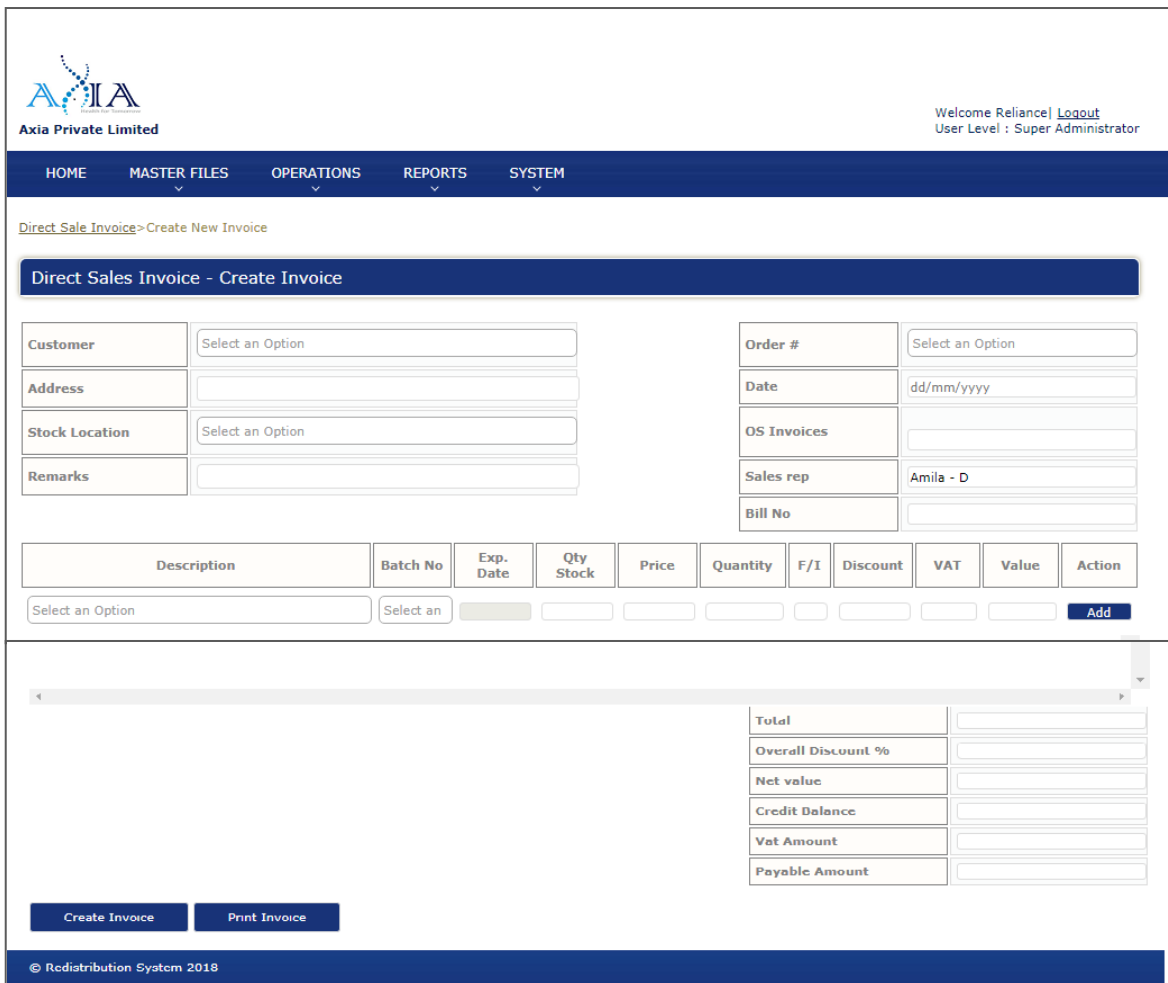


Figure C.5: Add Invoice Form.

Figure C.6 shows common buttons in the invoice form. User can see it every form in the system. Hence user can easily familiar with system.



Figure C.6: Buttons in the System.

After entering invoice detail user need to save the invoice then user need to press create invoice button. Then that invoice will be saved and it shows as figure C.7.

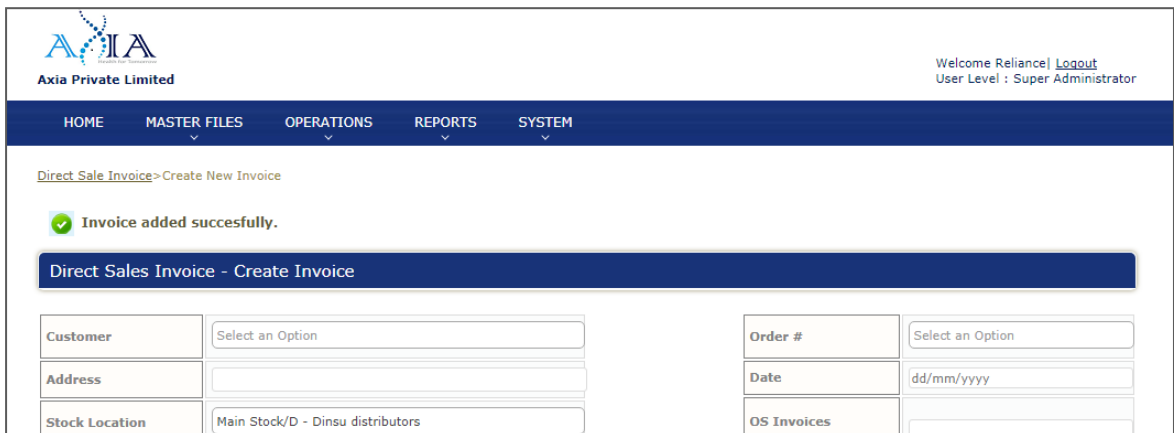


Figure C.7: Save Success Message.

APPENDIX C - MANAGEMENT REPORT

System creates reports shown in Figure D.1 to D.7

Date : 2017/11/08	Dinsu distributors		Page : 1
Daily Sales Report - Axia Private Limited			
Period : 2017/10/01 to 2017/10/31			
<u>Agency</u>	<u>Sales</u>	<u>Returns</u>	<u>Nett Sales</u>
Axia Private Limited			
LEOSONS	88793.60	0.00	88793.60
Indchemie Health	0.00	0.00	0.00
Soft Gel Health Care	0.00	0.00	0.00
Raptakos Brett & Co.Ltd	0.00	0.00	0.00
AMN Life science	0.00	0.00	0.00
BAFNA PHARMACEUTICALS(Branded)	368980.00	0.00	368980.00
MADRAS PHARMACEUTICALS(Brande	2704513.55	0.00	2704513.55
MADRAS PHARMACEUTICALS (B)	68918.00	0.00	68918.00
SHIN POONG	1161942.00	0.00	1161942.00
OCCLUTECH INTERNATIONALAB	0.00	0.00	0.00

Figure D.1: System Report 1.

Pharma Associates							
Daily Sales Summary							
Company	Axia Private Limited						
Period	2017/10/01 to 2017/10/31						
Stock Location : All							
<u>Product Description</u>	<u>Batch Code</u>	<u>Sales Qty</u>	<u>Sales Value</u>	<u>Rtn Qty</u>	<u>Rtn Value</u>	<u>Net Qty</u>	<u>Net Value</u>
Axia Private Limited							
MSN LABORATORIES LIMITED							
Breathezy 4 (montelukast sodium 4mg) 00000000			0.00	357	112,455.00	-357	(112,455.00)
			0.00		112,455.00		(112,455.00)
Axia Private Limited							
LEOSONS							
JOINT FLEX 1500mg,1200mg 60'S 00000000		588	1,491,732.48		0.00	588	1,491,732.48
			1,491,732.48		0.00		1,491,732.48

Figure D.2: System Report 2.

Dinsu distributors
Invoice Summary

Axia Private Limited

Period : 2017/10/01 to 2017/10/31

Location Stock Location : All

<u>Inv. No</u>	<u>Bill No.</u>	<u>Customer</u>	<u>Town</u>	<u>Inv. Value</u>	<u>Discount Amt</u>	<u>Nett Value</u>
Effective Date: 2017/10/06						
I011-000201	22821	Chamee Pharmaceuticals	New Bustand	49,451.50	0.00	49,451.50
I011-000197	22817	Anuradhapura	New Pharmacy	7,458.00	0.00	7,458.00
I011-000212	22834	Anuradhapura	New Pharmacy	17,179.00	0.00	17,179.00
I011-000192	22811	Mahoo	Visaka Pharmacy	2,532.20	0.00	2,532.20
I001-002378	22888	Wellawa	Wellawa Medicals	1,502.75	0.00	1,502.75
I001-002395	22898	Mawathagama	Zam Zam Pharmacy	4,709.80	0.00	4,709.80
I001-002402	22951	Sethsan Pharmaceuticals		58,540.50	0.00	58,540.50
I001-002458	22788	Nursing Home -	Marawila	3,564.00	0.00	3,564.00
I001-002386	22893	Dr.Samantha Wijesundara		5,430.00	0.00	5,430.00
I011-000196	22816	hiru Pharmacy -	Nochiyagama	8,082.00	0.00	8,082.00
I011-000219	22843	Para Traiding Pvt Ltd		26,220.00	0.00	26,220.00
I001-002385	22892	Polpithigma	New Medical	712.80	0.00	712.80
I001-002460	22790	The New pharmacy Holdings (retail)		1,145.80	0.00	1,145.80
I001-002405	22954	s.a.r.pharmacy -	rideegama	3,226.00	0.00	3,226.00
I011-000272	22600	Unique Pharmacy -	kibissa	29,022.00	0.00	29,022.00
I011-000206	22828	dulan pharmacy -	madawachchiya	11,140.50	0.00	11,140.50
I001-002457	22787	seth sevana outlet		18,500.00	0.00	18,500.00
I001-002383	22890	Dabulla Harcourts Pharamcy		9,184.80	0.00	9,184.80
I011-000198	22818	Anuradhapura	Isiwara Pharmacy	2,924.00	0.00	2,924.00
I001-002404	22953	Rideegama	Mahajana Pharmacy	2,486.00	0.00	2,486.00
I001-002365	22886	Dabulla Road Kurunegala	Miracal Hospital	710.00	0.00	710.00
I011-000208	22830	Horowpothana	MK Pharmacy	3,526.65	0.00	3,526.65
I011-000209	22831	Anuradhapura	New C.P Pharmacy	3,700.00	0.00	3,700.00
I011-000210	22832	Anuradhapura	New City Pharmacy	43,133.50	0.00	43,133.50

Figure D.3: System Report 3.

Date : 2017/11/08 Page : 1

Dinsu distributors
Sales Return Summary

Axia Private Limited

Period : 2017/10/01 to 2017/10/31

<u>Rtn/Note</u> <u>proddesc</u>	<u>Date</u>	<u>Customer</u>	<u>Town</u> <u>Batch No</u>	<u>qty</u> <u>returned</u>	<u>Bonus</u> <u>returned</u>	<u>eff price</u>	<u>Retn Value</u>
000012	2017/10/10	Dr.Samantha Wijesundara	Kithalawa				5,355.00
Breathezy 4 (montelukast sodium 4mg)			00000000	17	0	315.00	5,355.00
Total for Day							5,355.00
Grand Total							0.00

Figure D.4: System Report 4.

Date : 2017/11/08 Page : 1

Dinsu distributors
Product-Wise Moving Sales

Axia Private Limited

All Areas

<u>Product</u>	<u>Pack</u> <u>Size</u>	<u>Nett Sales Quantity (Sales minus Returns)</u>						<u>Average</u> <u>Per Month</u>
		<u>May, 2017</u>	<u>Jun, 2017</u>	<u>Jul, 2017</u>	<u>Aug, 2017</u>	<u>Sep, 2017</u>	<u>Oct, 2017</u>	
Axia Private Limited								
LEOSONS								
JOINT FLEX 1500mg,1200mg	60'S	53	59	6	54	0	35	35
BAFNA PHARMACEUTICALS(Brande)								
Ivab 5 (Ivabradin tablet 5mg)	28'S	121	235	59	173	234	198	170
Reclap 10 (prasugrel Tablet 5mg)	3x10'	78	33	8	58	54	84	53
MADRAS PHARMACEUTICALS(Brande)								
Aclofen 100 (aceclofenac tablets 100mg)	10X10'S	151	149	0	155	100	2	93
Etocox 120 (etoricoxib tablet 120mg)	1X10'S	24	11	2	40	21	22	20
Gabanin 100 (gabapentin capsule 100mg)	3x10'	559	615	159	726	636	462	526
Gabanin 300 (gabapentin capsule 300mg)	3x10'	501	306	125	532	288	560	385
Milcef 125 (cefuroxime axetil tablet 125mg)	3x10'	88	18	75	187	74	56	83
Milcef 250 (cefuroxime axetil tablet 250mg)	3x10'	172	108	70	76	74	57	93
Milcef 500 (cefuroxime axetil tablet 500mg)	3x10'	77	143	101	207	186	230	157
Milcef Suspension 70ml (cefuroxime axetil suspension 125mg/5ml)	3x10'	92	131	178	1,021	649	625	449

Figure D.5: System Report 5.

Date : 2017/11/08 Page : 1

Dinsu distributors
Product-Wise Moving Sales

Axia Private Limited

All Areas

Product	Pack Size	Nett Sales Quantity (Sales minus Returns)						Average Per Month
		May, 2017	Jun, 2017	Jul, 2017	Aug, 2017	Sep, 2017	Oct, 2017	
Axia Private Limited								
LEOSONS								
JOINT FLEX 1500mg,1200mg	60'S	53	59	6	54	0	35	35
BAFNA PHARMACEUTICALS(Branded)								
Ivab 5 (Ivabradin tablet 5mg)	28'S	121	235	59	173	234	198	170
Reclap 10 (prasugrel Tablet 5mg)	3x10'	78	33	8	58	54	84	53
MADRAS PHARMACEUTICALS(Branded)								
Aclofen 100 (aceclofenac tablets 100mg)	10X10'S	151	149	0	155	100	2	93
Etocox 120 (etoricoxib tablet 120mg)	1X10'S	24	11	2	40	21	22	20
Gabanin 100 (gabapentin capsule 100mg)	3x10'	559	615	159	726	636	462	526
Gabanin 300 (gabapentin capsule 300mg)	3x10'	501	306	125	532	288	560	385
Milcef 125 (cefuroxime axetil tablet 125mg)	3x10'	88	18	75	187	74	56	83
Milcef 250 (cefuroxime axetil tablet 250mg)	3x10'	172	108	70	76	74	57	93
Milcef 500 (cefuroxime axetil tablet 500mg)	3x10'	77	143	101	207	186	230	157
Milcef Suspension 70ml (cefuroxime axetil suspension 1250mg/5ml)		92	131	178	1,021	649	625	449

Figure D.6: System Report 6.

Date : 2017/11/08 Time : 10:19:46PM Page 1 of 4

Dinsu distributors
Stock Statement Report

Period : October, 2017

Product Description	Pack Size	Batch No	Unit Price	Quantity In Stock			Total	Value
				Main	Van	Unsalable		
Agency								Stock Value
Axia Private Limited								
LEOSONS								
JOINT FLEX 1500mg,1200mg	60'S							
		00000000	2,536.96	1	0	0	1	2,536.96
Total for Agency								2,536.96
LEOSONS								2,536.96
BAFNA PHARMACEUTICALS(Branded)								
Ivab 5 (Ivabradin tablet 5mg)	28'S							
		00000000	1,243.00	212	0	0	212	263,516.00
Reclap 10 (prasugrel Tablet 5mg)	3x10'							

Figure D.7: System Report 7.

APPENDIX E - TEST RESULTS

Table E.1 to E.4 shown some test cases in the Redistribution Management System for Axia (Pvt) Ltd.

No	Test Case	Expected Output	Status
01	Select supplier drop down List.	Scroll down all the suppliers	Pass.
02	Select the date	When date field is selected, pop up month.	Pass.
03	Select item description drop down list	When selecting item description, load the units, reorder level, qty in stock fields.	Pass.
04	Select a supplier.	Supplier name, address and country are appear in text fields.	Pass.
		fields.	
05	Press add to list button.	Item details record appear in the table grid. Active edit and delete button in the table grid. And item details grid set clear. Total taxes, total discount and total purchase order values fill in the text fields.	Pass.
08	Press edit button in the table grid.	Remove selected row in table grid and item details grid fill with that item details.	Pass.
09	Press delete button in the table grid.	Remove selected row.	Pass.
10	Press save button.	Save purchase order and show print preview.	Pass.

Table E.1: Test cases of Add Purchase Order.

No	Test Case	Expected Output	Status
01	Press new button.	Active save button and undo button. Also active text field to enter user details	Pass.
02	Press undo button.	Form will reset initial state. Deactivate all text fields.	Pass.
03	User enter user ID	Check it already available or no in the database. If not user can proceed. Otherwise user cannot proceed.	Pass.
04	User enter re type password	Check it, is match the previous entered password. If match user can continue. Otherwise user cannot proceed.	Pass.
05	Press search button.	Prompt user search window.	Pass.

06	Select a user in a grid	Edit and delete button will activate.	Pass.
07	Press delete button	If user not used in the database transaction tables delete can be confirm. Otherwise delete failed message will prompt.	Pass.

Table E.2: Test cases of Add, Edit User.

No	Test Case	Expected Output	Status
01	Press new button.	Active save button and undo button. Active GRN date and fill it system date. Active currency combo box, supplier combo box and tax combo box with values. Active add to list button.	Pass.
02	Press undo button.	Form will reset initial state. Deactivate all text fields.	Pass.
03	Double click on Purchase order no text filed.	Prompt a Purchase order help window to find a Purchase order.	Pass.
04	Select a purchase order and then press ok.	Ordered item details quantities and prices, supplier details appear in GRN interface.	Pass.
03	Select currency combo box value.	If select LKR currency rate set as a 1.00 and other rate field active to enter rate.	Pass.
04	Select a supplier.	Supplier name, address and country are appear in text fields.	Pass.
05	Press item code search button.	Prompt item search window.	Pass.
06	Select an item.	Item name and unit of measurements appear in text fields.	Pass.
07	Press add to list button.	Item details record appear in the table grid. Active edit and delete button in the table grid. And item details grid set clear. Total taxes, total discount and total purchase order values fill in the text fields.	Pass.
08	Press edit button in the table grid.	Remove selected row in table grid and item details grid fill with that item details.	Pass.
09	Press delete button in the table grid.	Remove selected row.	Pass.
10	Press save button.	Save GRN and show print preview. Also update the stock.	Pass.

Table E.3: Test cases of Add Good Receive Note.

No	Test Case	Expected Output	Status
01	Press Add button.	Add batch no, expiry date, qty in stock, price, quantity, free issue, discount, VAT, Value to the grid view and after adding that row, clear relevant fields to enter new record. And total, net value, credit balance , vat amount, payable amount are Filled.	Pass.
02	Select customer drop down	Scroll down all the customers and outstanding field of the customer.	Pass.
03	Address text field fill	When selecting the customer, address text field automatically filled	Pass.
04	Select the location drop down list	Scroll down all the locations	Pass.
03	Select the order drop down list	If orders are exists scroll down ones.	Pass.
04	Select the date	When date field is selected, pop up month.	Pass.
05	Adding discount	When adding discount, change the discounted value In value field	Pass.
06	Adding overall discount	When adding overall discount, change net value and payable amount	Pass.
07	Press create invoice button.	Invoice details need to be saved and all the fields in the form want to be clear and appear the saving Success message.	Pass.
08	Press delete button in the table grid.	Remove selected row in table grid and item details grid fill with that item details.	Pass.
09	Press delete button in the table grid.	Remove selected row.	Pass.

Table E.4: Test cases of Add Invoice.

APPENDIX D - CODE LISTING

F.1 SUPPLIER MANAGEMENT CODES ARE SHOWN IN FIGURE F.1 TO F.3.

Supplier User Interface Code

```
<%@ Page Title="" Language="C#" MasterPageFile="~/Site.Master"
AutoEventWireup="true"
CodeBehind="AddSupplierDet1.aspx.cs" Inherits="RELDIZ.SupplierDet1"
EnableEventValidation="false"%>

<asp:Content ID="Content1" ContentPlaceHolderID="HeadContent" runat="server">

<script type ="text/javascript">

    function CheckExpire(varStatus) {

        var selDiv = document.getElementById("navExpire");

        var varExpire = document.getElementById('<%= chkExpire.ClientID %>');
        var varBatch = document.getElementById('<%= chkBatch.ClientID %>');

        if (varStatus == "Yes") {
            selDiv.style.display = "";
            varExpire.checked = true;
            varBatch.checked = true;
        }
        else {
            selDiv.style.display = "none";
            varExpire.checked = false;
            varBatch.checked = false;
        }
    }

</script>

</asp:Content>
<asp:Content ID="Content2" ContentPlaceHolderID="ContentPlaceHolder1"
runat="server">

    <asp:ScriptManager ID="ScriptManager1" runat="server">
    </asp:ScriptManager>
    <asp:UpdatePanel ID="UpdatePanel1" runat="server">
    <ContentTemplate>
    <!-- Container -->
<div id="container">
    <!-- Main Nav -->
```

```

<div class="shell">

    <!-- Small Nav -->
    <div class="small-nav">
        <a
href="SupplierDet1.aspx?menu_id=<%=Request["menu_id"]%>&id=<%=Request["id"]%>">Supp
lier Details</a>
        <span>&gt;</span>
        Add New Supplier
    </div>
    <!-- End Small Nav -->

    <% if (lblError.Text != "")
    { %>
    <div class="msg msg-error">
        <p><strong><asp:Label ID="lblError"
runat="server"></asp:Label></strong></p>
    </div>
    <%} %>

    <% if (lblSuccess.Text != "")
    { %>
    <div class="msg msg-ok">
        <p><strong><asp:Label ID="lblSuccess"
runat="server"></asp:Label></strong></p>
    </div>
    <%} %>

    <!-- Main -->
    <div id="main">
        <div class="cl">&nbsp;</div>

        <!-- Content -->
        <div id="content">

            <!-- Box -->
            <div class="box">
                <!-- Box Head -->
                <div class="box-head">
                    <h2 class="left">Supplier Details - Add New
Supplier</h2>
                </div>
                <!-- End Box Head -->

                <!-- Table -->
                <div class="table">
                    <table width="100%" border="0" cellspacing="0"
cellpadding="0">

```

```

        <tr>
            <td>
                <asp:Label ID="lblCode" runat="server"
                    Text="Supplier Code"
                    SkinID="labelControls"></asp:Label>
            </td>
            <td>
                <asp:TextBox id="txtCode" runat="server"
                    SkinID="textControlsYellow"
                    Width="50px"
                    Enabled="False"></asp:TextBox>
            </td>
        </tr>

        <tr>
            <td >
                <asp:Label ID="lblSupRef" runat="server"
                    Text="Supp. Reference"
                    SkinID="labelControls"></asp:Label>
            </td>
            <td>
                <asp:TextBox id="txtRefCode" runat="server"
                    SkinID="textControlsYellow"
                    Width="50px" MaxLength="4"
                    CssClass="input_field"></asp:TextBox>
            </td>
        </tr>

        <tr>
            <td>
                <asp:Label ID="lblSName" runat="server"
                    Text="Supplier Name" SkinID="labelControls"></asp:Label>
            </td>
            <td>
                <asp:TextBox id="txtSName" runat="server"
                    SkinID="textControlsYellow"
                    MaxLength="40" Width="300px"
                    CssClass="input_field"></asp:TextBox>
            </td>
        </tr>

        <tr>
            <td>
                <asp:Label ID="lblSAdd" runat="server"
                    Text="Address" SkinID="labelControls"></asp:Label>
            </td>
            <td>
                <asp:TextBox id="txtSAdd1" runat="server"
                    SkinID="textControls"
                    Width="250px" MaxLength="100"
                    CssClass="input_field"></asp:TextBox>
            </td>
        </tr>

```

```

<tr>
    <td></td>
    <td>
        <asp:TextBox id="txtSAdd2" runat="server"
SkinID="textControls"
        Width="250px" MaxLength="100"
CssClass="input_field"></asp:TextBox>
    </td>
</tr>

<tr>
    <td></td>
    <td>
        <asp:TextBox id="txtSAdd3" runat="server"
SkinID="textControls"
        Width="250px" MaxLength="100"
CssClass="input_field"></asp:TextBox>
    </td>
</tr>

<tr>
    <td>
        <asp:Label ID="lblSTel" runat="server"
Text="Telephone" SkinID="labelControls"></asp:Label>
    </td>
    <td>
        <asp:TextBox id="txtSTel" runat="server"
MaxLength="10" SkinID="textControls" CssClass="input_field"
        ></asp:TextBox>
    </td>
</tr>

<tr>
    <td>
        <asp:Label ID="lblSFax" runat="server" Text="Fax"
SkinID="labelControls"></asp:Label>
    </td>
    <td>
        <asp:TextBox id="txtSFax" runat="server"
MaxLength="10" SkinID="textControls" CssClass="input_field"
        ></asp:TextBox>
    </td>
</tr>

<tr>
    <td>
        <asp:Label ID="lblEmail" runat="server"
Text="Email" SkinID="labelControls"></asp:Label>
    </td>
    <td>
        <asp:TextBox id="txtSEmail" runat="server"
SkinID="textControls" MaxLength="50" CssClass="input_field"
        ></asp:TextBox>
    </td>
</tr>

```

```

<tr>
    <td>
        <asp:Label ID="lblPTypes" runat="server"
Text="Purches Type"
        SkinID="labelControls"></asp:Label>
    </td>
    <td> <asp:DropDownList ID="drpPType"
runat="server" class="chzn-select" Width="100%">
        </asp:DropDownList>
    </td>
</tr>

<tr>
    <td>
        Using Batch
    </td>
    <td>
        <asp:RadioButton ID="rbByes" runat="server"
GroupName="grpBatch" Text="Yes" onchange="CheckExpire('Yes')"/>
        <asp:RadioButton ID="rbBNo" runat="server"
GroupName="grpBatch" Text="No" onchange="CheckExpire('No')"/>
    </td>
</tr>

<tr id = "navExpire">
    <td></td>
    <td>
        <asp:CheckBox ID="chkExpire" runat="server"
Text="With Expire Dates" /><br />
        <asp:CheckBox ID="chkBatch" runat="server"
Text="Use Custom Batch" />
    </td>
</tr>

<tr>
    <td>
    </td>
    <td>
        <asp:Button ID="btnSubmit" runat="server"
onclick="btnSubmit_Click"
        Text="Create" CssClass="button-link" />
    </td>
</tr>

</table>
</div>
<!-- Table -->

</div>
<!-- End Box -->

</div>
<!-- End Content -->

```

```

<!-- Sidebar -->
    <div id="sidebar">

        <!-- Box -->
        <div class="box">

            <!-- Box Head -->
            <div class="box-head">
                <h2>ShortCuts</h2>
            </div>
            <!-- End Box Head-->

            <div class="box-content">
                <a
href="SupplierDet1.aspx?menu_id=<%=Request["menu_id"]%>&id=<%=Request["id"]%>"
class="cancel-button"><span>Go Back</span></a>
                <div class="cl">&nbsp;</div>

                <!-- Sort
                <div class="sort">
                    <label>Filter by</label>
                    <select class="field">
                        <option value="">Agency</option>
                    </select>
                    <select class="field">
                        <option value="">Brand</option>
                    </select>
                </div-->
                <!-- End Sort -->

            </div>
        </div>
        <!-- End Box -->
    </div>
    <!-- End Sidebar -->

    <div class="cl">&nbsp;</div>
</div>
<!-- Main -->

</div>
</div>
<!-- End Container -->

</ContentTemplate>
</asp:UpdatePanel>
</asp:Content>

```

Code F.1: AddSupplierDet1.aspx

```

using System;
using System.Web.UI.WebControls;
using System.Data;
using RELDIZDL;
using System.Drawing;
using System.Configuration;
using System.Web;
using System.Web.UI;

namespace RELDIZ
{
    public partial class SupplierDet1 : System.Web.UI.Page
    {
        DataHelp objDataHelp;

        DataSet ds = new System.Data.DataSet();
        DataSet ds1 = new System.Data.DataSet();

        public static string str_ConStringName = "ConnString";
        string strConn =
ConfigurationManager.ConnectionStrings[str_ConStringName].ConnectionString;

        string strSql;
        string strId;

        ClsCommon objCommon = new ClsCommon();

        protected void Page_Load(object sender, EventArgs e)
        {
            Session["prevUrl"] = Request.Url;

            if (Session["UserName"] == null)
            {
                Response.Redirect("~/Login.aspx");
            }
            else
            {
                if (!Page.IsPostBack)
                {
                    if (Session["UserName"].ToString() != "")
                    {
                        FillCmb();
                        SetFields();
                        CheckAuth();

                        EnableFuncMenu("Lock_Toolbar", true, false, false, false,
false, false);

                        lblError.Text = "";
                        lblSuccess.Text = "";
                    }
                }
            }
        }
    }
}

```

```

private void CheckAuth()
{
    string strChkMenuID;
    string strChkUserID;
    string strChkUserLevID;

    strChkMenuID = Request["menu_id"];
    strChkUserID = Session["UserName"].ToString();
    strChkUserLevID = Session["UserLevel"].ToString();

    if (strChkUserLevID == "00")
        return;

    if (!objCommon.AuthOpt(strChkMenuID, "add_new", strChkUserID))
        Response.Redirect("~/Home.aspx");
}
private void FillCmb()
{
    //Purchases At
    DataTable dt = new DataTable();

    dt.Columns.Add("Display", typeof(String));
    dt.Columns.Add("Value", typeof(String));

    DataRow row;

    row = dt.NewRow();
    row["Display"] = "Whole Sale Price";
    row["Value"] = 0;
    dt.Rows.Add(row);

    row = dt.NewRow();
    row["Display"] = "Special Price";
    row["Value"] = 1;
    dt.Rows.Add(row);

    drpPType.DataTextField = ("Display");
    drpPType.DataValueField = ("Value");
    drpPType.DataSource = dt;
    drpPType.DataBind();
}
private void SetFields()
{
    rbByes.Checked = true;
    chkBatch.Checked = true;
    chkExpire.Checked = true;
}

```



```

private void Clearsrc()
{
    txtCode.Text = "";
    txtRefCode.Text = "";
    txtSName.Text = "";
    txtSAdd1.Text = "";
    txtSAdd2.Text = "";
    txtSAdd3.Text = "";
    txtSTel.Text = "";
    txtSFax.Text = "";
    txtSEmail.Text = "";
    drpPType.SelectedIndex = -1;
    lblError.Text = "";
    lblSuccess.Text = "";

    //HiddenMode.Value = " ";
}

public void NewEntry(string strFormName)
{
    Clearsrc();
    Lock_Unlock(false, true);

    //HiddenMode.Value = "New";
}

public void SaveEntry(string strFormName)
{
    if (SaveValues())
    {
        ApplyFuncMenu("SaveSuccess", true);

        LoadGrid();
        Lock_Unlock(true, true);
    }
    else
        ApplyFuncMenu("SaveSuccess", false);
}

public bool EditValues()
{
    if (txtCode.Text == "")
    {
        ScriptManager.RegisterClientScriptBlock(this, this.GetType(),
"script", "ConfirmDialog('', 'Error', 'Please select a record ...', false);",
true);

        return false;
    }

    return true;
}

```

```

private void Get_Data()
{
    //txtCode.Text = dgLeftGrid.SelectedRow.Cells[0].Text;

    strSql = "SELECT * FROM Supplier WHERE supp_code = '" + txtCode.Text +
    """;

    objDataHelp = new DataHelp(strConn);
    ds = objDataHelp.SELECT_Command(strSql);

    foreach (DataRow dr in ds.Tables[0].Rows)
    {
        txtRefCode.Text = dr["supp_ref"].ToString();
        txtSName.Text = dr["supp_name"].ToString();

        //drpPType.SelectedValue = "1";
    }
}

protected void dgLeftGrid_RowCreated(object sender, GridViewRowEventArgs e)
{
    //Add CSS class on header row.
    if (e.Row.RowType == DataControlRowType.Header)
        e.Row.CssClass = "header";

    //Add CSS class on normal row.
    if (e.Row.RowType == DataControlRowType.DataRow && e.Row.RowState ==
    DataControlRowState.Normal)
        e.Row.CssClass = "normal";

    //Add CSS class on alternate row.
    if (e.Row.RowType == DataControlRowType.DataRow && e.Row.RowState ==
    DataControlRowState.Alternate)
        e.Row.CssClass = "alternate";
}

public bool SaveValues()
{
    string strPurPrice;

    bool blSaveSuccess = false;

    string nextCode;

    //Validation Required Fields

    lblError.Text = "";
    lblSuccess.Text = "";

    strPurPrice = drpPType.SelectedValue.ToString();

    if (string.IsNullOrEmpty(txtRefCode.Text))
    {
        lblError.Text = "Supplier Reference can not be blank";
        txtRefCode.Focus();
        return false;
    }
}

```

```

if (string.IsNullOrEmpty(txtSName.Text))
{
    lblError.Text = "Supplier Name can not be blank";
    //ScriptManager.RegisterClientScriptBlock(this, this.GetType(), "script",
"ConfirmDialog('', 'Error', 'Supplier Name can not be blank.', false);", true);

    txtSName.Focus();
    return false;
}

try
{
    // chk company ref already exists
    strSql = "Select * from Supplier where supp_ref = '" + txtRefCode.Text
+ "'";

    objDataHelp = new DataHelp(strConn);
    ds = objDataHelp.SELECT_Command(strSql);

    if (ds.Tables[0].Rows.Count > 0)
    {
        lblError.Text = "Supplier referance already exsits";
        //ScriptManager.RegisterClientScriptBlock(this, this.GetType(),
"script", "ConfirmDialog('', 'Error', 'Supplier referance already exsits.', false);",
true);

        txtRefCode.Focus();
        return false;
    }

    // chk supplier name
    strSql = "Select * from Supplier where supp_name = '" + txtSName.Text
+ "'";

    objDataHelp = new DataHelp(strConn);
    ds = objDataHelp.SELECT_Command(strSql);

    if (ds.Tables[0].Rows.Count > 0)
    {
        lblError.Text = "Supplier name already exsits";
        //ScriptManager.RegisterClientScriptBlock(this, this.GetType(),
"script", "ConfirmDialog('', 'Error', 'Supplier name already exsits.', false);", true);
        txtSName.Focus();
        return false;
    }
    else

{
    // get next Supplier code
    nextCode = objCommon.GetNextDocNo("Supplier", "supp_code", 4, "");

    //strSql = "Insert into Supplier(supp_code, supp_name, adduser,
adddate, supp_ref) values('" + nextCode
//      + "','" + objCommon.SqlFix(txtSName.Text) + "','" +
Session["UserName"]
//      + "','" + DateTime.Now.ToShortDateString()
//      + "','" + txtRefCode.Text + "') ";

```



```

else
{ //Check if not using Batch
  strSql += "is_non_batch = 1 ";

  if (strPurPrice == "0") //Special Price
    strSql += ", chg_with_ws = 1 ";
  else
    strSql += ", chg_with_spe = 1 ";
}

strSql += "WHERE supp_code = '" + nextCode + "'";

objDataHelp = new DataHelp(strConn);
objDataHelp.UPDATE_Command_Sql(strSql);

//ScriptManager.RegisterClientScriptBlock(this,
this.GetType(), "script", "ConfirmDialog('', 'Information', 'Supplier detail added
successfully.', false);", true);

  lblSaveSucess = true;

  Clearsrc();

  lblSuccess.Text = "Supplier detail added successfully";
}

}
catch(Exception ex)
{
  lblError.Text = ex.Message;
  //ScriptManager.RegisterClientScriptBlock(this, this.GetType(),
"script", "ConfirmDialog('', 'Error', '" + ex.Message + "', false);", true);
  return false;
}

return lblSaveSucess;
}

```

Code F.2: Supplier.aspx.cs

APPENDIX E - CLIENT CERTIFICATE



AXIA PRIVATE LIMITED

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E-mail: info@axiasl.com

7th November 2017

Project Evaluation Board
University of Colombo - School of Computing,
35, Raid Avenue,
Colombo - 07.

Dear Sir/ Madam.

Letter of Certification for Online Redistribution System

This is to certify that the Mr. E.B.K. Ranasinghe (BIT Registration No: R092408) who is studying at University of Colombo Computing (UCSC) has successfully developed the Online Redistribution System for Axia (Pvt) Ltd.

It is happy to mention that the proposed system can be implemented successfully for our company which requires all requirements in best level.

We wish him all the success.

Thanking You.

Yours faithfully,

AXIA PRIVATE LIMITED

P. SIVAKUMAR
Managing Director



GLOSSARY

Database	-	Collection of data
Framework	-	It is a set of class library which provide functionalities
GUI	-	Graphical user interface which user can interact with the system
Interface	-	Interconnect system with the user.
MSSQL	-	One of most popular Database management system can handle big amount of data related to different types.
RUP	-	Stands for Rational Unified Process. Iterative software Development Methodology. Develop by Rational Software Co-operation.
Use Case Diagram	-	Use case diagram-use case diagram represent the how users interact with the system.

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