Automation of computer shop

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Automation of computer shop

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Department of Computer Science
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Submission Form for Final-Year

PROJECT REPORT

PROJECT ID		NUMBER OF MEMBERS	03

TITLE	Automation of computer shop

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I/We have enclosed the soft-copy of this document along-with the codes and scripts created by myself/ourselves	**YES / NO**
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Approval Letter

It is certified that this work, entitled "Automation and cart of computer shop" submitted by " *Rabiaqasim*", "*SaimaParveen*" and Qura-tul-ain is hereby approved as Partial Fulfilment for the award of Degree of " *Bachelor* "of Science in Computer Science.

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Declaration

"No portion of the work referred to in the dissertation has been submitted in support of an application for another degree or qualification of this or any other university/institute or other institution of learning".

MEMBERS' SIGNATURES

Acknowledgements

In the name of God, the most kind and most merciful

We would like to thank to our friends and parents who help us directly or indirectly who kept backing us up in all the times, both financially and morally…

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We are grateful to the God Almighty who provides all the resources of every kind to us, so that we make their proper use for the benefit of mankind. May He keep providing us with all the resources, and the guidance to keep helping the humanity.

Abstract

Project development has been coupled with time and cost problems through history. This has motivated the search for flexible, trustworthy, time and cost-efficient development. In order to achieve this, we have developed anautomated computer shop System. This web based application will help improve the complete process of buying products from suppliers and selling products to customers.Project management strategies by improving communication and collaboration among customers andemployees for better understanding of requirements.

The proposed system is about the automation of computer shop system designed for user to manage the purchase, sale,employees,and the stock inventory. Proposed system is composed of Sales and purchase modules.

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1 Introduction

Automation of Computer shop is a system which help in keeping the record of whatever the purchases and sales from shop (whole seller), also it keep track of remaining balance which due after selling the product. Through this project we maintain the warranty given on particular products along with complete information related to that product.

Computer shop management system will be used for various purposes under computer shop. For example It will be used at the billing counter, searching of products in requested amount as per user requirements and configuration demands following of orders from the purchasers, delivery status for particular products, helpline numbers details and address within current city and in nearest city for particular firms. In this computer shop management system user has to enter the model number of particular product total number of items. User can also keep track the items that are available in the shop. This Computer Shop Management system will be used for making references of requested amount for the user. The billing system will use current system date and time. However its user can manually set the date and time of purchase and can make changes in the amount which will be special feature available in the control panel of this system computer shop management system. Under generating bill section, its user have to make entry in the field of particular model and its serial number after which it will display the brand name of the products, its cost price and service tax. Then after this, when total amount will be generated for total number of products along with the address details of the seller. This system will also include the name, address and mobile number of the customer. Each bill will have a unique number Produced by the system automatically.

2 Background of System:

Existing computer shop management system only has the potential to perform processing task for limited section. In this system shopkeeper have to enter customer's report every time whenever they visited their shop. There was no any medium to find the customers record using any unique key or customers id. If the records of any item are to be revised, then search operation is performed to find the item and make updating. Stock report and making query on daily selling reports was not possible. It was not possible by the shopkeeper to track which salesman was responsible to sell particular product and what price and time. The present system was not able to make balance sheet, only the daily transaction was saved in the file, which was send to the charted accountant office to prepare balance sheet which is again not secure with respect to the customer's details. As product identification was done only using the particular product serial number, thus problem in identifying which product has been solved.

2.1 Objectives of the system:

The objective of our project is to provide management facilities to computer shop. The information technology is one of the fast and most growing industries in the world. Information technology has changed our lives consistently, human are achieving their goals with the help of information and technology. Computers are there to help in achieving their goals. All this motivated us to develop a software computer shop management system.

The objective behind making this software is to solve problems like inventory management of a computer shop which includes of maintenance of customer record, purchase record, sales record, profit and loss record and billing system and so on. So, I decided to make such software, which can provide solutions for these problems in the computer shops that will use this software.

2.2 Statement of the Problem*:*

Computer automation keeps the purchase and sales record, loss and benefit record and billing system in an efficient manner and it saves time of both the customer and supplier (Akram et al. 2018). It is time saving and resolves the problem of accuracy

and provides easy data access. This computer automation system makes it easier for different individuals to access data even outside the shop

2.3 Problem with existing system:

Existing Manual systems put pressure on people to be correct in all details of their work at all times, the problem being that people aren't perfect, however much each of us wishes we were. With manual systems the level of service is dependent on individuals and this puts a requirement on management to run training constantly for staff to keep them motivated and to ensure they are following the correct procedures (Hussain 2018). It can be all easy to unintentionally switch details and end up with inconsistency in data entry or in hand written orders. This has the effect of not only causing problems with customer service but also making information unable be used for reporting or finding trends with data discovery. Reporting and checking that data is robust can be timely and expensive. This is often an area where significant money can be saved by automation.

It takes more effort and physical space to keep track of paper documents, to find information and to keep details secure. When mistakes are made or changes or corrections are needed, often a manual transaction must be completely rebuild rather than just updated. With manual or partially computerized systems information often has to be written down and copied or entered more than once. Systemization can reduce the amount of duplication of data entry.

Another impact of manual systems is on Customer service. Customer queries can be difficult to respond to as information is stored in different places and may even require that you find the right person before being able to respond. This is no good if they are out to lunch or only work part time.

- Large ongoing staff training cost.
- System is dependent on good individuals.
- Reduction in sharing information and customer services.
- Time consuming and costly to produce reports.
- Lack of security.
- Duplication of data entry.

2.4 Significance of the system:

Computer shop management system is a specific function that focuses on controlling the purchase and sale records and manages overall movement of all the products in the shop. The business owners or managers typically setup systems or processes to serve them with this function.

The following are listed some of the main significance of the Proposed system

- **Performance:**

The proposed system will reduce the time and effort required retrieving products information

- **Progress in Sale:**

The use of the automated sale and purchase system will increase the sale of the company.

- **Accuracy:**

Automation significantly increases the accuracy of the work and record keeping.

However, it must be an emphasized very strongly that accuracy of work will only result if human input if fields is consistent and accurate.

- **User Friendly:**

User will communicate with the system through simple conversation. No specialized computer staff will be required. The system will be easy to use.

- **Reliability:**

The Proposed system is more reliable than the manual one due to its accuracy and security so that timely decision making may be possible.

3 Requirement Specification:

3.1 Non Functional Requirements:

3.1.1 Product Requirements:

Product requirements specify desired characteristics that a system or sub system must possess. Some product requirements are:

- Performance
- Reliability
- Usability
- Adaptability
- Security
- Safety

Performance Requirements:

The performance requirements concern the speed of operation of a system. System user should have sound knowledge of SQL Server for retrieving required information in less time

Types of performance requirements:

- Response requirements (how quickly the system reacts to a user input)
- Throughput requirements (how much the system can accomplish within a specified amount of time)
- Availability requirements (is the system available for service when requested by end-users)

Reliability:

The system should be able to handle all the workload of all the defined systems with less time

Usability:

System should be simple and user friendly interfaces need to be provided.

Safety and Security Requirements:

The authorization should be accurate, because of the use of the username and password for dealer identification.

Adaptability:

The system should customizable with any other system.

3.1.2 Organizational Requirements:

Organizational requirements are those that fulfill the needs on the higher level. Some organizational requirements are:

- Correctness
- Maintainability
- Portability
- Supportability
- User friendly interface

Correctness:

In this system transaction are performed so accuracy needs to be higher.

Maintainability:

The cost of day-to-day maintenance needs to be lower.

Portability

This system will perform well on all Microsoft O/S environments.

Supportability

The system would use windows pattern for menus making, icons etc. or any current standards operating in open source projects.

User friendly interface

Clear instructions are provided. You are guided from the very first steps right through to producing a comprehensive requirements specification. The Checklists are structured in multiple levels - overview and detailed levels, to help user to be more systematic and thorough when specifying his/her requirements. The Business Analysis and Overview sections will provide you with your outline system requirements and the detailed sections will provide your detailed system requirements (Ali et al. 2019).

3.1.3 External Requirements:

External requirements may be placed on both product and process. It derived from the system in which the system is developed. It includes legal requirements. Some external requirements are:

- Licensing
- Regulations
- Certification issues

3.2 Functional Requirements:

3.2.1 Supplier Module:

In this automated system supplier is registered with their company name. Supplier has name of supplier, company name, city and address of company and phone number, account number and branch name.

- Add supplier
- View supplier
- Update supplier
- Delete supplier
- Supplier Ledger
- Supplier Invoice
- Supplier payment
- Supplier Balance

3.2.2 Purchase Module:

This module manages all the purchase transaction includes purchase invoice, purchase return and supplier transaction. Manager performs the following actions.

- Add Purchase
- View Purchase
- Update purchase
- Delete Purchase
- Purchase Invoice
- Purchase Return
- Purchase Transactions

3.2.3 Customer Module:

In this automated system every customer is registered to make transaction. This information's include name of customer, address, ID card number and phone number. In automated system it is also possible to search the supplier by name or by customer ID.

- Add Customer

- View Customer
- Update Customer
- Delete Customer
- Customer Payment
- Customer Ledger
- Customer Invoice
- Customer Balance

3.2.4 Sale Module:

This feature manage all the sales transaction includes sale invoice, sale return and customer payment transaction. Manager can add/delete/update/view all the sales.

- Add Sale
- View Sale
- Update Sale
- Delete Sale
- Sale Invoice
- Sale Return
- Daily Sale Analysis

3.2.5 Stock Module:

In this module all the details of computers and accessories are recorded. Sale, purchase rates, quantity of items and detail description of each item is managed in this feature.

3.3 Use Cases

Primary Actor	**Use Cases**
Shop keeper	1. Login 2. Add items 3. View items 4. Update items 5. Delete items 6. Add sales 7. View sales 8. Update sales

Primary Actor	**Use Cases**
	9. Delete sales 10. Add purchase 11. View purchase 12. Update purchase 13. Delete purchase 14. View Defaulter customers list 15. Add customer/supplier list 16. View customer/supplier 17. Update customer/supplier 18. Delete customer/supplier
Use Case ID:	**UC-1**
Use Case Name:	Login
Scope	Automation and cart of computer shop
Created By:	RabiaQasim
Date Created:	24/10/2016
Actor:	Shop keeper
Preconditions:	The user should have login ID and Password and Input parameters must be in appropriate format
Post conditions:	If successful, a confirmation is sent to the user for successful login.
Basic flow:	• User submits the two parameters. • The two parameters are validated for format and completeness. • The two parameters are checked against stored values in inventory (• The result is passed back to the user • User successfully entered into the application • Main screen is displayed.
-Alternative Courses:	If the parameterized value (User ID & Password) is not valid ,System displays a me • Forgot password. • Sign up.
Special requirements	- Text must be visible from 1 meter. - Authentication response within 5 sec of the time. - Somehow, we want robust recovery when access to remote services by the system is failing. Language internationalization on the text displayed
Includes:	None
Priority:	High

Use Case ID:	**UC-2**
Use Case Name:	Add items
Created By:	QuraTul Ain
Date Created:	3/10/2013
Scope	Automation and cart of computer shop
Actors:	Shop keeper
Preconditions:	Customer and Supplier must be login
Post conditions:	Supplier has authority to add computer items list and accessories.
Normal Course:	• Shop keeper login to the system to add items list. • Shop keeper add the items. • Result is passed back to the Shop keeper.
-Alternative Courses:	If the values are duplicate or invalid format, system will display a message • Values are already inserted. • Invalid format.
Includes:	None
Priority:	High

Use Case ID:	**UC-3**
Use Case Name:	View items
Created By:	Qura-Tul-Ain
Date Created:	24/10/2016
Scope	Automation and cart of computer shop
Actors:	Customer, Admin & Shop keeper
Preconditions:	Customer & Supplier must be login
Post conditions:	Supplier has authority to view Computer & accessories list items and there mu items that
Normal Course:	Supplier login to the system to view Computer & accessories items list. • Supplier view the Computer &accessories . • Result is passed back to the user.
-Alternative Courses:	If Computer & accessories items are not in the list, System will displays a message

	• items are not in the list
Includes:	None
Priority:	High

Use Case ID:	**UC-4**
Use Case Name:	Update items
Created By:	Qura-tul-Ain
Date Created:	25/10/2016
Scope	Automation and cart of computer shop
Actors:	Shop keeper
Preconditions:	Customer & Supplier must be login
Post conditions:	There must be some items in the list that Supplier can update.
Normal Course:	• Shop keeper login to the system to update items list. • Shop keeper updates the items. • Result is passed back to the Shop keeper.
-Alternative Courses:	If items are not in the list, System will displays a message • items are not in the list to update.
Includes:	None
Priority:	High

Use Case ID:	**UC-5**
Use Case Name:	Delete item
Created By:	Qura-tul-Ain
Date Created:	3/10/2013
Scope	Automation and cart of computer shop
Actors:	Shop keeper
Preconditions:	Shopkeeper must be login
Post conditions:	There must be some grain items in the list that dealer can delete.

Normal Course:	• Shopkeeper login to the system to view items list. • Shopkeeper delete the grain items. • Result is passed back to the Shopkeeper.
-Alternative Courses:	➢ If items are not in the list, System will displays a message • Items are not in the list to delete
Includes:	None
Priority:	High

Use Case ID:	**UC-6**
Use Case Name:	Add Sales
Created By:	RabiaQasim
Date Created:	3/10/2013
Scope	Automation and cart of computer shop
Actors:	Shop Keeper
Preconditions:	Shop keeper must be login
Post conditions:	Shop keeper has authority to add sales.
Normal Course:	• Shop keeper login to the system to add sales. • Shop keeper add the sales. • Result is passed back to the Shop keeper.
-Alternative Courses:	If the values are duplicate or invalid format, system will display a message • Values are already inserted. or • Invalid format.
Includes:	None
Priority:	High

Use Case ID:	**UC-7**
Use Case Name:	View sales

Created By:	RabiaQasim
Date Created:	3/10/2013
Scope	Automation and cart of computer shop
Actors:	Customer, Admin & Shop keeeper
Preconditions:	Shop keeper must be login
Post conditions:	Shop keeper has authority to view sales and there must be some sales record in that user can view.
Normal Course:	• Customer, Admin & Shopkeeper login to the system to view sales. • Customer, Admin & Shopkeeper view the sales. • Result is passed back to the Customer, Admin & Shopkeeper.
-Alternative Courses:	If sales record are not in the list, System will displays a message • Sales are not in the list.
Includes:	None
Priority:	High

Use Case ID:	**UC-8**
Use Case Name:	Update sales
Created By:	Qura-tul-Ain
Date Created:	3/10/2013
Scope	Automation and cart of computer shop
Actors:	Shop keeper
Preconditions:	Shop keeper must be login
Post conditions:	Dealer has authority to update the sales and There must be some grain items in t dealer can update.
Normal Course:	• Shop keeper login to the system to update sales. • Shop keeper update the sales. • Result is passed back to the dealer.
-Alternative Courses:	If sales record are not in the list, System will displays a message • Sales are not in the list to update.
Includes:	None
Priority:	High

Use Case ID:	**UC-9**
Use Case Name:	Delete Sales
Created By:	SaimaParveen
Date Created:	3/10/2013
Scope	Automation and cart of computer shop
Actors:	Shop keeper
Preconditions:	Shop keeper must be login
Post conditions:	There must be sales record in the list that dealer can delete.
Normal Course:	• Shop keeper login to the system to delete sales. • Shop keeper delete the sales. • Result is passed back to the Shop keeper.
-Alternative Courses:	If sales record are not in the list, System will displays a message • Sales record are not in the list to delete
Includes:	None
Priority:	High

Use Case ID:	**UC-10**
Use Case Name:	Add Purchase
Created By:	Qura-tul-Ain
Date Created:	3/10/2013
Scope	Automation and cart of computer shop
Actors:	Shop keeper
Preconditions:	Shop keeper must be login
Post conditions:	Shopkeeper has authority to add purchase.
Normal Course:	• Shopkeeper login to the system to add purchase. • Shopkeeper add the purchase record. • Result is passed back to the Shopkeeper.
-Alternative Courses:	If the values are duplicate or invalid format, system will display a message • Values are already inserted.

	or • Invalid format.
Includes:	None
Priority:	High

Use Case ID:	**UC-11**
Use Case Name:	View purchase
Created By:	RabiaQasim
Date Created:	3/10/2013
Scope	Automation and cart of computer shop
Actors:	Customer, Admin & Shop keeper
Preconditions:	Shop keeper must be login
Post conditions:	Dealer has authority to view purchase and there must be some purchase record in the system that user can view.
Normal Course:	• Customer, Admin & Shop keeperlogin to the system to view purchase. • Customer, Admin & Shop keeper view the purchase. • Result is passed back to the Customer, Admin & Shop keeper.
-Alternative Courses:	If purchase record are not in the list, System will displays a message • Purchase are not in the list.
Includes:	None
Priority:	High

Use Case ID:	**UC-12**
Use Case Name:	Update purchase
Created By:	RabiaQasim
Date Created:	3/10/2013
Scope	Automation and cart of computer shop
Actors:	Admin & Shop keeper
Preconditions:	Admin & Shop keeper must be login
Post conditions:	Admin & Shop keeper has authority to update the purchase and There mus purchase record in the list that dealer can update.

Normal Course:	• Admin & Shop keeper login to the system to update purchase. • Admin & Shop keeper update the purchase. • Result is passed back to the Admin & Shop keeper.
-Alternative Courses:	If purchase record are not in the list, System will displays a message • purchase are not in the list to update.
Includes:	None
Priority:	High

Use Case ID:	**UC-12**
Use Case Name:	Delete Purchase
Created By:	SaimaParveen
Date Created:	3/10/2013
Scope	Automation and cart of computer shop
Actors:	Shop keeper
Preconditions:	Shop keeper must be login
Post conditions:	There must be purchase record in the list that dealer can delete.
Normal Course:	• Shopkeeper login to the system to delete purchase. • Shopkeeper delete the purchase. • Result is passed back to the Shopkeeper.
-Alternative Courses:	If purchase record are not in the list, System will displays a message • Purchase record are not in the list to delete
Includes:	None
Priority:	High

Use Case ID:	**UC-13**
Use Case Name:	View defaulter customer's list
Created By:	SaimaParveen
Date Created:	3/10/2013
Scope	Automation and cart of computer shop

Actors:	Customer, Admin & Shop keeper
Preconditions:	Customer, Admin & Shop keeper must be login
Post conditions:	Customer, Admin & Shop keeper has authority to view defaulter customer's lis must be defaulter customer's list in the system that user can view.
Normal Course:	• Customer, Admin & Shop keeper login to the system to view customer's list. • Customer, Admin & Shop keeper view the defaulter customer's list. • Result is passed back to the Customer, Admin & Shop keeper.
-Alternative Courses:	If defaulter customer are not in the list, System will displays a message • defaulter customer is not in the list.
Includes:	None
Priority:	High

Use Case ID:	**UC-14**
Use Case Name:	Add customer/supplier
Created By:	RabiaQasim
Date Created:	3/10/2013
Scope	Automation and cart of computer shop
Actors:	Shop keeper
Preconditions:	Shop keeper must be login
Post conditions:	Shop keeper has authority to add customer/supplier record
Normal Course:	• Shop keeper login to the system to add customer/supplier record. • Shop keeper add the customer/supplier record. • Result is passed back to the Shop keeper.
-Alternative Courses:	If the values are duplicate or invalid format, system will display a message • Values are already inserted. or • Invalid format.

Includes:	None
Priority:	High

Use Case ID:	**UC-15**
Use Case Name:	View customer/supplier record.
Created By:	Qura-tul-Ain
Date Created:	3/10/2013
Scope	Automation and cart of computer shop
Actors:	Admin & Shop keeper
Preconditions:	Dealer must be login
Post conditions:	Admin & Shop keeper has authority to viewcustomer/supplier record and there mu customer/ supplier record in the system that user can view.
Normal Course:	• Admin & Shop keeper login to the system to view customer/supplier • Enter a name to view the record. • Admin &Shop keeper view the customer/supplier record. • Result is passed back to the Admin & Shop keeper.
-Alternative Courses:	If customer/supplier are not in the list, System will displays a message • customer/supplier does not exist.
Includes:	None
Priority:	High

Use Case ID:	**UC-16**
Use Case Name:	Update customer/supplier record
Created By:	Qura-tul-Ain
Date Created:	3/10/2013
Scope	Automation and cart of computer shop
Actors:	Admin
Preconditions:	Administrator must be login
Post conditions:	Admin has authority to update the customer/supplier record and There must be customer/supplier in the list that dealer can update.
Normal Course:	• Admin login to the system to update customer/supplier record.

	• Admin update the customer/supplier record. • Result is passed back to the Admin.
-Alternative Courses:	If customer/supplier are not in the list, System will displays a message • customer/supplier record are not in the list to update.
Includes:	None
Priority:	High

Use Case ID:	**UC-17**
Use Case Name:	Delete customer/supplier
Created By:	RabiaQasim
Date Created:	3/10/2013
Scope	Automation and cart of computer shop
Actors:	Shop keeper
Preconditions:	Shop keeper must be login
Post conditions:	There must be customer/supplier record in the list that dealer can delete.
Normal Course:	• Shop keeper login to the system to delete customer/supplier. • Shop keeper delete the customer/supplier. • Result is passed back to the Shop keeper.
-Alternative Courses:	If customer/supplier are not in the list, System will displays a message • customer/supplier are not in the list to delete
Includes:	None
Priority:	High

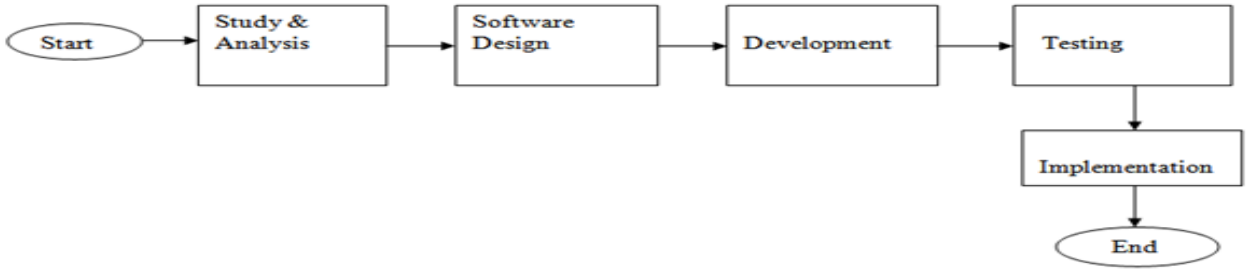
Use Case ID:	**UC-18**
Use Case Name:	Logout
Created By:	RabiaQasim
Date Created:	3/10/2013
Scope	Automation and cart of computer shop
Actors:	Customer, Admin & Shop keeper
Description:	
Preconditions:	Customer, Admin & Shop keeper logged in and wants to log out from account

Post conditions:	User successfully Logout.
Normal Course:	• Clicks Logout. • Session is destroyed. • User is redirected to the log out confirmation window..
-Alternative Courses:	if not logout successfully, system will generate a message • You are not successfully logout.
Includes:	None
Priority:	High

4 Project Design:

4.1 Methodology:

The methodology used during the development of software tells that which programming approach has been followed in the development of the software (Zahoor et al. 2019).



Why Methodology?

1. Tocomplete a project within time and budget with the expected scope and quality we need methodologieswhich provide for a framework.
2. Most methodologies have a general planning, developing and managing stages in common. They suggest the development team the ways of thinking, learning and arriving at a regular feasible solution.

To select an ideal methodology was based on project requirements and goals.

- ❖ Functional Decomposition: The methodology should have stages according to the interrelated activities which can be grouped into different functional areas.
- ❖ Requirement Changes: If required, methodology provides scope to change the requirement.
- ❖ Manage Risks: Determined the risk is an important activity to develop a project.
- ❖ Iterative approach: Iteration allows refinement of requirement as well as design.

- ❖ Documentation: Methodology provides support for large documentation.
- ❖ Analysis and Design Support: A well defined structure of the methodology helps for analysis and designing to development process..
- ❖ Implementation: The system should be implemented as per plan.
- ❖ Testing Support: More testing, more reliable the product is.
- ❖ Object Oriented Approach: Object oriented concepts will be used in developing the project as it supports component reusability.

Suitable Methodologies:

Waterfall Methodology:All projects can be managed better when segmented into a hierarchy of chunks such as phases, stages, activities, tasks and steps. It follows a linear structure starting from requirement analysis, through design, implementation and maintenance. Most widely accepted methodology for student projects, this model has been well tried and tested. Each phase of it has sub phases which produce deliverables (Hussain et al. 2020a, b). Requirements are fixed at initial stages before proceeding with development plans in system development projects; the simplest rendition of this is called the "waterfall" methodology, as shown in the following figure:

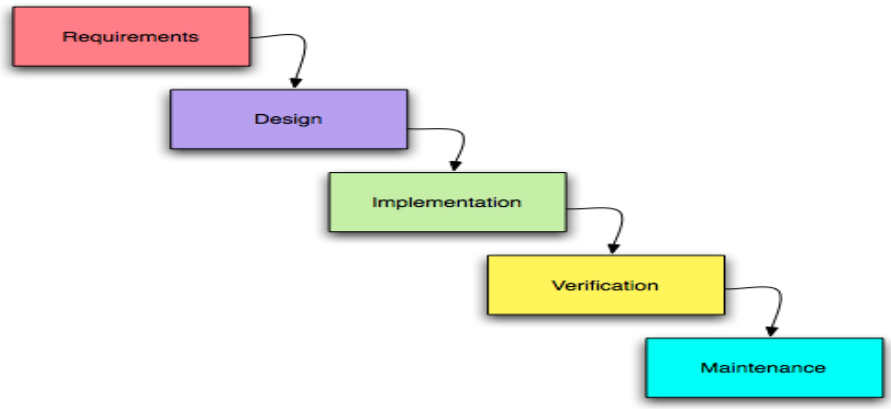


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Figure 1 Waterfall methodology

Thegraphic illustrates a few critical principles of a good methodology:

- Work is done in stages,
- Content reviews are conducted between stages, and
- Reviews represent quality gates and decision points for continuing.

The waterfall provides an orderly sequence of development steps and helps ensure the adequacy of documentation and design reviews to ensure the quality, reliability, and maintainability of the developed software. While almost everyone these days disparages the "waterfall methodology" as being needlessly slow and cumbersome, it does illustrate

4.2 Architecture Overview:

4.2.1 System Architecture

We will be using two-tier architecture. This architecture is a particular type of Client/server architecture consisting of two well-defined and separate processes.

- The user interface which runs on the user's computer. In our system, the operators sitting at different location will use this interface.
- A database management system (DBMS) that stores the data required by the middle tier. Often called Data Storage Tier.

This two-tier approach is applied to web based applications as:

- GUI interfaces.
- Database Server

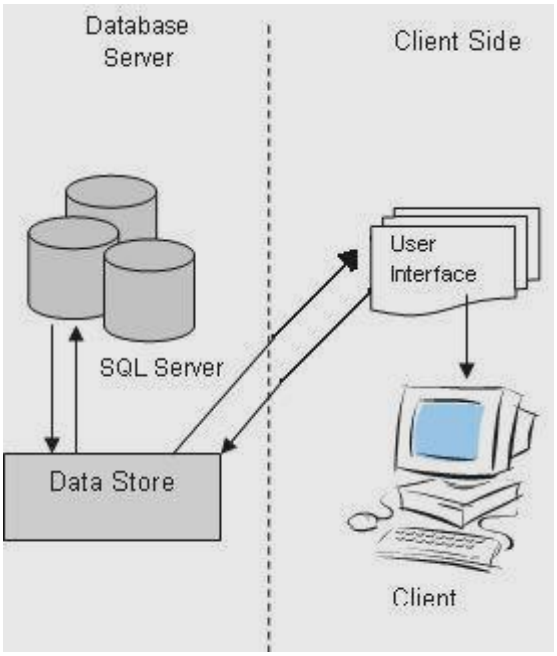
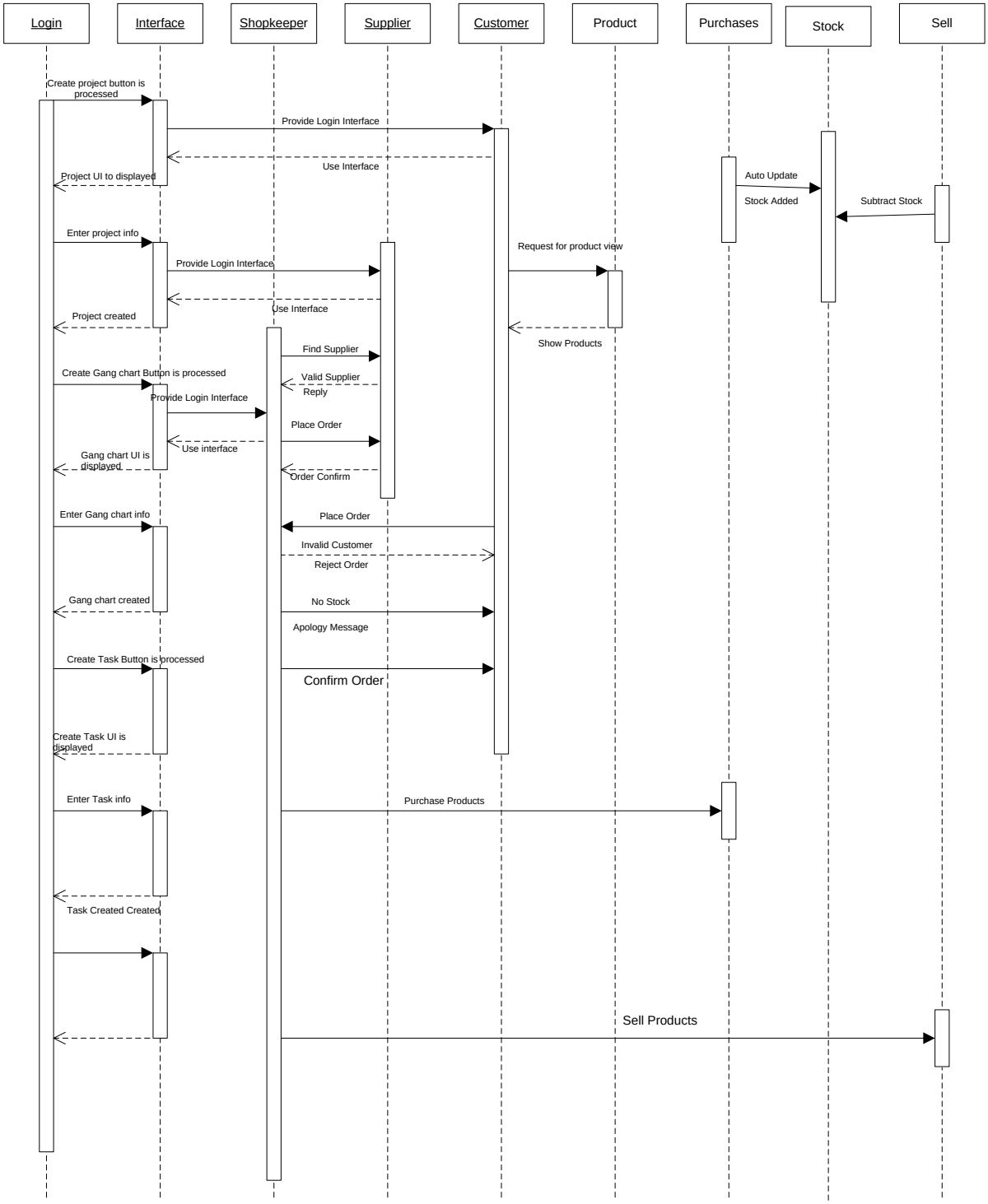


Figure 2of Server client Architecture

The system is designed using two-tier architecture approach, as it is a web-based project.

4.2.2 Sequence Diagram:



4.3 System Design:

The Software Design Document is a document to provide documentation which will be used to aid in software development by providing the details for how the software should be built. Software design is a process by which the software requirements are translated into a representation of software components, interfaces, and data necessary for the implementation phase. It shows how the software system will be structured to satisfy the requirements. It is the primary reference for code development and, therefore, it must contain all the information required by a programmer to write code. It is performed in two stages. The first is a preliminary design in which the overall system architecture and data architecture is defined. In the second stage, i.e. the detailed design stage, more detailed data structures are defined and algorithms are developed for the defined architecture. The purpose of the Software Design Document is to provide a description of the design of a system fully enough to allow for software development to proceed with an understanding of what is to be built and how it is expected to built.

4.3.1 Composition View Point:

Composition is the placement or arrangement of visual elements or ingredients in a work of art, as distinct from the subject of a work. It can also be thought of as the organization of the elements of art according to the principles of art.

4.3.2 Use Case Diagram:

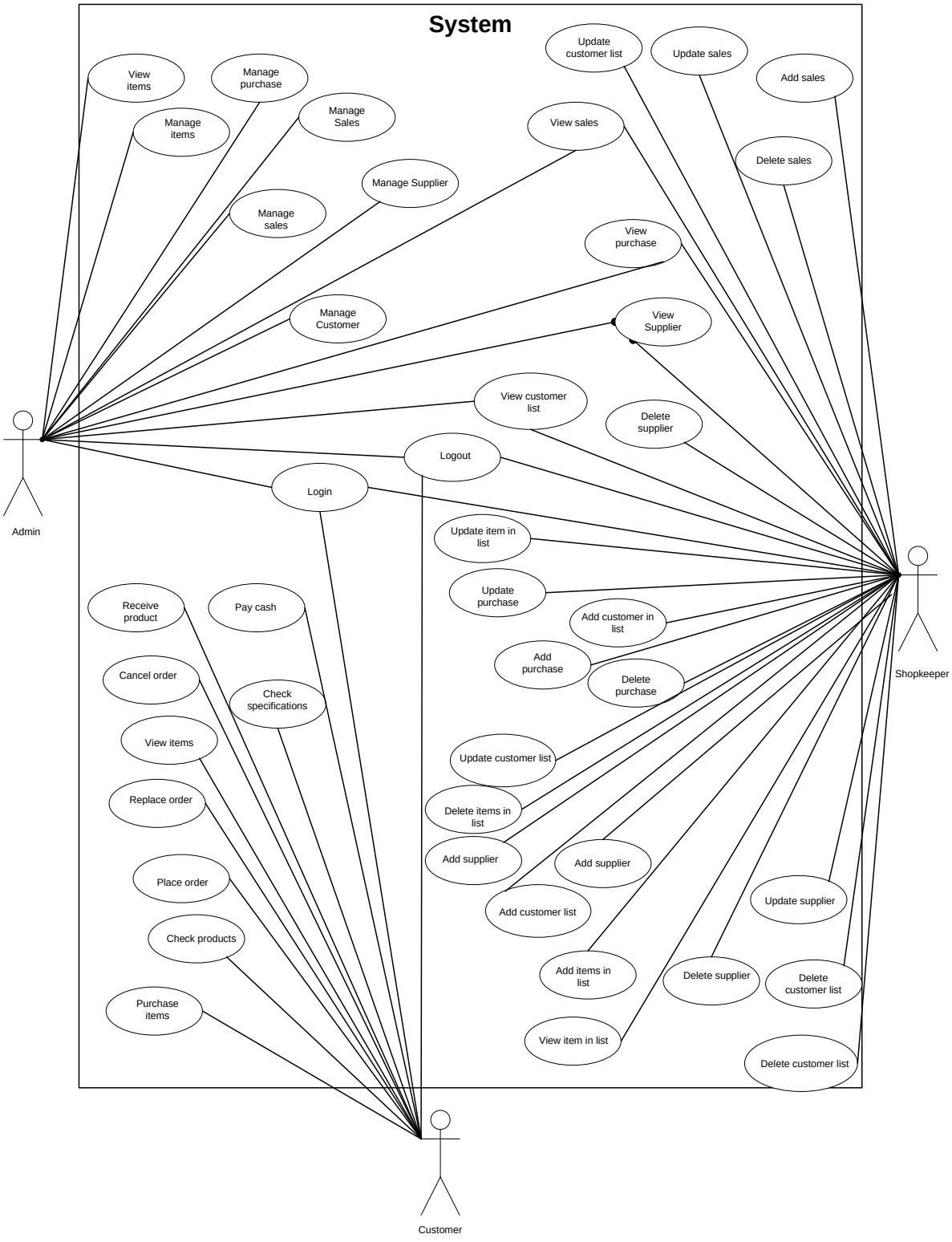
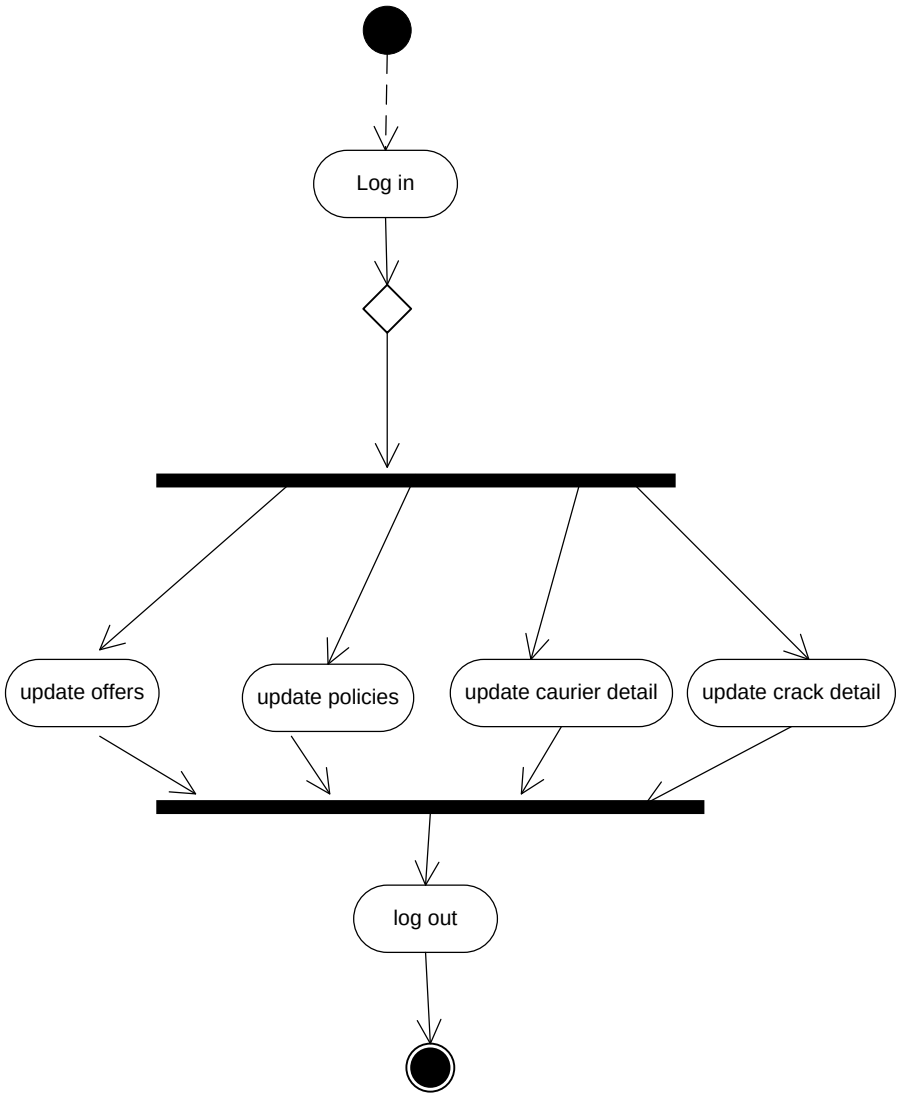


Figure 3 Use Case Diagram

4.3.3 State Dynamics:

4.3.4 Activity diagram:



4.3.5 Package Diagram:

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Package Diagram

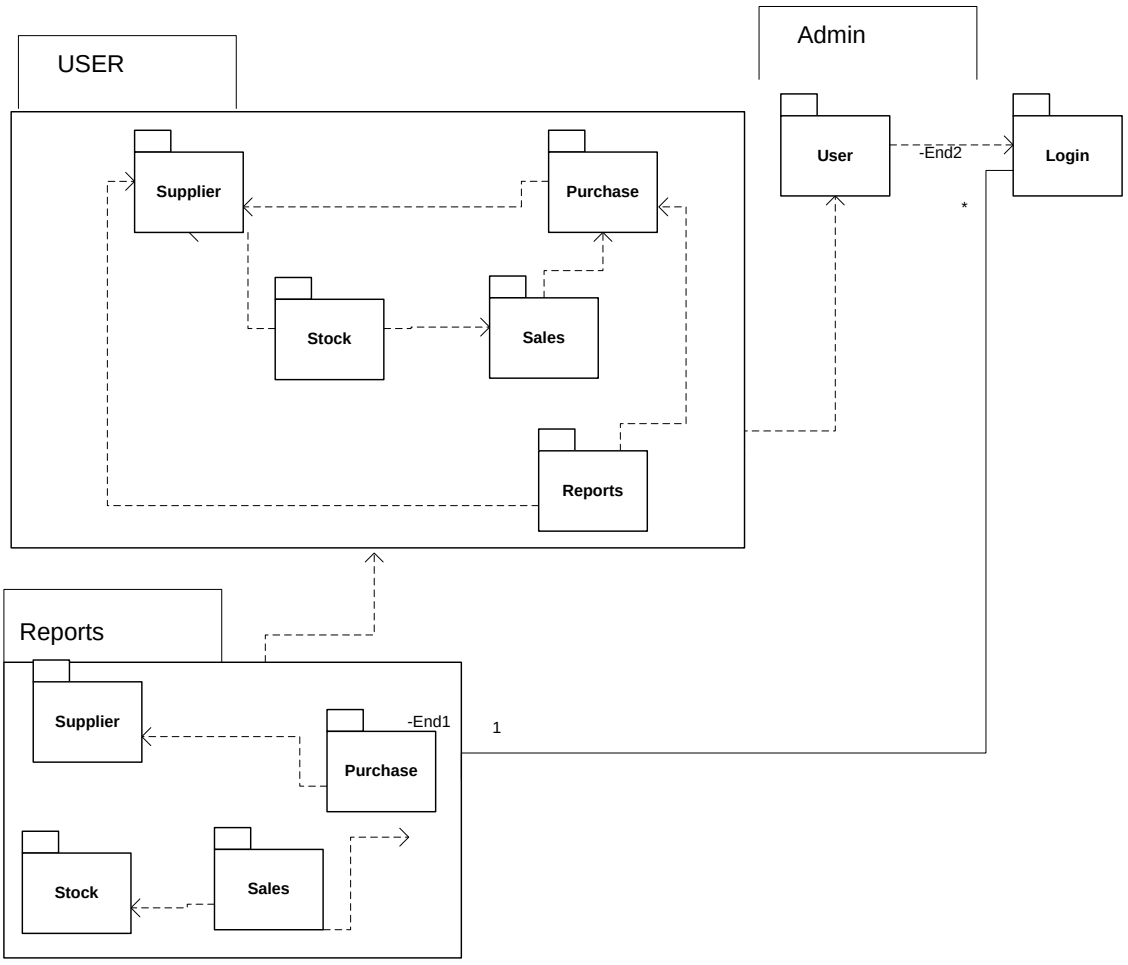
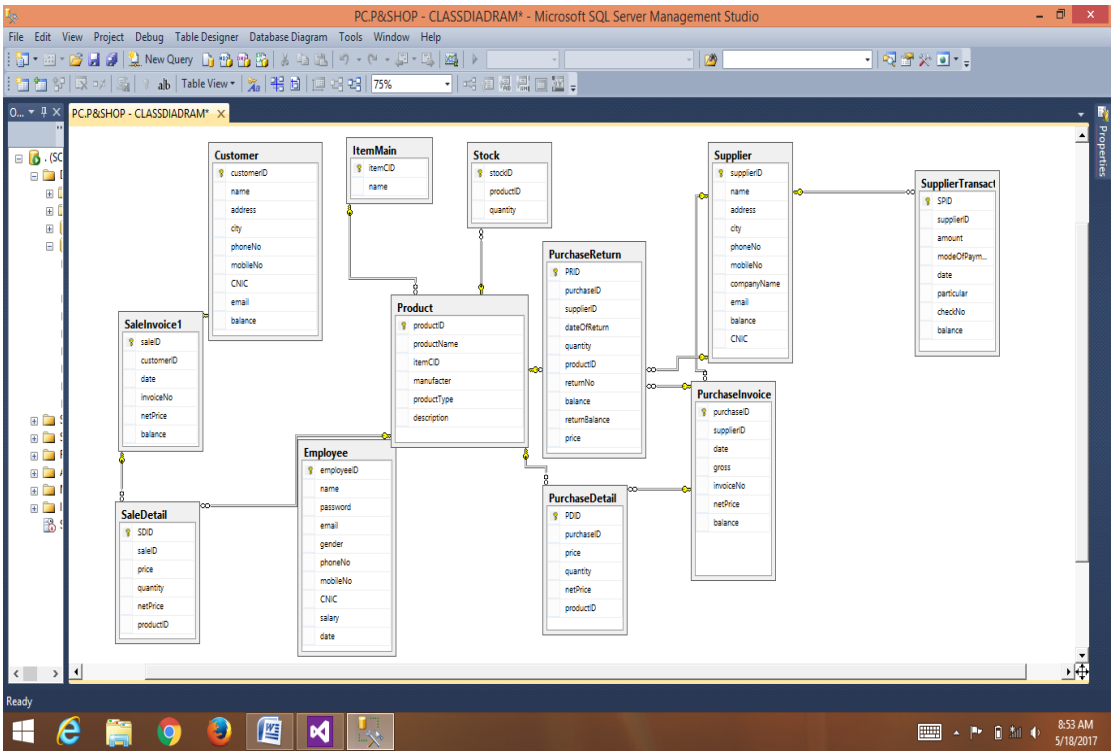


Figure 4 Package Diagram

4.3.6 Database Diagram



5 Implementation

This chapter is focused on how we have implemented our system including the tools and techniques used to build the system, hardware and software platforms, screen shots of our working system and in the end the comparative analysis of our system with the existing systems is elaborated.

Tools and Techniques

The following software/tools were used to develop the product

- **Database:** SQL Server 2014.
- **Application:** C#
- **Tool:** Visual Studio 2012 ,MS Visio, MS Word
- **Libraries:** Gantt chart, Project Management.

Hardware Platform

- Operating System: Window 7, Window 8, Window 8.1, Window 10.
- Processor: Core i5
- RAM: 4 GB
- Hard Drive: 100 GB or more

Software Platform:

The following software/tools will be used to connect and develop the product

- **Database:** SQL Server 2008.
- **Application:** C#
- **Tool:** Visual Studio 2010

5.1 Development Stages:

Following were the discrete phases we have experienced incrementally to realize our product in the given time:

5.1.1 Creating Interface:

We started the project by gathering requirements. After requirements Specification we create ainteractive and user friendly interface. The interface is simple, helpful and easy to use for all type of users who use this product.

5.1.2 Implements Modules:

The next step followed was to implement all modules separately.

5.1.3 Testing:

As we already described, some of the modules were critically depending on other modules and could not be unit-tested without communicating to them properly. So we test each module.

5.1.4 System Integration

The next step followed was to integrate the all modules in the form of one project So, that we use this product.

5.2 Key Components

Following are the key components that need special attention from developer's viewpoint. We are not intending to present the code in this discussion, rather the hardware and software components are explained using state-charts and pseudo-code, and are critically discussed. The importance of keycomponents with their implementation is elaborated. Moreover, we explain the approaches taken, along with their advantages and/or limitations.

5.2.1 Interface:

We have implemented the web based motorbike system in which one of the important component is creating interactive interface. The created interface should be simple,easy,flexible and helpful for all types of users who use this product.

5.2.2 Graphics and Design:

The second most important component is uses of graphics, shapes and selection of colour combination. Colour can be a powerful tool to improve user interfaces, but its inappropriate use can severely reduce the performance of the systems we build (Hussain et al. 2020c).

5.3 User Interface

User Interface is an extremely important consideration for any project that requires human-machine interaction. However, this project doesn't require human machine interaction and therefore the product runs solely in the background without any user input. Besides this fact, we have introduced an option to display the current status, orientation, and power production from the requested solar panels. The user interface is simple and easy to use.It has different characteristics like flexibility,reliability,safety and secure.

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5.3.1 Home:

Figure 5Example Figure User Interface Home

5.3.2 Admin

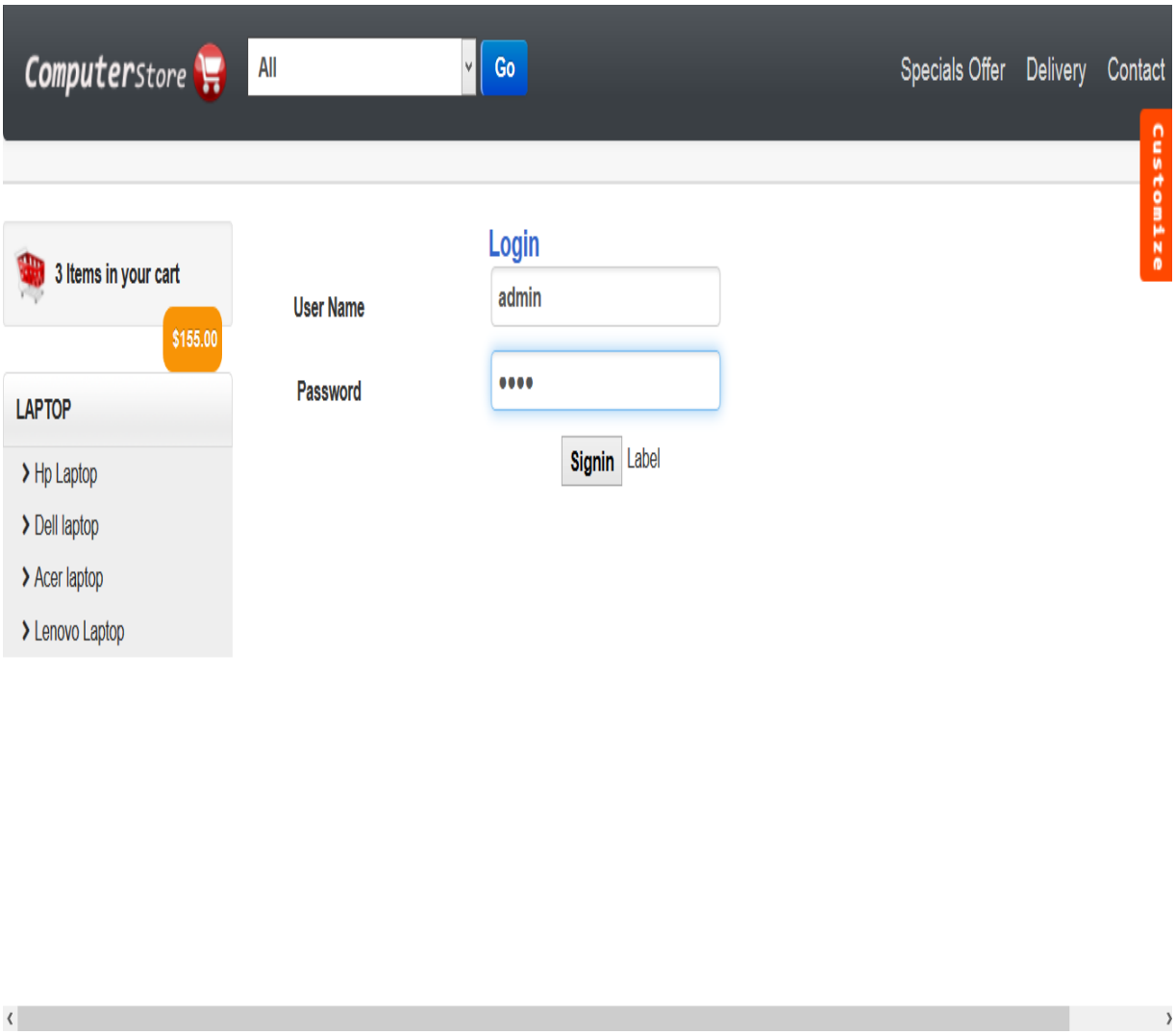


Figure 5-2 Example Figure for User Interface

5.3.3 Supplier Add:

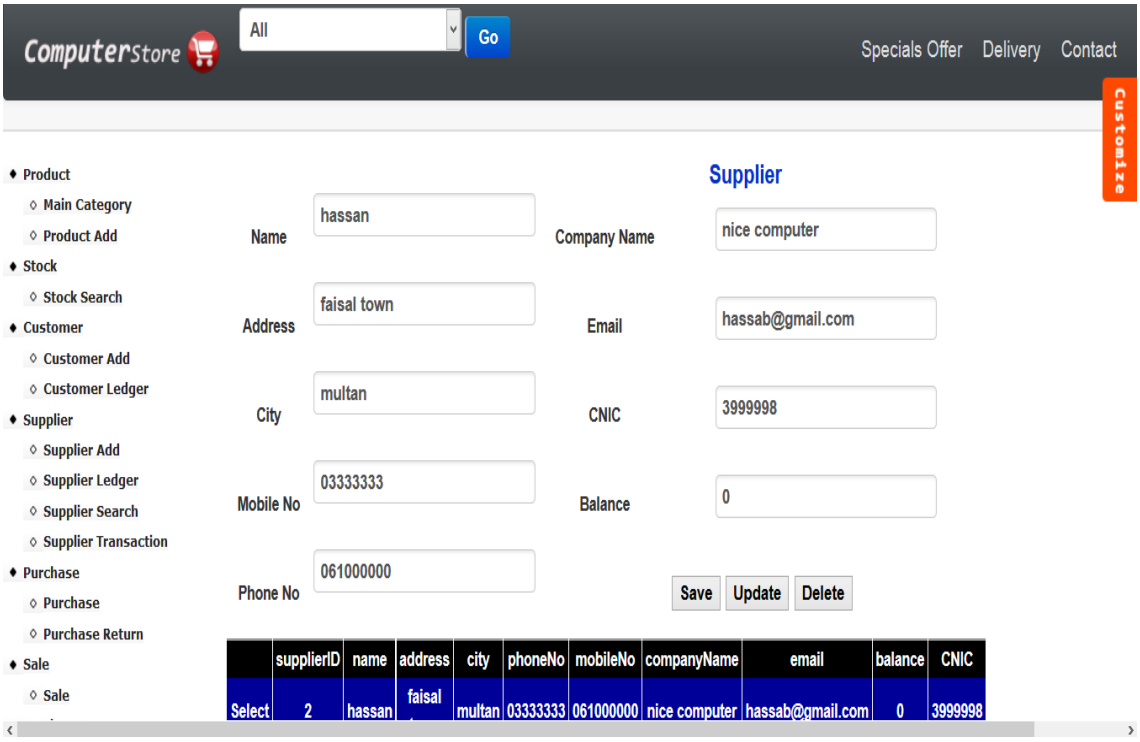
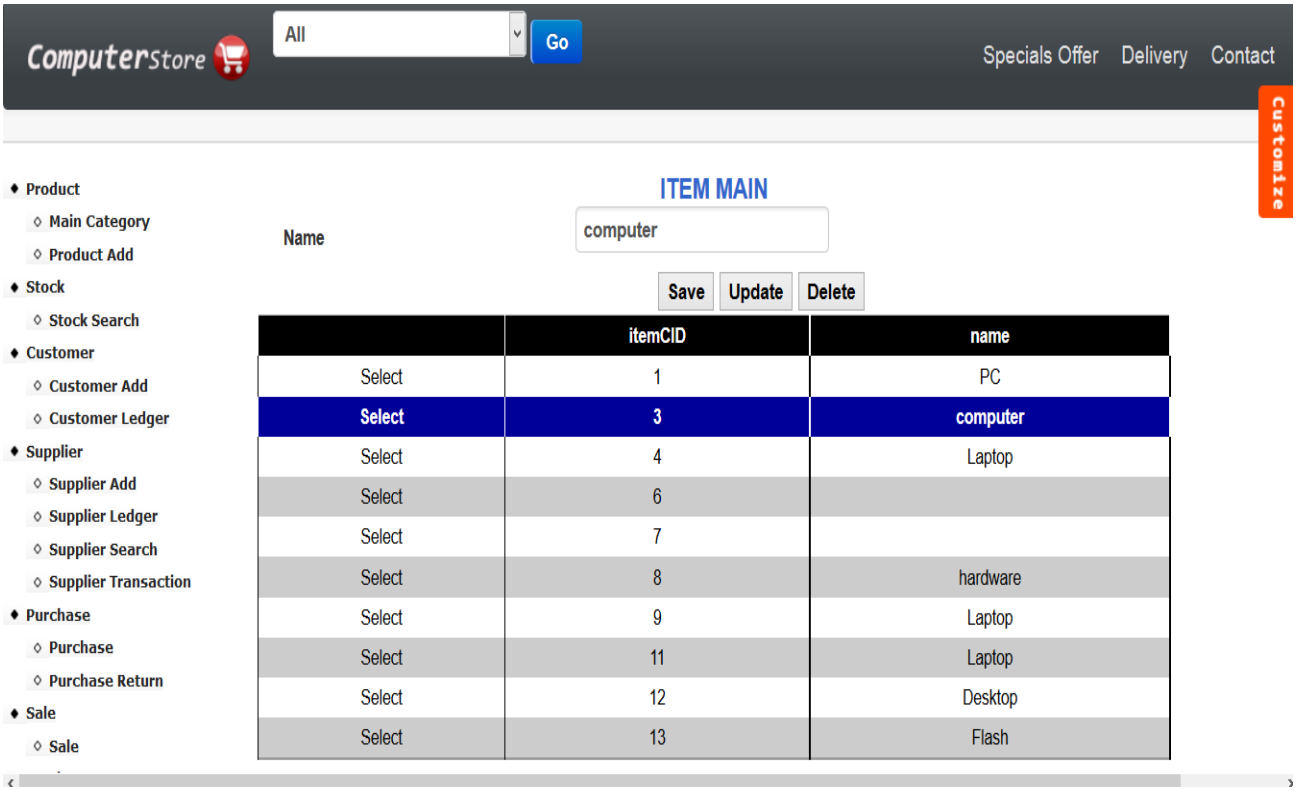


Figure 5-6 Example Figure for User Interface

5.3.4 Item main



6 Evaluation

We have focussed on thorough testing through-out the design and implementation phase. While testing the aim of making this project is achieved. Each module is properly tested and worked as desired.

6.1 Unit Testing

Each module in the application was tested while being developed to confirm its adherence to the related requirements. This testing was done to check either each module is properly work or not.

6.2 Function Testing

After integrating the system, testing was done on aeach function of every module.

6.2.1 Testing Requirements

Test Plan:

A test plan is a document detailing a systematic approach to testing a system such as a machine or software. The plan typically contains a detailed understanding of the eventual workflow.

Testing:

Login Form testing:

Tester Name: Qura-tul-Ain			
Module Name: Login			
Username	Rabia	Password	12345
Expected Result: Invalid username			
Conclusion : system will generate error of invalid username			

Tester Name: Qura-tul-Ain			
Module Name: Login			
UserName	Rabia	Password	12345
Expected Result: Successfully Login to the System			
Conclusion: user is successfully login to the system.			

Supplier form testing:

Tester Name: Rabia	
Module Name: Add Supplier	
Test Method	Empty textbox or Invalid Input format
Expected Result: User input is in incorrect format	
Conclusion: input is not correct so supplier information can't add in database.	

Tester Name: Saima	
Module Name: Add Supplier	
Test Method	Correct format of input
Expected Result: Supplier Successfully Added	
Conclusion: values of suppliers are successfully entered in database.	

Customer Form testing:

Tester Name: Qura-tul-Ain	
Module Name: Add Customer	
Test Method	Empty textbox or Invalid Input format
Expected Result: User input is in incorrect format	
Conclusion: input is not correct so supplier information can't add in database.	

Tester Name: Saima	
Module Name: Add Customer	
Test Method	Correct format of input
Expected Result: Supplier Successfully Added	
Conclusion: values of suppliers are successfully entered in database.	

Purchase Form Testing:

Tester Name: Rabia	
Module Name: Add Purchase Transaction	
Test Method	Empty textbox or Invalid Input format
Expected Result: User input is in incorrect format	
Conclusion: input is not correct so supplier information can't add in database.	

Tester Name: Rabia	
Module Name: Add Purchase	
Test Method	Correct format of input
Expected Result: Purchase Transaction Successfully Added	
Conclusion: Entries of purchase invoice successfully added in database.	

Sale Form Testing:

Tester Name: Saima	
Module Name: Add Sale	
Test Method	Empty textbox or Invalid Input format
Expected Result: User input is in incorrect format	
Conclusion: input is not correct so supplier information can't add in database.	

Tester Name: Saima	
Module Name: Add Sale	
Test Method	Correct format of input
Expected Result: Purchase Transaction Successfully Added	
Conclusion: Entries of purchase invoice successfully added in database.	

Purchase returns Form Testing:

Tester Name: Qura-tul-Ain

Module Name: Add Purchase Return	
Test Method	Empty textbox or Invalid Input format
Expected Result: User input is in incorrect format	
Conclusion: input is not correct so supplier information can't add in database.	

Tester Name:Rabia	
Module Name: Add Purchase Return	
Test Method	Correct format of input
Expected Result: Purchase Transaction Successfully Added	
Conclusion: Entries of purchase invoice successfully added in database.	

Supplier Transaction Form Testing:

Tester Name: Qura-tul-Ain	
Module Name: Add Supplier transaction	
Test Method	Empty textbox or Invalid Input format
Expected Result: User input is in incorrect format	
Conclusion: input is not correct so supplier information can't add in database.	

Tester Name: Saima	
Module Name: Add Supplier Transaction	
Test Method	Correct format of input
Expected Result: Purchase Transaction Successfully Added	
Conclusion: Entries of purchase invoice successfully added in database.	

Customer Form Testing:

Tester Name: Rabia	
Module Name: Add Customer transaction	
Test Method	Empty textbox or Invalid Input format
Expected Result: User input is in incorrect format	
Conclusion: input is not correct so supplier information can't add in database.	

Tester Name: Saima	
Module Name: Add Customer Transaction	
Test Method	Correct format of input
Expected Result: Purchase Transaction Successfully Added	
Conclusion: Entries of purchase invoice successfully added in database.	

6.3 Results

After thorough testing of system, we proceeded for investigation of our implemented techniques for proper working.

7 Conclusions& Future Work

Conclusion:

Computer software contributes with the existing solution in many ways. One of the major contribution is to combine both project management and collaboration tools on a single platform unlike existing separate project management and collaboration solutions, where the project manager can easily manage his project using the statistical update of his/her project and easily collaborate in synchronous or asynchronous manner with his/her team members. Another main contribution is to make the solution web-based so that the geographically distributed members of the team could use it easily without installing any heavy software's on their system; they need just an internet connection and any of the available browsers to be connected to the system.

7.1 Future Work:

Some of the future work that will be done is as follows:

- Project could be more automated, i.e. the works which are done manually now could be automated in future e.g. the percentage completion of the project should made automatic updateable on the basis of completed tasks of that project.
- The work of any specialist should be electronically approved and on the basis of that status of that task should be shifted to complete automatically.
- Our project is focused on software projects only; it could be enhanced and should have the capacity to handle all kinds of projects.

- Our white board feature only can handle two users at a time, in future this could be made to handle more than 10 users at a time or even more.
- Our project has asynchronous type of collaboration i.e. e-mail, SMS notification, in future synchronous type of collaboration could be added like video and voice chat to the system.
- We have just given two type of charts in our system i.e. Gantt chart and Pie chart. In future more type of charts could be added to show the statistics of the project in enhanced form.
- In future different type of reports could be added to enhance decision making of the project manager.
- Document management could be enhanced in future so that the annotation could be seen in the edited document versions.

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Appendix A: Project Timeline

DATE	

PROJECT ID		TOTAL NUMBER OF WEEKS IN PLAN	

TITLE	Web Based Motorbike System
