

**18CSC206J - SOFTWARE ENGINEERING AND PROJECT  
MANAGEMENT**

**LAB REPORT**

*Submitted by*

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*Under the Guidance of*

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Associate Professor, Department of Networking and Communications

*In partial satisfaction of the requirements for the degree of*

**BACHELOR OF TECHNOLOGY  
in  
COMPUTER SCIENCE ENGINEERING**

**with specialization in Information Technology**



**SCHOOL OF COMPUTING  
COLLEGE OF ENGINEERING AND TECHNOLOGY  
SRM INSTITUTE OF SCIENCE AND TECHNOLOGY  
KATTANKULATHUR - 603203**

**JUNE 2022**



## SRM INSTITUTION OF SCIENCE AND TECHNOLOGY KATTANKULATHUR-603203

### BONAFIDE CERTIFICATE

Certified that this lab report titled "**Computer Shop Management System**" is the bonafide work done by Saurabh Raj (RA2011031010107) who carried out the lab exercises under my supervision. Certified further, that to the best of my knowledge the work reported herein does not form part of any other work.

#### SIGNATURE

Dr. L.N.B. Srinivas  
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Department of Networking and  
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Dr. Annapurani K.  
**HOD of Dept. NWC**

## **ABSTRACT**

The Computer Shop System is designed & developed for a computer shop to manage their records of selling and purchasing of the computer parts from the dealers and sell them to the customers. This system make the work of the computer shopkeepers easy as it keep all the records of the computer product and also keep the records of the product that is sold to the customers. This system first check the availability of the computer parts and their quantity then enter the record to the record table after deducting number of the computer parts from the quantity and then print the invoice after adding all the discounts and VAT% and save the record for future use if needed. It also print the reports in a tabular form as well as according to the search of a particular computer product available at that time ,if product is less than it provide the facility to modify the product by adding more.

It automates the system records, their selling maintenance, balance evaluation, due to calculation other functions. In other words you can say it a complete computer shop management system. In this project we can easily maintain systems sales details. We can see the systems details before selling the particular items.

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## LIST OF ABBREVIATIONS

### **Introduction**

Computer-shop management System is a project which assist in keeping the Record of whatever the sales from shop (whole seller), also it keep track of remaining balance which due after selling the product. Through this project we maintain the discount given on particular products along with complete information related to that product.

Computer-shop management System is software for store billing management. Sell hardware systems components and accessories (keep track of sold configurations, create system configuration, sell accessories and computer components, supplying company's administration, and many more...). Computer-shop management System is a windows based billing software designed for uses in computer stores.

### **Objective**

The objective of my project to provides management facility to computer shop. We have given many facilities for users in this project.

1. Welcome screen
2. Login screen
3. Main form
4. Add Computer System parts
5. Modify Computer System parts
6. Update Computer System parts
7. Delete Computer System parts
8. Report of computer part
9. Report of sold computer parts invoice
10. Report of a particular computer parts

### **Purpose**

It is the project about Computer-shop management System. It automates the Systems records, their Selling and Maintenance, Balance evaluation, due to calculation other functions. In other words you can say it a complete computer-shop management System.

In this project we can easily maintain systems sales details. We can see the Systems details before selling the particular items & view for our requirement- satisfying item detail

### **Project Scope**

The scope of project '**Computer-shop management system**' is to Develop C++ based software to support for daily sale, receipt & Balance of products and maintain the all information of System related items.

This software will be very useful for the small Computer Shop as well as the customer. It will perform as the required task of Automation of product by itself in a systematic way.

It will also save lots of time, as system will perform all tasks in quick time profiting customer and shop owner as well, so it will prove very economical in every respect.



## Department of Networking and Communications

**SRM IST, Kattankulathur – 603 203**

**Course Code: 18CSC206J**

**Course Name: Software Engineering and Project Management**

<b>Experiment No</b>	1
<b>Title of Experiment</b>	To identify the Software Project, Create Business Case, Arrive at a Problem Statement
<b>Name of the candidate</b>	Saurabh Raj
<b>Team Members</b>	Saurabh Raj, Chitram Sujith
<b>Register Number</b>	RA2011031010107
<b>Date of Experiment</b>	21/3/2022

### Mark Split Up

<b>S.No</b>	<b>Description</b>	<b>Maximum Mark</b>	<b>Mark Obtained</b>
1	Exercise	5	
2	Viva	5	
<b>Total</b>		<b>10</b>	

**Staff Signature with date**

## **Aim**

To Frame a project team, analyze and identify a Software project. To create a business case and Arrive at a Problem Statement for the <title of the project>

## **Team Members:**

S. No	Register No	Name	Role
1	<b>RA2011031010107</b>	<b>Saurabh Raj</b>	<b>Lead/Rep</b>
2	<b>RA2011031010119</b>	<b>Chitram Sujith</b>	<b>Member</b>
3			<b>Member</b>

## **Project Title: Computer Shop Management System**

### **Project Description**

This project introduces Computer Shop Billing System. It explains how transaction is being done in Computer Shop. The step by step procedure is explained. This project is developed in c ++ language.

### **Business Case**

<Incorporate the Business Case template>

### **Result**

Thus, the project team formed, the project is described, the business case was prepared and the problem statement was arrived.

# ONE PAGE BUSINESS CASE TEMPLATE

DATE	31/03/2022
SUBMITTED BY	Saurabh Raj, Chitram Sujith
TITLE / ROLE	Computer Shop Management

LOGO

## THE PROJECT

In bullet points, describe the problem this project aims to solve or the opportunity it aims to develop.

This project introduces Computer Shop Billing System.  
It explains how transaction is being done in computer shop.  
It makes transaction and management of products easier.

## THE HISTORY

In bullet points, describe the current situation.

In current, still there are many shop keepers who does handwritten work which make things complicated.  
It takes lot of time to stand in queues and then making a hand-written bill.  
Using this project, we can make bills in very less time.  
This projects can be used to make management and transactions easier.

## LIMITATIONS

List what could prevent the success of the project, such as the need for expensive equipment, bad weather, lack of special training, etc.

This project can only be easier to handle for English speaking or understand shopkeepers.  
As the software will work and understand only English.  
Lack of training can also be one prevention for its success. So, they must know to use it.

## APPROACH

List what is needed to complete the project.

A better project planning and management.  
Good coding skills is required in c/c++ language.  
One should also have good knowledge of data structures.  
A good team and consistency towards project.

## BENEFITS

In bullet points, list the benefits that this project will bring to the organization.

Data management initially had to maintain a lot of ledgers and a lot of paper work to be done but now using software product on this organisation has made their work faster and easier. Now only this software has to be loaded on computer and work can be done. This prevents lot of time and money.



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603 203**

**Course Code: 18CSC206J**

**Course Name: Software Engineering and Project Management**

<b>Experiment No</b>	2
<b>Title of Experiment</b>	Identification of Process Methodology and Stakeholder Description
<b>Name of the candidate</b>	Saurabh Raj
<b>Team Members</b>	Saurabh Raj, Chitram Sujith
<b>Register Number</b>	RA2011031010107
<b>Date of Experiment</b>	20/04/2022

**Mark Split Up**

<b>S.N o</b>	<b>Description</b>	<b>Maximum Mark</b>	<b>Mark Obtained</b>
1	Exercise	5	
2	Viva	5	
	<b>Total</b>	<b>10</b>	

**Staff Signature with date**

## Aim

To identify the appropriate Process Model for the project and prepare Stakeholder and User Description.

## Team Members:

Sl No	Register No	Name	Role
1	RA2011031010107	Saurabh Raj	Rep/Member
2	RA2011031010119	Chitram Sujith	Member
3			Member

**Project Title:** Computer Shop Management System

## Selection of Methodology

- < Summarize their understanding of “Waterfall” or “Agile” Methodology>

### Waterfall Methodology

**Description:** The waterfall methodology is a project management approach that emphasizes a linear progression from beginning to end of a project. This methodology, often used by engineers, is front-loaded to rely on careful planning, detailed documentation, and consecutive execution.

The Waterfall Model was the first Process Model to be introduced. It is also referred to as a linear-sequential life cycle model. It is very simple to understand and use. In a waterfall model, each phase must be completed before the next phase can begin and there is no overlapping in the phases.

The sequential phases in Waterfall model are –

- Requirement Gathering and analysis
- System Design
- Implementation
- Integration and Testing
- Deployment of system
- Maintenance

**Some of the major advantages of the Waterfall Model are as follows –**

- Simple and easy to understand and use.
- Easy to manage due to the rigidity of the model.
- Phases are processed and completed one at a time.
- Clearly defined stages.
- Easy to arrange tasks.
- Process and results are well documented.

Incorporate information to below table regarding stakeholders of the project [Make use of below examples]

StakeholderName	Activity/Area /Phase	Interest	Influence	Priority (High/ Medium/ Low)
Head	System app	High	High	1
Sponsor	Increase sells	High	High	2
Project Manager	Accountable for Project success and failures	High	Low	2
Resource Manager	Resource planning	Low	Low	3
Users	Feedback	Low	High	4

## **Result**

Thus the Project Methodology was identified and the stakeholders were described.



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<b>Experiment No</b>	3
<b>Title of Experiment</b>	System, Functional and Non-Functional Requirements of the Project
<b>Name of the candidate</b>	Saurabh Raj
<b>Team Members</b>	Saurabh Raj, Chitram Sujith
<b>Register Number</b>	RA2011031010107
<b>Date of Experiment</b>	20/04/2022

### Mark Split Up

<b>S.No</b>	<b>Description</b>	<b>Maximum Mark</b>	<b>Mark Obtained</b>
1	Exercise	5	
2	Viva	5	
<b>Total</b>		<b>10</b>	

**Staff Signature with date**

## Aim

To identify the system, functional and non-functional requirements for the project.

## Team Members:

S No	Register No	Name	Role
1	RA2011031010107	Saurabh Raj	Rep/Member
2	RA2011031010119	Chitram Sujith	Member
3			Member

## Project Title: Computer Shop Management System

### System Requirements

Technology: C++

Hardware: Keyboard, Monitor, Cpu

Software: This projects using the software tools like Turbo C

Report: Microsoft Word 2007

### Functional Requirements

- The Sales system should allow users to record customers sales
- The background colour for all windows in the application will be blue
- Only Managerial level employees have the right to view revenue data
- The software system should be integrated with banking API

## **Non-Functional Requirements**

- User friendly
- User must learn to use it
- Time to time upgradation
- Low cost maintenance

## **Result**

Thus the requirements were identified and accordingly described.



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**Course Code: 18CSC206J**

**Course Name: Software Engineering and Project Management**

<b>Experiment No</b>	4
<b>Title of Experiment</b>	Prepare Project Plan based on scope, Calculate Project effort based on resources and Job roles and responsibilities
<b>Name of the candidate</b>	Saurabh Raj
<b>Team Members</b>	Chitram Sujith
<b>Register Number</b>	RA2011031010107
<b>Date of Experiment</b>	5/5/2022

### Mark Split Up

<b>S.No</b>	<b>Description</b>	<b>Maximum Mark</b>	<b>Mark Obtained</b>
1	Exercise	5	
2	Viva	5	
<b>Total</b>		<b>10</b>	

**Staff Signature with date**

## Aim

To Prepare Project Plan based on scope, Calculate Project effort based on resources,

Find Job roles and responsibilities

## Team Members:

Sl No	Register No	Name	Role
1	RA2011031010107	Saurabh Raj	Lead
2	RA2011031010119	Chitram Sujith	Member
3			Member

## Requirements

### 1. Project Management Plan

Describe the key issues driving the project. [Min 3 Focus Areas]

Focus Area	Details				
Cost Management	<b>Estimate Effort</b> More effort to be applied on learning required technology rather than to implement them. A good foundation is very important to build a good application. <b>Assign Team</b> Teams were assigned with appropriate tasks. <b>Budget Control</b> Flow of budget was controlled mutually.				
Quality Management	<b>Quality Assurance:</b> Quality assurance will be managed including governance, roles and responsibilities, tools and techniques and reporting by appropriately <b>Quality Control:</b> Customer feedback and reviews to be constantly taken in consideration for proper quality control of the product				
Resource Management	<b>People:</b> Small group of highly dedicated and motivated people needed to carry out the task effectively <b>Finance:</b> Minimal amount required for purchase of software, publishing the app in play store which would be managed from internal funding				
Stakeholder	Stakeholder Name	Activity/ Area / Phase	Interest	Influence	Priority (High/ Medium / Low)
	General User	For Money Management Reminders	High	High	3
	Developer	Coding the app	High	Low	2

	Maintainer	Add new features and fixing bugs	High	Low	1	
	Investor	To promote the app	Low	Low	4	
Risk Management	Risk factors to be taken into consideration and common mitigation to be taken for risk management					

## 2. Estimation

### 2.1. Effort and Cost Estimation

Activity Description	Sub-Task	Sub-Task Description	Effort (in hours)	Cost in INR
Design the user screen	E1R1A1T1	Confirm the user requirements (acceptance criteria)	3	3000
	E1R1A1T2	Develop the homescreen	5	5000
	E1R1A1T3	Develop sub screens	12	12000
Data and State Management	E1R1A1T4	Integrate data from appto local storage	5	5000
Testing and Finalizing	E1R1A1T5	Test the product	10	10000

Effort (hr)	Cost (INR)
35	35000

### 2.2. Infrastructure/Resource Cost [CapEx]

< One Time Infra requirements >

Infrastructure Requirement	Qty	Cost per qty	Cost per item
Laptop for development	2	100,000	200,000

## 2.3 Maintenance and Support Cost [OpEx]

Category	Details	Qty	Cost perqty per annum	Cost per item
People	Developer, Tester, Manager	2	N/A	N/A
License	Operating System IDE Android Studio	1 product each * 2	5000 approx.	10,000

## 3. Project Team Formation

### 3.1. Identification Team members

Name	Role	Responsibilities
Saurabh Raj	Key Business User (Product Owner)	Provide clear business and user requirements
	Project Manager	Manage the project
Chitram Sujith	Technical Lead	Design the end-to-end architecture
	Tester	Define Test Cases and Perform Testing
Both	UX Designer	Design the user experience
	Frontend Developer	Develop user interface

### 3.2. Responsibility Assignment Matrix

RACI Matrix	Team Members			
Activity	Saurabh Raj(BA)	Chitram Sujith (Developer)	Saurabh Raj (Project Manager)	Key Business User
User Requirement Documentation	A	C/I	I	R
Testing and Deploying	R	R	I	
Advertisement	C	I	A/R	
Bug fixes	C	R	C	
Update and Upgrade	A	R	C/I	

A	Accountable
R	Responsible
C	Consult
I	Inform

**Result:**

Thus, the Project Plan was documented successfully.



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**Course Code: 18CSC206J**

**Course Name: Software Engineering and Project Management**

<b>Experiment No</b>	5
<b>Title of Experiment</b>	Prepare Work breakdown structure, Timeline chart, Risk identification table
<b>Name of the candidate</b>	Saurabh Raj
<b>Team Members</b>	Saurabh Raj, Chitram Sujith
<b>Register Number</b>	RA2011031010107
<b>Date of Experiment</b>	9/5/2022

### Mark Split Up

<b>S.N o</b>	<b>Description</b>	<b>Maximum Mark</b>	<b>Mark Obtained</b>
1	Exercise	5	
2	Viva	5	
<b>Total</b>		<b>10</b>	

**Staff Signature with date**

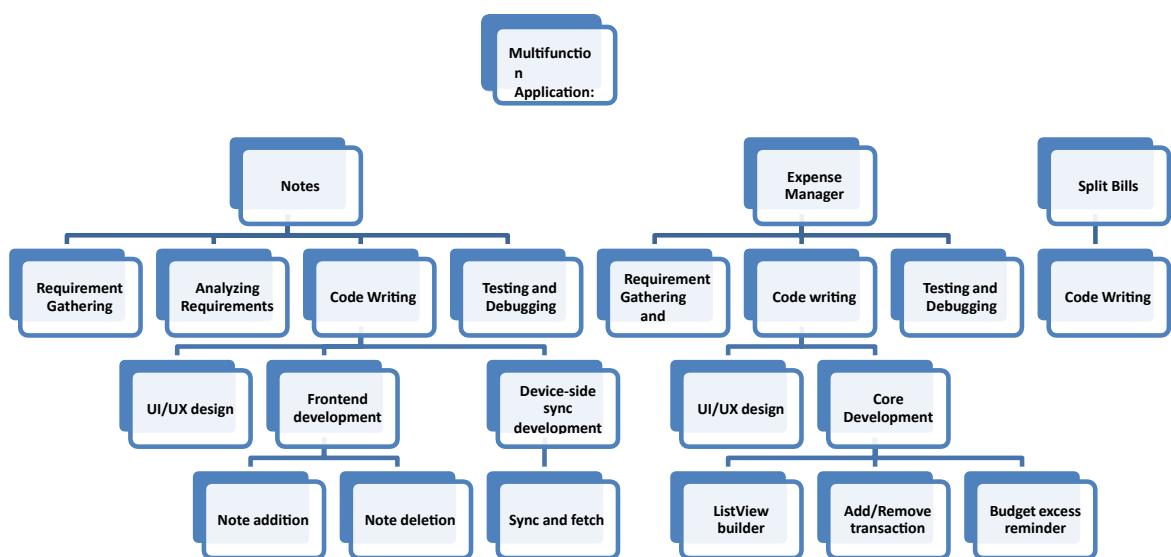
## Aim

To Prepare Work breakdown structure, Timeline chart and Risk identification table

## Team Members:

Sl No	Register No	Name	Role
1	RA2011031010107	Saurabh Raj	Rep
2	RA2011031010119	Chitram Sujith	Member
3			

## WBS – Examples



## TIMELINE – GANTT CHART

Week/Events	1	2	3	4	5	6	7	8	9	10
Identify Requirements										
Kick off Meeting										
High level Design										
Design Check in										
Staging Environment										
Production Environment										
QA environment										
Testing										
Deployment										

## RISK ANALYSIS – SWOT & RMMM

### Strengths

- Dedicated Skillful Staff
- Knowledge of the software
- Low Budget requirement
- Online links for leaning
- Well Knowledge of Money management system, notes applications.

### Weaknesses

- Insufficient staff
- Insufficient Time
- Lack of communication and understanding
- Low coding expertise

### Opportunities

- Increase our skill set
- Boost your software management capabilities
- Make a well-functioning model of a Money management system and note and remainder taking system to make life easier and efficient for the users.
- Staff Training

### Threats

- Competition between the Competitors
- Quality of the Product

Response	Strategy	Examples
Reduction	Steps taken to Reduce Risks. It may be applying proper formulae, hiring an expert to help out with some specific problem,	Cross check the formulae, Hire an expert to figure out problems
Sharing	Involves partnering with other individuals to share responsibility for the risky activities.	At least a team of 3 is optimum to share the risk, in order for it being less,
Mitigate	Strategy used by team members to reduce the probability of risk occurring.	Check the codes, test the app for every critical test case.
Avoid	To develop an alternative strategy that has a higher probability of success but usually at a higher cost associated with accomplishing a project task.	Keep the space complexity low, keep the time complexity low, switch to less complex methods

Risk Event	Probability
App consuming more space than each sub-app individually	80%
Unable to complete the app in certain time due to changes consistently being suggested by teammates.	100%
Extra time being put in for adding an extra feature about which the team doesn't have prior knowledge about	60%
App may not be able to store some special characters in notes due to lack of coding.	50%
App may not be able to split budget properly due to "negative or imaginary input".	60%

### Result:

Thus, the work breakdown structure with timeline chart and risk table were formulated successfully.



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**Course Code: 18CSC206J**

**Course Name: Software Engineering and Project Management**

<b>Experiment No</b>	6
<b>Title of Experiment</b>	Design a System Architecture, Use Case and Class Diagram
<b>Name of the candidate</b>	Saurabh Raj
<b>Team Members</b>	Saurabh Raj, Chitram Sujith
<b>Register Number</b>	RA2011031010107
<b>Date of Experiment</b>	16/5/2022

**Mark Split Up**

<b>S.N o</b>	<b>Description</b>	<b>Maximum Mark</b>	<b>Mark Obtained</b>
1	Exercise	5	
2	Viva	5	
	<b>Total</b>	<b>10</b>	

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## Aim

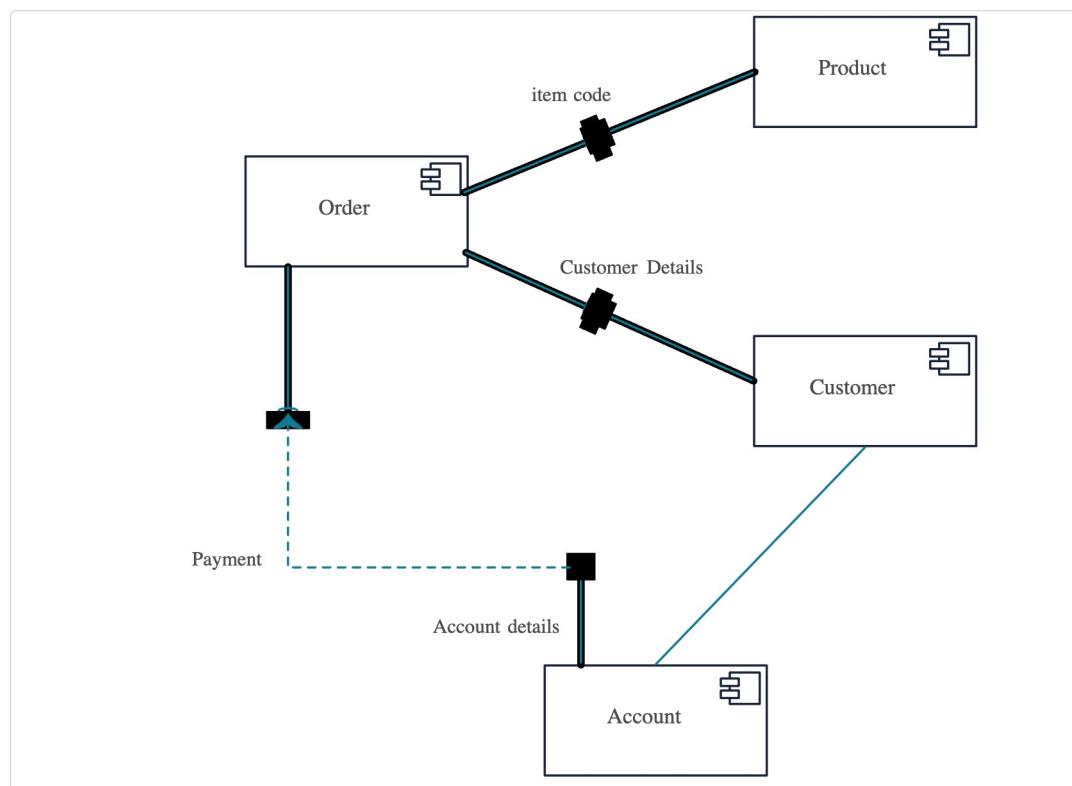
To Design a System Architecture, Use case and Class Diagram

## Team Members:

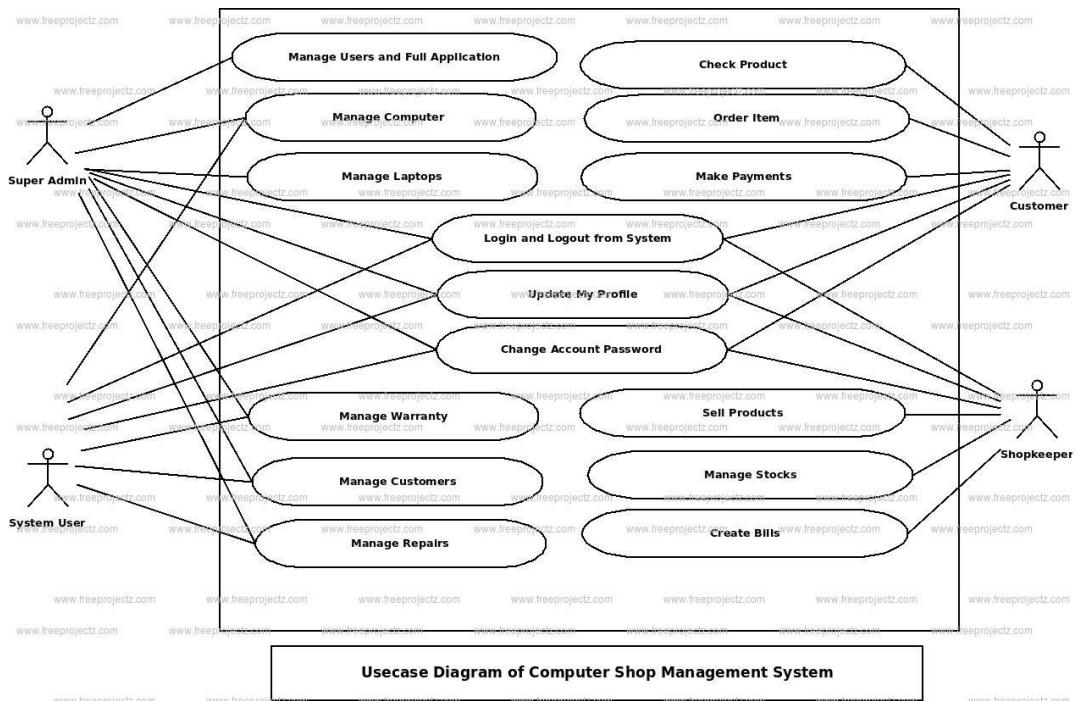
Sl No	Register No	Name	Role
1	RA2011031010107	Saurabh Raj	Rep
2	RA2011031010119	Chitram Sujith	Member
3			Member

## Requirements

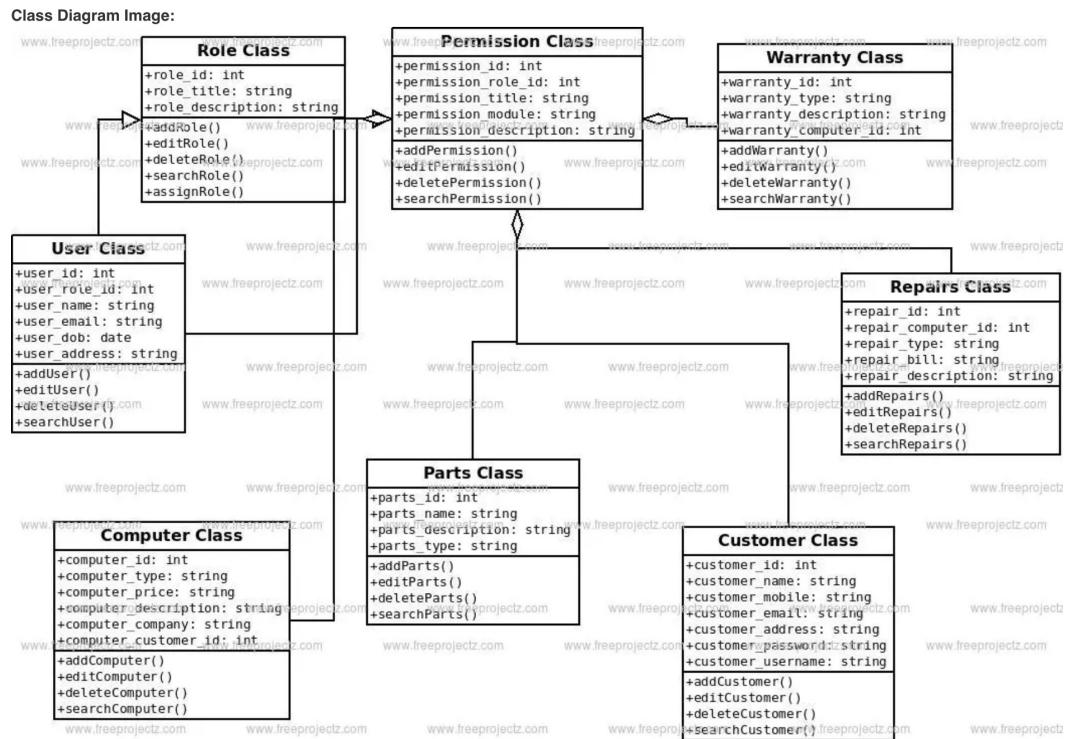
### System Architecture



## Use Case Diagram



## Class Diagram



## Result:

Thus, the system architecture, use case and class diagram created successfully.



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**Course Code: 18CSC206J**

**Course Name: Software Engineering and Project Management**

<b>Experiment No</b>	7
<b>Title of Experiment</b>	Design a Entity relationship diagram
<b>Name of the candidate</b>	Saurabh Raj
<b>Team Members</b>	Saurabh Raj, Chitram Sujith
<b>Register Number</b>	RA2011031010107
<b>Date of Experiment</b>	18/05/2022

### Mark Split Up

<b>S. No</b>	<b>Description</b>	<b>Maximum Mark</b>	<b>Mark Obtained</b>
1	Exercise	5	
2	Viva	5	
<b>Total</b>		<b>10</b>	

**Staff Signature with date**

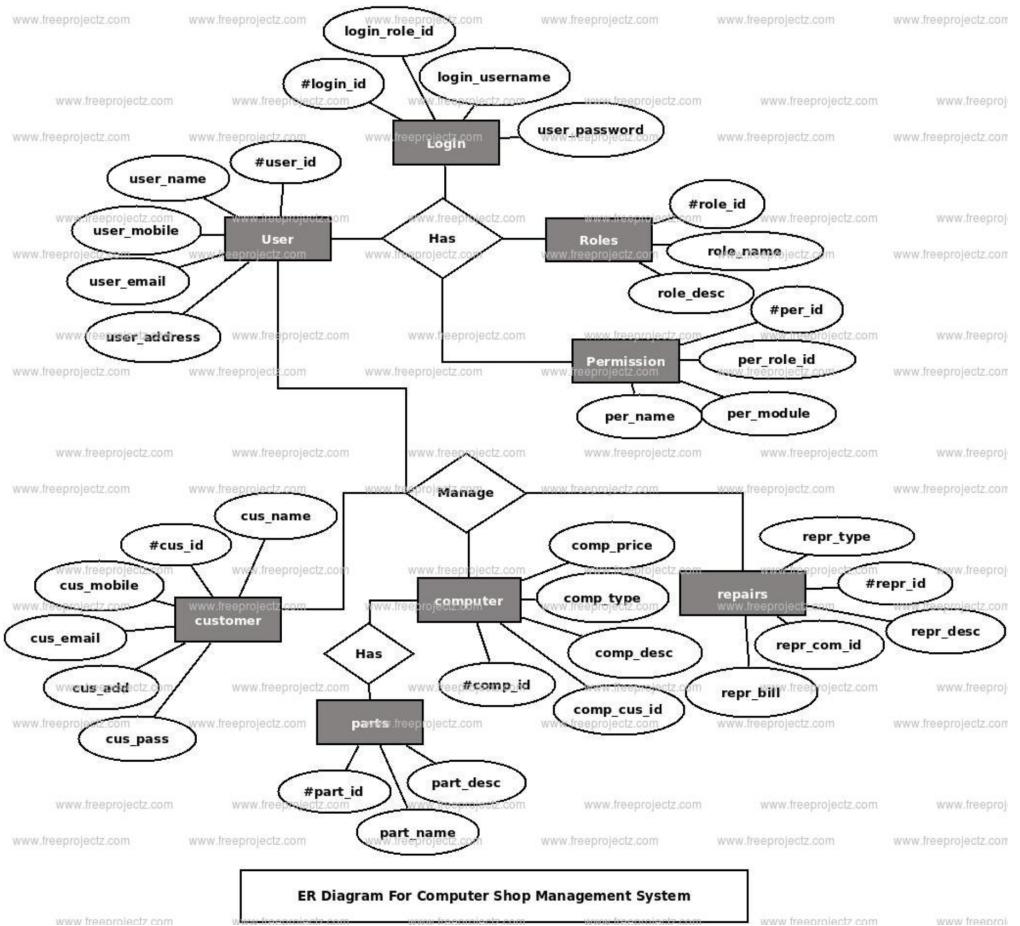
## Aim

To create the Entity Relationship Diagram

### Team Members:

S No	Register No	Name	Role
1	RA2011031010107	Saurabh Raj	Rep
2	RA2011031010119	Chitram Sujith	Member
3			Member

### <ER Diagram >



### Result:

Thus, the entity relationship diagram was created successfully.



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**Course Code: 18CSC206J**

**Course Name: Software Engineering and Project Management**

<b>Experiment No</b>	8
<b>Title of Experiment</b>	Develop a Data Flow Diagram (Process-Up to Level 1)
<b>Name of the candidate</b>	Saurabh Raj
<b>Team Members</b>	Saurabh Raj, Chitram Sujith
<b>Register Number</b>	RA2011031010107
<b>Date of Experiment</b>	3/06/2022

### Mark Split Up

<b>S. No</b>	<b>Description</b>	<b>Maximum Mark</b>	<b>Mark Obtained</b>
1	Exercise	5	
2	Viva	5	
<b>Total</b>		<b>10</b>	

**Staff Signature with date**

## Aim

To develop the data flow diagram up to level 1 for the **Computer Shop Management System.**

## Team Members:

S No	Register No	Name	Role
1	RA2011031010107	Saurabh Raj	Rep
2	RA2011031010119	Chitram Sujith	Member
3			Member

## <DFD>

### Data Flow Diagram

The DFD takes an input-process-output view of a system. That is, data objects flow into the software, are transformed by processing elements, and resultant data objects flow out of the software. Data objects are represented by labeled arrows, and transformations are represented by circles (also called bubbles). The DFD is presented in a hierarchical fashion. That is, the first data flow model (sometimes called a level 0 DFD or context diagram) represents the system as a whole. Subsequent data flow diagrams refine the context diagram, providing increasing detail with each subsequent level.

The data flow diagram enables you to develop models of the information domain and functional domain. As the DFD is refined into greater levels of detail, you perform an implicit functional decomposition of the system. At the same time, the DFD refinement results in a corresponding refinement of data as it moves through the processes that embody the application.

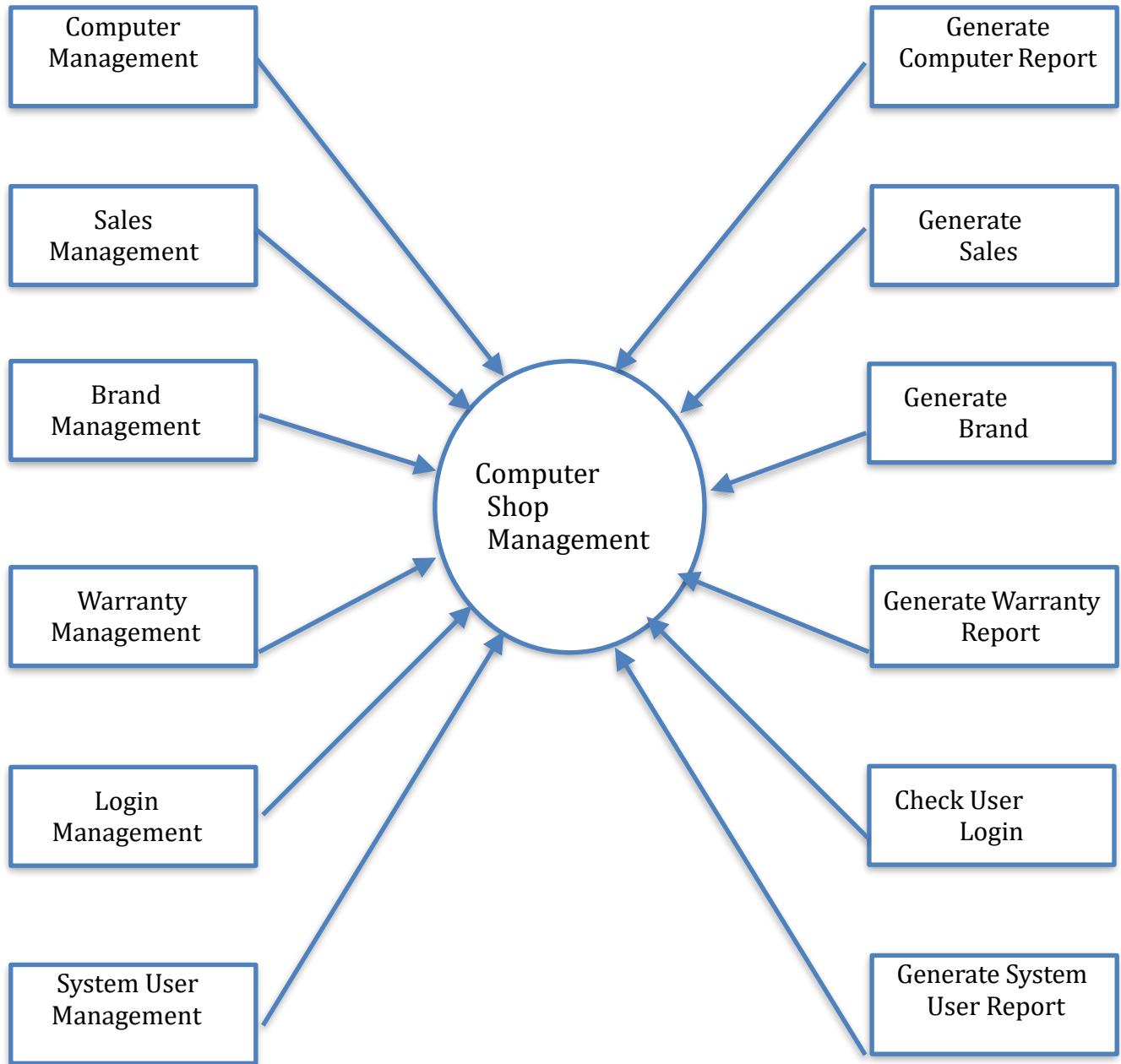
A few simple guidelines can aid immeasurably during the derivation of a data flow diagram:

- (1) Level 0 data flow diagram should depict the software/system as a single bubble;
- (2) Primary input and output should be carefully noted;
- (3) Refinement should begin by isolating candidate processes, data objects, and data stores to be represented at the next level;
- (4) All arrows and bubbles should be labeled with meaningful names;
- (5) Information flow continuity must be maintained from level to level and
- (6) One bubble at a time should be refined. There is a natural tendency to overcomplicate the data flow diagram. This occurs when you attempt to show too much detail too early or represent procedural aspects of the software in lieu of information flow.

## Zero Level DFD-Computer Shop Management System



## First Level DFD-Computer Shop Management System



### Result:

Thus, the data flow diagrams have been created for the Computer shop management system.



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**Course Code: 18CSC206J**

**Course Name: Software Engineering and Project Management**

<b>Experiment No</b>	9
<b>Title of Experiment</b>	Design a Sequence and Collaboration Diagram
<b>Name of the candidate</b>	Saurabh Raj
<b>Team Members</b>	Saurabh Raj, Chitram Sujith
<b>Register Number</b>	RA2011031010107
<b>Date of Experiment</b>	9/06/2022

### Mark Split Up

<b>S. No</b>	<b>Description</b>	<b>Maximum Mark</b>	<b>Mark Obtained</b>
1	Exercise	5	
2	Viva	5	
<b>Total</b>		<b>10</b>	

**Staff Signature with date**

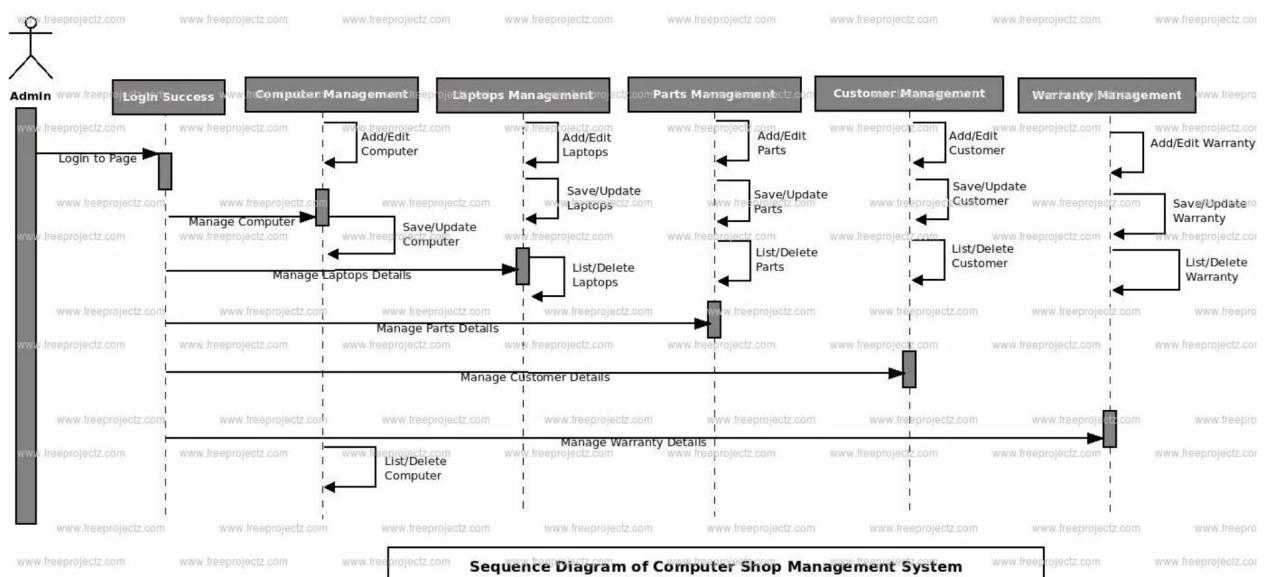
## Aim

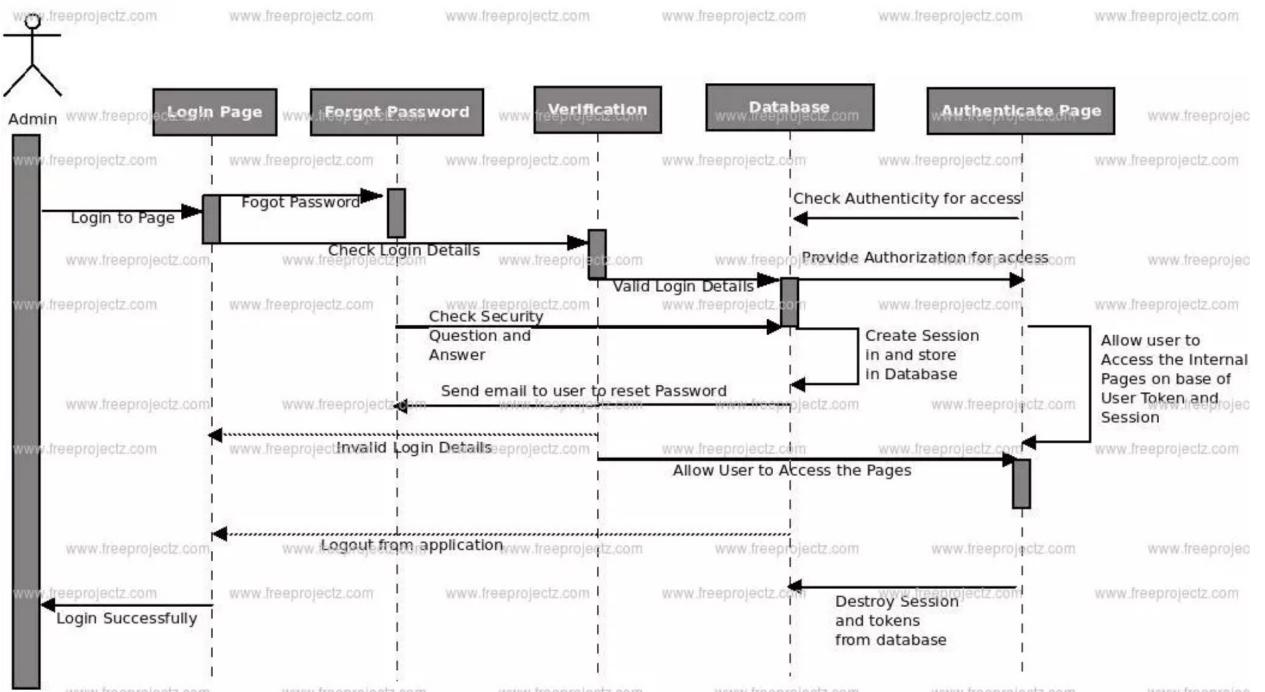
To create the sequence and collaboration diagram for the **Computer Shop Management System.**

### Team Members:

S No	Register No	Name	Role
1	RA2011031010107	Saurabh Raj	Rep/Member
2	RA2011031010119	Chitram Sujith	Member
3			Member

### Sequence and Collaboration Diagram





## Result:

Thus, the sequence and collaboration diagrams were created for the Computer shop management system.



### School of Computing

**SRM IST, Kattankulathur – 603 203**

**Course Code: 18CSC206J**

**Course Name: Software Engineering and Project Management**

<b>Experiment No</b>	10
<b>Title of Experiment</b>	Develop a Testing Framework/User Interface
<b>Name of the candidate</b>	Saurabh Raj
<b>Team Members</b>	Saurabh Raj, Chitram Sujith
<b>Register Number</b>	RA2011031010107
<b>Date of Experiment</b>	11/06/2022

### Mark Split Up

<b>S. No</b>	<b>Description</b>	<b>Maximum Mark</b>	<b>Mark Obtained</b>
1	Exercise	5	
2	Viva	5	
<b>Total</b>		<b>10</b>	

**Staff Signature with date**

**Aim**

To develop the testing framework and/or user interface framework for the Computer Shop Management System.

**Team Members:**

S No	Register No	Name	Role
1	<b>RA2011031010107</b>	<b>Saurabh Raj</b>	<b>Rep/Member</b>
2	<b>RA2011031010119</b>	<b>Chitram Sujith</b>	<b>Member</b>
3			<b>Member</b>

**Executive Summary**

- To design effective test cases for identifying the errors.
- Finding errors or defects which may be created while developing the computer shop manager application.
- To check whether all the calculation required in the Software is correct.
- To be confident about the quality of the product.

**Test Plan**

Duration	Subject	Methodology
2 weeks	Non-Functional Requirements (Usability, Speed)	Manual testing: Acceptance Testing
1 week	Functional Requirements (Adding and removing products, Adding Notes, Adding data)	Manual Testing: Compatibility Testing, Performance Testing, Usability Testing

**Scope of Testing****Functional Requirement Testing:**

- Checking whether user can add or remove products.
- Addition of notes.
- Addition and removing of data.
- Task is easily executed or not.

**Non-Functional Requirement:**

- Check whether software is working as per user inputs.
- Check if the functionalities are timely executed or not.
- Check if the design or UI of the S/w is user friendly.
- Check if the S/w is reliable to use i.e., Bugs or glitches.

**Types of Testing, Methodology, Tools**

Category	Methodology	Tools Required
Functional Requirements	Manual	Word Template, Calculator, Formula
Non-Functional Requirements	Manual	Word Template, UI Design tools, Colour Palettes

**Result:**

Thus, the testing framework/user interface framework has been created for the Computer Shop Management System.



### School of Computing

**SRM IST, Kattankulathur – 603 203**

**Course Code: 18CSC206J**

**Course Name: Software Engineering and Project Management**

<b>Experiment No</b>	11
<b>Title of Experiment</b>	Test Cases
<b>Name of the candidate</b>	Saurabh Raj
<b>Team Members</b>	Saurabh Raj, Chitram Sujith
<b>Register Number</b>	RA2011031010107
<b>Date of Experiment</b>	12/06/2022

### Mark Split Up

<b>S. No</b>	<b>Description</b>	<b>Maximum Mark</b>	<b>Mark Obtained</b>
1	Exercise	5	
2	Viva	5	
<b>Total</b>		<b>10</b>	

**Staff Signature with date**

## Aim

To develop the test cases manual for the Computer shop manager app.

## Team Members:

S No	Register No	Name	Role
1	RA2011031010107	Saurabh Raj	Rep
2	RA2011031010119	Chitram Sujith	Member
3			Member

## Test Case

### Functional Test Cases

Test ID (#)	Test Scenario	Test Case	Execution Steps	Expected Outcome	Actual Outcome	Status	Remarks
1	Verify Amount Entered	Accept only doubles / float in transaction amount	1. User uses add / edit transaction feature 2. Enters the amount(double) in given field 3. Click on add product button	Transaction should be added  User can maintain a ledger of his products sold and also the list of products in shop.			
		Don't accept string/ blob data type	Repeat above steps but use string or other data type instead of double	Error should be prompted			

2	Delete Transaction	Allow transaction to be deleted at user's request	<ol style="list-style-type: none"> <li>1. Select any transaction</li> <li>2. Press on delete button</li> </ol>	Transaction should be removed from the list and total product sold should be updated accordingly			
---	--------------------	---	--	--	--	--	--

### Non-Functional Test Cases

Test ID (#)	Test Scenario	Test Case	Execution Steps	Expected Outcome	Actual Outcome	Status	Remarks
1	Form at the amount	Format entered amount to 2 decimal places	<ol style="list-style-type: none"> <li>1) User enters transaction with amount as any length double</li> <li>2) Press add transaction button</li> </ol>	Amount should be added to list only after formatting it to 2 decimal places for neater UI			
2	The me switch	User should get to choose between dark and light theme	<ol style="list-style-type: none"> <li>1) User presses theme change button</li> </ol>	Dark and light theme should be toggled			

### Result:

Thus, the test case manual has been created for the Computer Shop Manager app.



### School of Computing

**SRM IST, Kattankulathur – 603 203**

**Course Code: 18CSC206J**

**Course Name: Software Engineering and Project Management**

<b>Experiment No</b>	12
<b>Title of Experiment</b>	Manual Test Case Reporting
<b>Name of the candidate</b>	Saurabh Raj
<b>Team Members</b>	Saurabh Raj, Chitram Sujith
<b>Register Number</b>	RA2011031010107
<b>Date of Experiment</b>	16/06/2022

### Mark Split Up

<b>S. No</b>	<b>Description</b>	<b>Maximum Mark</b>	<b>Mark Obtained</b>
1	Exercise	5	
2	Viva	5	
<b>Total</b>		<b>10</b>	

**Staff Signature with date**

## Aim

To prepare the manual test case report for Computer shop management system software.

## Team Members:

S No	Register No	Name	Role
1	RA2011031010107	Saurabh Raj	Rep/Member
2	RA2011031010119	Chitram Sujith	Member
3			Member

## Functional Test Cases

Test ID (#)	Test Scenario	Test Case	Execution Steps	Expected Outcome	Actual Outcome	Status	Remarks
1	Verify amount entered	Accept only double s/float in transaction amount	<ol style="list-style-type: none"> <li>User uses add / edit transaction feature</li> <li>Enters the amount(double) in given field</li> <li>Click on add product button</li> </ol>	<p>Transactions should be added</p> <p>User can maintain a ledger of his products sold and also the list of products in shop.</p>	Transaction and product sold or replaced added	Pas	-
		Don't accept string/ blobdatatype	Repeat above steps but use string or other data type instead of double	Error should be prompted	Input rejected	Pas	Functionality improved to reject input

								instead of error
2	Delete Transaction	Allow transaction to be deleted at user's request	1. Select any transaction 2. Press on delete button	Transaction should be removed from the list and total product sold should be updated accordingly	Transaction should be removed from the list and total product sold should be updated accordingly	Transaction deleted	Pass	-

### Non-Functional Test Cases

Test ID (#)	Test Scenario	Test Case	Execution Steps	Expected Outcome	Actual Outcome	Status	Remarks
1	Formatted the amount	Format entered amount to 2 decimal places	1) User enters transaction with amount as any length double 2) Press add transaction button	Amount should be added to list only after formatting it to 2 decimal places for neater UI	Output formatted	Pass	-
2	The theme switch	User should get to choose between two themes	1) User presses the theme change button	Dark and light theme should be toggled	Theme toggle	Pass	Theme switch feature improvised with multiple

		en dark and light theme				color themes
--	--	-------------------------------------	--	--	--	-----------------

Category	Progress Against Plan	Status
Functional Testing	Green	Completed
Non-Functional Testing	Green	Completed

Functional	Test Case Coverage(%)	Status
Home Page	30%	Completed
Expense Functionalities	40%	Completed
Bill Split Functionality	40%	Completed

**Result:**

Thus, the test case report has been created for Computer shop management system software.



## School of Computing

**SRM IST, Kattankulathur – 603 203**

**Course Code: 18CSC206J**

**Course Name: Software Engineering and Project Management**

<b>Experiment No</b>	13
<b>Title of Experiment</b>	Provide the details of Architecture Design/Framework/Implementation
<b>Name of the candidate</b>	Saurabh Raj
<b>Team Members</b>	Saurabh Raj, Chitram Sujith
<b>Register Numbers</b>	RA2011031010107
<b>Date of Experiment</b>	16/06/2022

### Mark Split Up

<b>S. No</b>	<b>Description</b>	<b>Maximum Mark</b>	<b>Mark Obtained</b>
1	Exercise	5	
2	Viva	5	
<b>Total</b>		<b>10</b>	

**Staff Signature with date**

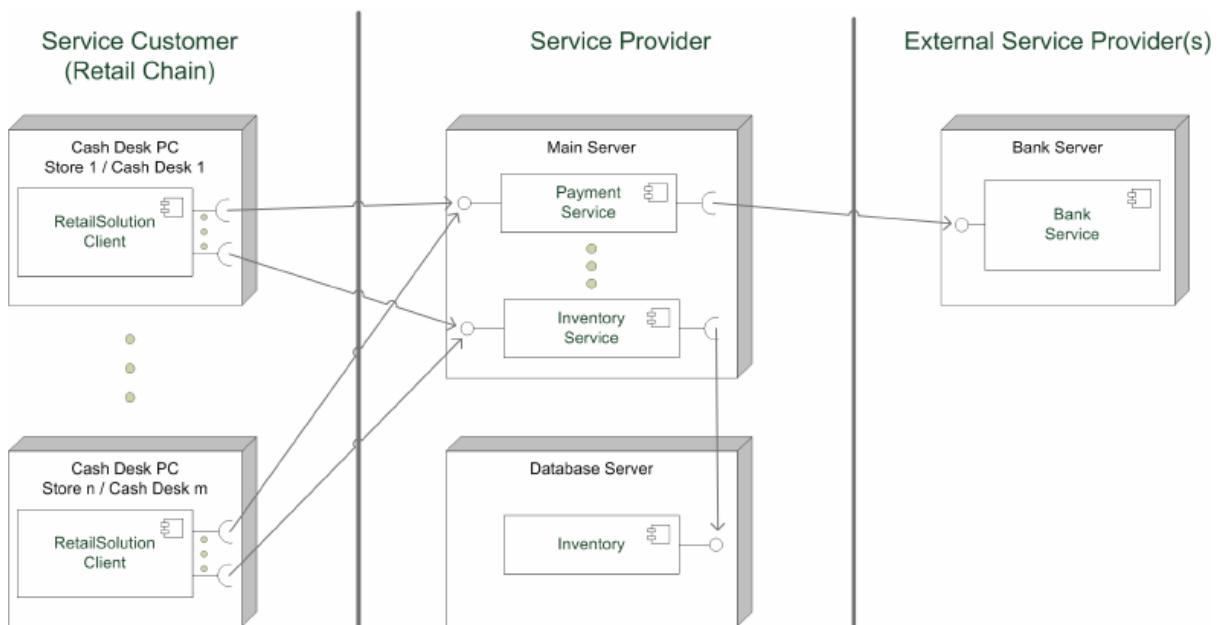
## Aim

To provide the details of architectural design/framework/implementation.

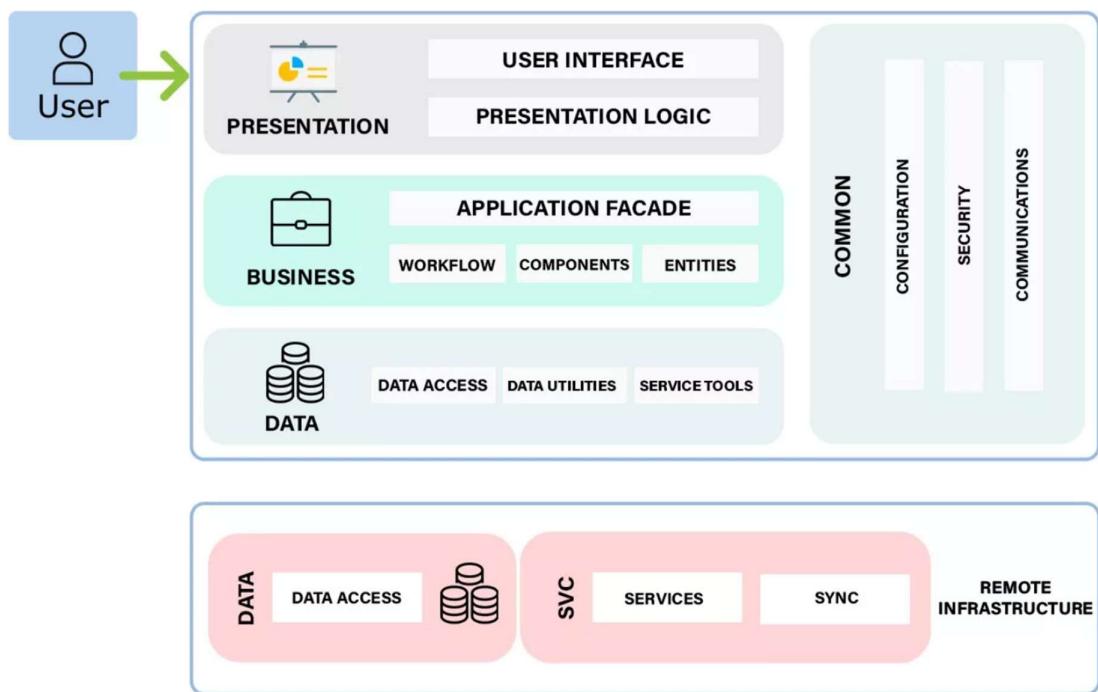
## Team Members:

S No	Register No	Name	Role
1	RA2011031010107	Saurabh Raj	Rep/Member
2	RA2011031010119	Chitram Sujith	Member
3			Member

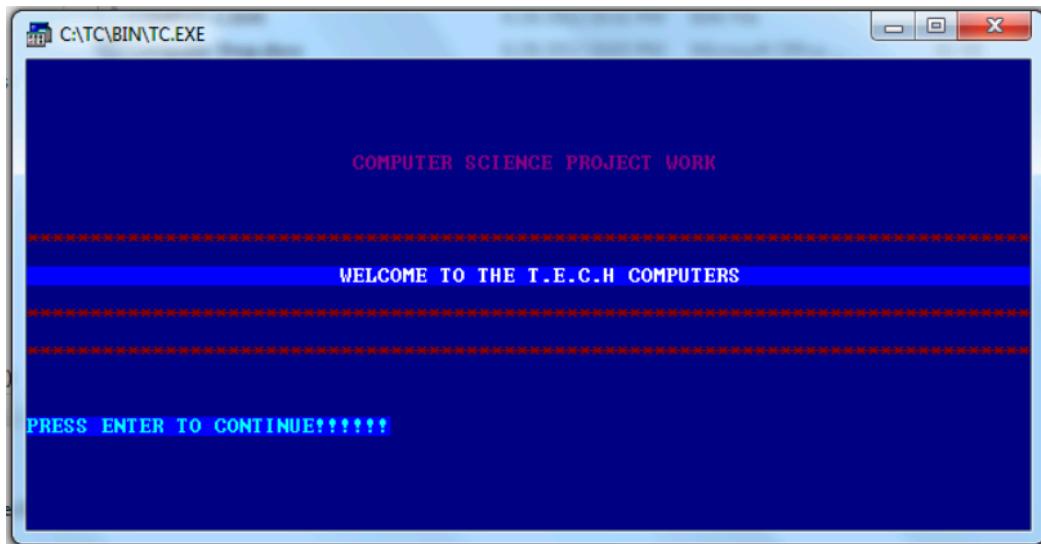
## Architecture:

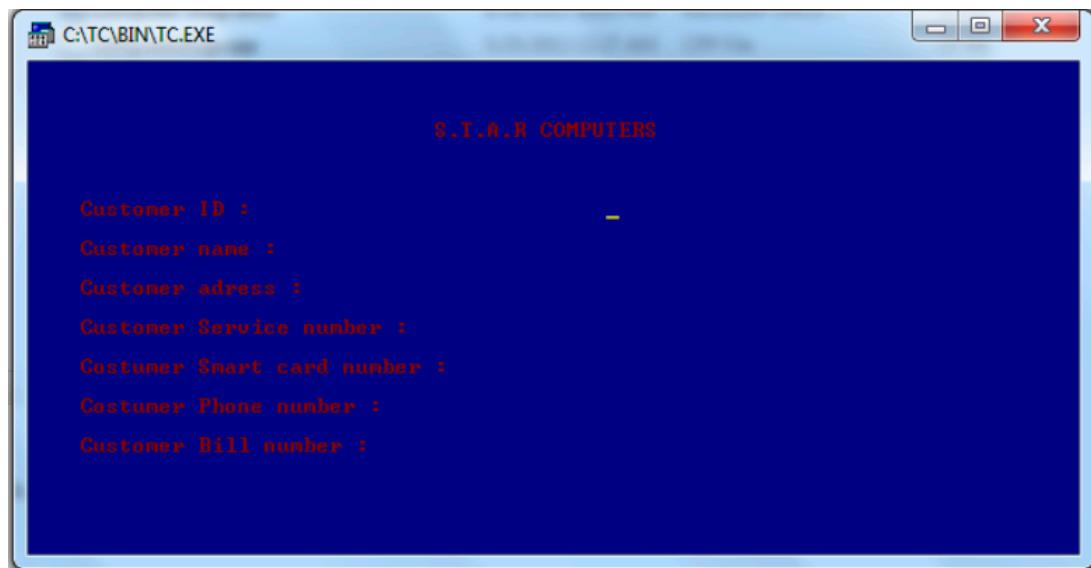


## Framework:



## Screenshots:





PRINTER	110
WEBCAM	1000
GRAPHIC CARD	500
RAM	400
HARD DISK	1000
WINDOWS ORIGINAL CD	1000
ANTIVIRUS	1000
MOUSE	300

Enter Customer ID you want to SEARCH : 1

RECORD NOT FOUND!!!!!!

**Codes:**

```
#include <iostream>
#include<conio.h>
#include<stdio.h>
#include<process.h>
#include<fstream>
using namespace std;

class product
{
    int pno;
    char name[50];
    float price, qty, tax, dis;
public:
    void create_product()
    {
        cout << "\nPlease Enter The Product No. of The Product ";
        cin >> pno;
        cout << "\n\nPlease Enter The Name of The Product ";
        cin>>gets(name);
        cout << "\nPlease Enter The Price of The Product ";
        cin >> price;
        cout << "\nPlease Enter The Discount (%) ";
        cin >> dis;
    }
    void show_product()
    {
        cout << "\nThe Product No. of The Product : " << pno;
        cout << "\nThe Name of The Product : ";
        puts(name);
        cout << "\nThe Price of The Product : " << price;
        cout << "\nDiscount : " << dis;
    }
    int retpno()
    {
        return pno;
    }
}
```

```

float retrprice()
{
    return price;
}

char * retrname()
{
    return name;
}

int retrdis()
{
    return dis;
};

fstream fp;
product pr;
void write_product()
{
    fp.open("Shop.dat", ios::out | ios::app);
    pr.create_product();
    fp.write((char * ) & pr, sizeof(product));
    fp.close();
    cout << "\n\nThe Product Has Been Created ";
    getch();
}
void display_all()
{
    cout << "\n\n\n\tDISPLAY ALL RECORD !!!\n";
    fp.open("Shop.dat", ios:: in );
    while (fp.read((char * ) & pr, sizeof(product)))
    {
        pr.show_product();
        cout << "\n\n=====\\n";
        getch();
    }
    fp.close();
}

```

```

getch();
}

void display_sp(int n)
{
    int flag = 0;
    fp.open("Shop.dat", ios:: in );
    while (fp.read((char * ) & pr, sizeof(product)))
    {
        if (pr.retpno() == n)
        {

            pr.show_product();
            flag = 1;
        }
    }
    fp.close();
    if (flag == 0)
        cout << "\n\nrecord not exist";
    getch();
}

void modify_product()
{
    int no, found = 0;

    cout << "\n\n\tTo Modify ";
    cout << "\n\n\tPlease Enter The Product No. of The Product";
    cin >> no;
    fp.open("Shop.dat", ios:: in | ios::out);
    while (fp.read((char * ) & pr, sizeof(product)) && found == 0)
    {
        if (pr.retpno() == no)
        {
            pr.show_product();
            cout << "\nPlease Enter The New Details of Product" << endl;
            pr.create_product();
            int pos = -1 * sizeof(pr);
            fp.seekp(pos, ios::cur);
            fp.write((char * ) & pr, sizeof(product));
            cout << "\n\n\t Record Updated";
        }
    }
}

```

```

        found = 1;
    }
}
fp.close();
if (found == 0)
    cout << "\n\n Record Not Found ";
getch();
}

void delete_product()
{
    int no;
    cout << "\n\n\n\tDelete Record";
    cout << "\n\nPlease Enter The product no. of The Product You Want To Delete";
    cin >> no;
    fp.open("Shop.dat", ios:: in | ios::out);
    fstream fp2;
    fp2.open("Temp.dat", ios::out);
    fp.seekg(0, ios::beg);
    while (fp.read((char * ) & pr, sizeof(product)))
    {
        if (pr.retumno() != no)
        {
            fp2.write((char * ) & pr, sizeof(product));
        }
    }
    fp2.close();
    fp.close();
    remove("Shop.dat");
    rename("Temp.dat", "Shop.dat");
    cout << "\n\n\tRecord Deleted ..";
    getch();
}

void menu()
{
    fp.open("Shop.dat", ios:: in );
    if (!fp)
    {
        cout << "ERROR!!! FILE COULD NOT BE OPEN\n\n\n Go To Admin Menu to create File ";

```

```

cout << "\n\n\n Program is closing ....";
getch();
}

cout << "\n\n\tProduct MENU\n\n";
cout << "===== \n";
cout << "P.NO.\tNAME\tPRICE\n";
cout << "===== \n";
while (fp.read((char * ) & pr, sizeof(product)))
{
    cout << pr.retpno() << "\t" << pr.retname() << "\t" << pr.retpice() << endl;
}
fp.close();
}

```

```

void place_order()
{
    int order_arr[50], quan[50], c = 0;
    float amt, damt, total = 0;
    char ch = 'Y';
    menu();
    cout << "\n===== ";
    cout << "\n PLACE YOUR ORDER";
    cout << "\n===== \n";
    do
    {
        cout << "\n\nEnter The Product No. Of The Product : ";
        cin >> order_arr[c];
        cout << "\nQuantity in number : ";
        cin >> quan[c];
        c++;
        cout << "\nDo You Want To Order Another Product ? (y/n)";
        cin >> ch;
    } while (ch == 'y' || ch == 'Y');
    cout << "\n\nThank You For Placing The Order";
    getch();

    cout << "\n\n***** INVOICE *****\n";
    cout << "\nPr No.\tPr Name\tQuantity \tPrice \tAmount \tAmount after discount\n ";

```

```

for (int x = 0; x <= c; x++)
{
    fp.open("Shop.dat", ios:: in );
    fp.read((char * ) & pr, sizeof(product));
    while (!fp.eof())
    {
        if (pr.retpno() == order_arr[x])
        {
            amt = pr.retprice() * quan[x];
            damt = amt - (amt * pr.retdis() / 100);
            cout << "\n" << order_arr[x] << "\t" << pr.retname() <<
                "\t" << quan[x] << "\t\t" << pr.retprice() << "\t" << amt << "\t\t" << damt;
            total += damt;
        }
        fp.read((char * ) & pr, sizeof(product));
    }
    fp.close();
}
cout << "\n\n\t\t\tTOTAL = " << total;
getch();
}

```

```

void intro()
{
    cout << endl << endl << "\tSUPER MARKET";
    cout << endl << endl << "\t\tBILLING";
    cout << endl << endl << "\t\t\tPROJECT";
    cout << "\n\nMADE BY : Shahzad Khan Meo";
    cout << "\n\nWebsite : www.PuPapersBook.com";
    getch();
}

```

```

void admin_menu()
{
    char ch2;
    cout << "\n\n\tADMIN MENU";
    cout << "\n\n\t1.CREATE PRODUCT";
    cout << "\n\n\t2.DISPLAY ALL PRODUCTS";
    cout << "\n\n\t3.QUERY ";
}

```

```
cout << "\n\n\t4.MODIFY PRODUCT";
cout << "\n\n\t5.DELETE PRODUCT";
cout << "\n\n\t6.VIEW PRODUCT MENU";
cout << "\n\n\t7.BACK TO MAIN MENU";
cout << "\n\n\tPlease Enter Your Choice (1-7 )";
ch2 = getche();
switch (ch2)
{
case '1':
    write_product();
    break;
case '2':
    display_all();
    break;
case '3':
    int num;
    cout << "\n\n\tPlease Enter The Product No. ";
    cin >> num;
    display_sp(num);
    break;
case '4':
    modify_product();
    break;
case '5':
    delete_product();
    break;
case '6':
    menu();
    getch();
case '7':
    break;
default:
    cout << "\a";
    admin_menu();
}
}

int main()
{
    char ch;
```

```

intro();
do
{
    cout << "\n\n\n\tMAIN MENU";
    cout << "\n\n\t01. CUSTOMER";
    cout << "\n\n\t02. ADMINISTRATOR";
    cout << "\n\n\t03. EXIT";
    cout << "\n\n\tPlease Select Your Option (1-3) ";
    ch = getche();
    switch (ch)
    {
        case '1':
            place_order();
            getch();
            break;
        case '2':
            admin_menu();
            break;
        case '3':
            return 0 ;
        default:
            cout << "\a";
    }
} while (ch != '3');
}

```

### **Result:**

Thus, the details of architectural design/framework/implementation along with the screenshots were provided.

## **CONCLUSION**

Nothing is perfect in this world. So, we are also no exception. Although, we have tried our best to present the information effectively, yet, there can be further enhancement in the Application. We have taken care of all the critical aspects, which need to take care of during the development of the Project. Like the things this project also has some limitations and can further be enhanced by someone, because there are certain drawbacks that do not permit the system to be 100% accurate.

The project has covered almost all the requirements. Further requirements and improvements can easily be done since the coding is mainly structured or modular in nature. Improvements can be appended by changing the existing modules.

We think that not a single project is ever considered as complete forever because our mind is always thinking new and our necessities also are growing. Our application Also, if you see at the first glance that you find it to be complete but we want to make it still mature and fully automatic.

As system is flexible you can generate more report and screen as and when required. The system is modified in future as per the owner requirement. In this system we can add more reports about users so more and more Information about computer parts.

## **REFERENCES**

The C++ Programming Language , 3rd Edition / Stroustrup Addison-Wesley.

*C++ Primer, 3rd Edition* / Lippman and Lajoie Addison-Wesley. The Scott Meyers series, Addison-Wesley:

Effective C++ : 50 Specific Ways to Improve Your Programs and Designs, 2nd Edition

More Effective C++ : 35 New Ways to Improve Your Programs and Designs  
and Effective STL: 50 Specific Ways to Improve Your Use of the Standard Template Library

*Beginners' C++ Course, 3rd Edition* Ron Wein