Any Store Billing System

A PROJECT REPORT

Submitted By

Aryan Kothambia

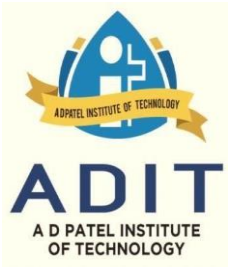
190010116020

In partial fulfillment for the award of degree of

BACHELOR OF ENGINEERING

in

Information Technology Engineering A.D. Patel Institute of Technology, Anand



Gujarat Technological University, Ahmedabad

May 2023

A.D. Patel Institute of Technology, Anand

CERTIFICATE

This is to certify that the project report submitted along with the project entitled **BILLING SYSTEM** has been carried out by **Aryan Kothambia** under my guidance in partial fulfilment for the degree of Bachelor of Engineering in IT Engineering, 8th Semester of Gujarat Technological University, Ahmadabad during the academic year 2022-23.

Prof. Disha Panchal
Internal Guide

Prof. Narendra Chauhan
Head of the Department

GUJARAT TECHNOLOGICAL UNIVERSITY

CERTIFICATE FOR COMPLETION OF ALL ACTIVITIES AT ONLINE PROJECT PORTAL

B.E. SEMESTER VIII, ACADEMIC YEAR 2022-2023

Date of certificate generation : 12 May 2023 (21:48:58)

This is to certify that, ***Kothambia Aryan Ketanbhai*** (Enrolment Number - 190010116020) working on project entitled with ***Any store*** from ***Information Technology*** department of ***A. D. PATEL INSTITUTE OF TECHNOLOGY, KARAMSAD*** had submitted following details at online project portal.

Internship Project Report	**Completed**

Name of Student : Kothambia Aryan Ketanbhai

Name of Guide : Mrs. DISHA DHAVALKUMAR PANCHAL

Signature of Student : _____

*Signature of Guide : _____

Disclaimer :
This is a computer generated copy and does not indicate that your data has been evaluated. This is the receipt that GTU has received a copy of the data that you have uploaded and submitted as your project work.

*Guide has to sign the certificate, Only if all above activities has been Completed.

HATKESH INFOTECH PVT. LTD.

-The Power Of Imagination

Email: - Info.hatkesh@gmail.com Contact No: -9725113007, 8732987881

Date: 05/05/2023

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **ARYAN KETANKUMAR KOTHAMBIA (190010116020)** student of **A.D. PATEL INSTITUTE OF TECHNOLOGY** has worked on project **title "BILLING SYSYTEM"** from 23rd Jan 2023 to 05th May 2023 . Under our guidance and supervision.

It gives us indeed pleasure to highlight that candidate has worked hard and with sincerity through project work. We assure that the experience given during the project training period will enable candidate to take more challenging project and build up a successful career in near future.

Best Regards,

For HATKESH INFOTECH PVT.LTD.

Mr. Rinkal Jani
Director

BRANCH: C-5 AADITYA COURT YARD, NEAR BAKROL GATE , BAKROL, 388 120
H/O: NEAR SWAMINARAYAN STREET, PANDOLI, 388160 www.hatkeshinfotech.com

A.D. Patel Institute of Technology, Anand

DECLARATION

I hereby declare that the Internship / Project report submitted along with the Internship / Project entitled **BILLING SYSTEM** submitted in partial fulfilment for the degree of Bachelor of Engineering in IT Engineering to Gujarat Technological University, Ahmedabad, is a Bonafide record of original project work carried outby me at Hatkesh Infotech Pvt. Ltd under the supervision of **Sr. Rinkal Jani** and that no part of this report has been directly copied from any students' reports or taken from any other source, without providing due reference.

Name of the Student	Sign of Student
Aryan Kothambia	

ACKNOWLEDGMENT

I hereby, would like to have the privilege to show our gratitude to all the persons, helped me in whatever way for the successful completion of this internship without hindrance. I am grateful to all our mentors who inspired me by setting an example of them for the kind purpose of motivating me to reach my targeted objective. Without their knowledge and wisdom along with experience and specialization in their specific field, I would not have been able to think of doing or completing this work. All the persons who have contributed directly or indirectly with their kind support and humble approach are highly appreciative and I would always remain indebted to them in all the ways. I am especially thankfull of **Prof. Disha Panchal** and **Prof. Narendra Chauhan,** who is our internal guide and HOD respectively, for their kind support and motivation. Finally, I apologize to all the other unnamed who helped me in various ways to have safe and good training.

ABSTRACT

Customer relationship management (BILLING SYSTEM) is a software, processes and technology that seeks to understand a company's customers. It is an integrated approach to managing relationships by focusing on customer retention and relationship development. Today it's widely acknowledged that how you understand and treat your customers, goes a long way to determining your future success and profitability, and companies are making bigger and bigger investments to do just that. The concepts of customer relationship management have been in the air ever since people started exchanging things, but BILLING SYSTEM as a term came into existence in the mid-1990s. Companies are already pouring billions of dollars into BILLING SYSTEM solutions—software and services designed to help businesses more effectively, manage customer relationships through any direct or indirect channel a customer us.

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Chapter 1: Introduction

1. Introduction

This chapter gives an overview of the aim, objectives, background and operation environment of the system. Customer relationship management (BILLING SYSTEM) is a technology for managing all your company's relationships and interactions with customers and potential customers.

1.1 Project Aims and Objectives

The project aims and objectives that will be achieved after completion of this project are discussed in this sub- chapter. The aims and objectives are as follows:

1. Improve the buyer's journey. The fundamental purpose of a BILLING SYSTEM system is to improve the customer experience.
2. Improve operational efficiency.
3. Increase customer retention.
4. Lower your customer acquisition cost.
5. Generate more sales.

1.2 Background of The Project

BILLING SYSTEM furnishing is a website which refers to the relationship between a furnishing company and its customers. It is used by the company staff to access the data of the previous and current projects that its working on and help the customers accordingly by providing them with the appropriate solution that they need.

Customer relationship management (BILLING SYSTEM) is the combination of practices, strategies and technologies that companies use to manage and analyze customer interactions and data throughout the customer lifecycle.

The goal is to improve customer service relationships and assist in customer retention and drive sales growth. BILLING SYSTEM systems compile customer data across different channels, or points of contact, between the customer and the company, which could include the company's website, telephone, live chat, direct mail, marketing materials and social networks.

Chapter 2: Company Profile

- **HATKESH INFOTECH PRIVATE LIMITED** is one of the foremost providers of integrated business solution and IT services for diversified business enterprises around the globe.
- Supported by an experienced pool of professionals, **HATKESH INFOTECH PRIVATE LIMITED** has attained expertise in delivering cost effective yet high quality, consistent and reliable business solutions and IT services corporate entities, globally.

2.1 Organization Logo:

Fig 2.1 Company Logo

2.2 Company Details

Company Name	**Hatkesh Infotech Private Limited**
Address	Aditya Courtyard, C-5, Bakrol - Vadtal Rd, beside Tulsi Angan Society, Vaishali Nagar, Vallabh Vidyanagar, Anand, Gujarat 388120
Contact Number	**09725113007**
Year of Established	**2013**
Email	**Info.hatkesh@gmail.com**
Company Website	**https://hatkeshinfotech.com**

2.3 Services

1. **Custom software Development:** The custom software development process encompasses designing, developing, deploying, and maintaining custom software solutions and services.

2. **Web Application Development:** Design, develop and deploy web application to bring impactful changes to your web development project.

3. **Dedicated Development Team:** Optimize and scale your business delivery by hiring dedicated software developers, with the freedom to screen, select and manage the extended team.

4. **Software product Development:** Hatkesh Infotech offers intuitive and design-led softwareproduct development services to accelerate software products.

5. **e Commerce Development:** Hatkesh infotech capability to build flexible & reliable-commerce platform empowers business to provide an omnichannel, mobile and personalized experience.

6. **Mobile Apps Development:** Hatkesh infotech is well experienced Mobile App Development Company with proven track record of delivering effective apps.

7. **Software Testing & QA:** Experience of Next-Gen software testing & Quality Assurance serviceswith Hatkesh.

8. **UI/UX Design:** Explore innovation digital experience by offering a blend of technology creativity & personalization in UI and UX development services.

2.4 Working Environment

As an intern I am blessed that I get the opportunity to explore an amazing work environment at Hatkesh Infotech Private Limited. All of my colleagues are cooperative, friendly, and understanding. I never felt left out because everyone is so inspiring and optimistic.

2.5 Department

The various departments of Hatkesh are:

1. Fintech & Insurance
2. Education
3. Energy and Utilities
4. Healthcare
5. Media & Entertainment
6. Oil, gas and mining
7. Retail & e commerce
8. Logistic & Distribution
9. Travel & Hospitality
10. Public Sector

2.6 Technologies

Sr. No.	Technologies
1.	.NET
2.	Java
3.	Node.js
4.	PHP
5.	Angular
6.	React.js
7.	Vus.js
8.	IOS
9.	Android

Chapter 3: SYSTEM ANALYSIS

In this chapter, we will discuss and analyses about the developing process of customer relationship management including software requirement specification (SRS) and a comparison between existing and proposed systems. The functional and non-functional requirements are included in the SRS part to provide a complete description and overview of system requirements before the developing process is carried out.Besides that, existing vs proposed provides a view of how the proposed system will be more efficient thanthe existing one.

3.1 Software Requirement Specification

3.1.1 General Description

Product Description

A BILLING SYSTEM system can help you identify and add new leads easily and quickly, and categories them accurately. By focusing on the right leads, sales can priorities the opportunities that will close deals, and marketing can identify leads that need more nurturing and prime them to become quality leads.

Problem Statement:

The problem that occurred before having the computerized system includes:

1. Data lost:
When a computerized system is not implemented file is always lost because of human environment. Sometimes due to some human error, there may be a loss of records.
2. File damaged:
Without computerized system the file may lost by such kind of accident such as spilling of water accidentally. Besides some natural disaster like floods or fires may also damage the files.
3. Difficult to search words:
As the records are large in number, one may always get confused while searching of records.
4. Space consuming:
As the records becomes large it is obvious that it will consume huge space in physical device.
5. Cost-consuming:
As there is no computerized system to add each data record which will increase the cost.

3.1.3 System Objectives

1 Improvement in control and performance:

The system is developed to cope up with the current issues and problems. The system can add users, validate the user and is also bug-free.

2 Save cost:

After the computerized system is implemented, this will help staff or customers to read data in electronic format. Thus, reducing overall cost.

3 Save time:

Staff or customers can find any data related to project with just one touch away, thus saving their valuable time.

4 Task notes:

Staff can make notes according to the requirements of customer to complete the tasks successfully.

3.1.3.1 Non-Functional Requirements

1 Product Requirements

EFFICIENCY REQUIREMENT

When a BILLING SYSTEM will be implemented experts will easily upload their daily task andthey can manage their customer relationships with their customer and expert recommendations are available for their requirements.

RELIABILITY REQUIREMENT

The system should accurately manage customer, company can add their requirements,add sales growth and many more.

USABILITY REQUIREMENT

The system is designed for a user-friendly environment so that staff and experts of thesystem can perform various tasks easily and effectively.

ORGANIZATIONAL REQUIREMENT

IMPLEMENTATION REQUIREMNTS

In implementing the whole system, it uses HTML, CSS, and JAVASCRIPT in the front endwith C# and VB.NET for the back end, and MySQL is used for database connectivity.

DELIVERY REQUIREMENTS

Th whole system is expected t o be delivered i n six months with a weekly evaluation by project guide

3.1.3.2 FUNCTIONAL REQUIREMENTS

1. NORMAL USER

1.1 USER LOGIN

Description feature

This feature is used by the user to login into the system. They are required to enter their user id and password before they are allowed to enter the system. The user id and password will be verified and if an invalid id is there the user is allowed to not enter the system.

Functional requirements

- user id is provided when they register.
- The system must only allow users with valid IDs and passwords to enter the system.
- The system performs an authorization process that decides what user level can access.
- The user must be able to log out after they finished using the system.

1.2 REGISTER NEW USER

Description of feature

This feature can be performed by all users to register new users to create an account.

Functional requirements

-System must be able to verify information

-The system must be able to delete information if the information is wrong or inappropriate.

1.3 UPLOAD NEW TASK

Description of feature

This feature allows users to upload requirement into the system.

Functional requirements

-System must be able to verify information

-System must be able to enter number of copies into table.

- System must be able to not allow two users having same user id.

1.4 TASK DETAILS

Description of feature

This feature allows users to enter some details about task.

Functional requirements

-System must be able to verify registration id

DESCRIPTION OF FEATURE

This feature is found in the task detail part. We can search task based on taskid, task name, description, total cost, starting date, due date, or company name.

Functional requirements

1. The system must be able to search the database based on a select search type
2. The system must be able to filter data based on keywords entered
3. The system must be able to show the filtered information in the table view

Functional requirements

1. System should be able to add detailed information about tasks.
2. System should be able to display information on the notice board available on the homepage of the site

1.5 Opportunity Details

Description of feature

This feature allows staff to enter customer details.

Functional requirements

-System must be able to verify registration id

DESCRIPTION OF FEATURE

This feature is found in the opportunity detail part. Here, staff can add account name, task, completion stage, owner name, revenue and probability.

HARDWARE AND SOFTWARE REQUIREMENTS

3.1.4.1 HARDWARE REQUIREMENTS

To create an BILLING SYSTEM, you will need hardware that is capable of running software for educational tools. The specific requirements will depend on the scale of your system, the data of customer, and the complexity of the software you plan to use. Here are some general hardware requirements that maybe necessary:

1. Computer or server: You will need a computer or server to host the software and manage the system.

2. Processor: A multi-core processor with a clock speed of at least 2 GHz is recommended to handle multiple tasks simultaneously.

3. Memory (RAM): The recommended amount of RAM for an education system is at least 8 GB, but themore RAM you have, the better.

4. Storage: Sufficient storage space is required to manage large data of customer, and other materials. A solid-state drive (SSD) is recommended for faster read and write speeds.

5. Network connectivity: A stable and reliable internet connection is essential for managing the customer data. A wired connection is preferred over wireless, as it is more stable and secure.

6. Display: A high-resolution display is recommended to provide a clear and detailed view of customer data.

Remember that these are general guidelines, and the specific requirements may vary depending onthe software.

3.1.4.2 SOFTWARE REQUIREMENTS

1. Visual studio: -

I. Visual Studio 2012 is an integrated development environment (IDE) developed by Microsoft. It is used to create a wide range of applications, including desktop software, web applications, mobile apps, and games.

II. The main features of Visual Studio 2012 include a code editor, a debugger, a compiler, a graphical user interface designer, and many other tools to help developers create, test, and deploy software. It supports awide range ofprogramming languages, including C++, C#, Visual Basic .NET, and more.

III. Visual Studio 2012 also includes tools for version control, code analysis, and code refactoring, which help developers to improve the quality and maintainability of their code. Additionally, it provides a rich set of frameworks and libraries for developing applications, such as the .NET Framework, Windows Forms, Windows Presentation Foundation (WPF), and more.

IV. Overall, Visual Studio 2012 is a powerful tool for software development that helps developers to create high-quality, efficient, and scalable applications.

2. SQL Server Management: -

I. SQL Server Management refers to the process of administering and managing a Microsoft SQL Server database system. SQL Server Management involves tasks such as configuring, monitoring, securing, and maintaining the database server and its components.

II. SQL Server Management typically involves using tools such as Microsoft SQL Server Management Studio (SSMS) or SQL Server Management Objects (SMO) to interact with the SQL Server database system. These tools allow administrators to perform tasks such as creating and managing databases, setting up user accounts and permissions, configuring database backup and recovery, and monitoring server performance and activity.

III. SQL Server Management works by providing a set of tools and features that allow administrators to control and manage the SQL Server database system. These tools interact with the various components of the SQL Server system, including the SQL Server Database

Engine, SQL Server Analysis Services, SQL Server Integration Services, and SQL Server Reporting Services.

IV. Administrators can use SQL Server Management tools to perform a wide range of tasks, including creating and managing databases, setting up security and permissions, configuring backups and recovery, monitoring server performance and activity, and troubleshooting issues with the database system. By providing a comprehensive set of tools and features, SQL Server Management helps ensure the reliability, security, and performance of the SQL Server database system.

3. Brackets: -

I. Brackets is a free and open-source code editor that is designed for web development. It was developed by Adobe Systems and released in 2014.

II. Brackets is built using HTML, CSS, and JavaScript and can be used on Windows, macOS, and Linux operating systems. It is primarily used for front-end web development, which includes HTML, CSS, and JavaScript.

III. One of the main features of Brackets is its Live Preview feature, which allows developers tosee changes to their code in real-time as they make them. This is possible due to its integrationwith Google Chrome, which provides a live preview of web pages as they are being developed.

IV. In addition to its live preview feature, Brackets also includes other useful features such as code highlighting, code folding, and auto-completion of code. It also supports extensions thatallow developers to add new features to the editor.

V. Overall, Brackets is a powerful and easy-to-use code editor that is especially useful for front-end web development. Its Live Preview feature and support for extensions make it a popular choiceamong developers.

Chapter 4: SYSTEM DESIGN

4.1 E-R DIAGRAM

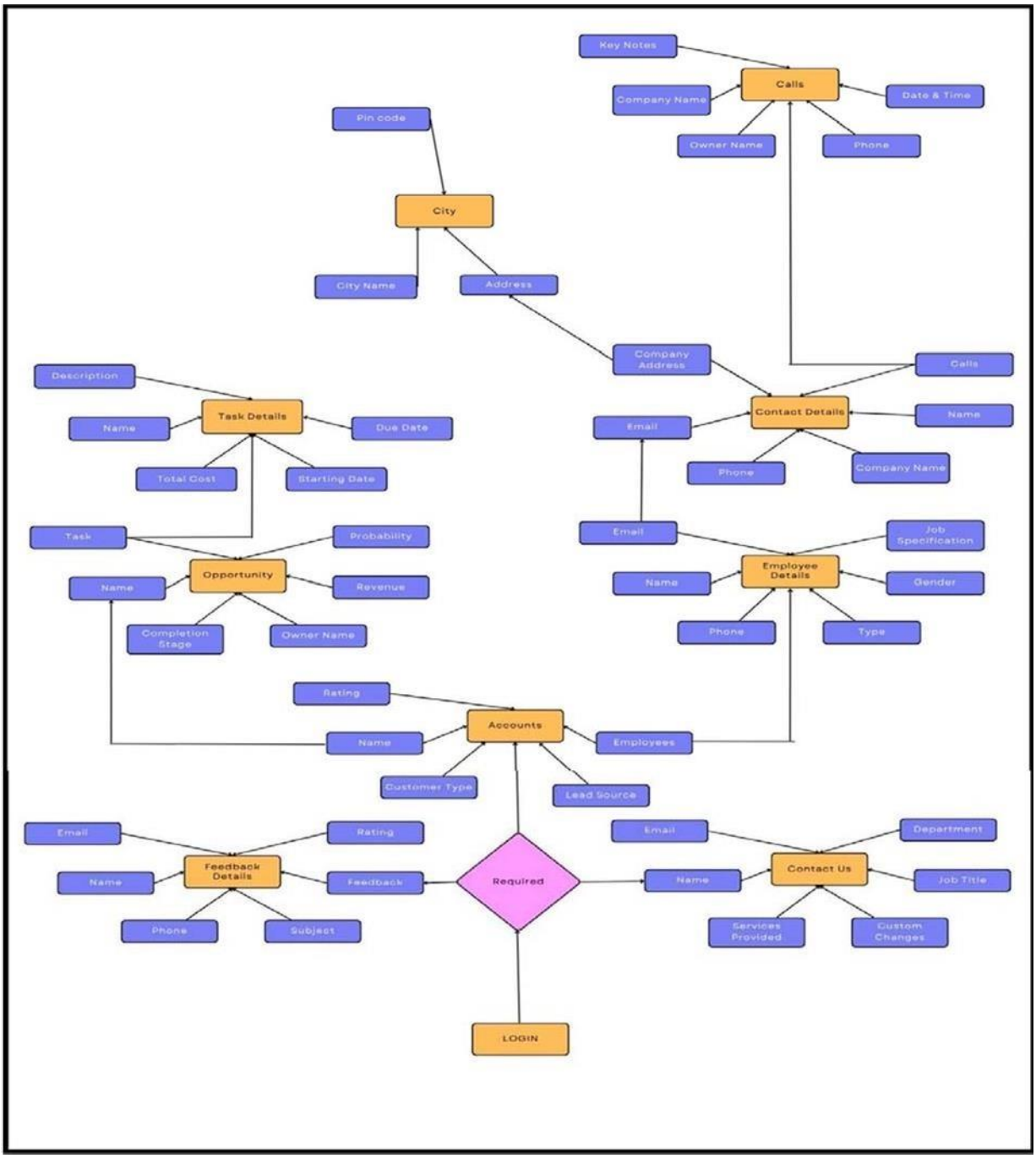

Fig 4.1 E-R Diagram

4.2 USE CASE DIAGRAM(ADMIN)

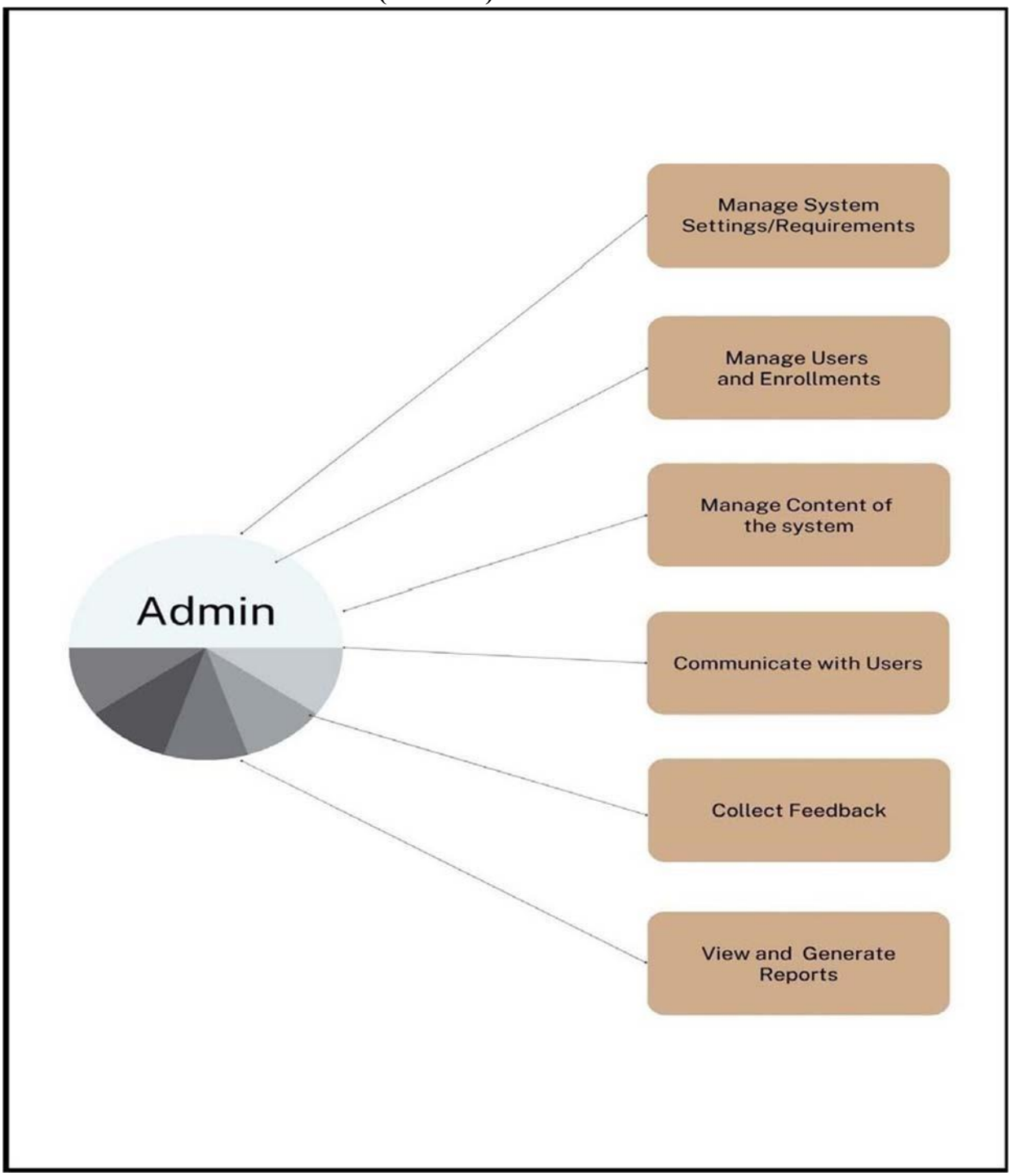

Fig 4.2 Use case Diagram(Admin)

4.3 USE CASE DIAGRAM(STAFF)

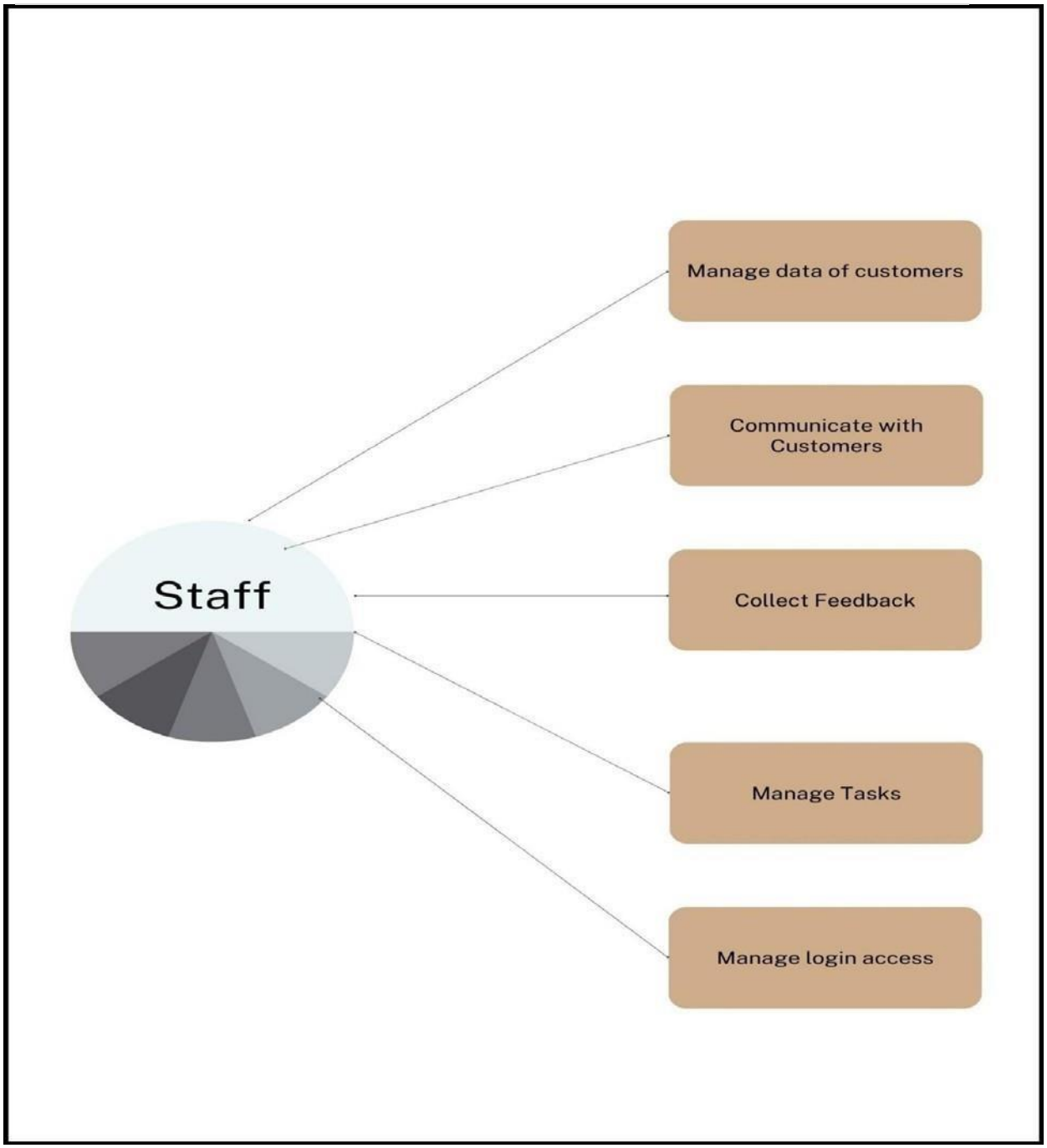

Fig 4.3 Use Case Diagram (Staff)

4.4 DATA-FLOW DIAGRAM(ADMIN)

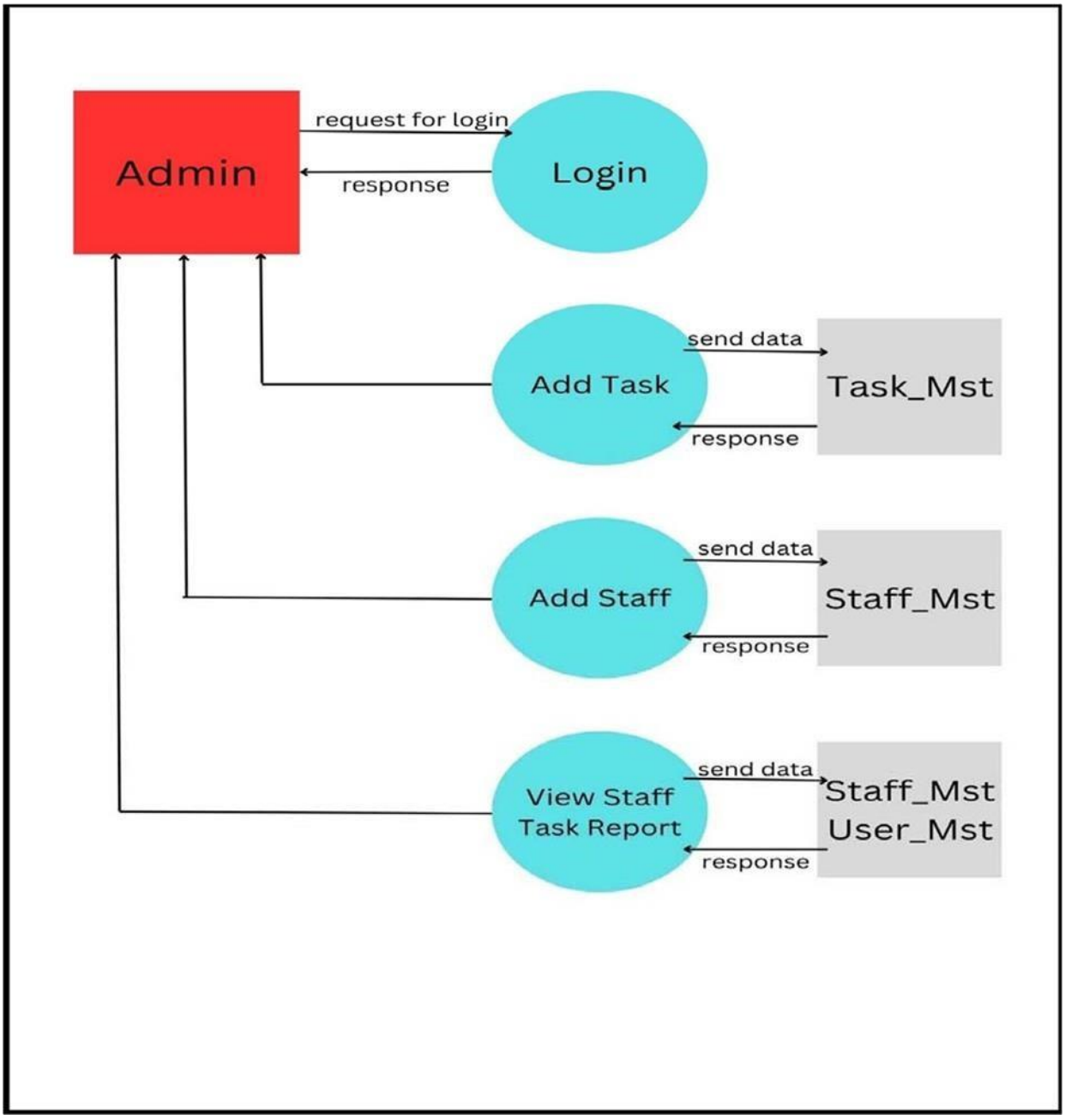

Fig 4.4 Dataflow Diagram (Admin)

4.5 DATA-FLOW DIAGRAM(STAFF)

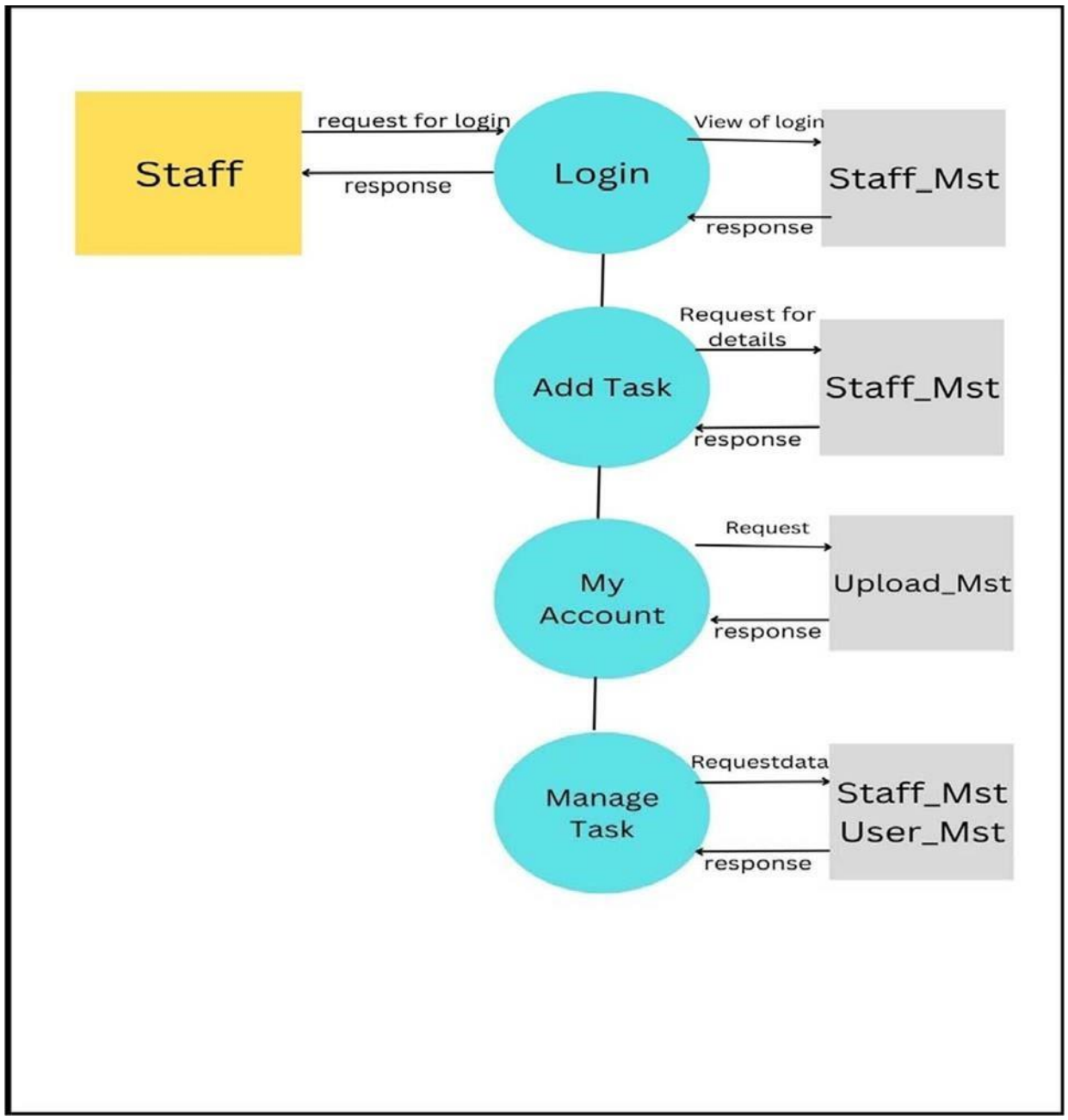

Fig 4.5 Dataflow Diagram (Staff)

CHAPTER-5 DATA TABLES

5.1 ADMIN_ACCOUNTS

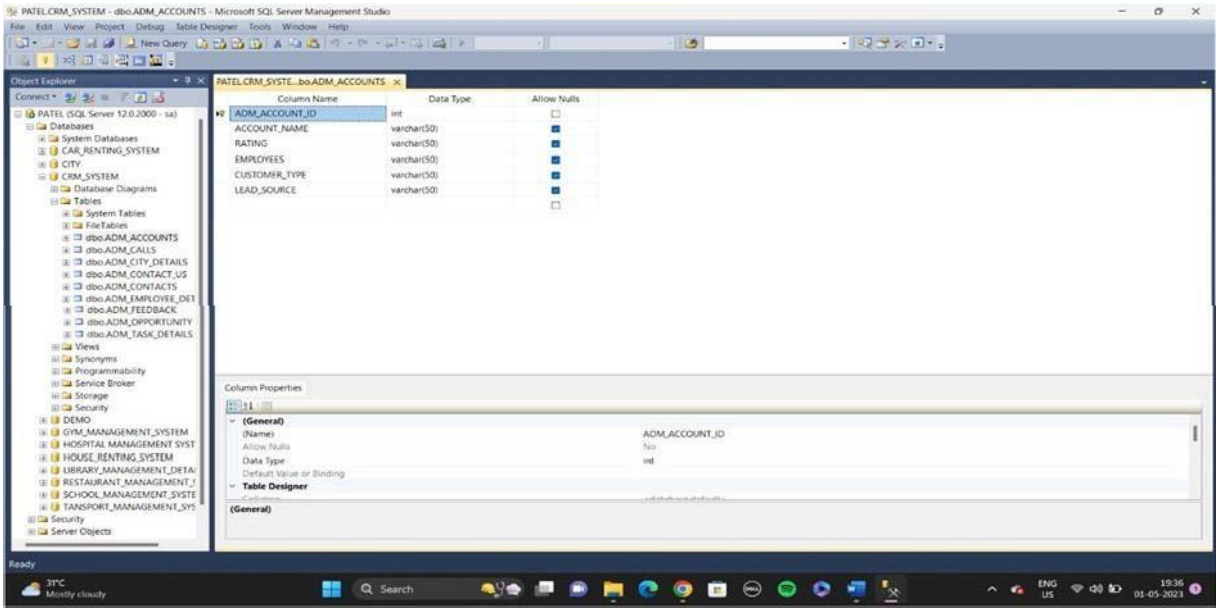

Fig 5.1 Admin Accounts

5.2 ADMIN_EMPLOYEE_DETAILS

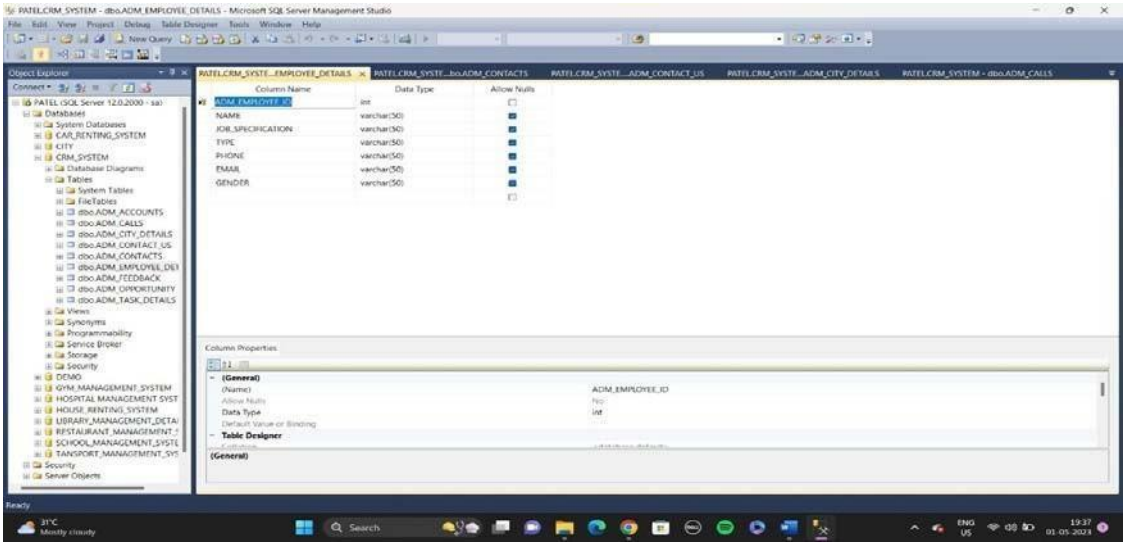

Fig 5.2 Admin Employee Details

5.3 ADMIN OPPORTUNITY_DETAILS

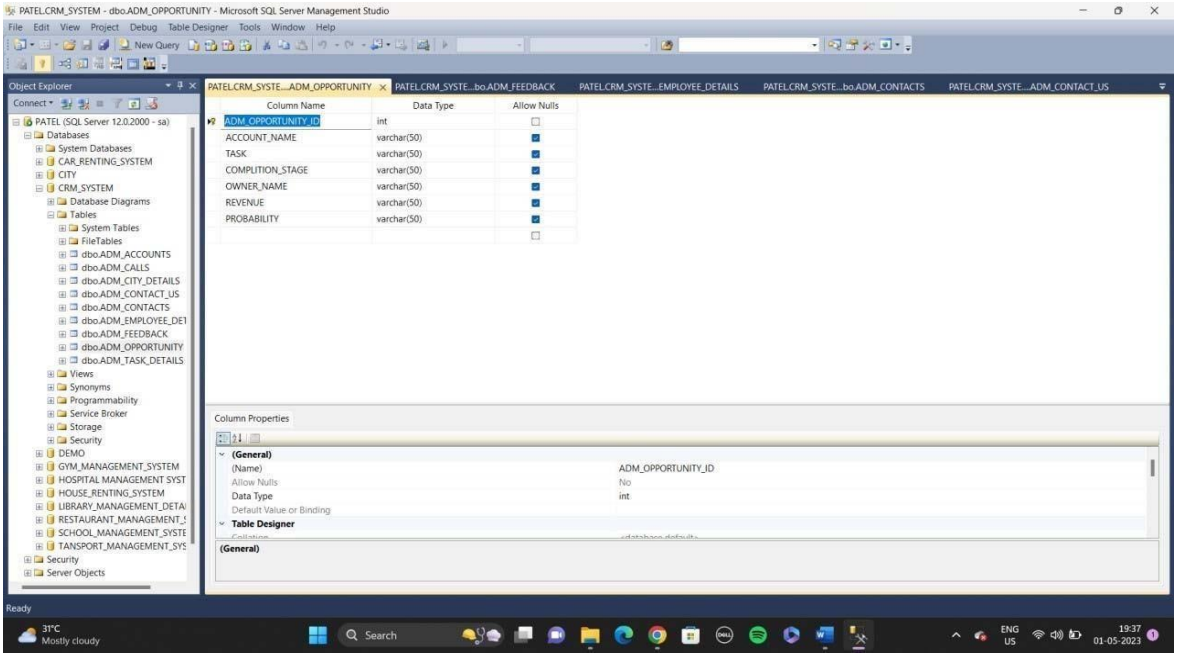

Fig 5.3 Admin Opportunity Details

5.4 ADMIN_CALL_DETAILS

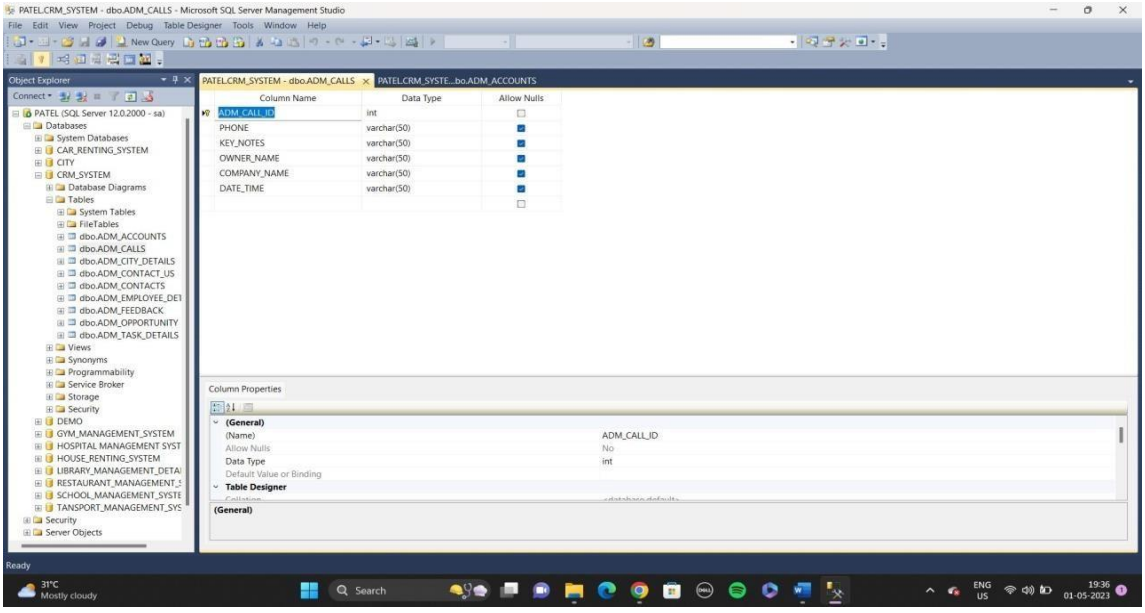

Fig 5.4 Admin Call Details

5.5 ADMIN_CITY_DETAILS

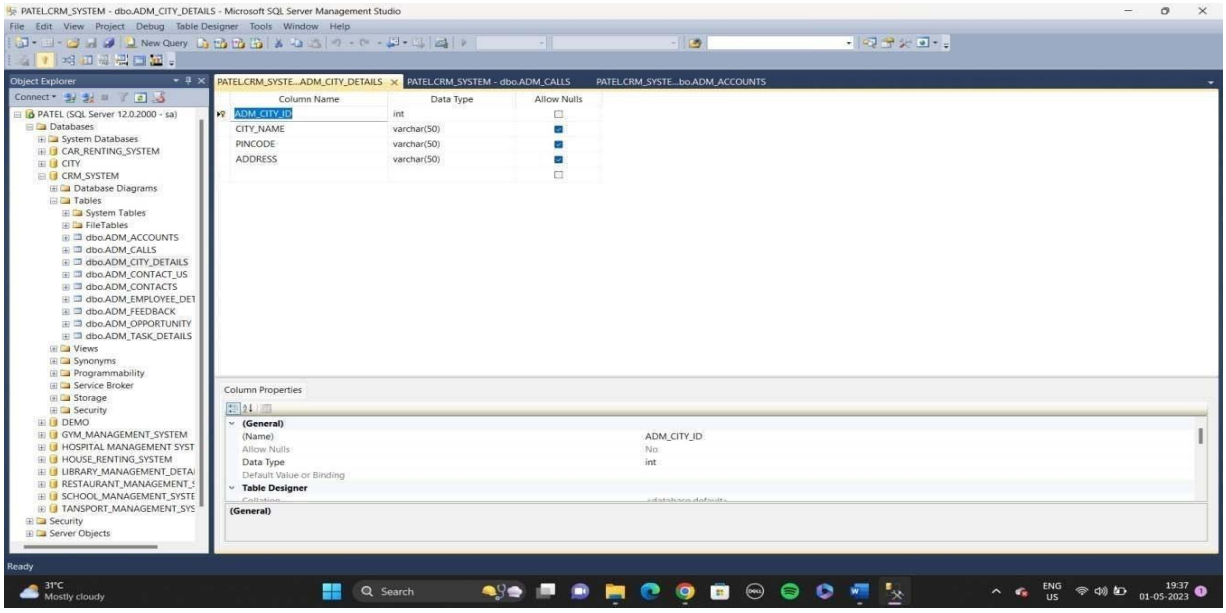

Fig 5.5 Admin City Details

5.6 ADMIN_FEEDBACK

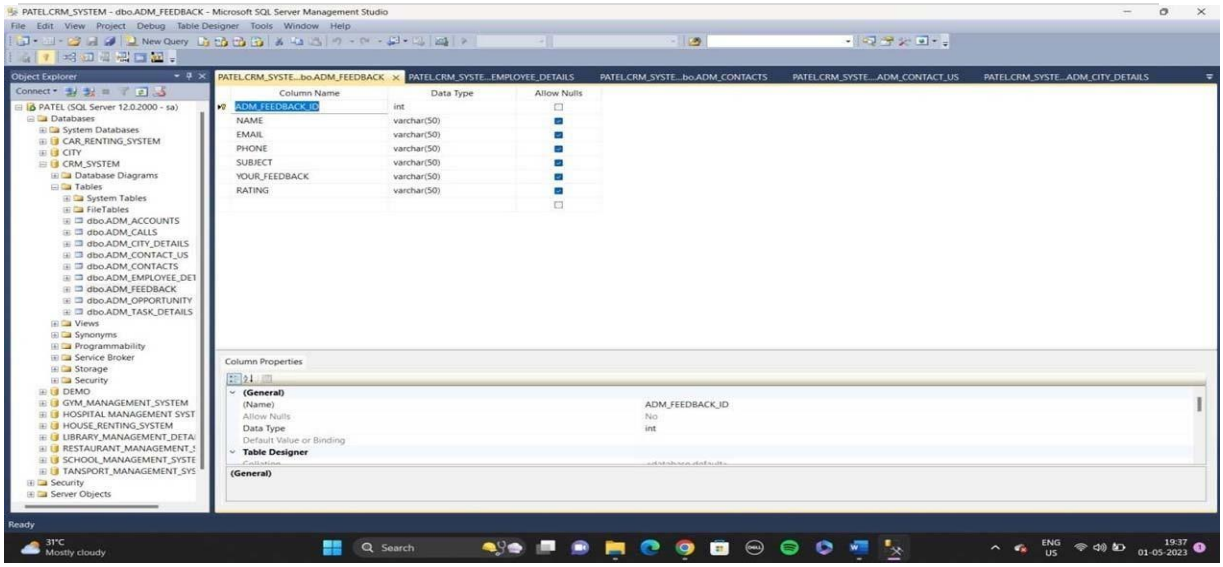

Fig 5.6 Admin Feedback

5.7 ADMIN_CONTACT_DETAILS

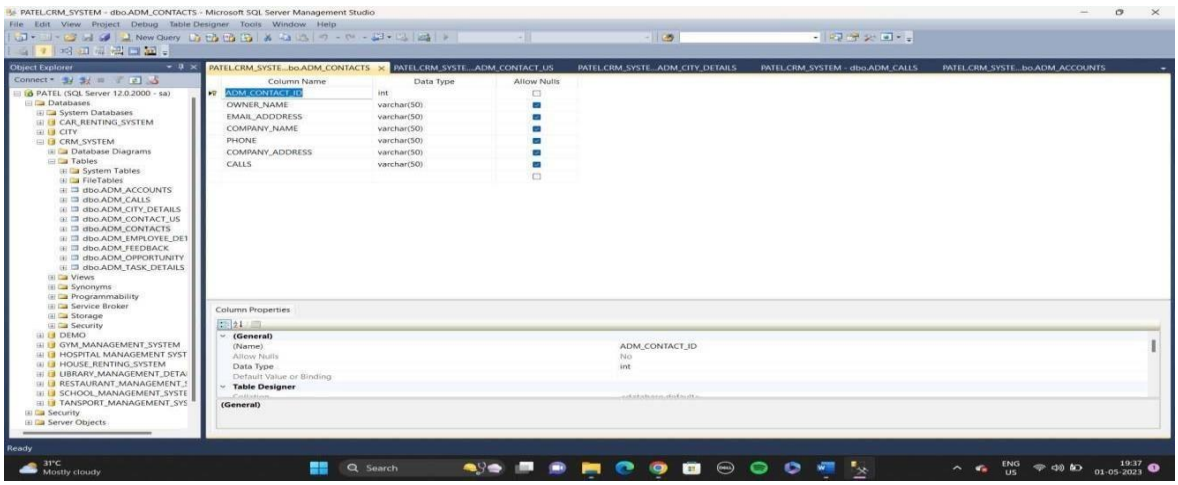

Fig 5.7 Admin Contact Details

5.8 ADMIN_CONTACT_US

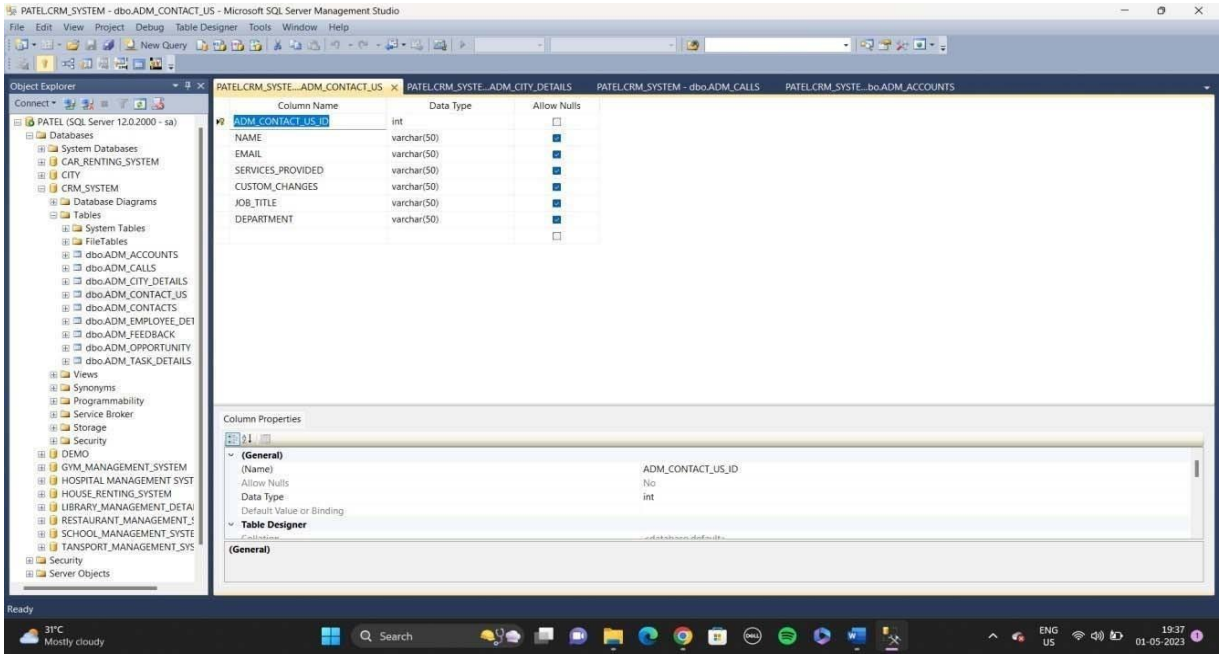

Fig 5.8 Admin Contacts

5.9 ADMIN_TASK_DETAILS

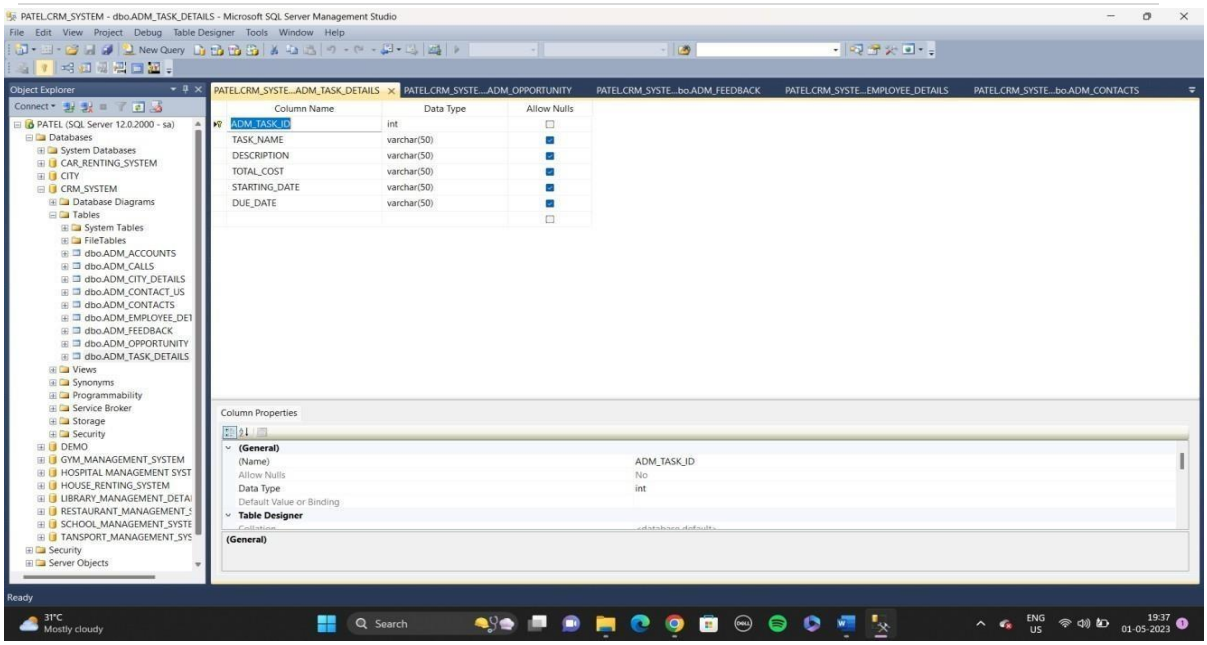

Fig 5.9 Admin Task Details

5.10 FOREIGNKEY

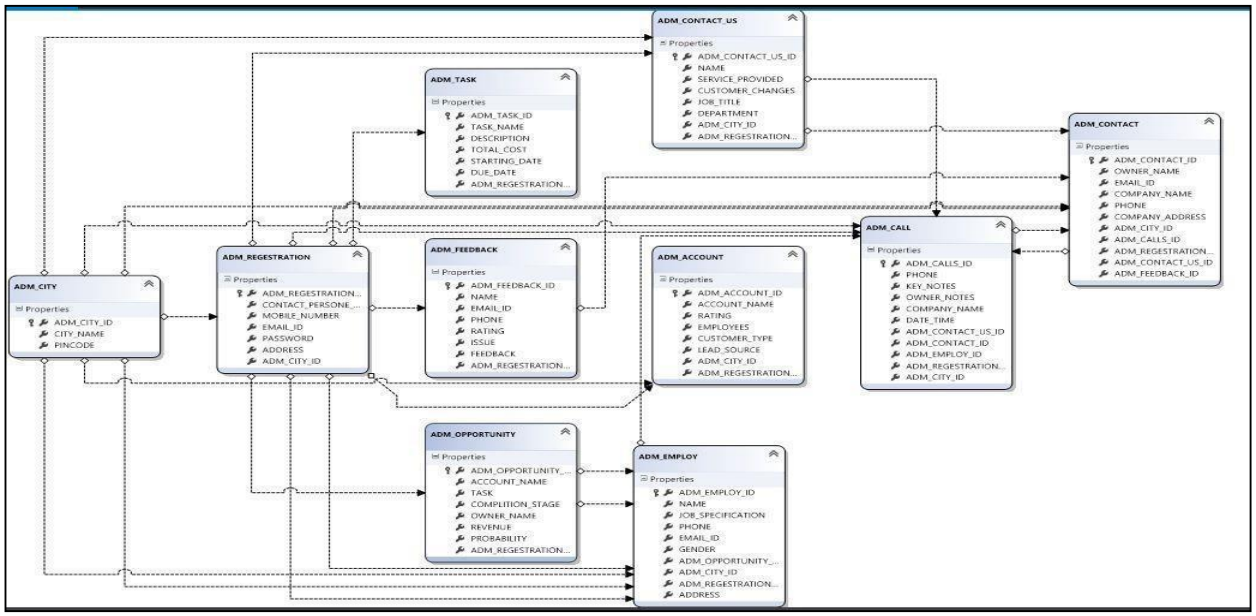

Fig 5.10 Foreign Key

CHAPTER-6 IMPLEMENTATION

6.1 ADMIN PANEL

6.1.1 HOME PAGE

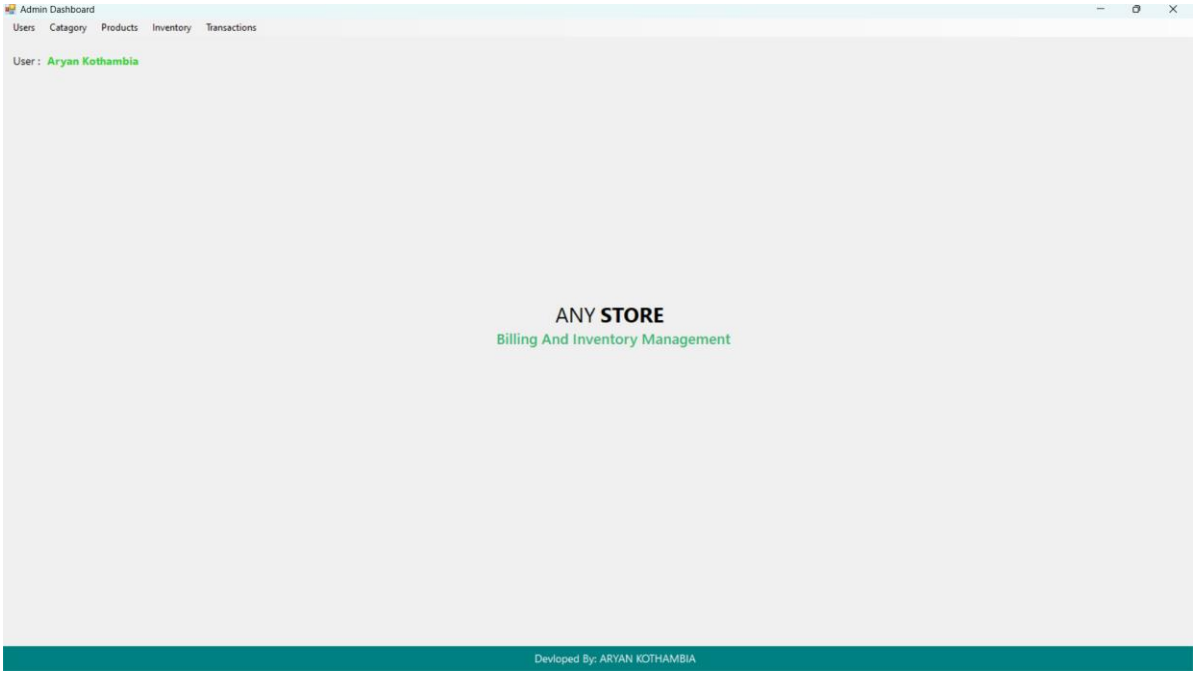

Fig. 6.1.1 Home Page

6.1.2 ADD USERS

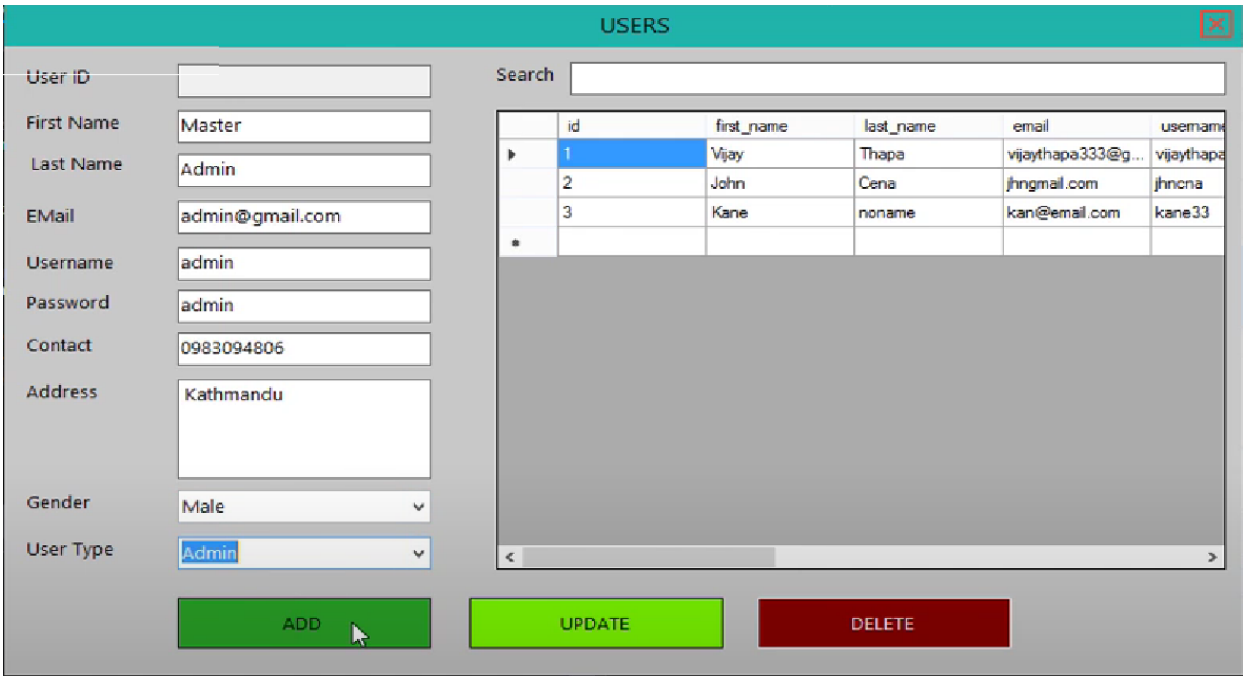

Fig. 6.1.2 ADD USERS

6.1.3 CATAGORIES

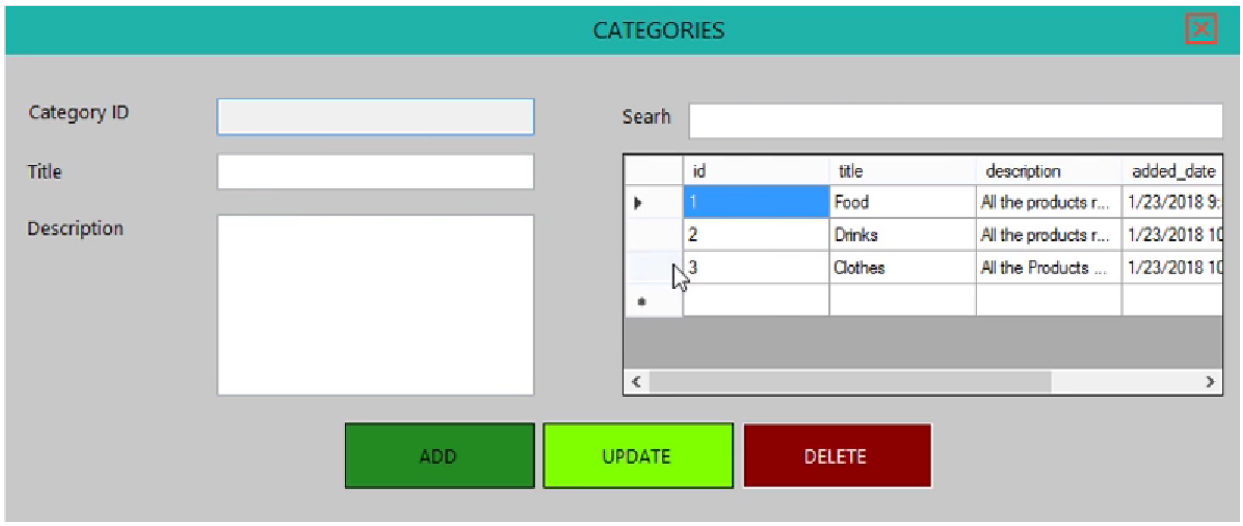

Fig. 6.1.3 CATAGORIES

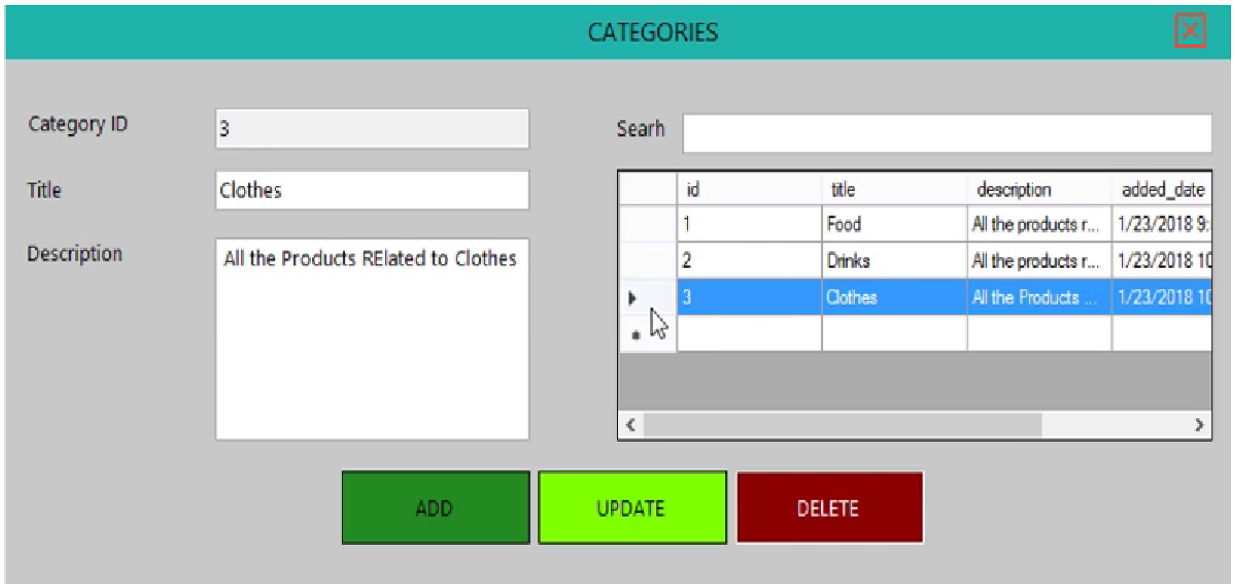

Fig. 6.1.3.1 CATAGORIES

6.1.4 PRODUCTS

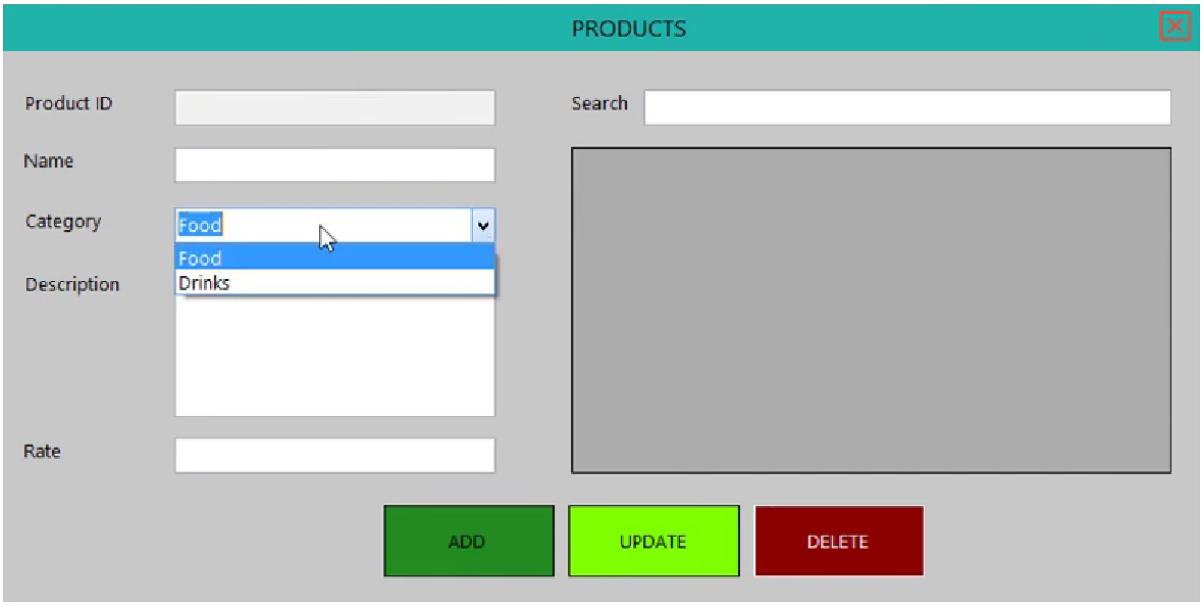

Fig 6.1.4 PRODUCTS

6.1.5 DEALER AND CUSTOMER

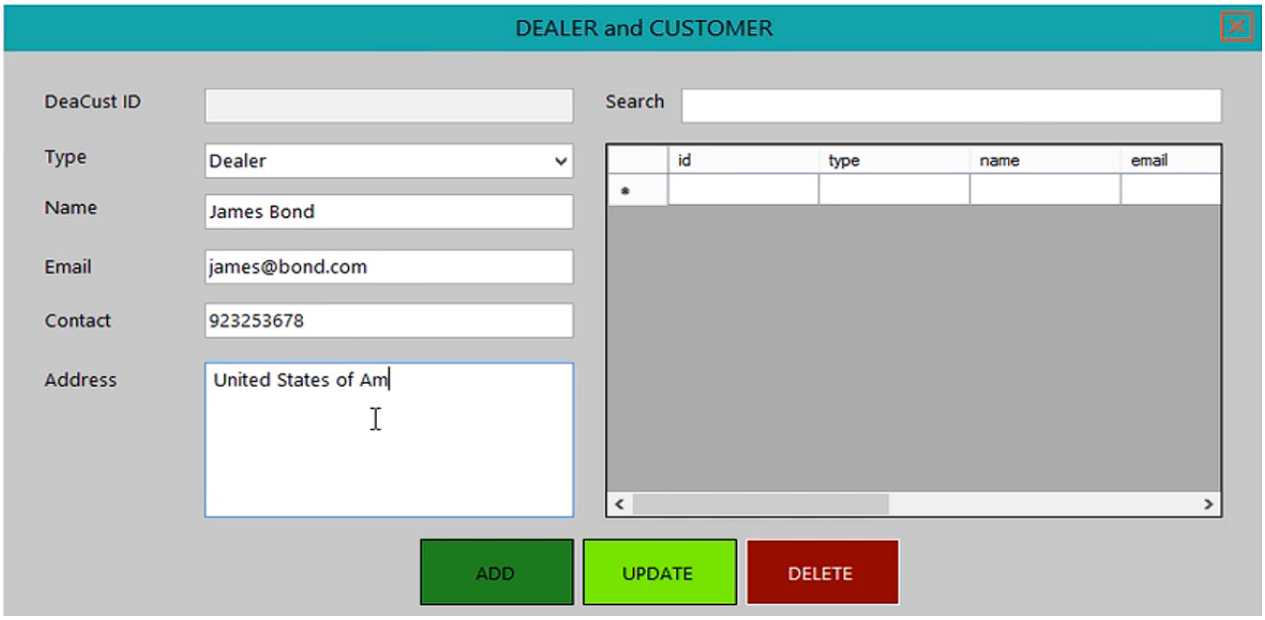

Fig 6.1.5 DEALER AND CUSTOMER

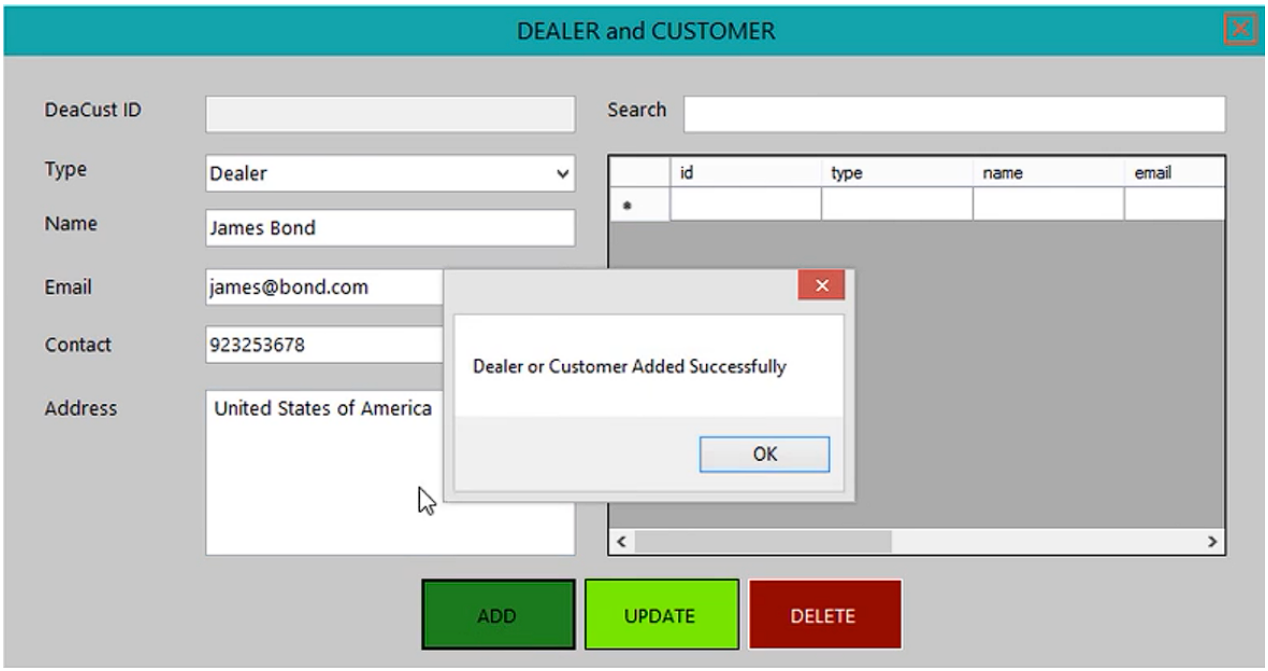

Fig 6.1.5.1 DEALER AND COUSTOMER

6.1.6 LOGIN

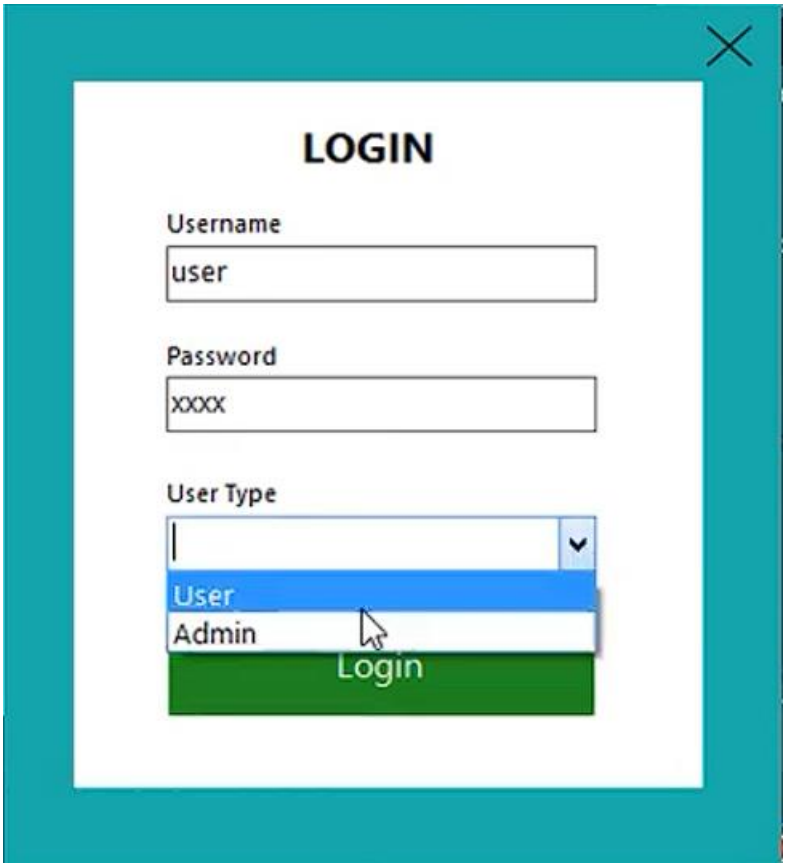

Fig 6.1.6 LOGIN

6.1.7 INVANTORY

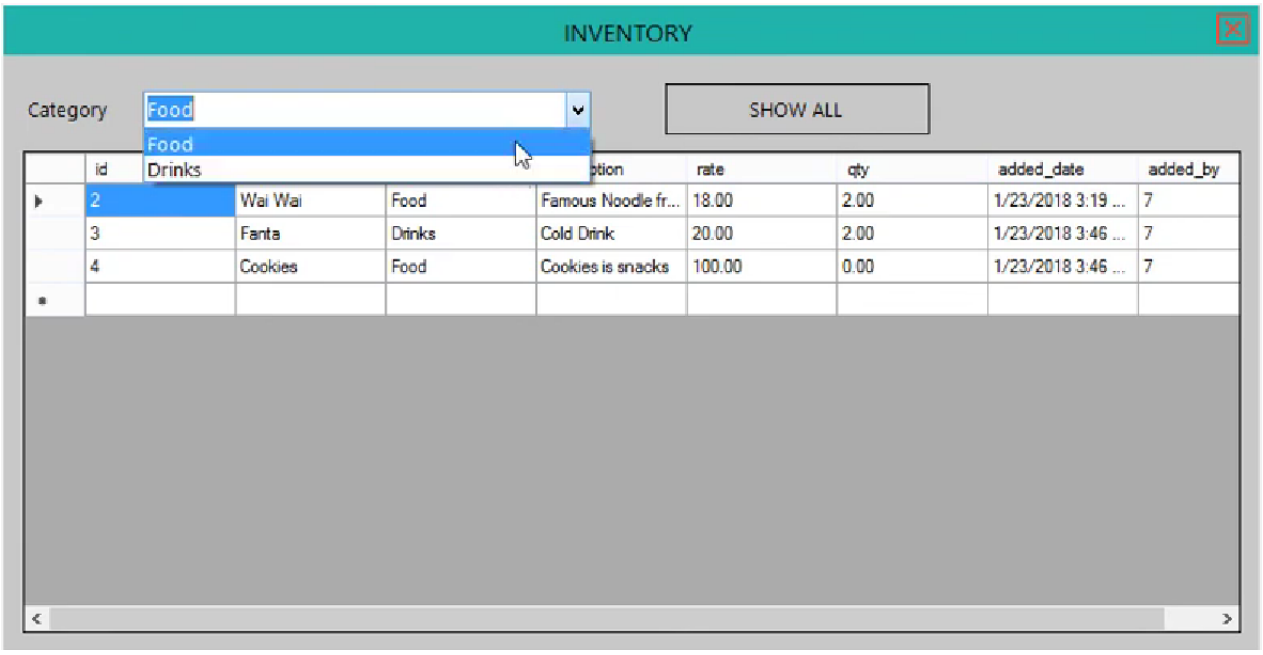

Fig 6.1.7 INVANTORY

6.1.8 PURCHASE

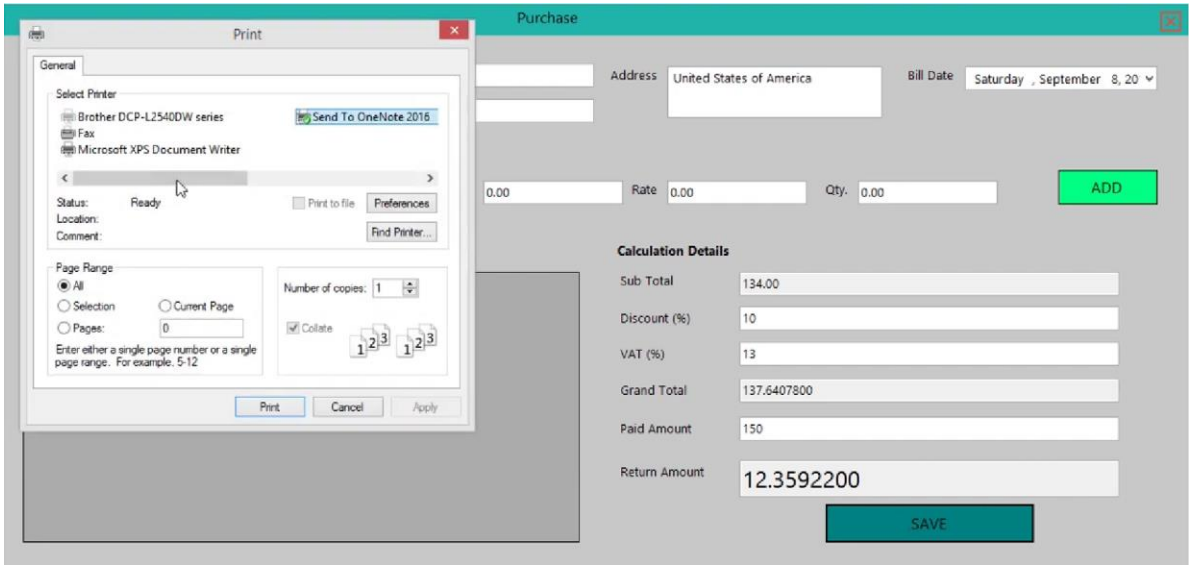

Fig 6.1.8 PURCHASE

CHAPTER-7 SYSTEM -TESTING

1. What is Software Testing?

Software Testing is a method to check whether the actual software product matches expected requirements and to ensure that software product is Defect free. It involves execution of software/system components using manual or automated tools to evaluate one or more properties of interest. The purpose of software testing is to identify errors, gaps, or missing requirements in contrast to actual requirements.

2. Why Software Testing is Important?

Software Testing is Important because if there are any bugs or errors in the software, it can be identified early and can be solved before delivery of the software product.

Properly tested software product ensures reliability, security, and high performance which further results in time saving, cost effectiveness and customer satisfaction.

3. What is the need of Testing?

Testing is important because software bugs could be expensive or even dangerous. Software bugs can potentially cause monetary and human loss, and history is full of such examples.

In April 2015, Bloomberg terminal in London crashed due to software glitch affected more than 300,000 traders on financial markets. It forced the government to postpone a 3bn pound debt sale. Nissan cars recalled over 1 million cars from the market due to software failure in the airbag sensory detectors. There has been reported two accidents due to this software failure. Starbucks was forced to close about 60 percent of stores in the U.S and Canada due to software failure in its POS system. At one point, the store served coffee for free as they were unable to process the transaction. Some of Amazon's third-party retailers saw their product price is reduced to 1p due to a software glitch. They were left with heavy losses.Vulnerability in Windows 10. This bug enables users to escape from security sandboxes through a flaw in the win32k system

4. What are the benefits of Software Testing?

Here are the benefits of using software testing:

Cost-Effective: It is one of the important advantages of software testing. Testing any IT project on time helps you to save your money for the long term. In case if the bugs caught in the earlier stage of software testing, it costs less to fix.

Security: It is the most vulnerable and sensitive benefit of software testing. People are looking for trusted products. It helps in removing risks and problems earlier.

Product quality: It is an essential requirement of any software product. Testing ensures a quality product is delivered to customers.

Customer Satisfaction: The main aim of any product is to give satisfaction to their customers.

UI/UX Testing ensures the best user experience.

5. Types of Software Testing

Typically Testing is classified into three categories.

1. Functional Testing.
2. Non-Functional Testing or Performance Testing.
3. Maintenance (Regression and Maintenance).

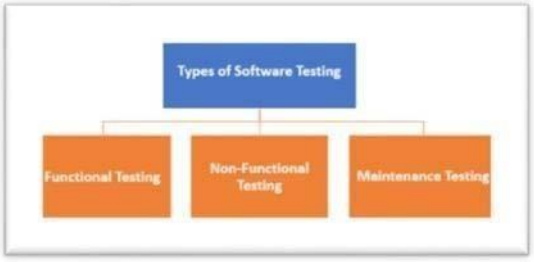

Fig 7.1 Types of Software Testing in Software Engineering

Table 7.1 Types of Software Testing

Testing Category	Types of Testing
Functional Testing	Unit Testing Integration Testing Smoke UAT (User Acceptance Testing) Localization Globalization Interoperabilit yso, on
Non-Functional Testing	Performance endurance Load Volume Scalability Usability So, on
Maintenance	Regression Maintenanc e

6. Testing Strategies in Software Engineering

Here are important strategies in software engineering:

Unit Testing: This software testing basic approach is followed by the programmer to test the unit of the program. It helps developers to know whether the individual unit of the code is working properly or not.

Integration testing: It focuses on the construction and design of the software. You need to see that the integrated units are working without errors or not.

System testing: In this method, your software is compiled as a whole and then tested as a whole. This testing strategy checks the functionality, security, portability, amongst others.

7.1 TEST PLAN / STRATEGY

What is Test Plan

A Test Plan is a detailed document that describes the test strategy, objectives, schedule, estimation, deliverables, and resources required to perform testing for a software product. Test Plan helps us determine the effort needed to validate the quality of the application under test. The test plan serves as a blueprint to conduct software testing activities as a defined process, which is minutely monitored and controlled by the test manager.

As per ISTQB definition: “Test Plan is A document describing the scope, approach, resources, and schedule of intended test activities.”

What is the Importance of Test Plan?

Making Test Plan document has multiple benefits like helping people outside the test team such as developers, business managers, customers to understand the details of testing. Test Plan guides our thinking. It is like a rule book, which needs to be followed. Important aspects like test estimation, test scope, Test Strategy are documented in Test Plan, so it can be reviewed by Management Team and re-used for other projects.

How to write a Test Plan

You already know that making a Test Plan is the most important task of Test Management Process. Follow the seven steps below to create a test plan as per IEEE 829

Step 1: Analyse the product

Step 2: Design the Test Strategy

Step 3: Define the Test Objectives

Step 4: Define Test Criteria

Step 5: Resource Planning

Step 6: Plan Test Environment

Step 7: Schedule & Estimation

Step 8: Determine Test Deliverable

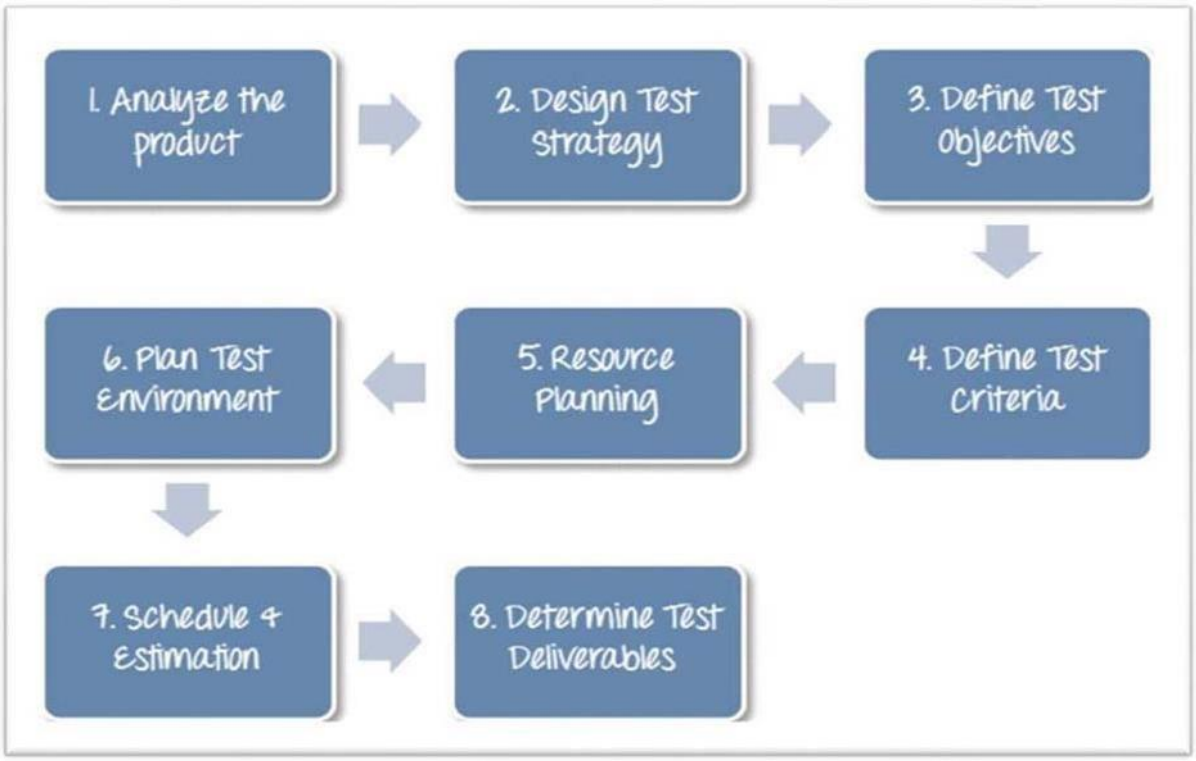

Fig. 7.2 Test Deliverables ["Courtesy of www.devgenius.io"]

Step 1: Analyse the product How can you test a product without any information about it?

The answer is impossible. You must learn a product thoroughly before testing it. We should research clients and the end users to know their needs and expectations from the application

1. Who will use the website? 2. What is it used for?

3. How will it work?

4. What is software/ hardware the product uses?

Step 2: Develop Test Strategy

Test Strategy is a critical step in making a Test Plan in Software Testing. A Test Strategy document is a high-level document, which is usually developed by Test Manager. This document defines:

- The project's testing objectives and the means to achieve them.
- Determines testing effort and costs

We should follow steps below

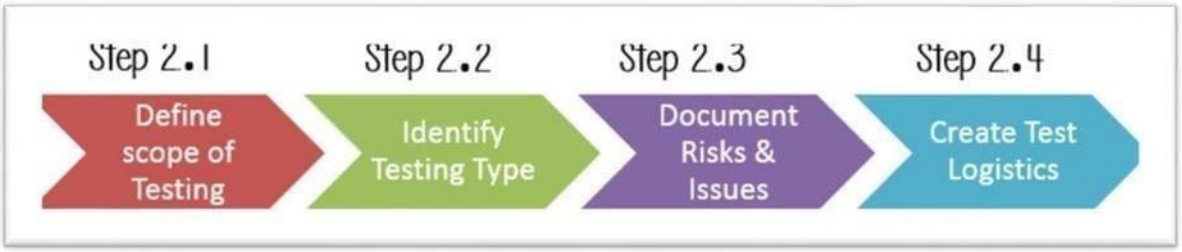

Fig 7.3 Develop Test Strategy

Step 2.1: Define Scope of Testing

Before the start of any test activity, scope of the testing should be known. We must think hard about it.

- The components of the system to be tested (hardware, software, middleware, etc.) are defined as "in scope"
- The components of the system that will not be tested also need to be clearly defined as being "out of scope."

Defining the scope of testing project is very important for all stakeholders. A precise scope helps to give everyone a confidence and accurate information of the testing you are doing, and all project members will have a clear understanding about what is tested and what is remaining to be test.

Step 2.2: Identify Testing Type A Testing Type is a standard test procedure that gives an expected test outcome.

Each testing type is formulated to identify a specific type of product bugs. But, all Testing Types are aimed at achieving one common goal "Early detection of all the defects before releasing the product to the customer"

The commonly used testing types are described as following figure

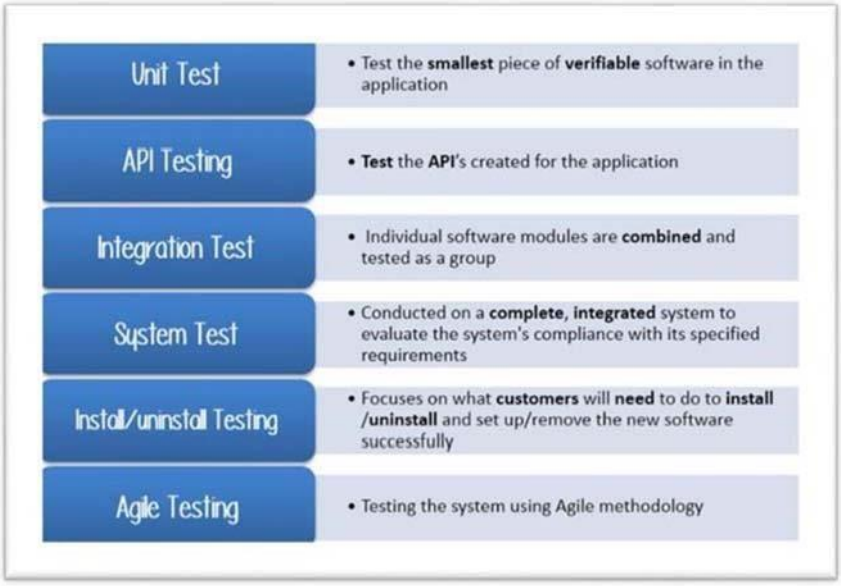

Fig 7.4 Commonly Used Testing Types

Step 2.3: Document Risk & Issues

Risk is future's uncertain event with a probability of occurrence and a potential for loss. When the risk happens, it becomes the 'issue'.

Step 2.4: Create Test Logistics In Test Logistics, the Test Manager should know who will test and when will the test occur.

Who will test? We may not know exact names of the tester who will test, but the type of tester can be defined.

To select the right member for specified task, you must consider if his skill is qualified for the task or not, also estimate the project budget. Selecting wrong member for the task may cause the project to fail or delay.

Person having the following skills is most ideal for performing software testing:

- Ability to understand customers point of view.
- Strong desire for quality.
- Attention to detail and good cooperation

When will the test occur?

Test activities must be matched with associated development activities.

You will start to test when you have all required items shown in following figure.

Step 3: Define Test Objective

Test Objective is the overall goal and achievement of the test execution. The objective of the testing is finding as many software defects as possible; ensure that the software under test is bug free before release. To define the test objectives, you should do the following steps :- 1. List all the software features (functionality, performance, GUI…) which may need to

test.

2. Define the target or the goal of the test based on above features.

Step 4: Define Test Criteria

Test Criteria is a standard or rule on which a test procedure or test judgment can be based. There are two types of test criteria as following:-

Suspension Criteria

Specify the critical suspension criteria for a test. If the suspension criteria are met during testing, the active test cycle will be suspended until the criteria are resolved.

Test Plan Example: If your team members report that there are 40% of test cases failed, you should suspend testing until the development team fixes all the failed cases.

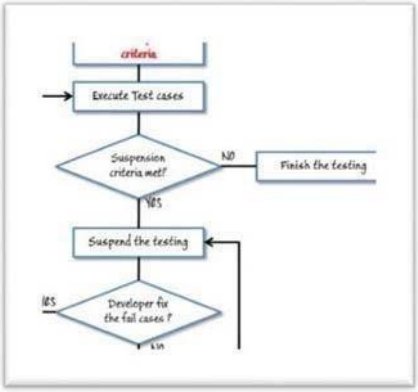

Fig 7.5 Suspension test criteria [“Courtesy of www.guru99.com]

Exit Criteria

It specifies the criteria that denote a successful completion of a test phase. The exit criteria are the targeted results of the test and are necessary before proceeding to the next phase of development. Some methods of defining exit criteria are by specifying a targeted run rate and pass rate.

1. Run rate is ratio between number test cases executed/total test cases of test specification.

For example, the test specification has total 120 TCs, but the tester only executed 100 TCs, So the run rate is 100/120 = 0.83 (83%)

2. Pass rate is ratio between numbers of test cases passed / test cases executed. For example, in above 100 TCs executed, there're 80 TCs that passed, so the pass rate is 80/100 = 0.8 (80%).

This data can be retrieved in Test Metric documents.

 Run rate is mandatory to be 100% unless a clear reason is given. Pass rate is dependent on project scope but achieving high pass rate is a goal.

Step 5: Resource Planning

Resource plan is a detailed summary of all types of resources required to complete project task. Resource could be human, equipment and materials needed to complete a project.

The resource planning is important factor of the test planning because helps in determining the number of resources (employee, equipment…) to be used for the project. Therefore, the Test Manager can make the correct schedule & estimation for the project.

Step 6: Plan Test Environment What is the Test Environment?

A testing environment is a setup of software and hardware on which the testing team is going to execute test cases. The test environment consists of real business and user environment, as well as physical environments, such as server, front end running environment.

Step 7: Schedule & Estimation

In the article Test estimation, you already used some techniques to estimate the effort to complete the project. Now you should include that estimation as well as the schedule to the Test Planning.

Step 8: Test Deliverables

Test Deliverables is a list of all the documents, tools and other components that has to be developed and maintained in support of the testing effort. There are different test deliverables at every phase of the software development lifecycle.

Test deliverables are provided before testing phase.

- Test plans document.
- Test cases documents
- Test Design specifications

Test deliverables are provided during the testing

- Test Scripts
- Simulators.
- Test Data
- Test Traceability Matrix
- Error logs and execution logs.

Test deliverables are provided after the testing cycles is over.

- Test Results/reports
- Defect Report
- Installation/ Test procedures guidelines
- Release notes

7.2 TEST RESULTS AND ANALYSIS

7.2.1 Test Cases:

A test case is a set of actions performed on a system to determine if it satisfies software requirements and functions correctly. The purpose of a test case is to determine if different features within a system are performing as expected and to confirm that the system satisfies all related standards, guidelines, and customer requirements. The process of writing a test case can also help reveal errors or defects within the system.

Test cases are typically written by members of the quality assurance (QA) team or the testing team and can be used as step-by-step instructions for each system test. Testing begins once the development team has finished a system feature or set of features. A sequence or collection of test cases is called a test suite. A test case document includes test steps, test data, preconditions and the postconditions that verify requirements.

How to Write Software Test Cases:

Test cases have a few integral parts that should always be present in fields. However, every test case can be broken down into 8 basic steps.

Step 1: Test Case ID

Test cases should all bear unique IDs to represent them. In most cases, following a convention for this naming ID helps with organization, clarity, and understanding.

Step 2: Test Description

This description should detail what unit, feature, or function is being tested or what is being verified.

Step 3: Assumptions and Pre-Conditions

This entails any conditions to be met before test case execution. One example would be requiring a valid Outlook account for a login.

Step 4: Test Data

This relates to the variables and their values in the test case. In the example of an email login, it would be the username and password for the account.

Step 5: Steps to be Executed

These should be easily repeatable steps as executed from the end user's perspective. For instance, a test case for logging into an email server might include these steps:

1. Open email server web page.
2. Enter username.
3. Enter password.
4. Click "Enter" or "Login" button

Step 6: Expected Result

This indicates the result expected after the test case step execution. Upon entering the right login information, the expected result would be a successful login.

Step 7: Actual Result and Post-Conditions

As compared to the expected result, we can determine the status of the test case. In the case of the email login, the user would either be successfully logged in or not. The post-condition is what happens as a result of the step execution such as being redirected to the email inbox.

Step 8: Pass/Fail

Determining the pass/fail status depends on how the expected result and the actual result compare to each other. Same result = Pass

Different results = Fail

• Unit testing may be performed manually or using automated testing tools and frameworks. The tests are designed to cover all possible scenarios and edge cases, such as incorrect input, error handling, and exception handling.

Overall, unit testing is a critical part of the software development process, as it helps to ensure that the system's individual components work as expected and can be integrated successfully into the system as a whole.

7.3 INTEGRATIONTESTING

1. Integration testing for a customer relationship management system involves testing the interactions between different components and modules of the system to ensure that they work together as expected. The main goal of integration testing is to verify that the system functions as a whole and that all the components and modules are integrated correctly. For a customer relationship management, integration testing may involve testing the integration betweendifferent component, such as:

2. **User management**: Testing the integration between the user authentication and registration modules to ensure that users can log in and access the system securely.

3. Integration testing may be performed manually or using automated testing tools and frameworks. The tests are designed to cover all possible scenarios and edge cases, such as incorrect input, error handling, and exception handling.

4. Overall, integration testing is an essential part of the software development process, as it helps to ensure that the different modules or components of the system work together correctly and that the system as a whole function as expected.

7.3 System testing and acceptance testing

1. System testing and acceptance testing are two distinct types of testing, but they are often performed together as part of the overall testing process for an BILLING SYSTEM system.
2. System testing for an Customer relationship management system system involves testing the entire system as a whole to ensure that all the modules and components work together correctly and meet the specified requirements. This type of testing is typically performed by quality assurance (QA) teams and may include manual and automated testing.
3. Acceptance testing, on the other hand, is a type of testing that is performed to ensure that the system meets the user's requirements and is ready for deployment. Acceptance testing is typically performed by the customer or end-user and may involve testing the system in areal-world scenarioto ensure that it meets their needs and expectations.
4. For an Customer relationship, acceptance testing may involve:

I. Testing the system's user interface to ensure that it is user-friendly and easy to navigate for both students and teachers.

II. Testing the system's functionality to ensure that it meets the user's requirements.

III. Testing the system's performance to ensure that it can handle the load and is scalable, suchas testing the system's response time, bandwidth usage, and capacity to handle multiple users simultaneously.

IV. Testing the system's security features to ensure that it is secure from external threats such as hacking, viruses, and malware.

V. Testing the system's compatibility with different devices, platforms, and web browsers to ensure that it works smoothly on different operating systems and devices.

VI. Testing the system's usability and accessibility to ensure that it is easy to use and accessiblefor users with different levels of technical expertise and users with disabilities.

VII. Testing the system's compatibility with different devices, platforms, and web browsers to ensure that it works smoothly on different operating systems and devices.

VIII. Testing the system's usability and accessibility to ensure that it is easy to use and accessible for users with different levels of technical expertise and users with disabilities.

Overall, system testing and acceptance testing are critical parts of the software development process for an education system, as they help to ensure that the system meets the customer’s requirements, functions as expected, and provides an effective learning experienceto students and teachers.

REGRESSION TESTING

1. Regression testing for an BILLING SYSTEM system involves retesting the system after changes or updates have been made to ensure that the system still works as expected and that the changes or updates have not introduced any new errors or issues.
2. The main goal of regression testing is to ensure that the changes or updates made to the system do not have any unintended consequences and that the system's functionality and performance remain intact.
3. Overall, regression testing is an essential part of the software development process for an BILLING SYSTEM system, as it helps to ensure that the system remains reliable and effective, even after updates or changes have been made.

CONCLUSION

CHAPTER 8: CONCLUSION

8.1 DATES OF CONTINUOUS EVALUATION

Review - I: 28/02/2023

Review – II: 15/04/2023

8.2 SUMMARY OF INTERNSHIP WORK:

1. In this internship I had work on .NET language at Hatkesh Infotech PVT LTD, for this internship I learnt so many points or features of .NET language. I learnt about how SQL Server Databases and Visual Studio2012are used to develop website.
2. **First,** I learnt about SQL Server Database. In it we learnt about how to make new Database and after making New Database how to add necessary tables we are related to our project. Learnt about how to give primary key and foreign key to necessary table. After that I learnt about how to crate Database Diagram. Now, finally I learnt about how to crate view of our crated project related Database.
3. **Second,** I learnt about Visual Studio 2012. In it I learnt about how make various types of webpages related to our project. After making various webpages I learnt about how to make changes in the downloaded Free CSS Templates and prepared new website. After that I learnt about how to add master page in project. After that I learnt about how to link Visual Studio Webpages with SQL Server Database which are related to our project. After that werun all the pages for testing. After that I learnt about how to run Admin Panel in VisualStudio to run our project properly and make some changes. Here, we add Master Entry & Account Entry modules.
4. After all the necessary changes and proper designing, testing, analysis were work on finding domain name of our website, and after taking domain name we are able to live our website project.

8.3 FUTURE ENCHANCEMENT:

1. Try to provide other Technical Courses.
2. Share accurate information related to Courses.
3. Try to provide these courses in less price or free of cost.
4. Try to provide practical knowledge.
5. Try to provide accurate study materials.
6. More features include in this project.

CHAPTER 9 - REFERENCES:

1. Youtube:https://www.youtube.com/watch?v=3AYoipyqOkQ&list=PL6n9fhu94yhXQS_p1i- HLIftB9Y7Vnxlo&ab_channel=kudvenkat
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3. ASP.NET forums: https://forums.asp.net/
4. ASP.NET CodePlex: https://archive.codeplex.com/site/search?query=asp.net
5. Stack Overflow: https://stackoverflow.com/questions/tagged/asp.net
6. GitHub: https://github.com/search?q=asp.net&type=Repositories I