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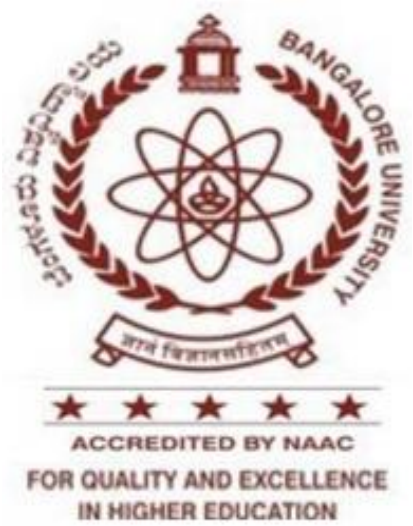

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

A DBMS MINI PROJECT ON "BANK MANAGEMENT SYSTEM"

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		BANK MANAGEMENT SYSTEM

This is to certify that we have successfully completed the above mentioned project, prescribed by the Bangalore University for the academic year 2020-2021.

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- ANUSHA A

- SUSHMITHA A T

ABSTRACT

Bank management system can be considered as a most important thing in economic world. The **BANK MANAGEMENT SYSTEM** undertaken as a project is an application for maintaining a personal account in a bank. In this bank management system we will automate all the banking process.

The main aim of this project is to develop software for bank management system. This project is to develop software for bank management system. This project has been developed to carry out the processes easily and quickly, which is not possible with the manuals systems, which are overcome by this software. This project is developed using JAVA programming language. Hence it provides the complete solution for the current management system.

The Design and development of this Bank Management system provides a more secured approach in managing bank customer's information. This application provides the access to the customer to create an account, deposit/withdraw the cash from the account and also to check the balance of the account and also to view reports of all accounts present.

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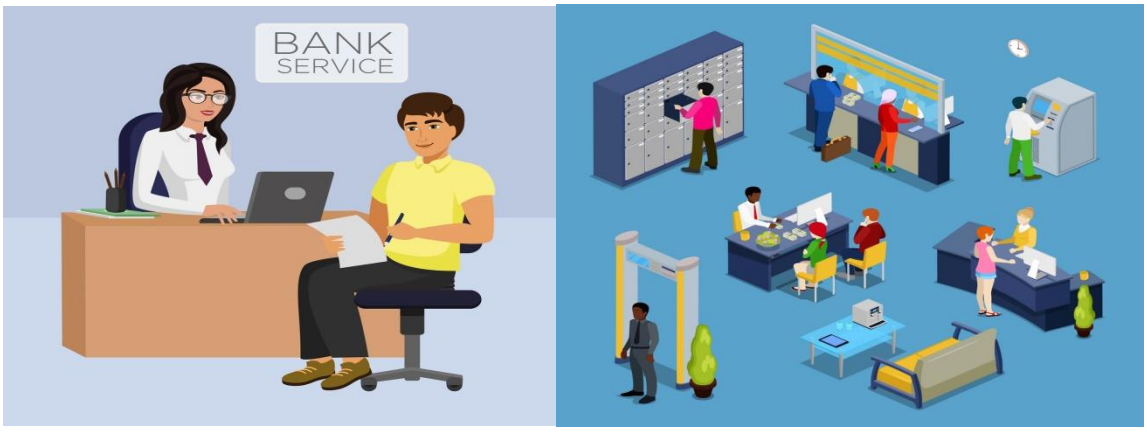
CHAPTER 1

INTRODUCTION

1.1 Introduction

- The "**Bank Management System**" project is a desktop application which can be used by customers of bank to perform basic banking transactions. This application provides the access to the customer to create an account, deposit/withdraw the cash from the account and also to check the balance of the account and also to view reports of all accounts present.
- The main objective of the project is to develop Banking system for banks. In this bank management system we will automate all the banking process. The main purpose of developing bank management system is to design an application, which could store bank data and provide an interface for retrieving customer related details with 100% accuracy.
- A **bank** is a financial institution that accepts deposits and recurring accounts from the people and creates Demand Deposit. Bank is the place where customers feel the sense of safety for their property. In the bank, customers deposit and withdraw their money.
- Now a day's, managing a bank is tedious job up to certain limit. So software that reduces the work is essential. Also today's world is a genuine computer world and is getting faster and faster day-by-day. Thus considering above necessities, the software for bank management has become necessary which would be useful in managing the bank more efficiently. The software is meant to overcome the drawbacks of the manual system.
- The software has been developed using the most powerful and secure backend MYSQL database and most widely used language JAVA Swings Concepts.



1.2 Features of Bank Management System

- ✓ The proposed system is more efficient, fast, reliable, user friendly.
- ✓ User Account creation.
- ✓ Login using username and password there by provides security to the software.
- ✓ User can create customer easily by filling up details.
- ✓ Customer can create a new account in the application.
- ✓ Customer can make transactions such as deposit and withdraw money from the account.
- ✓ Customer also able to check the balance of the account.
- ✓ The system also shows customer and account reports.
- ✓ Customer also transfers money from one account to another account.
- ✓ The system also provides logout system facility.
- ✓ Manage large number of customer details with ease.

1.3 Objective of the Bank Management System

- The main objective of the system is to automate all the banking process with improved performance an realize the vision of paperless banking.
- The main objective of the system is to provide a secure system. Our system is password protected and it only allows authorized user to access various functions available in the system.
- It will Reduced manual work as most of the work done by computer.
- It will also increase the work efficiency as few employees can handle more customers. This will reduced the manual workload and give information instantly.

CHAPTER 2

REQUIREMENT SPECIFICATION

2.1 Hardware Requirements

Hardware is a set of physical components, which performs the functions of applying appropriate, predefined instructions.

The hardware requirements given here is minimal requirements for the project to run.

- Processor : Intel Pentium processor and above
- Processor Speed : 300 MHz and above
- Ram Size : 4GB or above
- Hard Drive : 32 GB or above
- Input Device : Mouse, Keyboard
- Output Device : Monitor

2.2 Software Requirements

The software is a set of procedures of coded information or a program which when fed into the computer hardware enables the computer to perform the various tasks.

- Operating System : Microsoft Windows 10
- Front End : Java-Swings
- Bank End : MYSQL
- Toolkit : XAMPP Server for MYSQL
- IDE : NetBeans IDE

2.3 Overview of Tools/Software

2.3.1 Java Swings

- Swing is the collection of user interface components for the Java programs.
- It is part of Java foundation classes that are referred to as JFC.
- Swing was developed to provide a more sophisticated set of GUI components than the earlier Abstract Window Toolkit.

- Swing is the graphical user interface toolkit that is used for developing the windows based java applications or programs.
- It is built on the top of AWT (Abstract Windowing Toolkit) API and entirely written in java.

Swing Features

- **Light Weight** − Swing components are independent of native Operating System's API as Swing API controls are rendered mostly using pure JAVA code instead of underlying operating system calls.
- **Rich Controls** − Swing provides a rich set of advanced controls like Tree, TabbedPane, slider, colorpicker, and table controls.
- **Highly Customizable** − Swing controls can be customized in a very easy way as visual appearance is independent of internal representation.
- **Pluggable look-and-feel** − SWING based GUI Application look and feel can be changed at run-time, based on available values.

2.3.2 NetBeans IDE

- **NetBeans** is an integrated development environment (IDE) for Java.
- NetBeans allows applications to be developed from a set of modular software components called *modules*. NetBeans is also referred to as a platform of modular components used for developing Java desktop applications.
- NetBeans is coded in Java and runs on most operating systems with a Java Virtual Machine (JVM), including Solaris, Mac OS, and Linux.
- NetBeans IDE is free, open source, cross-platform, feature-rich, easy to use and as powerful as Eclipse IDE.

2.3.3 MYSQL

- MYSQL is an open-source relational database management system (RDBMS).
- Its name is a combination of “My”, the name of co-founders Michael Widenius's daughter and "SQL", the abbreviation for Structured Query Language.

- MySQL is very fast, reliable, and easy to use and it is free to download and use.
- The data in a MySQL database are stored in tables. A table is a collection of related data, and it consists of columns and rows.
- MySQL works on many operating systems and with many languages including PHP, PERL, C, C++, JAVA, etc.
- MySQL works very quickly and works well even with large data sets.
- MySQL uses a standard form of the well-known SQL data language.
- MySQL is customizable. The open-source GPL license allows programmers to modify the MySQL software to fit their own specific environments.
- MySQL is a very powerful program in its own right. It handles a large subset of the functionality of the most expensive and powerful database packages.

2.3.4 Xampp Server

- Xampp is a free and open-source cross-platform web server solution stack package developed by Apache Friends, consisting mainly of the Apache HTTP Server, MariaDB database, and interpreters for scripts written in the PHP and Perl programming languages.
- It is one of the simplest and light-weight local servers that is used to test your website locally. It is an open source platform.
- The full form of XAMPP stands for

  X - Cross-platform,

  A - Apache server,

  M - MariaDB (Mysql),

  P - PHP,

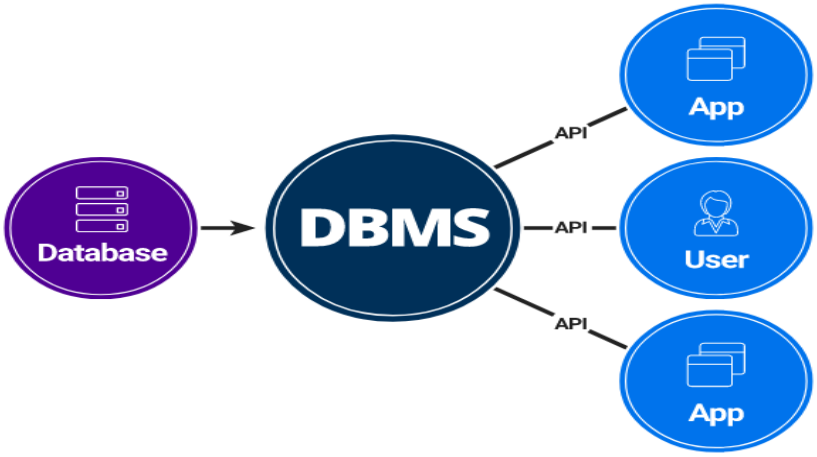
  P - Perl
- It includes X-OS because it works in all major operating systems like Windows, Linux, Mac etc
- The use of XAMPP is to check the clients or your website before uploading it to the remote web server.

CHAPTER 3

SOFTWARE ENVIRONMENT

3.1 Database Management System (DBMS)

- The database is a collection of inter-related data which is used to retrieve, insert and delete the data efficiently. It is also used to organize the data in the form of a table, schema, views, and reports, etc.
- DBMS is a collection of programs that enables users to create and maintain a database.
- The DBMS is a general-purpose software system that facilitates the processes of defining, constructing, manipulating and sharing databases among various users and applications.
- For example: MySQL, Oracle, etc



3.1.1 Characteristics of Database Management System

- Self-describing nature.
- Keeps a tight control on data redundancy.
- Enforces user defined rules to ensure that integrity of table data.
- Provides insulation between Programs and data, data abstraction.
- Supports multiple views of the data.
- Helps sharing of data and Multi-user transaction processing.

3.1.2 Advantages of using the DBMS approach

- Controlling the redundancy.
- Restricting unauthorized access.
- Providing persistent storage for program objects.
- Providing storage structures for efficient query processing.
- Providing backup and recovery.
- Providing multiple users interfaces.
- Representing complex relationships among data.
- Enforcing integrity constraints.

3.2 Structured Query Language (SQL)

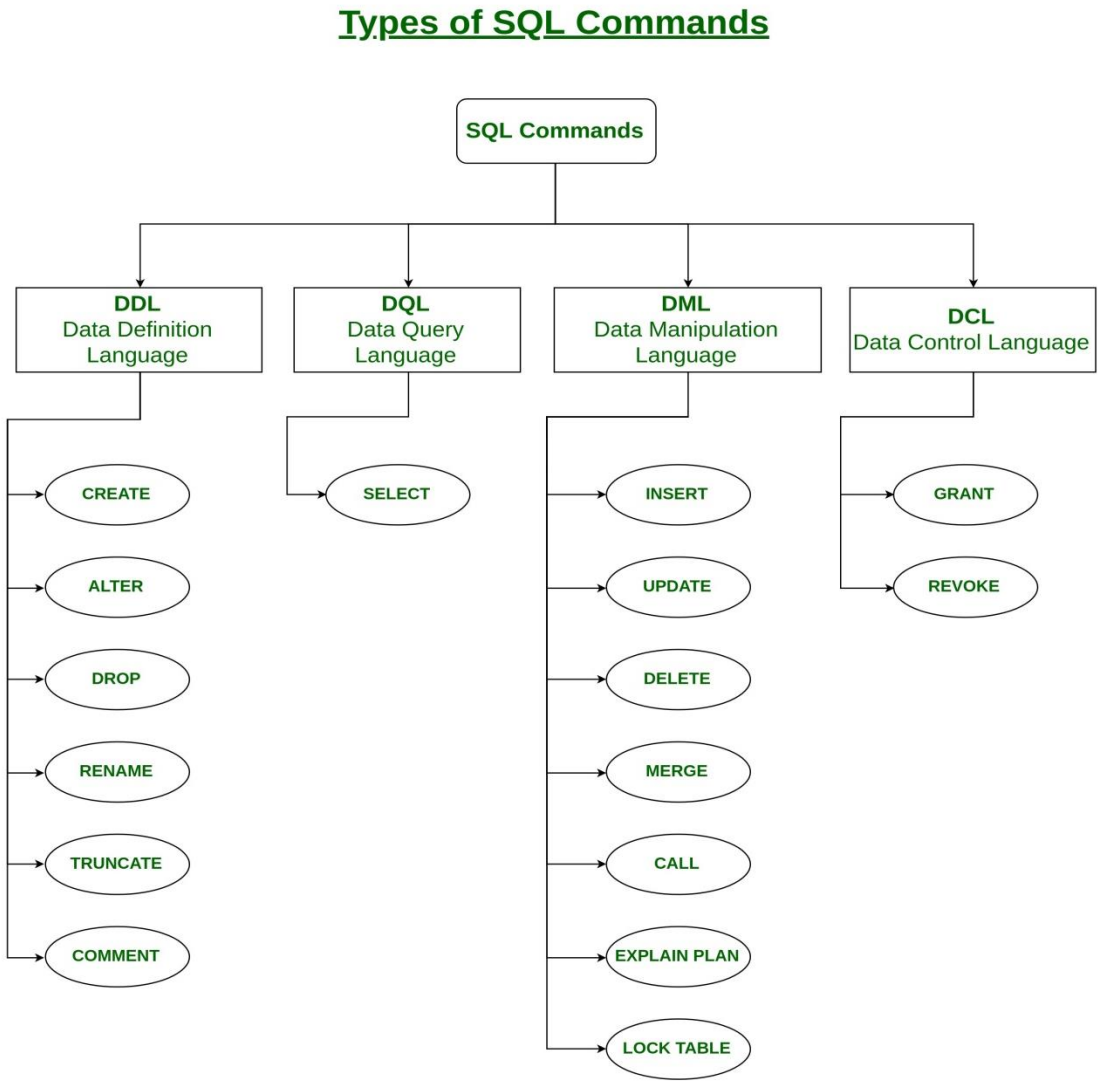
- It is a standard language for Relational Database System.It is used for storing and managing data in relational database management system (RDMS).
- SQL allows users to query the database in a number of ways, using English-like statements.
- SQL uses the terms table, row, and column for relation, tuple, and attribute.

3.2.1 Characteristics of SQL

- SQL is easy to learn.
- SQL is used to access data from relational database management systems.
- SQL can execute queries against the database.
- SQL is used to describe the data.
- SQL is used to define the data in the database and manipulate it when needed.
- SQL is used to create and drop the database and table.
- SQL is used to create a view, stored procedure, function in a database.
- SQL allows users to set permissions on tables, procedures, and views.

3.2.2 SQL commands

- SQL commands are instructions. It is used to communicate with the database. It is also used to perform specific tasks, functions, and queries of data.
- SQL can perform various tasks like create a table, add data to tables, drop the table, modify the table, set permission for users.



- **CREATE**

  This command is used to create table or view by giving it a name and specifying its attributes and constraints. The attributes are specified first, and each attribute is given a name, a data type to specify its domain values, and any attribute constraints such as NOT NULL.

  Syntax:

  CREATE TABLE <TNAME> (ATR1 TYP1 CONST1, ATR2 TYP2 CONST2,…)

  Ex:

  CREATE TABLE EMPLOYEE(Name VARCHAR2(20), Email VARCHAR2(100), DOB DATE);

- **ALTER**

It is used to alter the structure of the database. This change could be either to modify the characteristics of an existing attribute or probably to add a new attribute.

Syntax:

- To add a new column in the table

  ALTER TABLE table_name ADD column_name COLUMN-definition;

- To modify existing column in the table:

  ALTER TABLE MODIFY(COLUMN DEFINITION....);

- **DROP**

It is used to delete both the structure and record stored in the table.

Syntax:

DROP TABLE;

Example:

DROP TABLE EMPLOYEE;

- **TRUNCATE**

It is used to delete all the rows from the table and free the space containing the table.

Syntax:

TRUNCATE TABLE table_name;

Example:

TRUNCATE TABLE EMPLOYEE;

3.2.3 Statements in SQL

Following are the important statements used in SQL.

- ✓ SELECT - Used to retrieve the information from the relation.
- ✓ INSERT - Used to insert the new values to the relation.
- ✓ DELETET - Used to delete one or more existing tuples from the relation.
- ✓ UPDATE - Used to update already existing values in the relation.

3.2.4 Aggregate Functions in SQL

Following aggregate functions are provided by the SQL.

- ✓ COUNT - Returns number of tuples.
- ✓ SUM - Returns sum of entries in a column.
- ✓ MAX - Returns Maximum value from an entire column.
- ✓ MIN - Returns Minimum value from an entire column.
- ✓ AVG - Returns Average of all the entries in a column.

3.2.5 Constraints in SQL

Following constraints are provided by the SQL.

- ✓ NOT NULL - Column should not contain NULL value.
- ✓ PRIMARY KEY - Should not contain duplicate or NULL values.
- ✓ UNIQUE - Each value of the column should be unique.

3.3 Database design

- Database design is a collection of processes that facilitate the designing, development, implementation and maintenance of enterprise data management system.
- Properly designed database are easy to maintain, improves data consistency and are cost effective in terms of disk storage space.
- Database is designed using MYSQL database. We can efficiently store and retrieve data from the database.
- The database BANK has seven tables.
    1. Account
    2. Branch
    3. Customer
    4. Deposit
    5. Transfer
    6. Withdraw
    7. User

1. Account Table

Field	Description
Id	It is auto-incremented id
acc_id	Creates a unique account id for each new customer
cust_id	Links the customer to an account in the customer table
acc_type	It contains the type of the account
Balance	It contains the balance amount of an account

2. Customer

Field	Description
Id	It is auto-incremented id
cust_id	Creates a unique customer id for each new customer
Firstname	It contains the first name of customer
Lastname	It contains the last name of customer
Street	It contains the address of customer
City	It contains the name of city
Branch	It contains the name of branch
Phoneno	It contains the phone number of customer

3. Branch Table

Field	Description
Id	It is auto-incremented id
Branch	It contains the name of branch

4. Transfer Table

Field	Description
Id	It is auto-incremented id
f_acount	It contains the from account number
t_account	It contains the to account number
Amount	It contains the transferred amount

5. Deposit Table

Field	Description
Id	Its auto-incremented id
acc_id	Links the account id in the account table
cust_id	Links the customer id in the customer table
Date	It contains the date
Balance	It contains the balance amount
Deposit	It contains the deposit amount

6. Withdraw Table

Field	Description
Id	Its auto-incremented id
acc_id	Links the account id in the account table
cust_id	Links the customer id in the customer table
Date	It contains the date
Balance	It contains the balance amount
Withdraw	It contains the withdraw amount

7. User Table

Field	Description
Id	Its auto-incremented id
Name	It contains name of the user
Username	It contains the username
Password	It contains the password entered by user to login

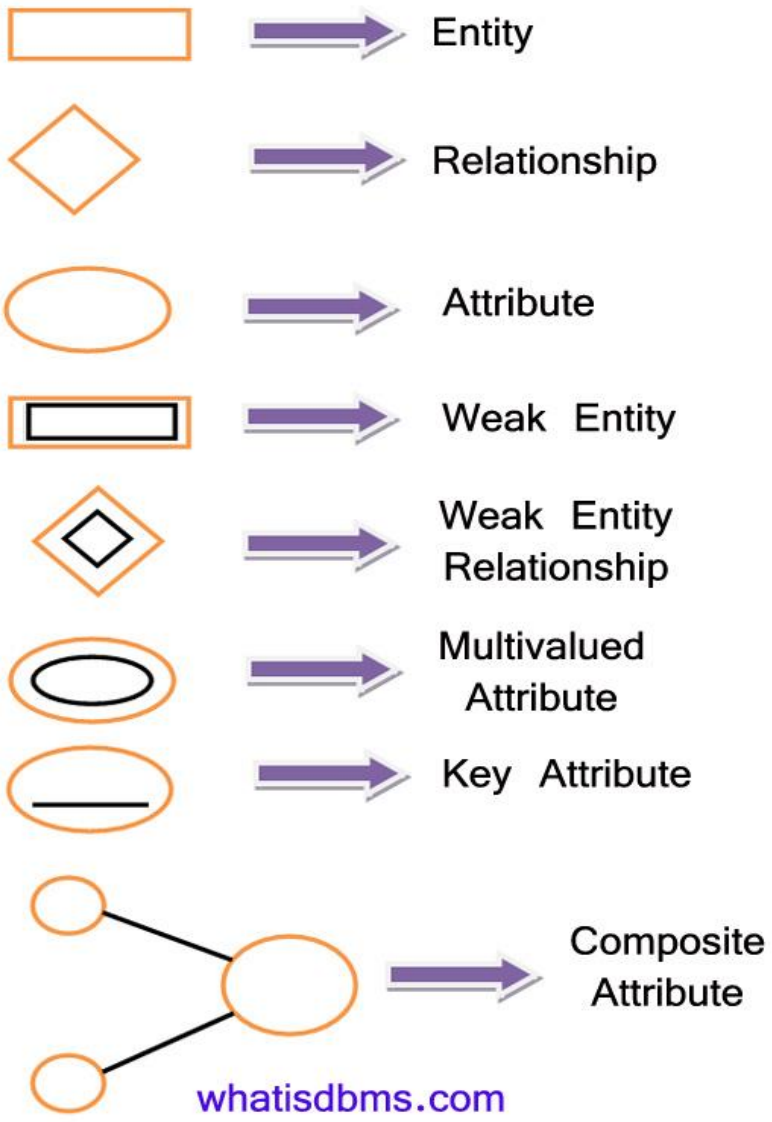
CHAPTER 4

SYSTEM DESIGN

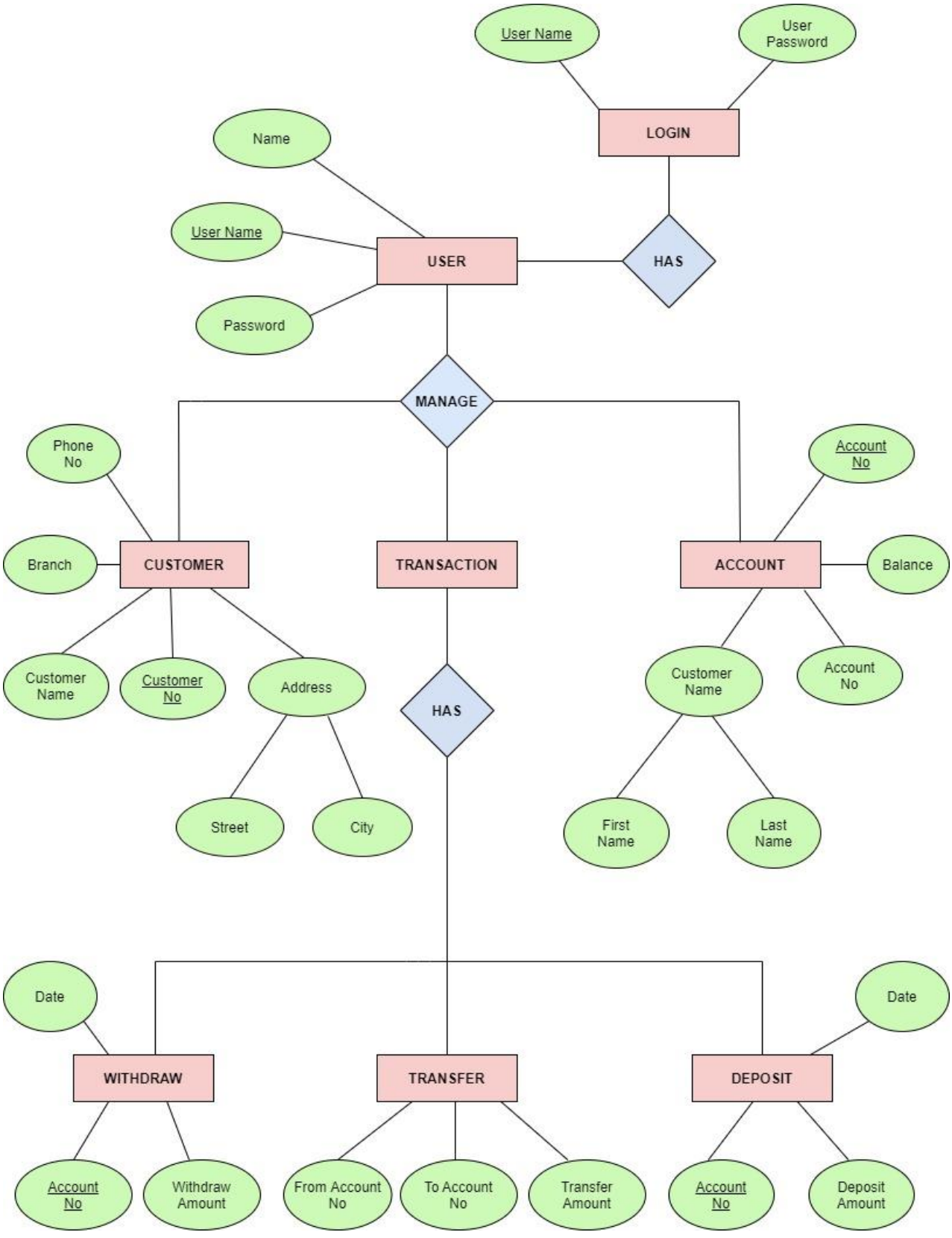
4.1 ER Diagram

An Entity-Relationship (ER) model is an abstract way to describe a database. It is a popular high-level conceptual data model. Entity relationship diagrams (ER diagrams) are used to present the diagrammatic notations associated with ER model.

4.1.1 Notations for ER Diagram



4.2 ER Diagram for Bank Management System



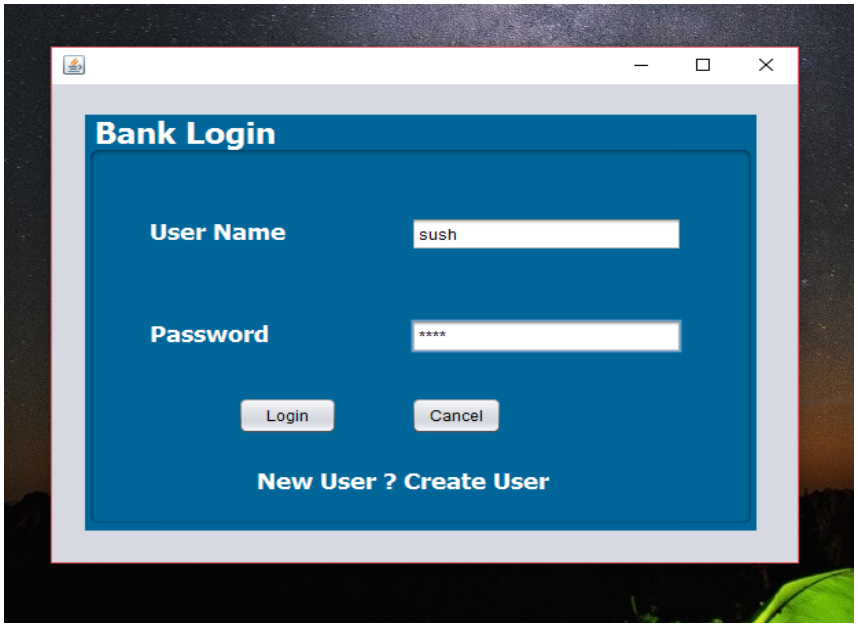
4.3 Modules of Bank Management System

- The Bank Management System consists of two modules :
  - Login module
  - Main menu module
- The main module is the **LOGIN** module which is used to login into the main menu page through username and password stored in the database.
- The Bank Management System **MAIN MENU** page consists of following seven menus:
  1. **File -** This menu consists of two submenus.
     - Customer : It creates a new customer and generates unique customer id.
     - Account : It creates a new account according to customer id,type of account.
  2. **Transaction** – This menu consist of two submenus.
     - Depsoit : It is used to deposit money into the account.
     - Withdraw : It is used to withdraw money from the account.
  3. **Transfer** – This menu consist of one submenu.
     - Account to Account transfer : It is used to transfer money from one account to another account through account number.
  4. **Balance** – This menu consist of one submenus.
     - Balance Check : It is used to check the balance of the account.
  5. **Report -** This menu consist of two submenus.
     - Customer Report : It gives the customer report.
     - Account Report : It gives the account report.
  6. **User Account -** This menu consist of one submenu.
     - User account Creation : It is used to create user account to login into the application.
  7. **Logout** – This menu consist of one submenu.
     - Logout – It is used to logout from the application and again it goes to login page.

CHAPTER 5

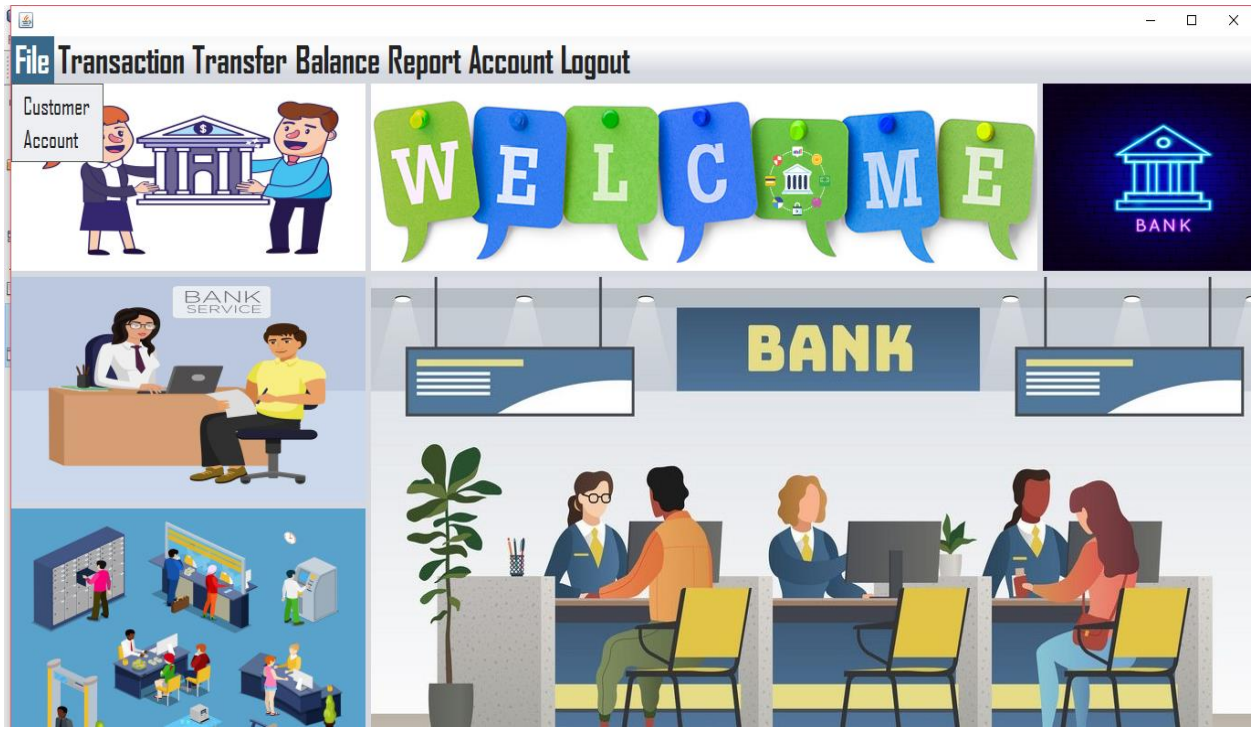
RESULTS

Login Page



Main Menu

File menu



Transaction Menu

Transfer Menu

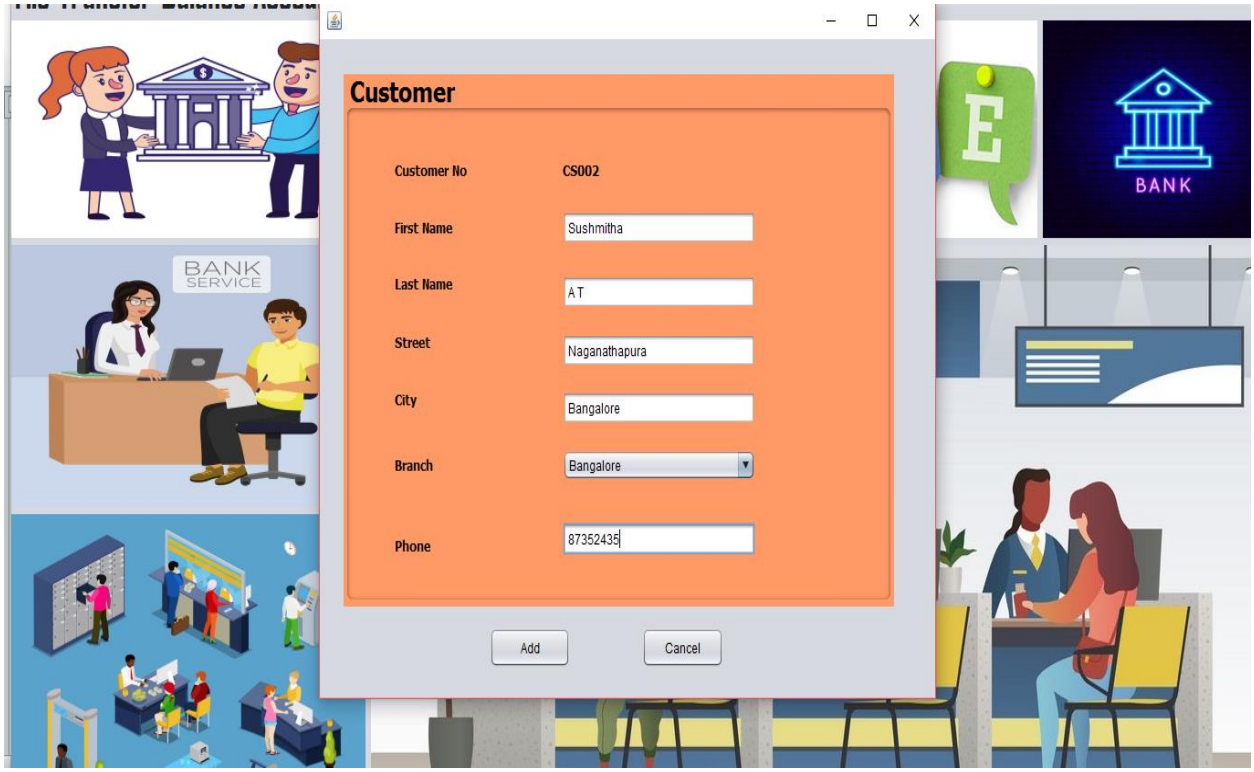
Balance Menu

Report Menu

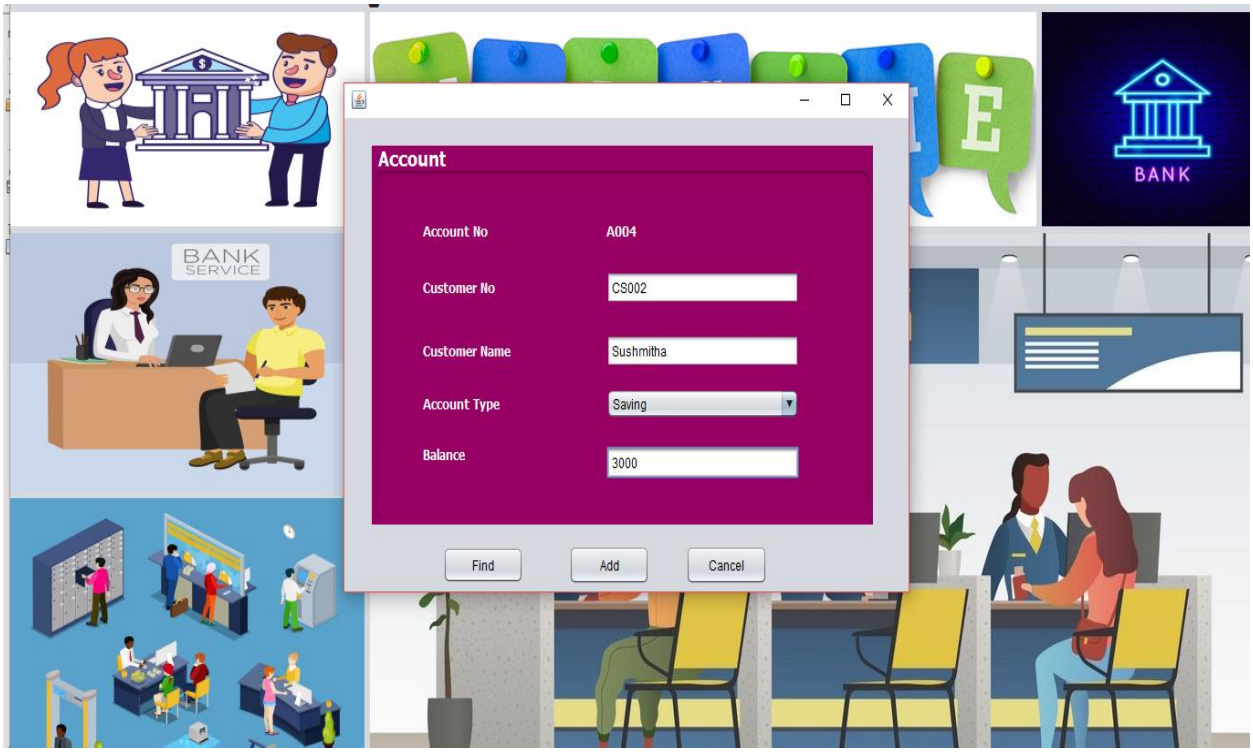
Account Menu

Logout Menu

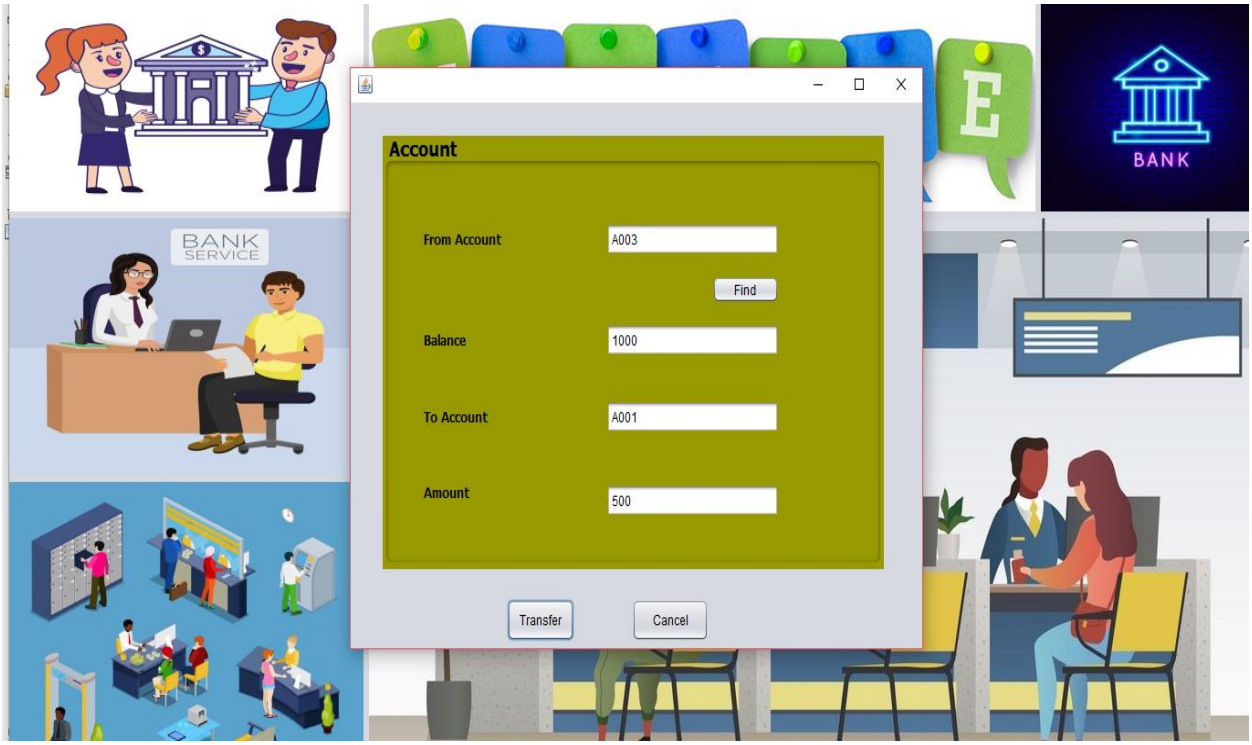
Customer Form



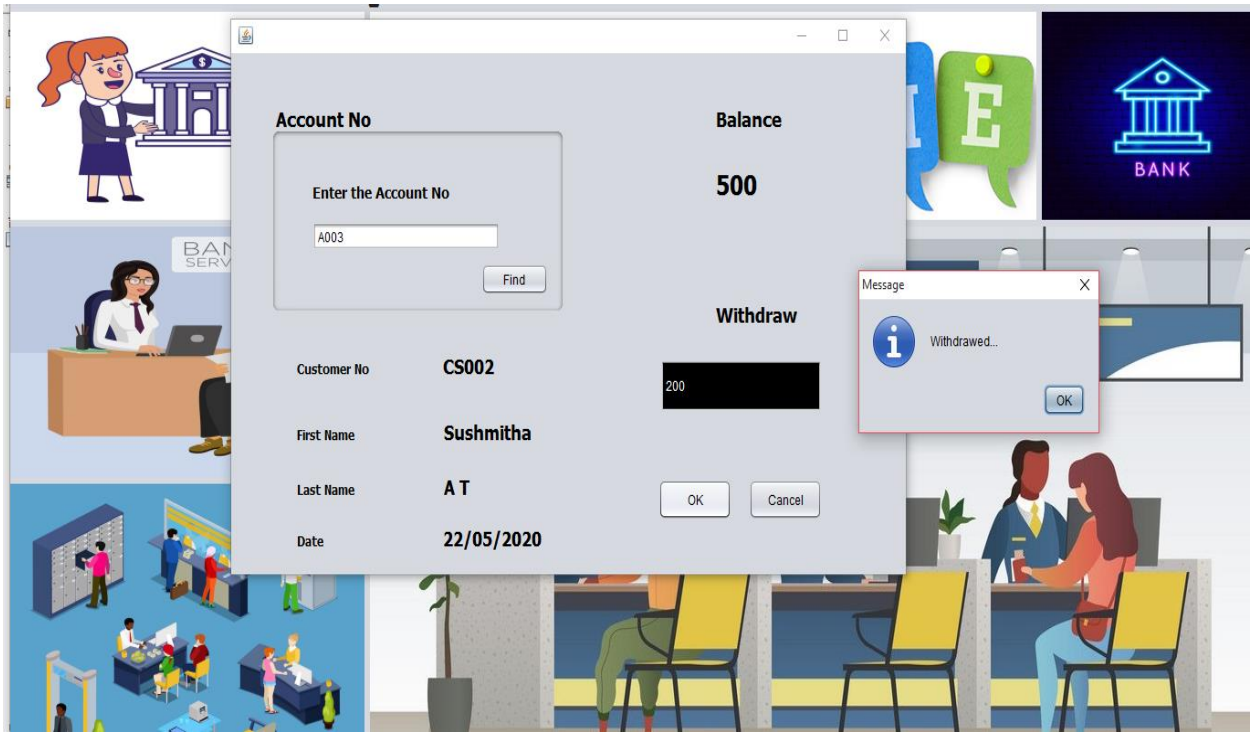
Account Form



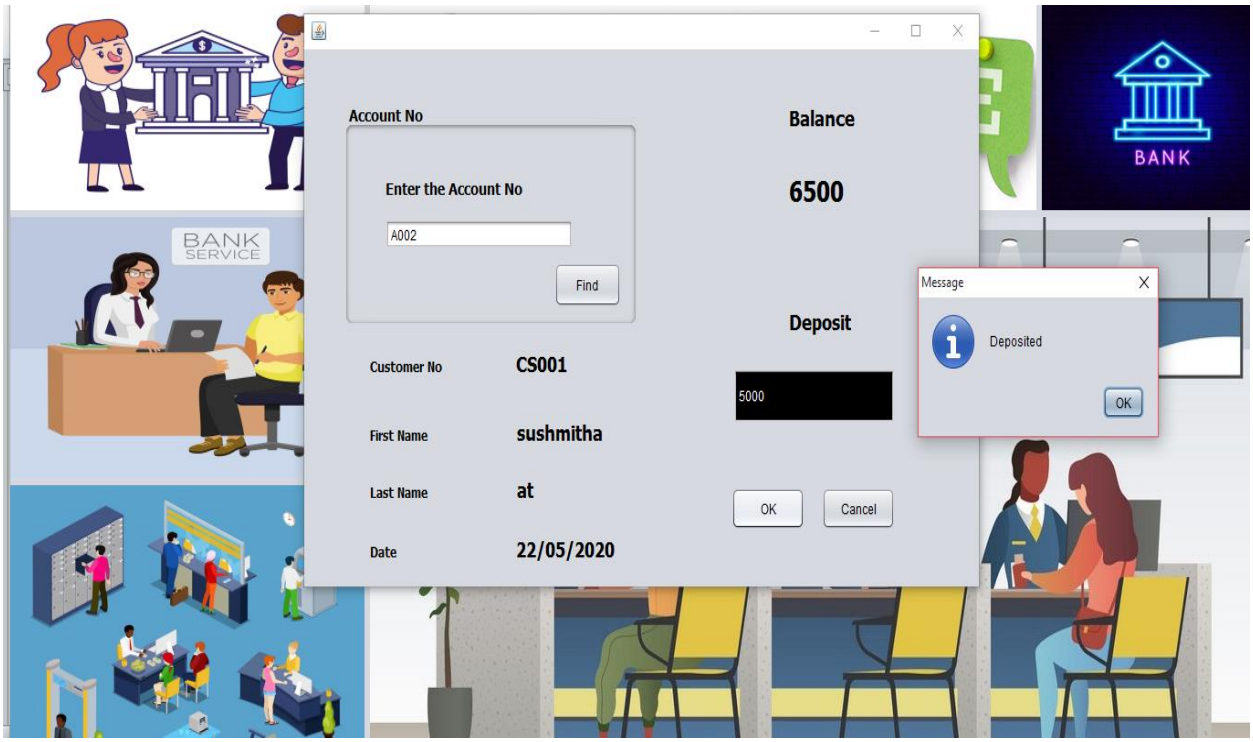
Account to Account Transfer Form



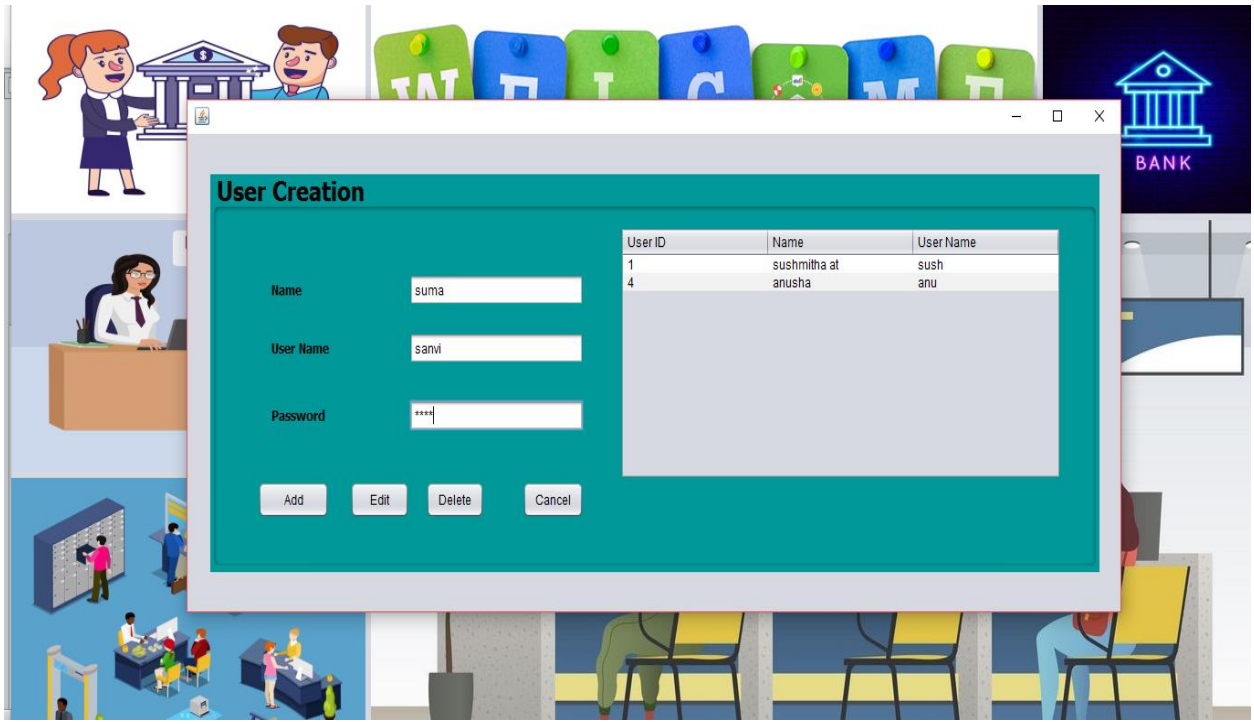
Withdraw Check Form



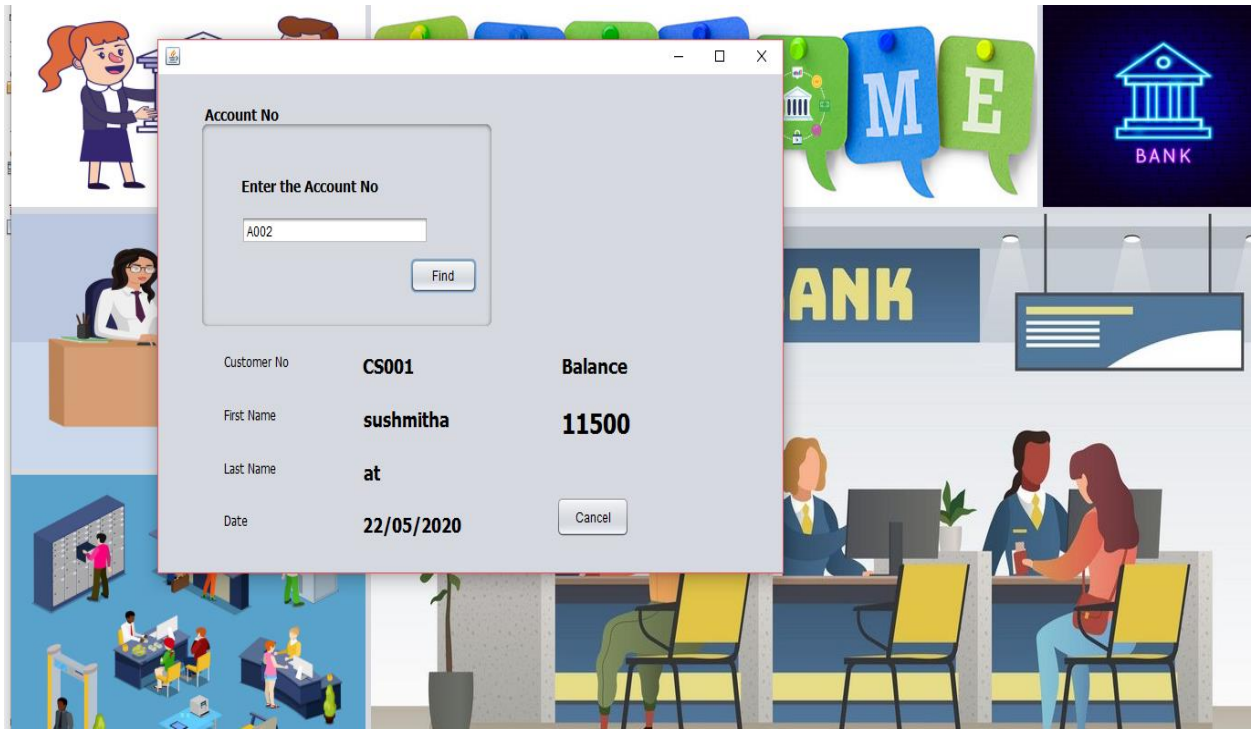
Deposit Form



User Creation Form



Balance Check Form



CHAPTER 6

CONCLUSION

The bank management system is a desktop application for maintaining a person's account in a bank. The system provides the access to the customer to create an account, deposit/withdraw the cash from the account, also to view reports of accounts present.

Bank management system is saving the time with accuracy than bank manual system. The whole process of banking is showed in the code like creating new account, displaying details, deposits, withdraw.

The main focus of this project is to save the customer time which have multiple bank accounts in different banks. The maintenance of the records is made efficient, as all the records are stored in the database, through which data can be retrieved easily. Hence we can conclude that project is accomplished successfully.

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