VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI

B.L.D.E ASSOCIATION'S

VACHANA PITAMAHA DR. P.G. HALAKATTI COLLEGE OF ENGINEERING & TECHNOLOGY
VIJAYAPURA - 586103

DEPARTMENT
OF
COMPUTER SCIENCE AND ENGINEERING

INTERNSHIP REPORT
ON
"UNIVERSITY MANAGEMENT SYSTEM"

Submitted by
NIKHIL GUGAWAD
[2BL19CS057]

Under the guidance of
Prof. D.M. Ijeri

Internship carried out at
The Learn Hub

2022-2023

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CERTIFICATE

This Certified Internship Report entitled "University Management System" is a bonafide work carried out by Nikhil Gugawad [2BL19CS057] in partial fulfilment for the award of Bachelor of Engineering in Computer Science and Engineering from BLDEA's V. P. Dr. P. G. Halakatti college of Engineering & Technology during the academic year 2022-2023.

GUIDE	HOD	PRINCIPAL
Prof. D.M. IJERI	**Dr. PUSHPA .B. PATIL**	**Dr. V.G. SANGAM**

EXAMINERS **SIGNATURE WITH DATE**

1.

2.

REQUEST LETTER

BLDE ASSOCIATION'S
VACHANA PITAMAHA DR. P. G. HALAKATTI
COLLEGE OF ENGINEERING AND TECHNOLOGY Since 1980
Adarsh Nagar, Ashram Road, Vijayapur 586103, Karnataka, INDIA

To,
The Placement Officer,
BLDEA's CET,
Vijayapur.

From,
HOD
Dept of CSE,
BLDEA's CET Vijayapur

Subject: Request for providing Internship to VI Semester B.E (CSE) Students by the **Learn Hub Company.**

Respected Sir,

With reference to the above cited subject. The VI Semester students of **B.E(Computer Science and Engineering)** are willing to undertake Internship training on **AWS, Python & Java** as a part of their academic studies by **Learn Hub company**. Hence, I request the placement officer to arrange the needful and list of students willing to undergo internship is attached below.

Please do the needful and help them to acquire additional knowledge.
Thanking you,

Date: 10-02-2022
Place: Vijayapura

Dr. Pushpa B. Patil
Head of CSE Dept.

APPROVAL LETTER

The LearnHub

06-08-2022

To,
The Placement officer,
VP Dr. P G Halakatti College of Engineering,
Vijayapur

Respected Sir, Sir,

Subject: Regarding Internship Activities in V P Dr. P G Halakatti College of Engineering and Technology, Vijayapur.

With respect to above mentioned subject, LearnHub Talent Solutions has agreed to conduct an internship on AWS/Full stack in Java/Python in your institute for **B.E Computer science Engineering** students.

Thank you

Head - Institutional Alliances
LEARNHUB TALENT SOLUTIONS
For LEARNHUB TALENT SOLUTIONS

INTERNSHIP CERTIFICATE

The LearnHub

CERTIFICATE

of completion

This certificate is proudly presented to

NIKHIL GUGAWAD

Of BLDEA's V P Dr. P G Halakatti college of Engineering and Technolgy,
CSE Branch bearing USN 2BL19CS057,

for completing the Internship – "Full stack in JAVA" from 21- 08 -2022 to 20-09-2022.

We Highly appreciate your efforts.

Date 20-02-2023

Signature

DECLARATION

I **NIKHIL GUGAWAD**, a student of Bachelor of Engineering degree, Computer Science and Engineering in B.L.D.E.A's V.P. Dr P. G. Halakatti collegeof Engineering and Technology declare that the Internship work titled "**UNIVERSITY MANAGEMENT SYSTEM**" and submitted in fulfilment of the course requirements for the award of degree in B.E Computer Science and Engineering, Visvesvaraya Technological University, Belagavi during the academic year 2022-2023.

Nikhil Gugawad

[2BL19CS057]

ACKNOWLEDGEMENT

I would also like to express my heartfelt gratitude to our Principal **Dr. V. G. Sangam** for providing all the facilities in our college.

I would like to thank **Dr. Pushpa. B. Patil** , HOD of Computer Science and Engineering for providing all facilities and fostering a congenial academic in the department.

I also wish to express my thanks to **Prof. D.M. Ijeri** who provided me the primary incentive and devoted their valuable guidance in completion of thework.

I also wish to express my thanks to Internship coordinators **Prof. Suvarna Kattimani** and **Prof. Roopa Chavan** who provided me the primary incentive and their valuable guidance in completion of the work.

I am extremely thankful to my parents and friends for their unfailing enthusiasm, moral boosting and encouragement for me in completion of the work.

I own sincere thanks and gratitude to all the staff members and others who have helped me directly or indirectly in completion of the work.

Nikhil Gugawad

[2BL19CS057]

ABSTRACT

UNIVERSITY MANAGEMENT SYSTEM (UMS) deals with the maintenance of university, college, faculty, student information with in the university. UMS is an automation system, which is used to store the college, faculty, student, courses and information of a college.

Starting from registration of a new student in the college, it maintains all the details regarding the attendance and marks of the students. The project deals with retrieval of information through an INTRANET based campus wide portal. It collects related information from all the departments of an organization and maintains files, which are used to generate reports in various forms to measure individual and overall performance of the students.

Development process of the system starts with System analysis. System analysis involves creating a formal model of the problem to be solved by understanding requirements.

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CHAPTER 1

ABOUT THE COMPANY

1.1 The Learn Hub

LearnHub offers a comprehensive set of filters and uses AI so you can find the right learning pathway that fits you. A pathway that matches your learning style, goal and level, with the highest engagement and comprehensive rate (and other aspects), tailored toward your specific location, context and requirements.

At LearnHub we try to provide a detailed description of each pathway and show you the best reviews from other learners and experts so you can make the most informed decision as much as possible.

And if you haven't decided what field to study or what skill to gain or what profession to adopt, and you want to get a better sense of all the different aspects of each those categories, you can find the best Overviews available on the internet here at LearnHub.com.

CHAPTER 2

INTRODUCTION

2.1 Overview

University Management System is a clever, versatile, and cost-effective solution for universities, colleges, and schools. It's a whole end-to-end system that takes care of every detail of a university workflow, which is exactly what we needed. UMS covers every minute aspects of a universities work flow and integrates all processes with user friendly interface. With hundreds of satisfied customers UMS is first choice of several state, governments/semi-government universities and institutions. UMS is an outcome supervision of several renowned educationists which includes Controller of examination, faculties. UMS is a rare combination of experience and precision. UMS streamline path of information flow in organization by taking care of following departments:

- Fee Department
- Examination Department
- Attendance
- Faculty information portal
- Student information portal

2.2 Purpose

- Drive operational efficiency.
- Self-service systems with simple to use with little or no training.
- Elimination of duplicate data entry processes.
- Integrated with Online Application workflow with unified data model.
- Monitoring and decision support system.
- Automation of all the Academic / Examination / Administration operations.
- Ease and accuracy of reporting.

2.3 Scope

This project automates college management processes like registration, student search, fees, attendance, exam records, and performance evaluation. The aim is to improve efficiency and accuracy by replacing manual administration tasks.

CHAPTER 3

SYSTEM REQUIREMENTS

3.1 Hardware Requirements :

Processor Brand : Intel

Processor Type : Core i3

Processor Speed : 2 GHz

Processor Count : 1

RAM Size : 2 GB

Memory Technology : DDR3

Computer Memory Type : DDR3 SDRAM

Hard Drive Size : 160 GB

3.2 Software Requirements :

Operating system : Windows 10

Application server : JAVA (NetBeans)

Front end : JAVA

Connectivity : JDBC Driver

Database connectivity : WAMP (MYSQL Console)

CHAPTER 4

FUNDAMENTALS OF JAVA AND MYSQL

4.1 Introduction to java

Java uses Applets to communicate it with any webpage. The steps involved are:

1. The user sends requests for a hyperlink document to a web-serverof the remote computer.
2. The hyperlink document contains the applet tag that identifies the applet.
3. The Java source code file compiles the byte code for that applet and transfers it to the user's computer.
4. The browser enabled by Java programming interprets the byte code andprovides the output to the user.

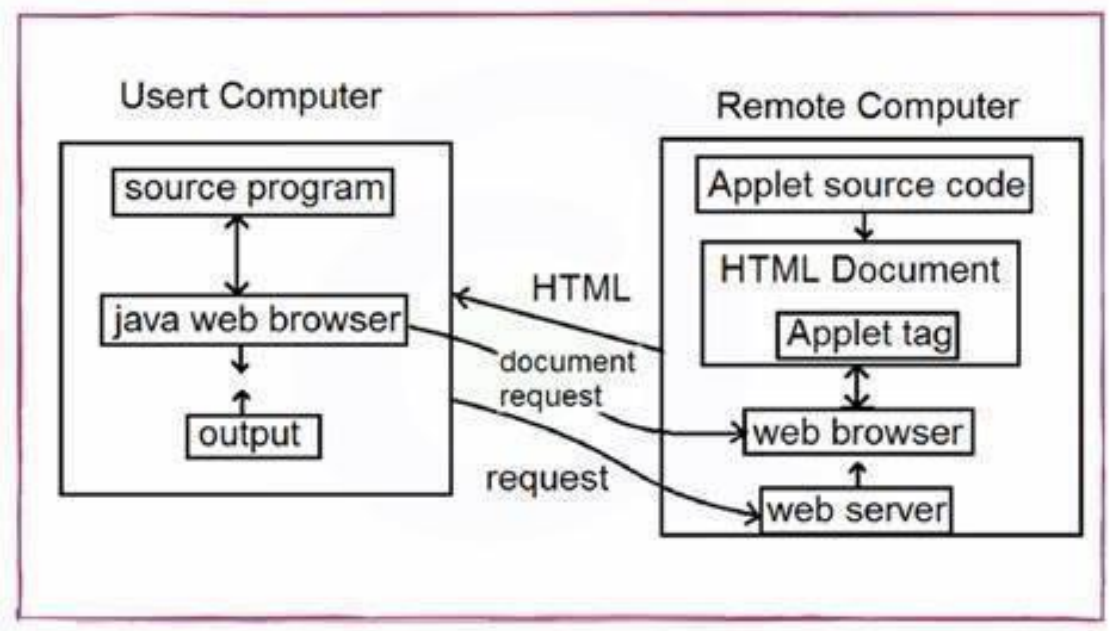

Fig. 4.1 Communication to webpage

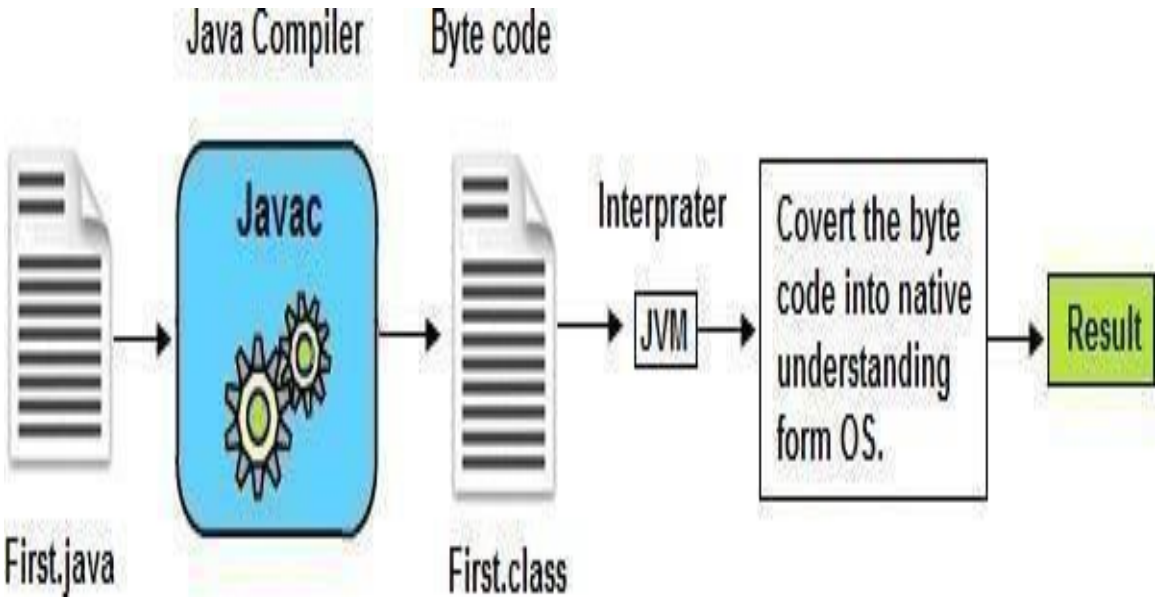

Fig. 4.2 Java program execution

On Compiling of java program, a dot class file would be generated which would contain the instruction in byte code format. This instruction can't be directly executed as it can't be understood by microprocessor. In order to convert byte code into the machine level instruction, we require just in time compiler.

WORA stands for write once run anywhere java program written on one platform can be executed anywhere around the global java language is a platform intendent. JVM use for execution of java is platform dependent that is a window JVM is cannot be used or other then windows.

When the code is run by the user, it is processed by something called the Java Virtual Machine (JVM). The JVM is essentially an interpreter for the bytecode. It goes through the bytecode and runs it. This makes it a lot easier for programmers doing software development.

4.2 Features of Java

1. Simple : Java is very easy to learn, and its syntax is simple, clean and easy to understand, Java language is a simple programming language because:
   - Java has removed many complicated and rarely-used features.
   - There is no need to remove unreferenced objects because there isan Automatic Garbage Collection in Java.

2. Object-Oriented : Java is an object-oriented programming language. Everything in Java is an object. Object-oriented means we organize our software as a combination of different types of objects that incorporate both data and behavior.

3. Portable : Java is portable because it facilitates you to carry the Java bytecode to any platform. It doesn't require any implementation.

4. Platform Independent : Java is platform independent because it is different from other languages like C, C++, etc. which are compiled into platform specific machines whileJava is a write once, run anywhere language. A platform is the hardware or software environment in which a program runs.

5. Secured : Java is best known for its security. With Java, we can develop virus-free systems. Java is secured because:
   - No explicit pointer.
   - Java Programs run inside a virtual machine sandbox.

6. Robust: Java is robust because:
   - It uses strong memory management.
   - There is a lack of pointers that avoids security problems.

7. High Performance : Java is faster than other traditional interpreted programming languages because Java bytecode is "close" to native code. It is still a little bit slower than a compiled language (e.g., C++). Java is an interpreted language that is why it is slower than compiled languages.

8. Dynamic : Java is a dynamic language. It supports the dynamic loading of classes. It means classes are loaded on demand. It also supports functions from its native languages.

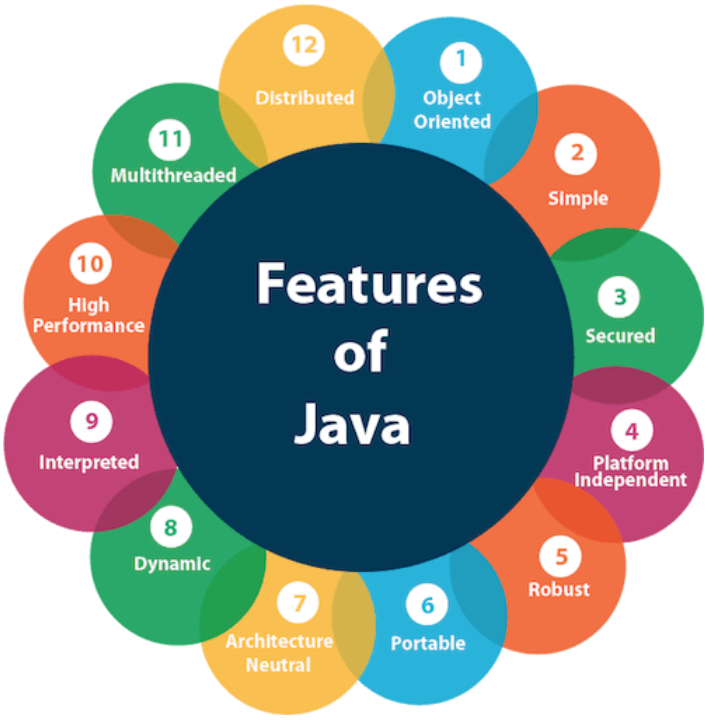

Fig. 4.3 Features of java

4.3 Java Support System

The operations of Java and Java-enabled browsers on the internet requires avariety of support systems like

- Internet Connection
- Webserver
- Web Browser
- HTML (Hypertext Markup Language) which is a language forcreating hypertext for the web
- APPLET tag
- Java code
- Bytecode
- Proxy Server that acts as an intermediate server between the client workstation and the original server
- Mail Server

4.4 Java Platform Editions

Java ME (Micro Edition–J2ME)

The Java ME stands for **Java Micro Edition**. It is a development and deployment platform of portable code for embedded and mobile devices (sensors, gateways, mobile phones, printers, TV set-top boxes). It is based on **object-oriented Java**. The Java ME has a robust user interface, great security, built-in network protocols, and support for applications that can be downloaded dynamically. Applications which are developed on Java ME are portable and can run across various devicesand can also leverage the native capabilities of the device.

Java SE (Standard Edition–J2SE)

The Java SE stands for **Java Standard Edition** is a computing platform in which we can execute software, and it can be used for development and deployment of portable code for desktop and server environments. It has the Java programming language in use. It is part of Java software-platform family.Java SE has a variety of general purpose APIs and the Java Class Library. It isthe core Java programming platform and provides all the libraries and APIs such as **java. lang**, **java.io**, **java. math**, **java.net**, **java. util** etc.

Java EE (Enterprise Edition–J2EE)

The **Java EE** stands for **Java Enterprise Edition**, which was earlier known as J2EE and is currently known as Jakarta EE. It is a set of specifications wrapping around Java SE (Standard Edition). The Java EE provides a platform for developers with enterprise features such as distributed computing and web services. Java EE applications are usually run on reference run times such as **microservers** or **application servers**. Examples of some contexts where Java EE is usedare e-commerce, accounting, banking information systems.

Java Card

Java Card is a software technology that allows Java-based applications (applets) to be run securely on smart cards and more generally on similar secure small memory footprint devices which are called "secure elements" (SE).

4.5 Difference between JDK, JRE AND JVM

JVM, JRE, JDK these all are the backbone of java language. Each component has separateworks. JDK and JRE physically exist but JVM are abstract machine it means it not physically exists.

JVM: JVM(Java Virtual Machine) acts as a run-time engine to run Java applications. JVM is the one that actually calls the main method present in a java code. JVM is a part of JRE(Java Runtime Environment). Java applications are called WORA (Write Once Run Anywhere). This means a programmer can develop Java code on one system and can expect it to run on any other Java-enabled system without any adjustment. This is all possible because of JVM.

JDK: The Java Development Kit (JDK) is a cross-platformed software development environment that offers a collection of tools and libraries necessary for developing Java- based software applications and applets. It is a core package used in Java, along withthe JVM (Java Virtual Machine) and the JRE (Java Runtime Environment).

JRE: The Java Runtime Environment (JRE) is part of the Java Development Kit (JDK). It contains set of libraries and tools for developing java application. The Java Runtime Environment provides the minimum requirements for executing a Java application. It physically exists. It contains set of libraries + other files that JVM uses at runtime.

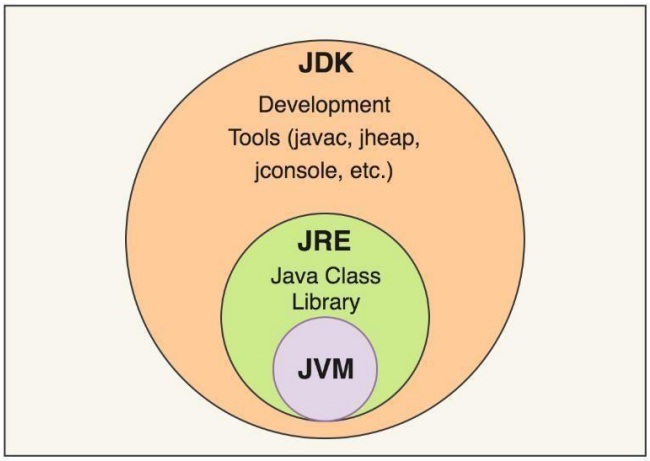

Fig. 4.4 JDK, JRE, JVM

4.6 Structure of Java Program

Documentation Section: The documentation section is an important section but optional for a Java program. It includes basic information about a Java program. The information includes the author's name, date of creation, version, program name, company name, and description of the program. It improves the readability of the program. Whatever we write in the documentation section, the Java compilerignores the statements during the execution of the program. To write the statements in the documentation section, we use comments. The comments may be single-line, multi-line, and documentation comments.

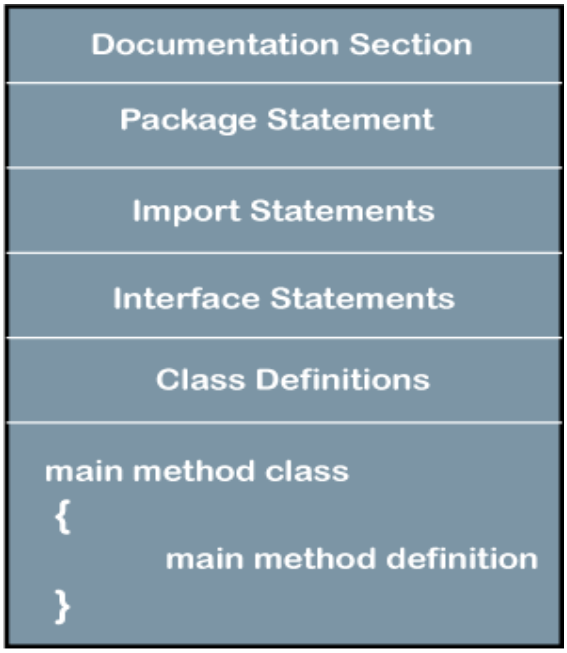

Fig. 4.5 Structure of a java program

Package Statement: The package declaration is optional. It is placed just afterthe documentation section. In this section, we declare the package name in which the class is placed. Note that there can be only one package statement in a Java program. It must be defined before any class and interface declaration. It is necessary because a Java class can be placed in different packages and directories based on the module they are used. For all these classes package belongs to a single parent directory. We use the keyword package to declare the package name.

Import Statement: The package contains the many predefined classes and interfaces. If we want to use any class of a particular package, we need to import that class. The import statement represents the class stored in the other package. We use the import keyword to import the class. It is written before the class declaration and after the package statement. We use the import

statement in two ways, either import a specific class or import all classes of a particular package. Ina Java program, we can use multiple import statements.

Interface Statement: It is an optional section. We can create an interface in this section if required. We use the interface keyword to create an interface. An interface the a slightly different from the class. It contains only constants and method declarations. Another difference is that it cannot be instantiated. We can use interface in classes by using the implements keyword. An interface can alsobeused with other interfaces by using the extends keyword.

Class Definition: In this section, we define the class. It is vital part of a Java program. Without the class, we cannot create any Java program. A Java program may conation more than one class definition. We use the class keyword to define the class. The class is a blueprint of a Java program. It contains information about user-defined methods, variables, and constants. Every Java program has at least oneclass that contains the main() method.

Main Method Class: In this section, we define the main() method. It is essential for all Java programs. Because the execution of all Java programs starts from the main() method. In other words, it is an entry point of the class. It must beinside the class. Inside the main method, we create objects and call the methods.

4.7 Java Object Oriented

Inheritance: Inheritance in Java is a mechanism in which one object acquires all the properties and behaviours of a parent object. It is an important part of OOPs (Object Oriented programming system). The idea behind inheritance in Java is that you can create new classes that are built upon existing classes. When you inherit from an existing class, you can reuse methods and fields of the parent class. Moreover, you can add new methods and fields in your current class also. Inheritance represents the IS-A relationship which is also known as a *parent-child* relationship.

Types of Inheritance:

- Single Inheritance.
- Multiple Inheritance.
- Hierarchical Inheritance.
- Multilevel Inheritance.
- Hybrid Inheritance.

Abstraction: Abstraction is a property of hiding the internal implementation and highlighting the setup services beneficial to the user. For example, the smartphone user does not know the internal performance of the Smartphone and its workings; instead, they are interested in the services provided by the Smartphone. In Java, we can achieve abstraction in two ways.

- Using abstract Class
- using interfaces

Using abstract Class, we can achieve abstraction up to 0-100% but using the interfaces, we can achieve it up to 100%.

Encapsulation: Encapsulation is a mechanism to bundle the data and code acting on the data together as a single unit. there are two steps to achieve encapsulation in Java

- declare the variable of a class as private
- Provide a Public setter and getter method to modify and view the values of the variables.

Polymorphism: Poly means many, and morphism means forms. We know that Water also exists in multiple states, such as Solid, Liquid, and Gas. So Water shows Polymorphism. In JAVA, we can achieve Polymorphism using methods. There are two types of Polymorphism that JAVA supports.

Compile-time Polymorphism is also known as static Polymorphism. We can achieve it by method overloading.

Method overloading satisfies three conditions.

1. There must be at least two methods of the same name
2. Both the methods should be inside the same Class
3. Both methods must have different arguments
    - The number of arguments is different
    - The sequence of arguments is different
    - Type of argument is different

The compiler handles Compile-time Polymorphism.

Runtime polymorphism is also called dynamic Polymorphism. We can achieve Runtime polymorphism by method overriding.

We can achieve method overriding by satisfying three conditions.

1. There must be at least two methods of the same name

2. Both methods belong to different classes
3. Both methods must have the same arguments
    - The number of arguments is the same
    - The sequence of arguments is the same
    - Type of argument is the same

JVM handles the runtime polymorphism.

4.8 Java Applications

Desktop GUI Applications: Desktop applications can be flawlessly designed using Java. APIs like Swing, Abstract Windowing Toolkit (AWT), and JavaFX provide a modern way to develop GUI applications. The use of java in desktop applications offers some fantastic benefits like ease of learning, visual feedback, simultaneous display of multiple instances, and many more.

Artificial Intelligence: Java is one of the best languages for AI projects. Its infrastructure is well embedded with intelligent software to enhance AI programming. It has amazing features like better interaction with users, ease of debugging, easy-to-code features, standard widget tools, and a lot more.

Web Applications: Java is just perfect for developing web applications because of its ability to interact with a large number of systems. It allows us to create dynamic web applications that interact with interfaces. The presence of JSP, web servers, spring, and Hibernate provides feasibility in the web development process.

Big Data Technology: It is a software utility designed to analyze and extract information from complex data structures. It is widely used in other technologies like deep learning, Machine learning, and Artificial learning. Java is a viewpoint of Big data. Java is commonly used in ETL applications like Apatar, Apache Camel, and Apache Kafka which are used to extract complex information.

Embedded System: It refers to the combination of small units that combine to perform the collective function for larger systems. Java has proved to be the best solution to address increasing Software complexity. Today a large number of developers use Java in embedded systems. Java has a wide variety of libraries to simplify developers' lives.

Scientific Applications: Java has enhanced security features which makes it the best option for the development of scientific applications. It has served as a powerful tool in coding complex mathematical operations. The programs are designed in a highly secure and efficient manner. Some of the most widely used applications like MATLAB use Java as a component of the core system.

4.9 Java AWT

Java AWT (Abstract Window Toolkit) *is* an API to develop Graphical User Interface (GUI) or windows-based applications in Java. Java AWT components are platform- dependent i.e. components are displayed according to the view of operating system. AWT is heavy weight i.e. its components are using the resources of underlying operating system (OS).

The java. awt package provides classes for AWT API such as Text Field, Label, TextArea, Radio Button, Check Box, Choice, List etc.

The hierarchy of java awt classes are given below

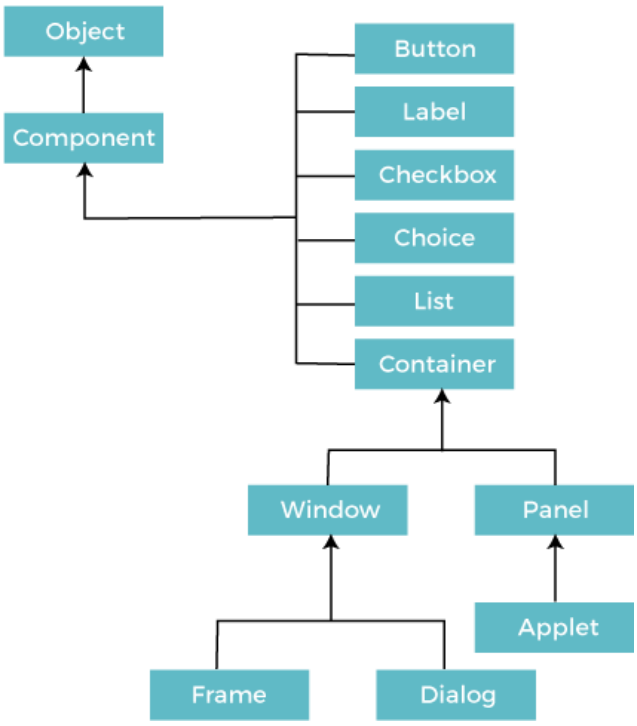

Fig. 4.6 Hierarchy of java awt classes

4.10 Java Swing

Swing is a Java Foundation Classes [JFC] library and an extension of the Abstract Window Toolkit [AWT]. Swing offers much-improved functionality over AWT, new components, expanded components features, and excellent event handling with drag-and-drop support.

Swing has about four times the number of User Interface [UI] components as AWT and is part of the standard Java distribution. By today's application GUI requirements, AWT is a limited implementation, not quite capable of providing the components required for developing complex GUI's required in modern commercial applications. The AWT component set has quite a few bugs and really does take up a lot of system resources when compared to equivalent Swing resources. Netscape introduced its Internet Foundation Classes [IFC] library for use with Java. Its Classes became very popular with programmers creating GUI's for commercial applications.

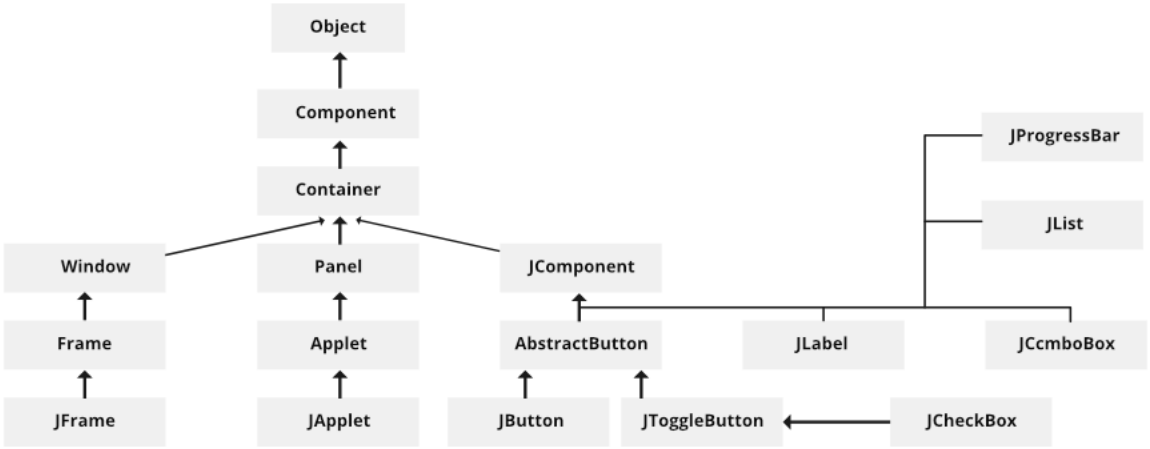

Fig. 4.7 Java swing hierarchy

4.11 MySQL

MySQL is currently the most popular database management system software used for managing the relational database. It is open-source database software, which is supported by Oracle Company. It is fast, scalable, and easy to use database management system in comparison with Microsoft SQL Server and Oracle Database. It is commonly used in conjunction with PHP scripts for creating powerful and dynamic server-side or web-based enterprise applications.

It is developed, marketed, and supported by MySQL AB, a Swedish company, and written in C

programming language and C++ programming language. The official pronunciation of MySQL is not the My Sequel; it is My Ess Que Ell. However, you can pronounce it in your way. Many small and big companies use MySQL. MySQL supports many Operating Systems like Windows, Linux, MacOS, etc. with C, C++, and Java languages.

MySQL is a Relational Database Management System (RDBMS) software that provides many things, which are as follows:

- It allows us to implement database operations on tables, rows, columns, and indexes.
- It defines the database relationship in the form of tables (collection of rows and columns), also known as relations.
- It provides the Referential Integrity between rows or columns of various tables.
- It allows us to updates the table indexes automatically.
- It uses many SQL queries and combines useful information from multiple tables for the end-users.

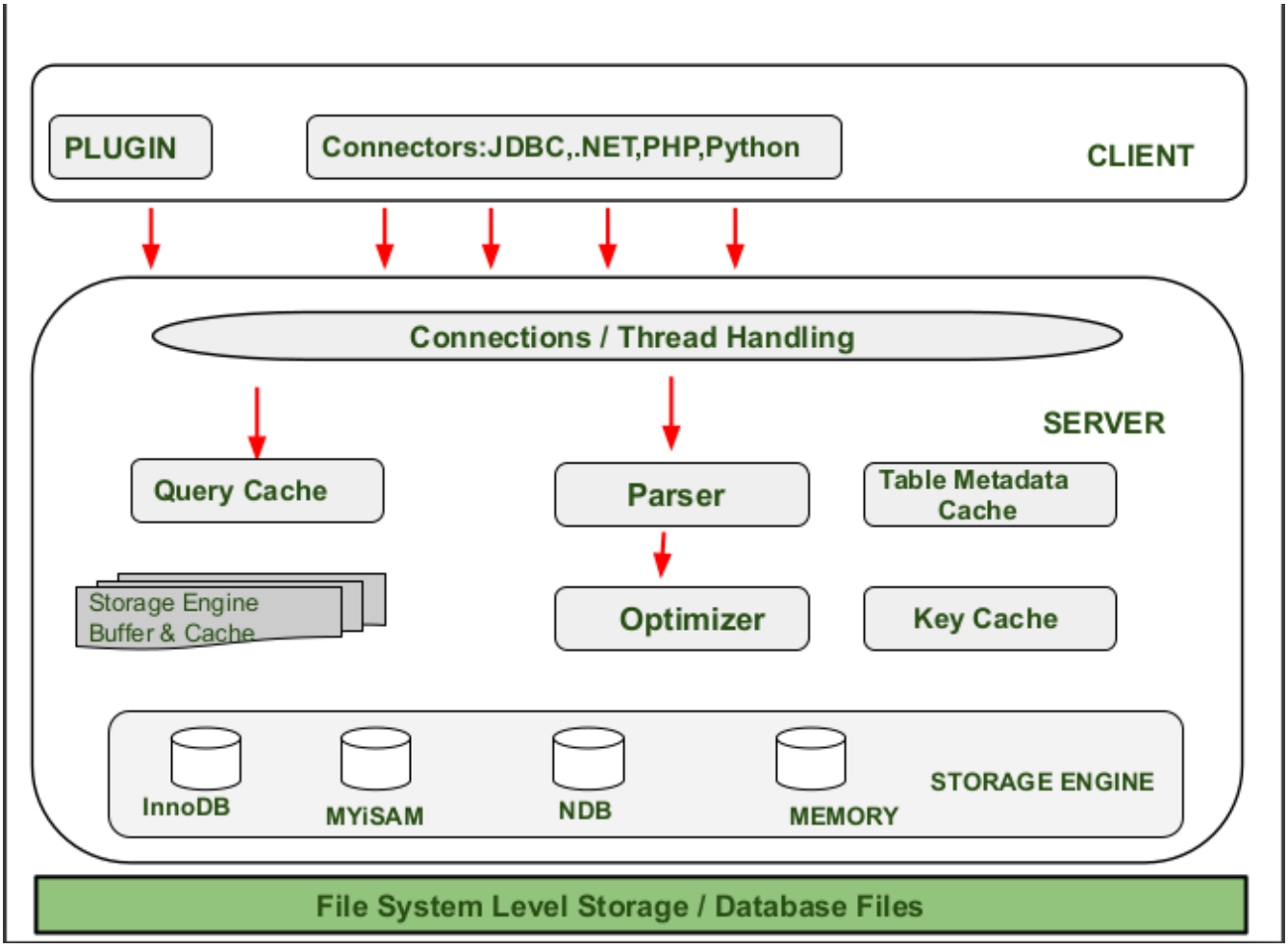

Fig. 4.8 File level system storage

CHAPTER 5

SYSTEM DESIGN AND IMPLEMENTATION

5.1 E-R DIAGRAM

ER Diagram: ER Diagram is a high-level conceptual data model diagram. Entity-Relation model is based on the notion of real-world entities and the relationship between them. ER modelling helps you to analyse data requirements systematically to produce a well-designed database.

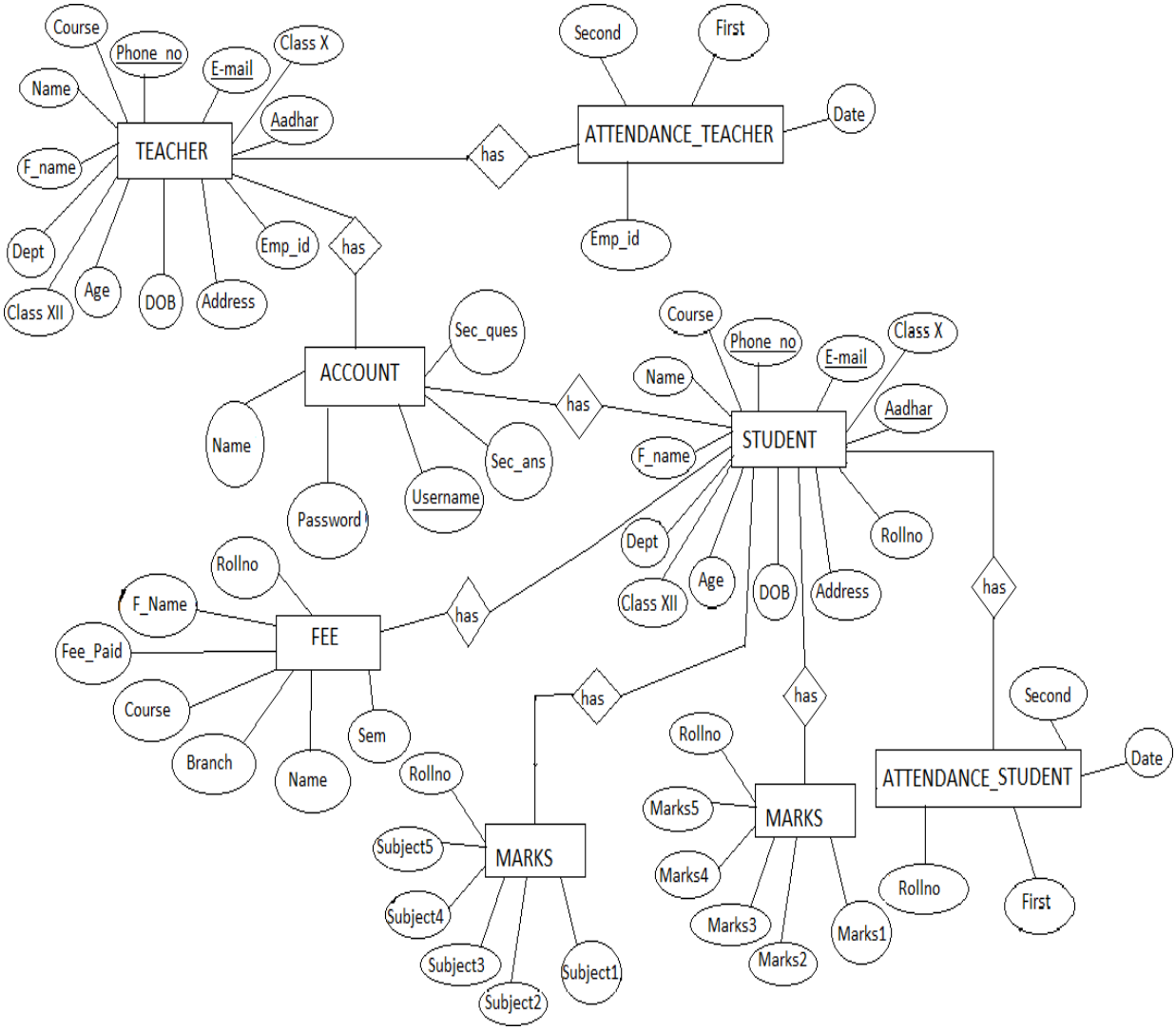

Figure 5.1: ER Diagram for University Management System

5.2 SCHEMA DIAGRAM

Schema diagram A schema diagram is the skeleton structure that represents the logical view of the entire database. It contains a descriptive detail of the database.

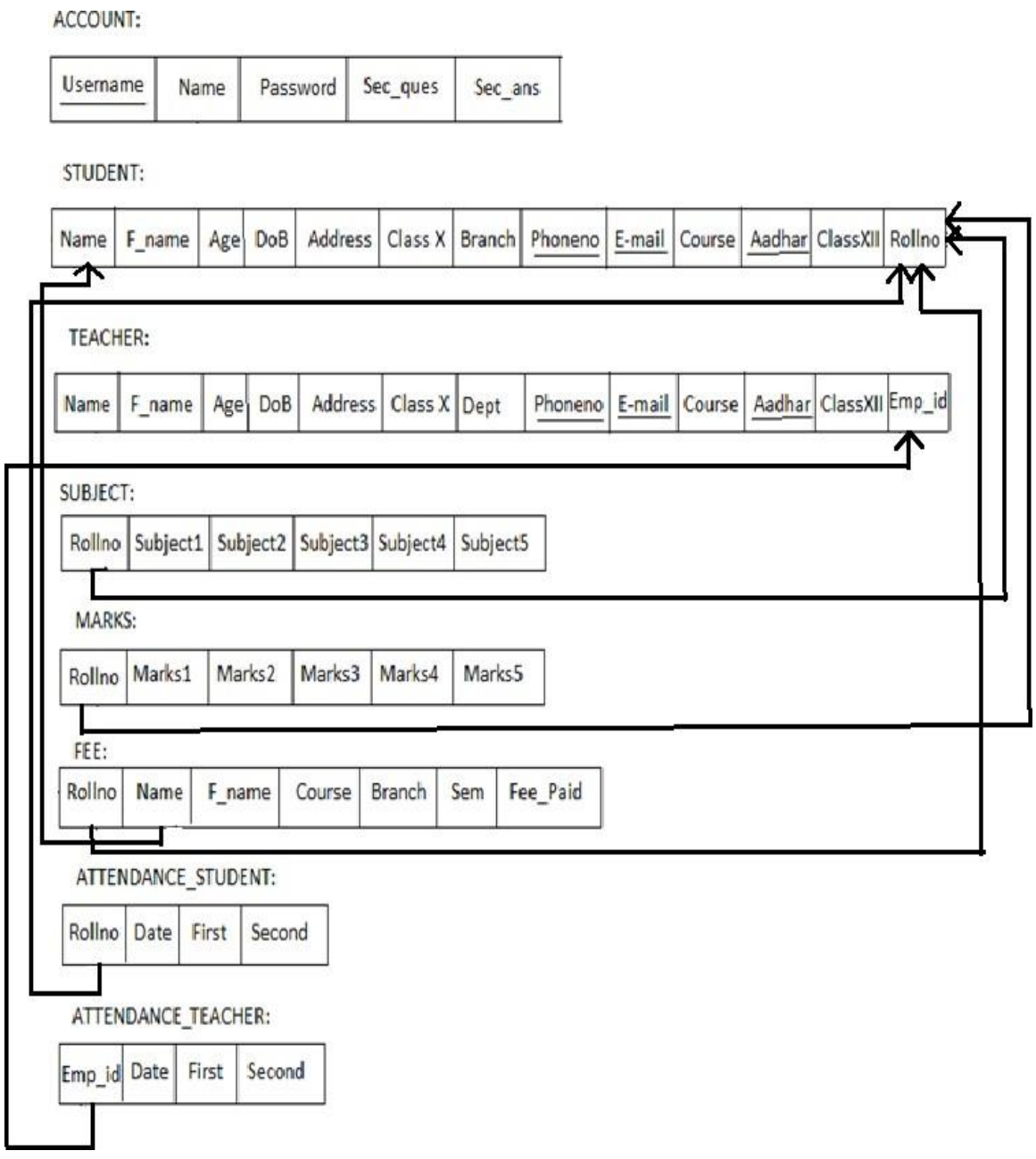

Figure 5.2: Schema Diagram for University Management System

CHAPTER 6

RESULTS AND DISCUSSION

6.1 Database Design

ACCOUNT TABLE

Account Table: Account table consists of five attributes which are Username, Name, Password, Sec_ques, Sec_ans.Username is used as Primary key.

Desc account;

```
mysql> desc account;
+----------+--------------+------+-----+---------+-------+
| Field    | Type         | Null | Key | Default | Extra |
+----------+--------------+------+-----+---------+-------+
| username | varchar(30)  | NO   | PRI | NULL    |       |
| name     | varchar(40)  | YES  |     | NULL    |       |
| password | varchar(30)  | YES  |     | NULL    |       |
| sec_ques | varchar(100) | YES  |     | NULL    |       |
| sec_ans  | varchar(50)  | YES  |     | NULL    |       |
+----------+--------------+------+-----+---------+-------+
5 rows in set (0.00 sec)
```

Fig 6.1 Account table description

STUDENT TABLE

Student table :Student table is used to add the details of new student like Name,phoneno.,DoB,course,Branch etc...Phoneno. ,E-mail and Aadhar are used as Primary key.

Desc student;

```
mysql> desc student;
+--------------+-------------+------+-----+---------+-------+
| Field        | Type        | Null | Key | Default | Extra |
+--------------+-------------+------+-----+---------+-------+
| name         | varchar(20) | YES  |     | NULL    |       |
| fathers_name | varchar(20) | YES  |     | NULL    |       |
| age          | varchar(5)  | YES  |     | NULL    |       |
| dob          | varchar(20) | YES  |     | NULL    |       |
| address      | varchar(30) | YES  |     | NULL    |       |
| phone        | varchar(15) | NO   | PRI | NULL    |       |
| email        | varchar(25) | NO   | PRI | NULL    |       |
| class_x      | varchar(10) | YES  |     | NULL    |       |
| class_xii    | varchar(10) | YES  |     | NULL    |       |
| aadhar       | varchar(15) | NO   | PRI | NULL    |       |
| rollno       | varchar(15) | YES  |     | NULL    |       |
| course       | varchar(10) | YES  |     | NULL    |       |
| branch       | varchar(20) | YES  |     | NULL    |       |
+--------------+-------------+------+-----+---------+-------+
13 rows in set (0.00 sec)
```

Fig 6.2 Student table description.

TEACHER TABLE

Teacher table: Teacher table is used to add the details of new student like Name, phoneno.,DoB, course,Branch etc...Phoneno. ,E-mail and Aadhar are used as Primary key.

Desc teacher;

```
mysql> desc teacher;
+--------------+-------------+------+-----+---------+-------+
| Field        | Type        | Null | Key | Default | Extra |
+--------------+-------------+------+-----+---------+-------+
| name         | varchar(20) | YES  |     | NULL    |       |
| fathers_name | varchar(20) | YES  |     | NULL    |       |
| age          | varchar(5)  | YES  |     | NULL    |       |
| dob          | varchar(20) | YES  |     | NULL    |       |
| address      | varchar(30) | YES  |     | NULL    |       |
| phone        | varchar(15) | NO   | PRI | NULL    |       |
| email        | varchar(25) | NO   | PRI | NULL    |       |
| class_x      | varchar(10) | YES  |     | NULL    |       |
| class_xii    | varchar(10) | YES  |     | NULL    |       |
| aadhar       | varchar(15) | NO   | PRI | NULL    |       |
| course       | varchar(10) | YES  |     | NULL    |       |
| emp_id       | varchar(15) | YES  |     | NULL    |       |
| dept         | varchar(20) | YES  |     | NULL    |       |
+--------------+-------------+------+-----+---------+-------+
13 rows in set (0.00 sec)
```

Fig 6.3 Teacher table description

ATTENDANCE_STUDENT TABLE

Attendance_Student Table: Attendance_Student table is used to mark the attendance of the student day to day which as attributes like rollno,name,first and second half.

Desc attendance_student;

```
mysql> desc attendance_student;
+--------+-------------+------+-----+---------+-------+
| Field  | Type        | Null | Key | Default | Extra |
+--------+-------------+------+-----+---------+-------+
| rollno | varchar(20) | YES  |     | NULL    |       |
| Date   | varchar(30) | YES  |     | NULL    |       |
| first  | varchar(10) | YES  |     | NULL    |       |
| second | varchar(10) | YES  |     | NULL    |       |
+--------+-------------+------+-----+---------+-------+
4 rows in set (0.04 sec)
```

Fig 6.4 Attendance_Student table description.

ATTENDANCE_TEACHER TABLE

Attendance_Teachertable :Attendance_Teacher table is used to mark the attendance of theteacher day to day which as attributes like emp_id,name,first and second half.

Desc attendance_teacher;

```
mysql> desc attendance_teacher;
+--------+-------------+------+-----+---------+-------+
| Field  | Type        | Null | Key | Default | Extra |
+--------+-------------+------+-----+---------+-------+
| emp_id | varchar(20) | YES  |     | NULL    |       |
| Date   | varchar(30) | YES  |     | NULL    |       |
| first  | varchar(10) | YES  |     | NULL    |       |
| second | varchar(10) | YES  |     | NULL    |       |
+--------+-------------+------+-----+---------+-------+
4 rows in set (0.00 sec)
```

Fig 6.5 Attendance_Teacher table description.

SUBJECT TABLE

Subject table :Subject table is used to add the subjects of the student in that particular semwith the attributes like rollno and five subjects.

Desc Subject;

```
mysql> desc subject;
+----------+-------------+------+-----+---------+-------+
| Field    | Type        | Null | Key | Default | Extra |
+----------+-------------+------+-----+---------+-------+
| rollno   | varchar(25) | YES  |     | NULL    |       |
| subject1 | varchar(30) | YES  |     | NULL    |       |
| subject2 | varchar(30) | YES  |     | NULL    |       |
| subject3 | varchar(30) | YES  |     | NULL    |       |
| subject4 | varchar(30) | YES  |     | NULL    |       |
| subject5 | varchar(30) | YES  |     | NULL    |       |
+----------+-------------+------+-----+---------+-------+
6 rows in set (0.02 sec)
```

Fig 6.6 Subject table description.

MARKS TABLE

Marks table :Marks table is used to add the marks of the particular subjects of the student ina particular semester and the attributes used are roll no and five subject marks.

Desc Marks;

```
mysql> desc marks;
+--------+-------------+------+-----+---------+-------+
| Field  | Type        | Null | Key | Default | Extra |
+--------+-------------+------+-----+---------+-------+
| rollno | varchar(15) | YES  |     | NULL    |       |
| marks1 | varchar(20) | YES  |     | NULL    |       |
| marks2 | varchar(20) | YES  |     | NULL    |       |
| marks3 | varchar(20) | YES  |     | NULL    |       |
| marks4 | varchar(20) | YES  |     | NULL    |       |
| marks5 | varchar(20) | YES  |     | NULL    |       |
+--------+-------------+------+-----+---------+-------+
6 rows in set (0.03 sec)
```

Fig 6.7 Marks table description.

FEE TABLE

Fee table:fee table is used to pay the fee dues of the student for that particular sem and theattributes used like rollno, name, fathersname, course, branch, sem and fee_paid.

Desc Fee;

```
mysql> desc fee;
+--------------+-------------+------+-----+---------+-------+
| Field        | Type        | Null | Key | Default | Extra |
+--------------+-------------+------+-----+---------+-------+
| rollno       | varchar(20) | YES  |     | NULL    |       |
| name         | varchar(25) | YES  |     | NULL    |       |
| fathers_name | varchar(25) | YES  |     | NULL    |       |
| course       | varchar(10) | YES  |     | NULL    |       |
| branch       | varchar(20) | YES  |     | NULL    |       |
| semester     | varchar(10) | YES  |     | NULL    |       |
| fee_paid     | varchar(15) | YES  |     | NULL    |       |
+--------------+-------------+------+-----+---------+-------+
7 rows in set (0.02 sec)
```

Fig 6.8 Fee table description.

6.2 Output design

Account table :Account table consists of five attributes which will be retrived from user whenthe user signsup/logs in.

Select * from account;

```
mysql> select * from account;
+----------+-------+----------+------------------------+---------+
| username | name  | password | sec_ques               | sec_ans |
+----------+-------+----------+------------------------+---------+
| raja     | RAJA  | 12345    | Your Lucky Number?     | 9900    |
| gopi     | Gopi  | gopi123  | Your NickName?         | gopi    |
| vikas    | VIKAS | sai12    | Your child SuperHero?  | ntr     |
| mohan    | MOHAN | mogan    | Your childhood Name ?  | mogan   |
| akash    | AKASH | 67890    | Your Lucky Number?     | 9       |
+----------+-------+----------+------------------------+---------+
5 rows in set (0.00 sec)
```

Fig. 6.9 Account table

Student table: Student table is used to add the details of new student like Name,phone no.,DoB, course, Branch etc...Phone no. E-mail and Aadhaar are used as Primary key.

Select * from student;

```
mysql> select * from student;
+-------+-------------+-----+------------+----------+-----------+----------------------+---------+----------+-------------+---------+--------+-----------------
----+
| name  | fathers_name | age | dob        | address  | phone     | email                | class_x | class_xii | aadhar      | rollno  | course | branch
   |
+-------+-------------+-----+------------+----------+-----------+----------------------+---------+----------+-------------+---------+--------+-----------------
----+
| Vikas | Sai         | 22  | 02/03/1998 | Bangalore | 9869869576 | vikasvicky11@gmail.com | 84      | 77       | 229876589745 | 15331807 | M.Tech | Electronics
   |
| Raja  | Srinu       | 21  | 29/05/1999 | Bangalore | 9897969984 | raja123@gmail.com      | 88      | 82       | 676476486745 | 15335115 | M.Tech | Mechanical
   |
| Gopi  | Krishna     | 20  | 03/10/2000 | Kolar     | 7869687696 | gopi11@gmail.com       | 82      | 78       | 885787588758 | 1533842  | B.Tech | Computer Science
   |
| Akash | Kumar       | 20  | 22/08/2000 | Mangalore | 7879696896 | akash1122@gmail.com    | 84      | 81       | 906895709687 | 15339828 | B.Tech | Civil
   |
| Mohan | Mogesh      | 19  | 18/02/2001 | Bangalore | 7869869665 | mogan11@gmail.com      | 82      | 79       | 987689786988 | 15333481 | BCom   | Professional Deg
ree |
+-------+-------------+-----+------------+----------+-----------+----------------------+---------+----------+-------------+---------+--------+-----------------
----+
5 rows in set (0.00 sec)
```

Fig. 6.10 Student table

Teacher table :Teacher table is used to add the details of new student like Name, phoneno., DoB, course, Branch etc...Phone no. , E-mail and Aadhaar are used as Primary key.

Select * from teacher;

```
mysql> select * from teacher;
+-----------+-------------+-----+------------+----------+------------+-------------------+---------+----------+-------------+--------+---------+-------------
------+
| name      | fathers_name | age | dob        | address  | phone      | email             | class_x | class_xii | aadhar      | course | emp_id  | dept
     |
+-----------+-------------+-----+------------+----------+------------+-------------------+---------+----------+-------------+--------+---------+-------------
------+
| Lakshmi   | Venkatesh    | 45  | 04/05/1975 | Bangalore | 7897658656 | lakshmi12@gmail.com | 83      | 78       | 756876487594 | Msc    | 1016569 | Computer Scien
ce    |
| Prakash   | Kumarswamy   | 54  | 21/03/1966 | Bangalore | 9867976976 | prakash11@gmail.com | 84      | 81       | 979477658798 | M.Tech | 1013079 | Mechanical
     |
| Naveen.B.M | Bhaskar     | 38  | 26/11/1982 | Bangalore | 8978987687 | naveen123@gmail.com | 87      | 77       | 896596796798 | MBA    | 1012340 | Others
     |
| Mahesh.G  | Ganesh       | 41  | 16/09/1979 | Mangalore | 7897869876 | maheshg11@gmail.com | 78      | 68       | 456736753857 | MCA    | 1014233 | Others
     |
| Rakesh    | Chandrasekhar | 36 | 11/06/1984 | Mysore    | 8876659766 | rakesh121@gmail.com | 88      | 87       | 337659876007 | BCom   | 1012307 | Professional D
egree |
+-----------+-------------+-----+------------+----------+------------+-------------------+---------+----------+-------------+--------+---------+-------------
------+
5 rows in set (0.00 sec)
```

Fig. 6.11 Teacher table

Attendance_Student table :Attendance_Student table is used to mark the attendance of the student day to day which as attributes like rollno,name,first and second half.

Select * from attendance_student;

```
mysql> select * from attendance_student;
+----------+-------------------------------+---------+---------+
| rollno   | Date                          | first   | second  |
+----------+-------------------------------+---------+---------+
| 15331807 | Thu Jan 14 16:12:03 IST 2021 | Present | Present |
| 15335115 | Thu Jan 14 16:12:15 IST 2021 | Present | Absent  |
| 1533842  | Thu Jan 14 16:12:27 IST 2021 | Absent  | Present |
| 15339828 | Thu Jan 14 16:12:41 IST 2021 | Absent  | Absent  |
| 15333481 | Thu Jan 14 16:13:00 IST 2021 | Leave   | Leave   |
+----------+-------------------------------+---------+---------+
5 rows in set (0.00 sec)
```

Fig. 6.12 Attendance student table

Attendance_Teacher table :Attendance_Teachertable is used to mark the attendance of theteacher day to day which as attributes like emp_id,name,first and second half.

Select * from attendance_teacher;

```
mysql> select * from attendance_teacher;
+---------+-------------------------------+---------+---------+
| emp_id  | Date                          | first   | second  |
+---------+-------------------------------+---------+---------+
| 1016569 | Thu Jan 14 15:45:45 IST 2021 | Present | Present |
| 1013079 | Thu Jan 14 15:46:00 IST 2021 | Absent  | Present |
| 1012340 | Thu Jan 14 15:46:15 IST 2021 | Present | Absent  |
| 1014233 | Thu Jan 14 15:46:32 IST 2021 | Absent  | Absent  |
| 1012307 | Thu Jan 14 15:46:47 IST 2021 | Leave   | Leave   |
+---------+-------------------------------+---------+---------+
5 rows in set (0.00 sec)
```

Fig 6.13 Attendance_teacher table

Subject table : Subject table is used to add the subjects of the student in that particular semester with the attributes like roll no. and five subjects.

Select * from Subject;

```
mysql> select * from subject;
+---------+-----------------+---------------------+---------------+---------------------+------------+
| rollno  | subject1        | subject2            | subject3      | subject4            | subject5   |
+---------+-----------------+---------------------+---------------+---------------------+------------+
| 15331807 | Devices        | Signals             | System        | Numericals          | Circuits   |
| 15335115 | Mathematics    | Statics and Dynamics | Solid mechanics | Material engineering | Composites |
| 1533842  | Computer networks | Database management | Python      | Unix                | ATC        |
| 15339828 | Building materials | Strength of materials | Structures | Contuction project  | Steel design |
| 15333481 | Accounts       | Economics           | Statistics    | Management          | Finance    |
+---------+-----------------+---------------------+---------------+---------------------+------------+
5 rows in set (0.00 sec)
```

Fig. 6.14 Subject table

Marks table :Markstable is used to add the marks of the particular subjects of the student ina particular sem and the attributes used are rollno and five subject marks.

Select * from Marks;

```
mysql> select * from marks;
+----------+--------+--------+--------+--------+--------+
| rollno   | marks1 | marks2 | marks3 | marks4 | marks5 |
+----------+--------+--------+--------+--------+--------+
| 15331807 | 78     | 82     | 79     | 76     | 85     |
| 15335115 | 78     | 83     | 88     | 79     | 80     |
| 1533842  | 77     | 68     | 76     | 68     | 70     |
| 15339828 | 60     | 68     | 65     | 73     | 75     |
| 15333481 | 78     | 72     | 70     | 69     | 74     |
+----------+--------+--------+--------+--------+--------+
5 rows in set (0.00 sec)
```

Fig 6.15 Marks table

Fee table :fee table is used to pay the fee dues of the student for that particular sem and theattributes used like rollno, name, fathersname, course, branch, sem and fee_paid.

Select * from Fee;

```
mysql> select * from fee;
+----------+-------+-------------+--------+------------+----------+----------+
| rollno   | name  | fathers_name | course | branch     | semester | fee_paid |
+----------+-------+-------------+--------+------------+----------+----------+
| 15331807 | Vikas | Sai         | M.Tech | Electronics | 2nd      | 30000    |
| 15335115 | Raja  | Srinu       | M.Tech | Mechanical | 1st      | 40000    |
| 1533842  | Gopi  | Krishna     | B.Tech | CSE        | 5th      | 51000    |
| 15339828 | Akash | Kumar       | B.Tech | Civil      | 6th      | 28000    |
| 15333481 | Mohan | Mogesh      | B.com  | Other      | 3rd      | 30000    |
+----------+-------+-------------+--------+------------+----------+----------+
5 rows in set (0.00 sec)
```

Fig. 6.16 Fee table

6.3 SNAPSHOTS

Login form: This page represents the first thing about our website. It leads on to the login point for its personnel; it takes up the username,password and signup.

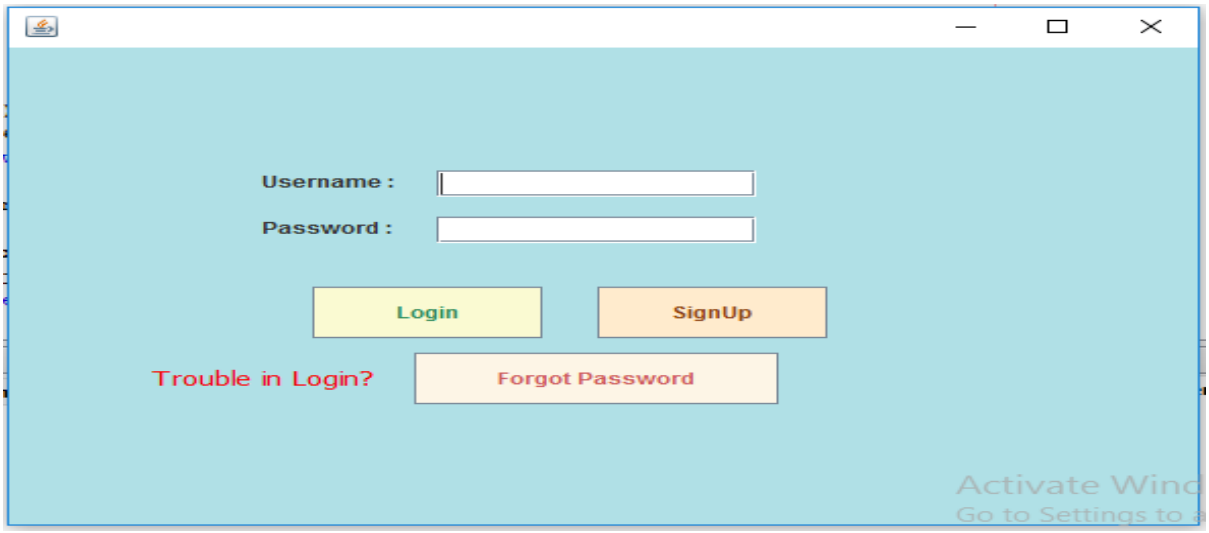

Figure 6.17: Login form

Signup page: This page represents signing up to website. It leads to registering to website making username and password, it takes the up username, name, password and security question. These information are mandatory.

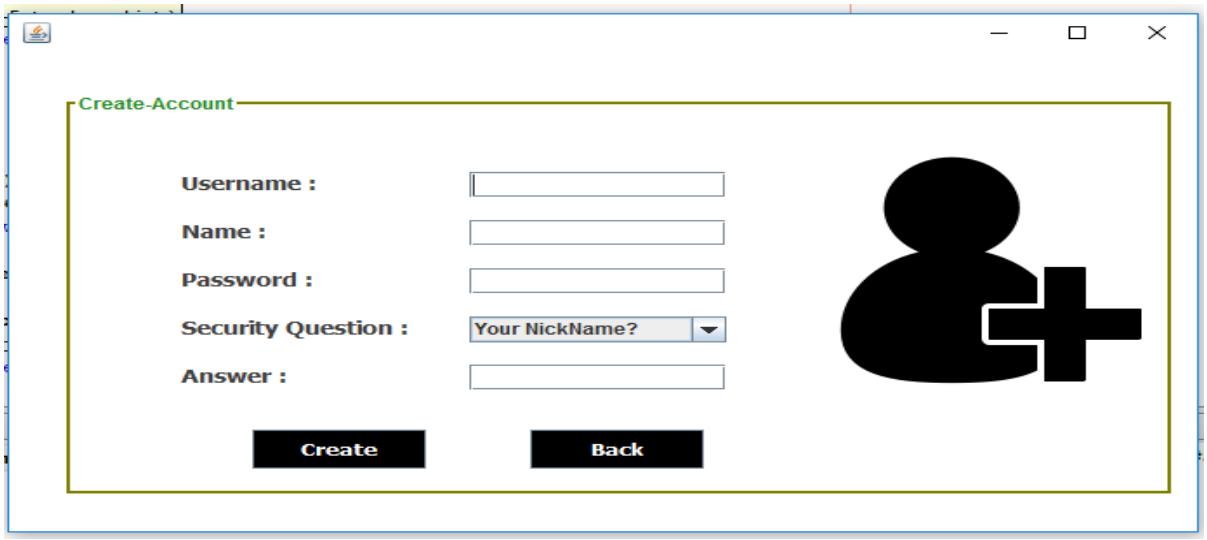

Figure 6.18: Signup page

Home page user : This page shows us what user can see and access. He can add, remove,update and upload the data. He can logout from the website in homepage.

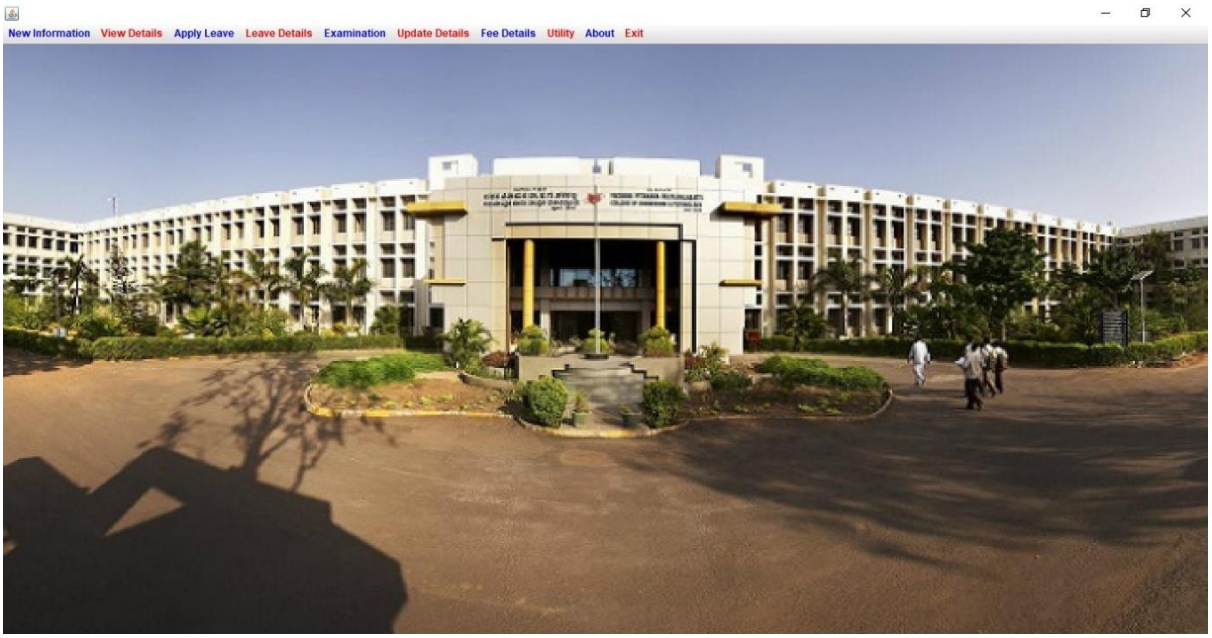

Figure 6.19: Home page user

Student form : In this we can add the new student details which will be stored in back endof user.This details further can updated in the update page.

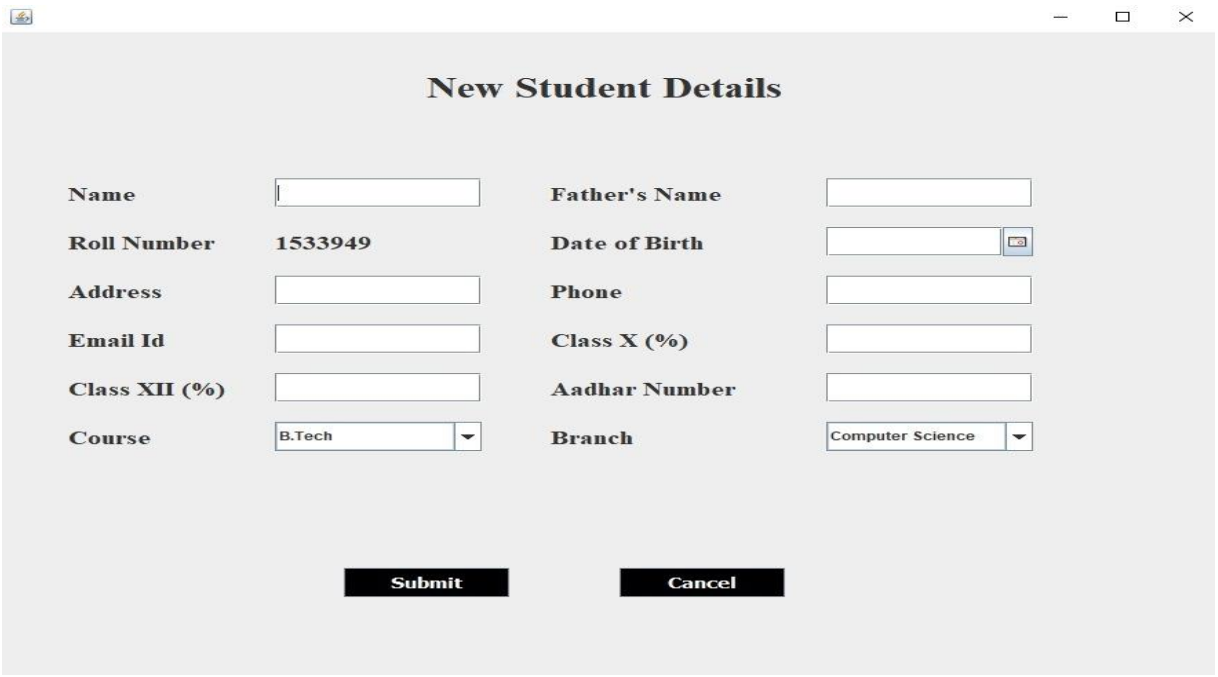

Figure 6.20: Student form

Teacher form: In this we can add the new teacher details which will be stored in back endof user.This details further can updated in the update page.

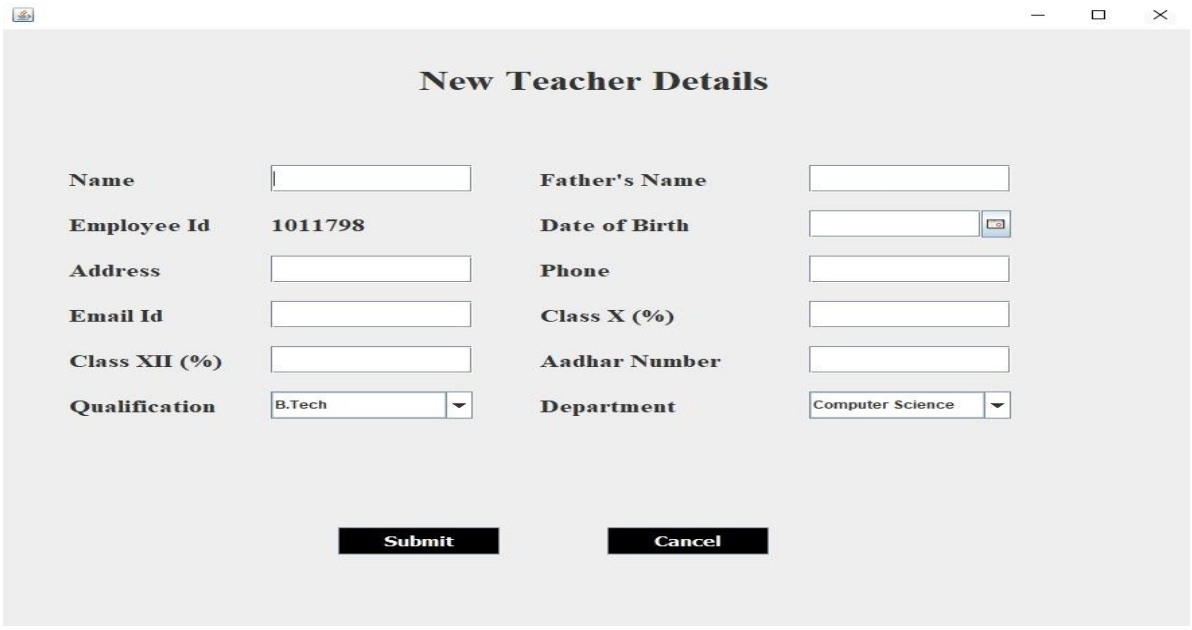

Figure 6.21: Teacher form

Marks and Subject page : In this page we can enter the subjects and marks scored in that particular subject along the rollno.

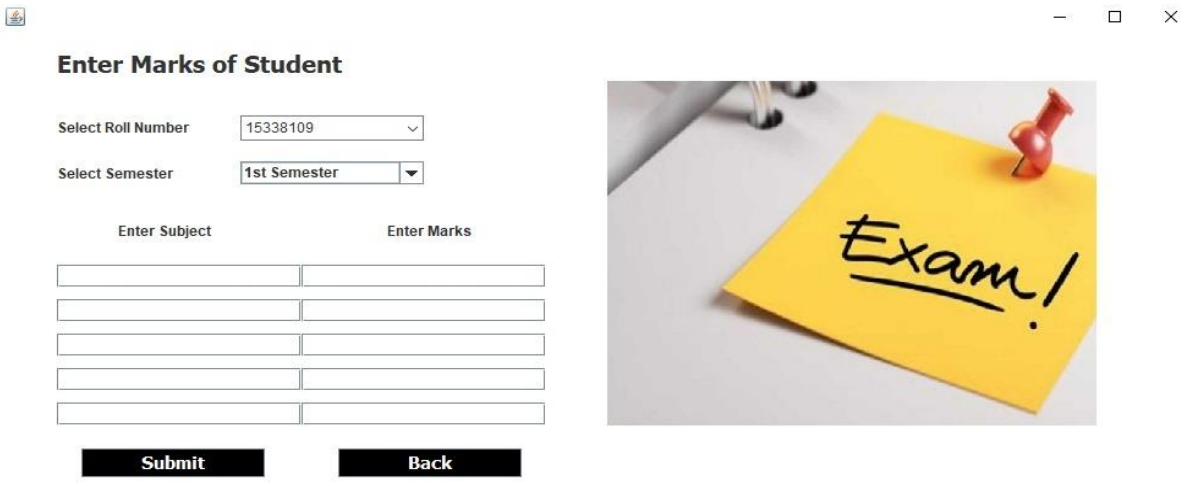

Figure 6.22: Marks and Subject page

Fee payment page : In this page we can the pay the fee dues of the particular student which uses rollno,course,branch and sem to pay the fee.

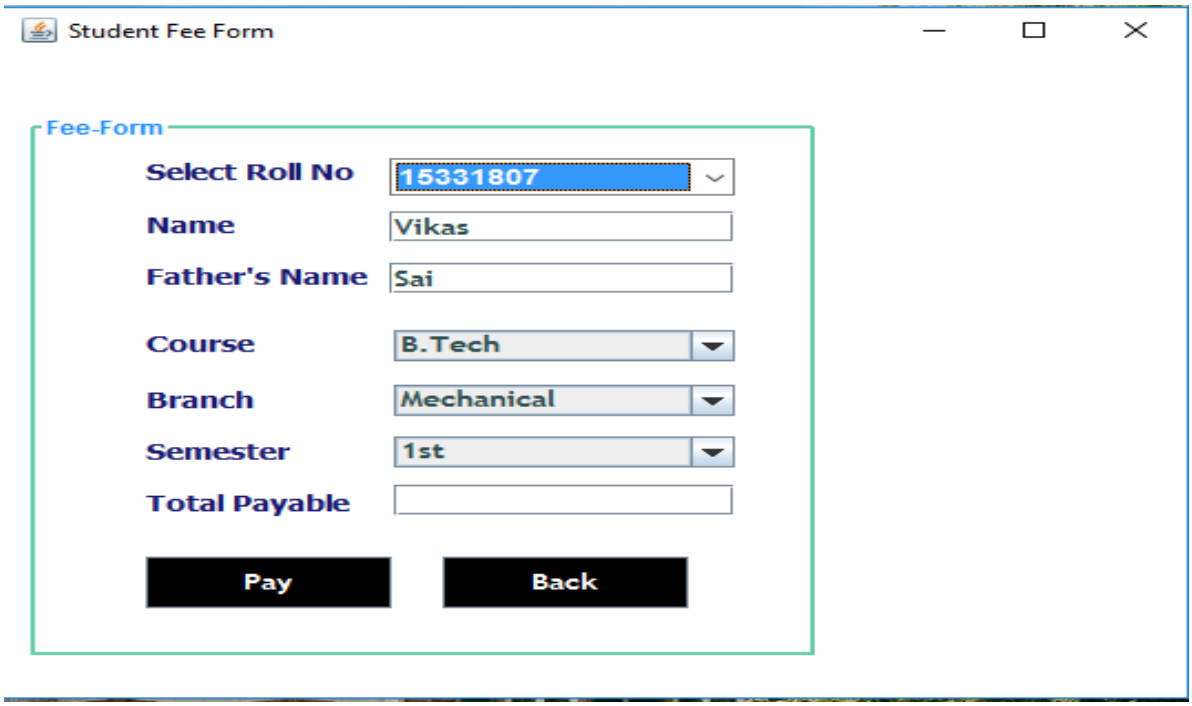

Figure 6.23: Fee payment page

CHAPTER 7

TESTING

System testing is the stage of implementation, which is aimed at ensuring that the system works accurately and efficiently before live operation commences. Testing is the process of executing the program with the intent of finding errors and missing operations and also a complete verification to determine whether the objectives are met and the user requirements are satisfied. The ultimate aim is quality assurance.

7.1 Unit Testing

The software units in a system are modules and routines that are assembled and integrated to perform a specific function. Unit testing focuses first on modules, independentlyof one another, to locate errors. This enables, to detect errors in coding and logic that are contained within each module. This testing includes entering data and ascertaining if the value matches to the type and size supported by java. The various controls are tested to ensure that each performs its action as required.

7.2 Integration Testing

Data can be lost across any interface, one module can have an adverse effect on another, sub functions when combined, may not produce the desired major functions. Integration testing is a systematic testing to discover errors associated within the interface. The objective is to take unit tested modules and build a program structure. All the modules are combined and tested asa whole. Here the Server module and Client module options are integrated and tested. This testing provides the assurance that the application is well integrated functional unit with smoothtransition of data.

7.3 User Acceptance

Testing User acceptance of a system is the key factor for the success of any system. The system under consideration is tested for user acceptance by constantly keeping in touch with the system users at time of developing and making changes whenever required.

7.4 Test Cases

Table 7.1 Test cases

Test No.	Test Name	input	Actualoutput	Expected output	Status
1	Login	Username and password	User is successfully Authenticated	User is successfully Authenticated	Pass
2	Login	Wrong username and password	Invalid username or password	Invalid username or password	Pass
3	Signup	User detailsand passsword	Account successfully created	Account successfully created	Pass
4	Student	Details of the student required.	Student inserted successfully	Student inserted successfully	Pass
5	Teacher	Details of the teacher required	Teacher inserted successfully	Teacher inserted successfully	Pass
6	Subject	Enter the subject names and marks along with rollno	Subjects entered successfully	Subjects entered successfully	Pass
7	Fee	Details and fee_paid	Paid successfully	Paid successfully	Pass
8	RemoveStudent	Enter rollnoand click on remove	Removed successfully	Removed successfully	Pass
9	RemoveTeacher	Enter emp_id and click on remove	Teacher removed successfully	Teacher removed successfully	Pass
10	Exit	Click on Exit	Logout successfully	Logout successfully	Pass

CHAPTER 8

CONCLUSION AND FUTURE SCOPE

8.1 Conclusion

The project entitled as University Management System is the system that deals with the issues related to a particular institution.This project is successfully implemented with all the features mentioned in system requirements specification.The application provides appropriate information to users according to the chosen service. The project is designed keeping in view the day to day problems faced by a college.Deployment of our application will certainly help the college to reduce unnecessary wastage of time in personally going to each department for some information.Awareness and right information about any college is essential for both the development of student as well as faculty. So this serves the right purpose in achieving the desired requirements of both the communities.

8.2 Future Scope

The future scope of a university management system holds tremendous potential for advancements. Some key areas of development include the integration of artificial intelligence (AI) and machine learning (ML) algorithms for data analysis and decision-making. Mobile applications can be developed to provide convenient access to university services for students, faculty, and administrators. Blockchain technology can enhance security and transparency in areas such as student records and financial transactions. Online learning and virtual classrooms can be expanded to offer flexible education opportunities. Integration with Internet of Things (IoT) devices can enable real-time data collection for efficient facility management and enhanced campus safety.

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