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INTRODUCTION

1.1 Overview:

UNIVERSITY MANAGEMENT SYSTEM (UMS) is a flagship product of Easy Solution which covers all aspects of Universities, Colleges or Schools. 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 of hard work done by our expert technical team in 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

1.2 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.

1.3 Scope:

This project deals with the various functioning in College management process. The main idea is to implement a proper process to system. In our existing system contains a many operations registration, student search, fees, attendance, exam records, performance of the student etc. All these activity takeout manually by administrator.

REQUIREMENT SPECIFICATIONS

2.1 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

2.2 Software Requirements:

Operating system : Windows 10

Application server : JAVA (NetBeans)

Front end : JAVA

Connectivity : JDBC Driver

Database connectivity : WAMP (MYSQL Console)

TOOL DESCRIPTION

3.1 Overview of Front End

An important issue for the development of a project is the selection of suitable frontend and back-end. When we decided to develop the project we went through an extensive study to determine the most suitable platform that suits the needs of the organization as well as helps in development of the project.

The aspects of our study included the following

factors. Front-end selection:

- 1. It must have a graphical user interface that assists employees that are not from IT background.
- 2. Scalability and extensibility.
- 3. Flexibility.
- 4. Robustness.
- 5. According to the organization requirement and the culture.
- 6. Must provide excellent reporting features with good printing support.
- 7. Platform independent.
- 8. Easy to debug and maintain.
- 9. Event driven programming facility.
- 10. Front end must support some popular back end like MySQL.

According to the above stated features we selected PHP and CSS as the front-end for developing.

3.1.1 About Java:

Java is a general-purpose, class-based, object-oriented programming language designed for having lesser implementation dependencies. It is a computing platform for application development. Java is fast, secure, and reliable, therefore. It is widely used for developing Java applications in laptops, data centers, game consoles, scientific supercomputers, cell phones, etc.

Here are some important Java applications:

- It is used for developing Android Apps
- Helps you to create Enterprise Software
- Wide range of Mobile java Applications
- Scientific Computing Applications
- Use for Big Data Analytics
- Java Programming of Hardware devices
- Used for Server-Side Technologies like Apache, JBoss, GlassFish, etc.

3.2 Overview of Back End

Back End Selection:

- 1. Multiple user support.
- 2. Efficient data handling.
- 3. Provide inherent features for security.
- 4. Efficient data retrieval and maintenance.
- 5. Stored procedures.
- 6. Popularity.
- 7. Operating System compatible.
- 8. Easy to install.
- 9. Various drivers must be available.
- 10. Easy to implant with the Front-end.

According to above stated features we selected MySQL as the backend.

The technical feasibility is frequently the most difficult area encountered at this stage. It is essential that the process of analysis and definition be conducted in parallel with an assessment to technical feasibility. It centers on the existing computer system (hardware, software etc.) and to what extent it can support the proposed system.

3.2.1 About SQL:

SQL is Structured Query Language, which is a computer language for storing, manipulating and retrieving data stored in a relational database.

SQL is the standard language for Relational Database System. All the Relational Database Management Systems (RDMS) like MySQL, MS Access, Oracle, Sybase, Informix, Postgres and SQL Server use SQL as their standard database language.

MySQL is a fast, easy-to-use RDBMS being used for many small and big businesses. MySQL is developed, marketed and supported by MySQL AB, which is a Swedish company. MySQL is becoming so popular because of many good reasons.[1]

MySQL is released under an open-source license. So you have nothing to pay to use it. 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. MySQL uses a standard form of the well-known SQL data language. 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 is very friendly to PHP, the most appreciated language for web development. MySQL supports large databases, up to 50 million rows or more in a table. The default file size limit for a table is 4GB, but you can increase this (if your operating system can handle it) to a theoretical limit of 8 million terabytes (TB).

Also, they are using different dialects, such as –

- Oracle using PL/SQL,.
- SQL is widely popular because it offers the following advantages –
- Allows users to access data in the database management systems.
- Allows users to describe the data.relational
- Allows users to define the data in a database and manipulate that data.
- Allows to embed within other languages using SQL modules, libraries & pre-compilers.
- Allows users to create and drop databases and tables.
- Allows users to create view, stored procedure, functions in a database.
- Allows users to set permissions on tables, procedures and views.

REQUIREMENT ANALYSIS

4.1 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.

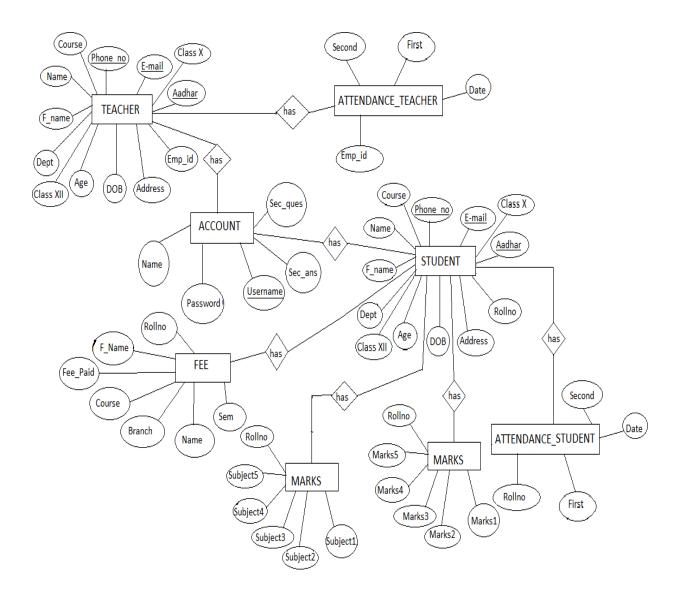


Figure 4.1: ER Diagram for Smartphone Management Arena

4.2 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.

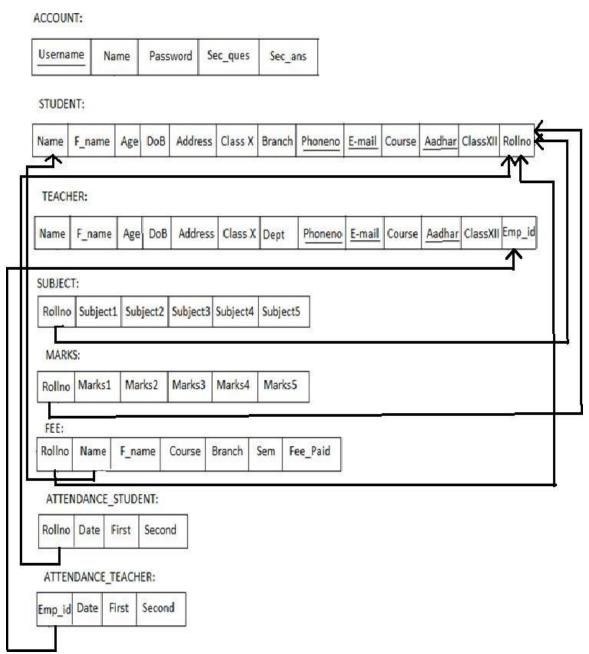


Figure 4.2: Schema Diagram for Smartphone Management System

TABLE DESCRIPTION

5.1 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;

ysql> desc	account;	+		·	++
Field	Туре	Null +	Key	Default 	Extra ++
username	varchar(30)	NO	PRI	NULL	I I
name	varchar(40)	YES		NULL	i i
password	varchar(30)	YES		NULL	
sec_ques	varchar(100)	YES		NULL	
sec_ans	varchar(50)	YES		NULL	
+		+		+	++
5 rows in se	et (0.00 sec)				

Fig 5.1 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;

Field	Type	Null	Key	Default	Extra
name	varchar(20)	YES		NULL	
fathers_name	varchar(20)	YES	į i	NULL	i i
age	varchar(5)	YES	İ	NULL	i i
dob	varchar(20)	YES		NULL	
address	varchar(30)	YES		NULL	i i
phone	varchar(15)	NO	PRI	NULL	i i
email	varchar(25)	NO	PRI	NULL	i i
class_x	varchar(10)	YES	į i	NULL	i i
class xii	varchar(10)	YES	į i	NULL	i i
aadhar	varchar(15)	NO	PRI	NULL	i i
rollno	varchar(15)	YES		NULL	i i
course	varchar(10)	YES	ĺ	NULL	i i
branch	varchar(20)	YES	ĺ	NULL	i i

Fig 5.2 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;

Field	Туре	Null	Key	Default	Extra
name	varchar(20)	YES		NULL	
fathers_name	varchar(20)	YES		NULL	l i
age	varchar(5)	YES		NULL	i i
dob	varchar(20)	YES		NULL	ı i
address	varchar(30)	YES		NULL	i i
phone	varchar(15)	NO	PRI	NULL	l i
email	varchar(25)	NO	PRI	NULL	l i
class_x	varchar(10)	YES		NULL	i i
class_xii	varchar(10)	YES		NULL	l i
aadhar	varchar(15)	NO	PRI	NULL	l i
course	varchar(10)	YES		NULL	i i
emp_id	varchar(15)	YES		NULL	i i
dept	varchar(20)	YES		NULL	l i

Fig 5.3 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;

++	c attendance_s	+	+	Default	++ Extra
rollno Date first second	varchar(20) varchar(30) varchar(10) varchar(10)	YES YES YES YES		NULL NULL NULL NULL	++
4 rows in	set (0.04 sec)			++

Fig 5.4 Attendance_Student table description.

ATTENDANCE_TEACHER TABLE

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

Desc attendance_teacher;

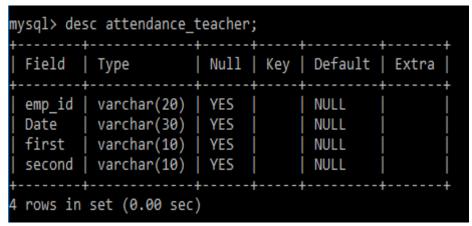


Fig 5.5 Attendance_Teacher table description.

SUBJECT TABLE

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

Desc Subject;

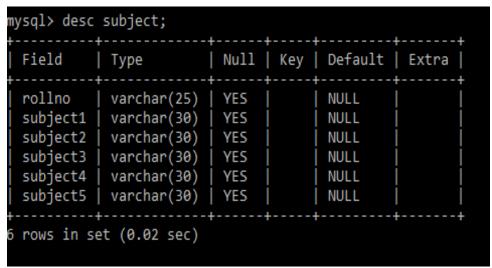


Fig 5.6 Subject table description.

MARKS TABLE

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

Desc Marks;

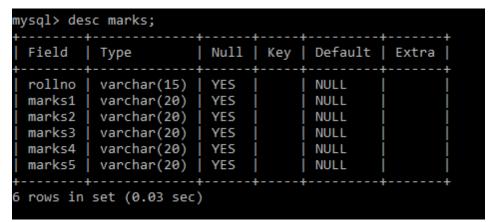


Fig 5.7 Marks table description.

FEE TABLE

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

Desc Fee;

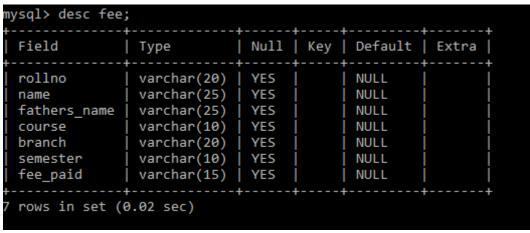


Fig 5.8 Fee table description.

TABLE WITH VALUES

6.1 Output design:

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

Select * from account;

Table 1.1 Account table

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

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.

Select * from student;

Table 1.2 Student table

	lect * from st		4					4	4			
+ name	fathers_name	age	dob	address	phone	email	class_x	class_xii	aadhar	rollno	course	branch
+ Vikas 		22				vikasvicky11@gmail.com		77	229876589745			
	Srinu Krishna	21 20	29/05/1999			raja123@gmail.com gopi11@gmail.com	88	82 78	676476486745 885787588758			Mechanical Computer Science
Akash Akash Mohan		20 19				akash1122@gmail.com	84 82	81 79	906895709687			Civil Professional Deg
ree ++ +	Ü							+				

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.

Select * from teacher;

Table 1.3 Teacher table

	* from teacher;											
 name 	fathers_name	age	dob	address	phone	email	class_x	class_xii	aadhar	course	emp_id	dept
Lakshmi	Venkatesh					lakshmi12@gmail.com		78	756876487594			Computer Scien
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 egree	Chandrasekhar		11/06/1984			rakesh121@gmail.com		87	337659876007			Professional D
++ 5 rows in set		+					 					

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;

Table 1.4 Attendance student table

```
mysql> select * from attendance student;
                                            first
 rollno
            Date
                                                       second
            Thu Jan 14 16:12:03 IST 2021
                                                       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
 rows in set (0.00 sec)
```

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

Select * fromattendance_teacher;

Table 1.5 Attendance_teacher table

	ect * from attendance_teacher;	.	
emp_id	Date	first	second
1016569 1013079 1012340 1014233 1012307	Thu Jan 14 15:45:45 IST 2021 Thu Jan 14 15:46:00 IST 2021 Thu Jan 14 15:46:15 IST 2021 Thu Jan 14 15:46:32 IST 2021 Thu Jan 14 15:46:47 IST 2021	Present Absent Present Absent Leave	Present Present Absent Absent Leave
5 rows in	set (0.00 sec)		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,

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

Select * from Subject;

Table 1.6 Subject table

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

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

Select * from Marks;

Table 1.7 Marks table

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
	+	+			

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

Select * from Fee;

Table 1.8 Fee table

15331807 Vikas Sai	mysql> seled + rollno	++	i fee; fathers_name	 course	branch	semester	+ fee_paid
15333481 Mohan Mogesh B.com Other 3rd 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

IMPLEMENTATION

```
Sample code:
Package
institution.management.system;
importjava.awt.*;
importjavax.swing.*;
importjava.awt.event.*;
importjava.sql.*;
importinstitution.management.system.Signup;
public class Login extends JFrame implements ActionListener{
       privateJPanel panel;
       privateJTextFieldtextField;
       privateJPasswordFieldpasswordField;
privateJButton b1,b2,b3;
       public Login() {
       setBackground(new Color(169, 169, 169));
setBounds(600, 300, 600, 400);
panel = new JPanel();
       panel.setBackground(new Color(176, 224, 230));
       setContentPane(panel);
       panel.setLayout(null);
       JLabel 11 = new JLabel("Username : ");
```

UNIVERSITY MANAGEMENT SYSTEM

11.setBounds(124, 89, 95, 24);

```
panel.add(11);
       JLabel 12 = new JLabel("Password : ");
       12.setBounds(124, 124, 95, 24);
       panel.add(12);
       textField = new JTextField();
       textField.setBounds(210, 93, 157, 20);
       panel.add(textField);
       passwordField = new JPasswordField();
       passwordField.setBounds(210, 128, 157, 20);
       panel.add(passwordField);
       JLabel 13 = new JLabel("");
       13.setBounds(377, 79, 46, 34);
       panel.add(13);
       JLabel 14 = new JLabel("");
       14.setBounds(377, 124, 46, 34);
       panel.add(13);
       b1 = new JButton("Login");
       b1.addActionListener(this);
       b1.setForeground(new Color(46, 139, 87));
       b1.setBackground(new Color(250, 250, 210));
       b1.setBounds(149, 181, 113, 39);
       panel.add(b1);
b2 = new JButton("SignUp");
       b2.addActionListener(this);
```

```
b2.setForeground(new Color(139, 69, 19));
       b2.setBackground(new Color(255, 235, 205));
       b2.setBounds(289, 181, 113, 39);
       panel.add(b2);
       b3 = new JButton("Forgot Password");
       b3.addActionListener(this);
b3.setForeground(new Color(205, 92, 92));
       b3.setBackground(new Color(253, 245, 230));
       b3.setBounds(199, 231, 179, 39);
       panel.add(b3);
       JLabel 15 = new JLabel("Trouble in Login?");
       15.setFont(new Font("Tahoma", Font.PLAIN, 15));
       15.setForeground(new Color(255, 0, 0));
       15.setBounds(70, 240, 130, 20);
       panel.add(15);
              JPanel panel2 = new JPanel();
              panel2.setBackground(new Color(176, 224, 230));
              panel2.setBounds(24, 40, 434, 263);
              panel.add(panel2);
 }
public void actionPerformed(ActionEventae){
if(ae.getSource() == b1){
         Boolean status = false;
              try {
```

```
conn con = new conn();
            String sql = "select * from account where username=? and password=?";
PreparedStatementst = con.c.prepareStatement(sql);
st.setString(1, textField.getText());
st.setString(2, passwordField.getText());
ResultSetrs = st.executeQuery();
if (rs.next()) {
this.setVisible(false);
new Loading().setVisible(true);
            } else
                      JOptionPane.showMessageDialog(null, "Invalid Login...!.");
               } catch (Exception e2)
{ e2.printStackTrace();} }
if(ae.getSource() == b2){
setVisible(false);
               Signup su = new Signup();
               su.setVisible(true);}
if(ae.getSource() == b3){
setVisible(false);
               ForgotPassword forgot = new ForgotPassword();
               forgot.setVisible(true);}
     }
       public static void main(String[] args) {
          new Login().setVisible(true);
                                                         }
                                            }
```

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.

8.1 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, independently of 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.

8.2 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 as a 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 smooth transition of data.

8.3 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.

8.4 Test Cases:

Table 1.9 Test cases

Test No.	Test Name	input	Actual output	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 details and 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	Remove Student	Enter rollno and click on remove	Removed successfully	Removed successfully	Pass
9	Remove Teacher	Enter emp_id and click on remove	Teacher removed successfully	Teacher removed successfully	Pass
10	Exit	Click on Exit	Logout successfully	Logout successfully	Pass

SNAPSHOTS

1. **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.

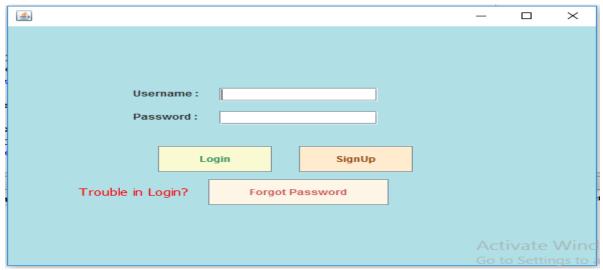


Figure 9.1: Login form

2. **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.

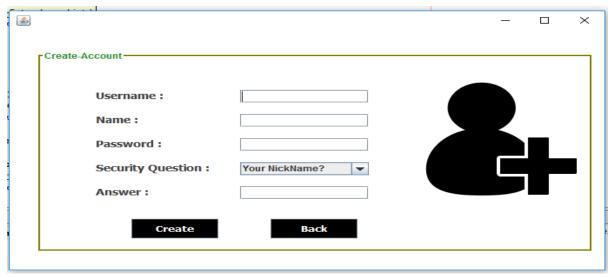


Figure 9.2: Signup page

3. **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.

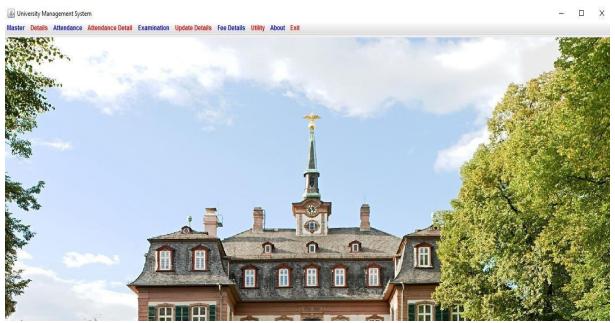


Figure 9.3: Home page user

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



Figure 9.4: Student form

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

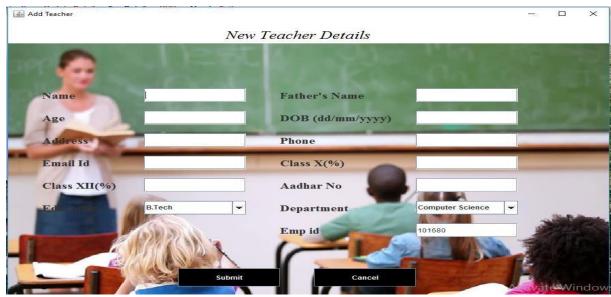


Figure 9.5: Teacher form

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

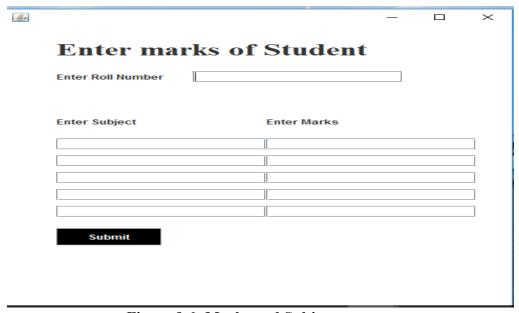


Figure 9.6: Marks and Subject page

7. **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.

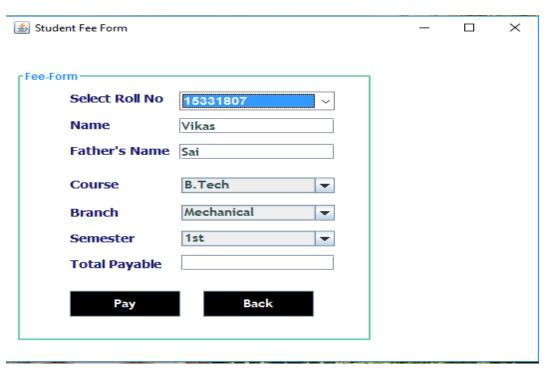


Figure 9.7: Fee payment page

CONCLUSION

The project entitled as **Institution 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.

REFERENCES

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