NATIONAL UNIVERSITY OF SCIENCES & TECHNOLOGY

MILTARY COLLEGE OF SIGNALS, NUST





Object Oriented Programming (OOP) (CS-212)

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○ COURSE: BESE-28 ○ SECTION: C

 DEPARTMENT: COMPUTER SOFTWARE ENGINEERING (CSE)

Submitted to: LE Muhammad Asif

o **DATED:** 13-05-2023

Overview:

INTRODUCTION

STUDENT MANAGEMENT SYSTEM (SMS) is a flagship product of Easy Solution which covers all aspects of Universities, Colleges or Schools. SMS covers every minute aspects of a universities work flow and integrates all processes with user friendly interface. With hundreds of satisfied customers SMS is first choice of several state, governments/semi- government universities and institutions. SMS is an outcome of hard work done by our expert technical team in supervision of several renowned educationists which includes Controller of examination, faculties. SMS is a rare combination of experience and precision. SMS streamline path of information flow in organization by taking care of following departments:

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

o 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.

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

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

Software Requirements:

➤ Operating system: Windows 10

> Application server : JAVA (NetBeans)

> Front end : JAVA

Connectivity: JDBC Driver

➤ Database connectivity : WAMP (MYSQL Console)

TOOL DESCRIPTION

o Overview of Front End

An important issue for the development of a project is the selection of suitable front- end 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.

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.

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.

o 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.

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).

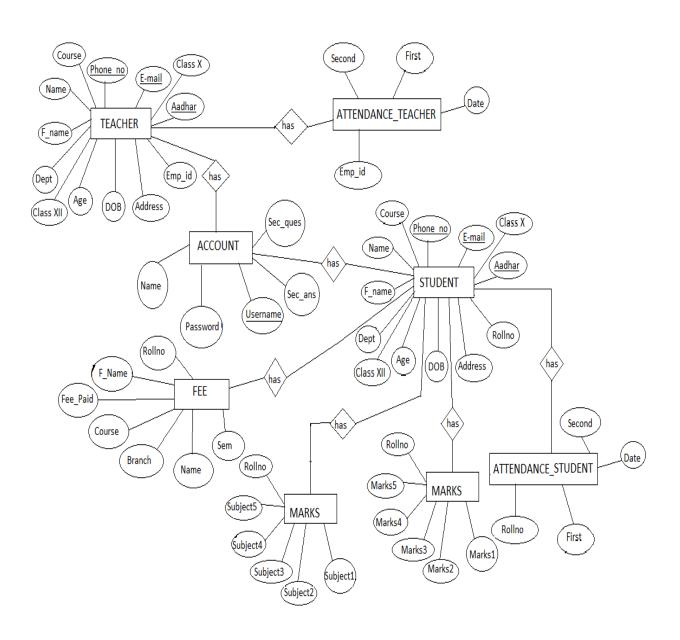
Also, they are using different dialects, such as -

- 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

E-R 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.



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.

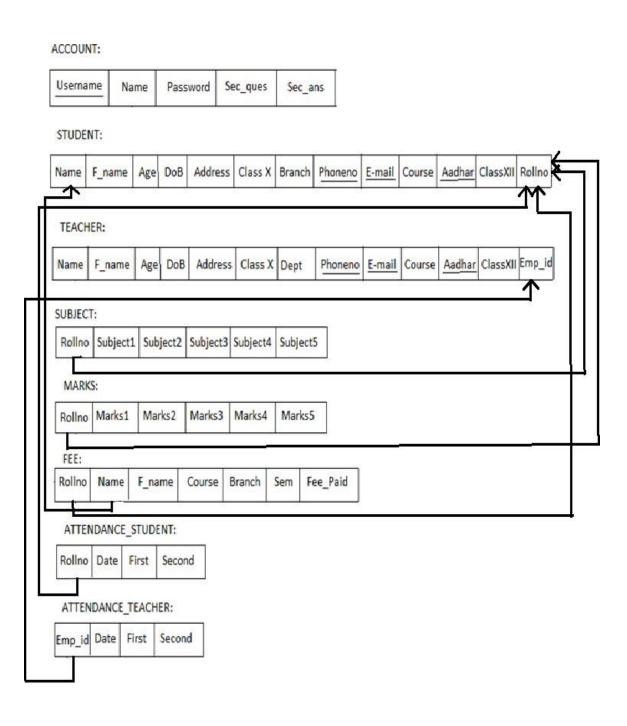


TABLE DESCRIPTION

Database Queries for COLLEGE MANAGEMENT SYSTEM Project

1 - Create database						
create database collegemanagementsystem;						
oreate database contegernandgements/stem,						
2 - Use database you just created						
use collegemanagementsystem;						
3 - Create login table						
create table login(username varchar(25), password varchar(25));						
4 - Insert some values in the login table						
insert into login values('mas', 'mas03');						
5 - Create student table						
create table student(name varchar(40), fname varchar(40), rollno varchar(20), dob varchar(40), address varchar(100), phone varchar(20), email varchar(40), class_x varchar(20), class_xii varchar(20), cnic varchar(20), course varchar(40), branch varchar(40));						

6 - Create teacher table

create table teacher(name varchar(40), fname varchar(40), empld varchar(20), dob varchar(40), address varchar(100), phone varchar(20), email varchar(40), class_x varchar(20), class_xii varchar(20), cnic varchar(20), education varchar(40), department varchar(40));

7 - Create student leave table

create table studentleave(rollno varchar(20), date varchar(50), duration varchar(20));

8 - Create teacher leave table

create table teacherleave(empId varchar(20), date varchar(50), duration varchar(20));

9 - Create table to store subjects

create table subject(rollno varchar(20), semester varchar(20), subject1 varchar(50), subject2 varchar(50), subject3 varchar(50), subject4 varchar(50), subject5 varchar(50));

10 - Create table to store marks

create table marks(rollno varchar(20), semester varchar(20), marks1 varchar(50), marks2 varchar(50), marks3 varchar(50), marks4 varchar(50), marks5 varchar(50));

11 - Create table for fee structure

create table fee_(course varchar(20), semester1 varchar(20), semester2 varchar(20), semester3 varchar(20), semester4 varchar(20), semester5 varchar(20), semester6 varchar(20), semester7 varchar(20), semester8 varchar(20));

12 - Insert some values in the table

```
insert into fee_ values("Bachelors", "175000",
"124000","124000","124000","124000","124000","124000","124000");
insert into fee_ values("Masters", "140000", "95000","95000","95000","","","","");
insert into fee_ values("PhD", "135000",
"110000","10000","110000","110000","110000","110000","110000");
```

13 - Create table to store student fee details

create table collegefee(rollno varchar(20), course varchar(20), branch varchar(20), semester varchar(20), total varchar(20));

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.

o 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.

o 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.

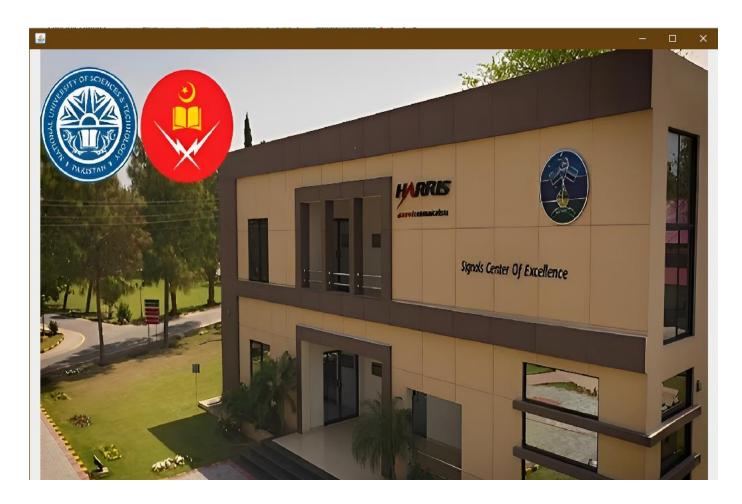
User Acceptance

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.

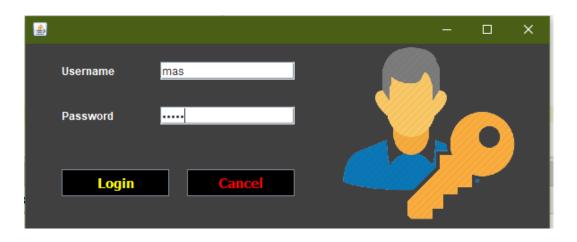
TEST CASES

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
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

• OUTPUT (SCREENSHOT) FOR MAIN WINDOW



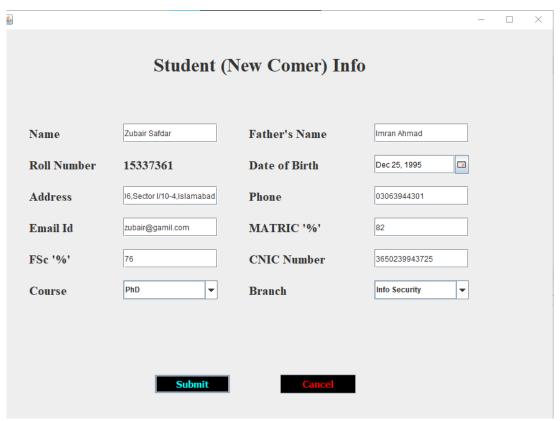
• OUTPUT (SCREENSHOT) FOR LOGIN WINDOW

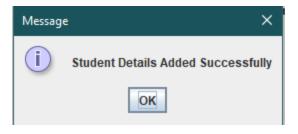


OUTPUT (SCREENSHOT) FOR LOGIN WINDOW

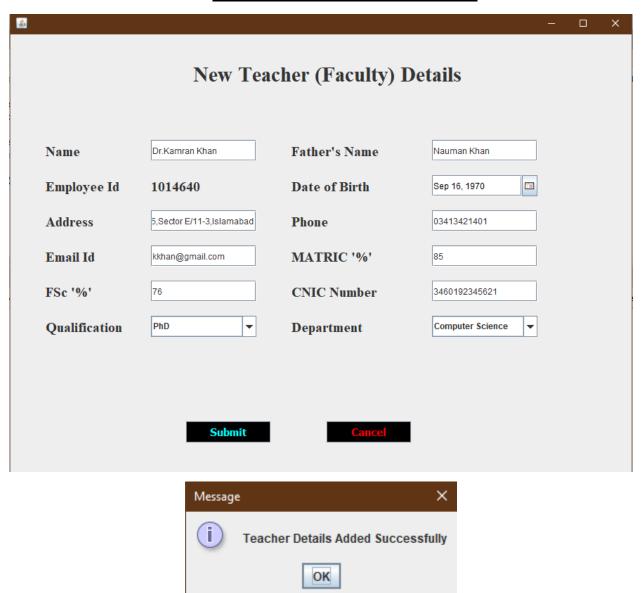


• OUTPUT (SCREENSHOT) FOR ADD NEW STUDENT WINDOW

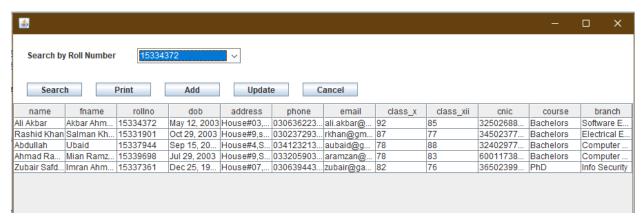




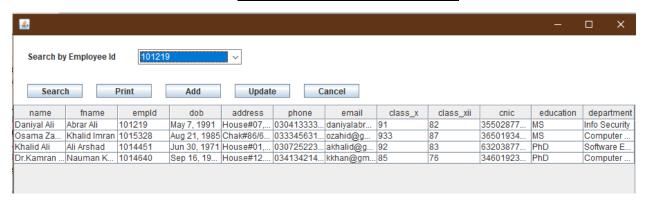
• OUTPUT (SCREENSHOT) FOR ADD NEW TEACHER WINDOW



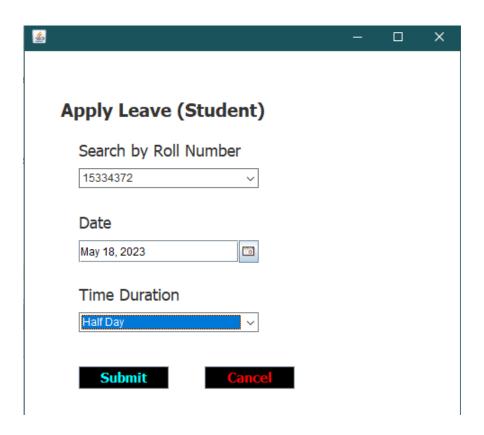
• OUTPUT (SCREENSHOT) FOR STUDENT DETAILS WINDOW



• OUTPUT (SCREENSHOT) FOR TEACHER DETAILS WINDOW

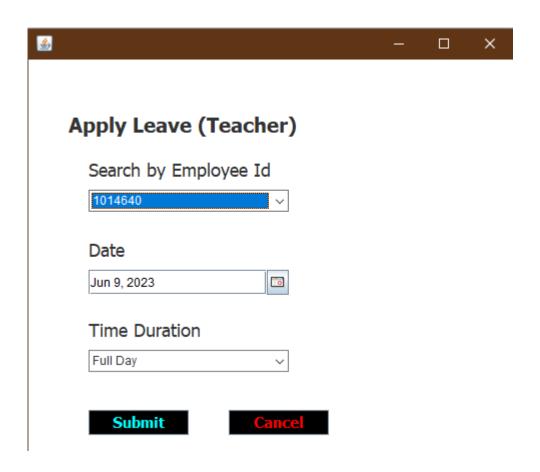


• OUTPUT (SCREENSHOT) FOR STUDENT LEAVE WINDOW



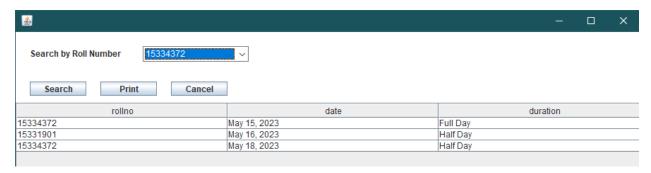


• OUTPUT (SCREENSHOT) FOR TEACHER LEAVE WINDOW





• OUTPUT (SCREENSHOT) FOR STUDENT LEAVE DETAILS WINDOW

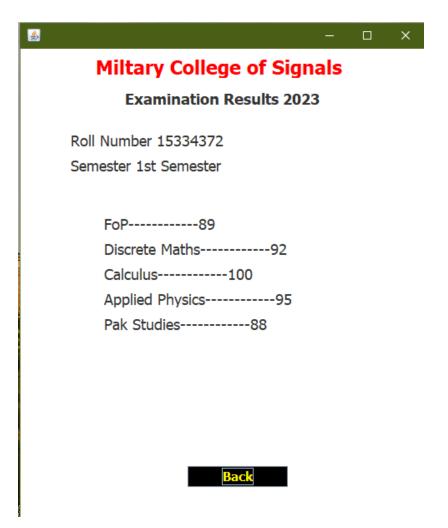


• OUTPUT (SCREENSHOT) FOR TEACHER LEAVE DETAILS WINDOW

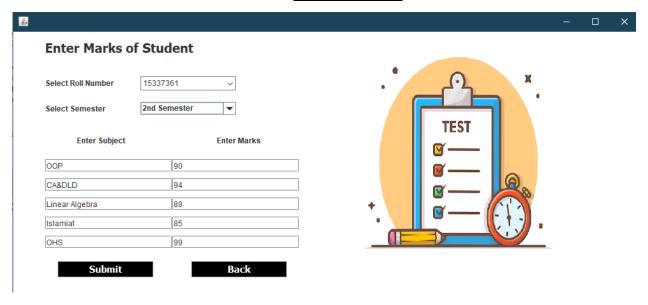


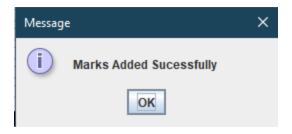
• OUTPUT (SCREENSHOT) FOR EXAMINATION DETAILS WINDOW



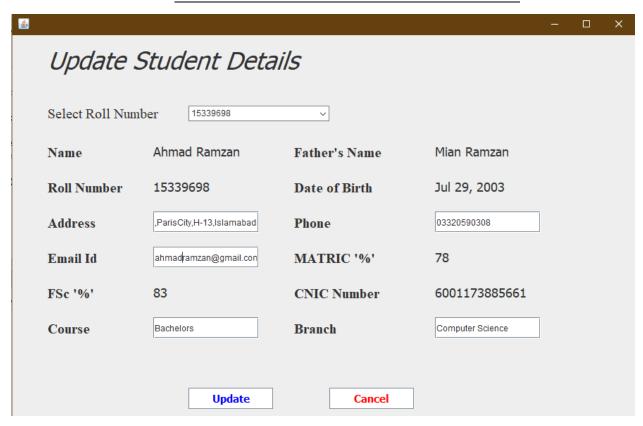


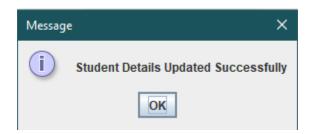
• OUTPUT (SCREENSHOT) FOR ENTER MARKS <u>WINDOW</u>



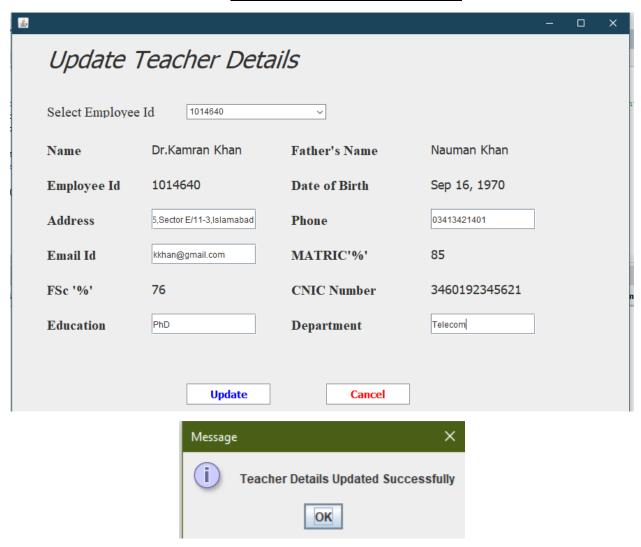


• OUTPUT (SCREENSHOT) FOR UPDATE STUDENT DETAILS WINDOW

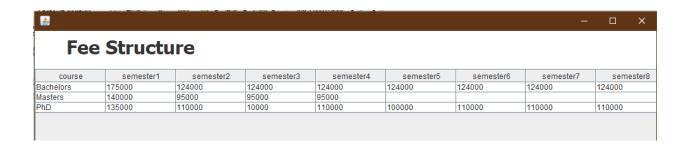




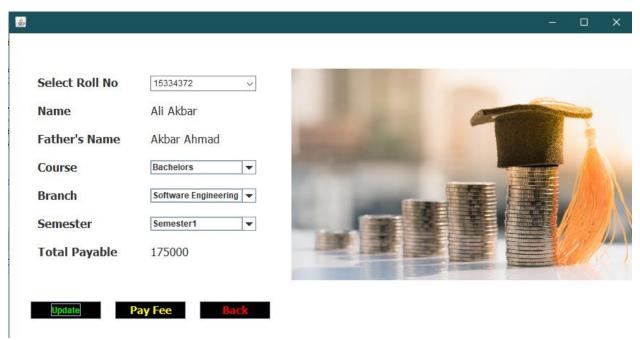
• OUTPUT (SCREENSHOT) FOR UPDATE TEACHER WINDOW



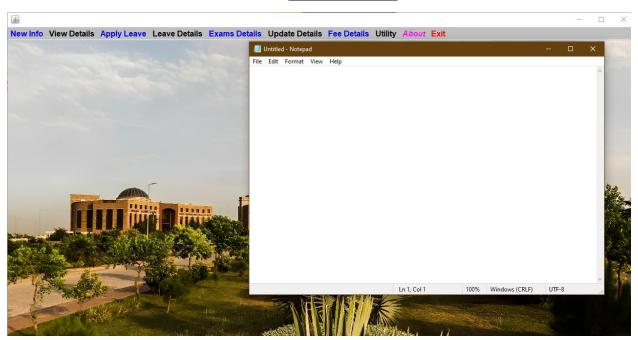
• OUTPUT (SCREENSHOT) FOR FEE STRUCTURE WINDOW



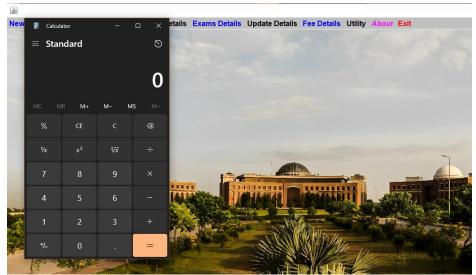
• OUTPUT (SCREENSHOT) FOR STUDENT FEE FORM WINDOW



• OUTPUT (SCREENSHOT) FOR NOTEPAD WINDOW



• OUTPUT (SCREENSHOT) FOR CALCULATOR WINDOW



• OUTPUT (SCREENSHOT) FOR ABOUT DEV WINDOW

Miltary College of Signals

Department of Software Engineering

Student Management System

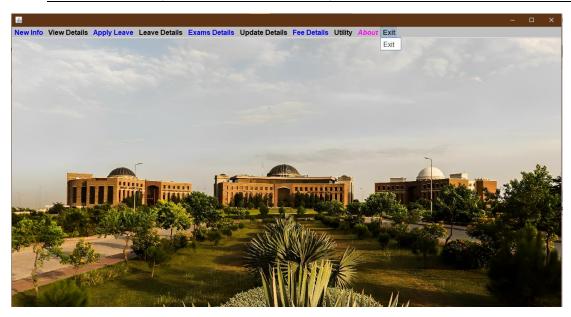
Developed By: MUHAMMAD AHMAD SULTAN



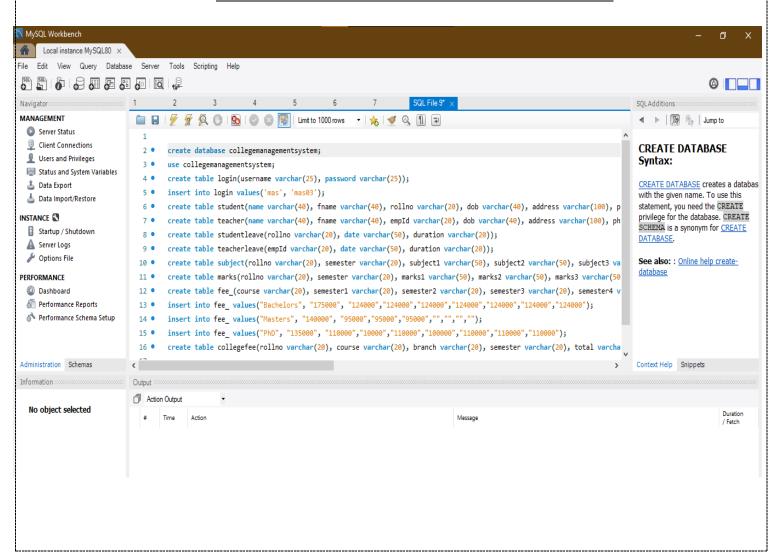
CMS ID # : 408709 Batch: BESE-28 (C)

Contact Info Email : m.ahmadsultan123mas@gmail.com Phone :+92 306 1611301

OUTPUT (SCREENSHOT) FOR EXIT WINDOW



OUTPUT (SCREENSHOT) FOR DATABASE MYSQL CONNECTIVITY WINDOW



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.

<u>Deployment of our application will certainly help the college to reduce unnecessary wastage of time in personally going to each department for some information.</u>

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.

o Sig	nature o	f the	student:	
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- Name of the Instructor: LE Muhammad Asif
- Signature of the Instructor :______

