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<u>INTRODUCTION</u>

Online Examinations are being launched because a need for a destination that is beneficial for both institutes and students. With this project, institutes can register and host online exams. Students can give exams and view their results. This project is an attempt to remove the existing flaws in the manual system of conducting exams.

Purpose:
Online Exams System fulfils the requirements of the institutes to conduct the exams online. They do not have to go to any software developer to make a separate site for being able to conduct exams online. They just have to register on the site and enter the exam details and the lists of the students which can appear in the exam.

Students can give exam without the need of going to any physical destination. They can view the result at the same time.

Thus the purpose of the site is to provide a system that saves the efforts and time of both the institutes and the students.

Project Overview:
     Online Exams System is a web application that establishes a network between the institutes and the students. Institutes enter on the site the questions they want in the exam. These questions are displayed as a test to the eligible students. The answers enter by the students are then evaluated and their score is calculated and saved. This score then can be accessed by the institutes to determine the passes students or to evaluate their performance.

     Online Exams System provides the platform but does not directly participate in, nor is it involved in any tests conducted. Questions are posted not by the site, but users of the site. The site requires an institute to register before posting the questions. The site has an administrator who keeps an eye on the overall functioning of the system. The site gets revenue by charging the

institutes each time they want to conduct the exam. The system entitled "Online Exams System" is application software, which aims at providing services to the institutes and providing them with an option of selecting the eligible students by themselves. It is developed by using J2EE technology and related database.

But in my project *Online Examination* testing is not based on internet we make our project at college level in which there is no need of internet. The testing is done with the help of database. Our project has a frontend that is acts as an interface to the users of the application and a backend that aids in the management of the application. The features of both are listed below.

Salient Features in Project:

- User friendly.
- Providing protection to data, through password.
- Efficient retrieval of information.
- Ensure accuracy of data, with in-built validations and checks.
- Efficient linkage of information.
- Informative reports.
- Elimination of paper works to a great extent.

Objectives of The Project:

After thoroughly analyzing the existing system the following objectives have been set:

- Providing user friendly interface

- Keeping exams online
- Easy access of data
- Elimination of paper works to a great extent.
- Maintaining data consistency

- Providing better performance
- Facility to update the data time to time
- Adequate security of the database
- Providing protection to data, through password.
- Efficient retrieval of information.

System Requirements Analysis:

Prior to the software development efforts in any type of system it is very essential to understand the requirements of the systems and users. A complete specification of the software is the 1st step is the analysis of system. Requirements analysis provides the designer with the representation of functions and procedures that can be translated into data, architecture and procedural design.

The goal of requirement analysis is to find out how the current system is working and if there are any areas where improvement is necessary and possible. This may result in using alternative ways to data capturing and processing.

Interface Requirements:

1.   User Interface

The package must be user friendly and robust. It must prompt the user with proper message boxes to help them perform various actions and how to precede further the system must respond normally under any in out conditions and display proper message instead of turning up faults and errors.

2. Hardware Specification

HARDWARE	SPECIFICATION
CPU	Intel Pentium IV
SPEED	1.5GHz
RAM	256 MB
HARD DISK	40GB
KEYBOARD	105 Keys

Software Specifications:

Software is a set of program, documents, and procedure, routines associated with computer system. Software is an essential complement to hardware. It is the computer programs which when "Student Management System" has been developed using the following tools:

- Java Swing, Awt
- MYSQL
- IDE: NetBeans

SYSTEM DEVELOPMENT LIFE CYCLE MODEL (SDLC MODEL):

This is also known as Classic Life Cycle Model (or) Linear Sequential Model (or) Waterfall Method. This has the following activities.

1. System/Information Engineering and Modeling

2. Software Requirements Analysis

3. Systems Analysis and Design

4. Code Generation

5. Testing

6. Maintenance

System/Information Engineering and Modeling:

As software is always of a large system (or business), work begins by establishing requirements for all system elements and then allocating some subset of these requirements to software. This system view is essential when software must interface with other elements such as hardware, people and other resources. System is the basic and very critical requirement for the existence of software in any entity. So if the system is not in place, the system should be engineered and put in place. In some cases, to extract the maximum output, the system should be re-engineered and spruced up. Once the ideal system is engineered or tuned, the development team studies the software requirement for the system.

Software Requirement Analysis:

This is also known as feasibility study. In this phase, the development team visits the customer and studies their system. They investigate the need for possible software automation in the given system. By the end of the feasibility study, the team furnishes a document that holds the different specific

recommendations for the candidate system. It also includes the personnel assignments, costs, project schedule, and target dates. The requirements

gathering process is intensified and focused specially on software. To understand the nature of the program(s) to be built, the system engineer ("analyst") must understand the information domain for the software, as well as required function, behavior, performance and interfacing. The essential purpose of this phase is to find the need and to define the problem that needs to be solved.

System Analysis and Design:

In this phase, the software development process, the software's overall structure and its nuances are defined. In terms of the client/server technology, the number of tiers needed for the package architecture, the database design, the data structure design etc are all defined in this phase. A software development model is created. Analysis and Design are very crucial in the whole development cycle. Any glitch in the design phase could be very expensive to solve in the later stage of the software development. Much care is taken during this phase. The logical system of the product is developed in this phase.

Code generation:

The design must be translated into a machine-readable form. The code generation step performs this task. If the design is performed in a detailed manner, code generation can be accomplished without much complication. Programming tools like Compilers, Interpreters, and Debuggers are used to generate the code. Different high level programming languages like C, C++, Pascal, and Java are used for coding. With respect to the type of application, the right programming language is chosen.

Testing

Once the code is generated, the software program testing begins. Different testing methodologies are available to unravel the bugs that were committed

during the previous phases. Different testing tools and methodologies are already available. Some companies build their own testing tools that are tailor made for their own development operations.

Background of The Project:

1. Setting up a Database

We will assume that the database COFFEEBREAK already exists. (Creating a database is not at all difficult, but it requires special permissions and is normally done by a database administrator.) When you create the tables used as examples in this tutorial, they will be in the default database. We purposely kept the size and number of tables small to keep things manageable.

Suppose that our sample database is being used by the proprietor of a small coffee house called The Coffee Break, where coffee beans are sold by the pound and brewed coffee is sold by the cup. To keep things simple, also suppose that the proprietor needs only two tables, one for types of coffee and one for coffee suppliers.

First we will show you how to open a connection with your DBMS, and then, since what JDBC does is to send your SQL code to your DBMS, we will demonstrate some SQL code. After that, we will show you how easy it is to use JDBC to pass these SQL statements to your DBMS and process the results that are returned.

This code has been tested on most of the major DBMS products. However, you may encounter some compatibility problems using it with older ODBC drivers with the JDBC-ODBC Bridge.

2. Establishing a Connection

The first thing you need to do is establish a connection with the DBMS you want to use. This involves two steps: (1) loading the driver and (2) making the connection.

(a)Loading Drivers

Loading the driver or drivers you want to use is very simple and involves just one line of code. If, for example, you want to use the JDBC-ODBC Bridge driver, the following code will load it:

Class.forName("sun.jdbc.odbc.JdbcOdbcDriver");

Your driver documentation will give you the class name to use. For instance, if the class name is jdbc.DriverXYZ , you would load the driver with the following line of code:

Class.forName("jdbc.DriverXYZ");

You do not need to create an instance of a driver and register it with the DriverManager because calling Class.forName will do that for you automatically. If you were to create your own instance, you would be creating an unnecessary duplicate, but it would do no harm.

When you have loaded a driver, it is available for making a connection with a DBMS.

(b)Making the Connection

The second step in establishing a connection is to have the appropriate driver connect to the DBMS. The following line of code illustrates the general idea:

**Connection con = DriverManager.getConnection(url,
        "myLogin", "myPassword");**

This step is also simple, with the hardest thing being what to supply for url . If you are using the JDBC-ODBC Bridge driver, the JDBC URL will start

with jdbc:odbc: . The rest of the URL is generally your data source name or database system. So, if you are using ODBC to access an ODBC data source called " Fred, " for example, your JDBC URL could be jdbc:odbc:Fred . In place of " myLogin " you put the name you use to log in to the DBMS; in place of " myPassword " you put your password for the DBMS. So if you log in to your DBMS with a login name of " Fernanda " and a password of " J8, " just these two lines of code will establish a connection:

String url = "jdbc:odbc:Fred";
Connection con = DriverManager.getConnection(url, "Fernanda", "J8");

If you are using a JDBC driver developed by a third party, the documentation will tell you what subprotocol to use, that is, what to put after jdbc: in the JDBC URL. For example, if the driver developer has registered the name acme as the subprotocol, the first and second parts of the JDBC URL will be jdbc:acme: . The driver documentation will also give you guidelines for the rest of the JDBC URL. This last part of the JDBC URL supplies information for identifying the data source.

If one of the drivers you loaded recognizes the JDBC URL supplied to the method DriverManager.getConnection, that driver will establish a connection to the DBMS specified in the JDBC URL. The DriverManager class, true to its name, manages all of the details of establishing the connection for you behind the scenes. Unless you are writing a driver, you will probably never use any of the methods in the interface Driver , and the only DriverManager method you really need to know is DriverManager.getConnection .

The connection returned by the method DriverManager.getConnection is an open connection you can use to create JDBC statements that pass your SQL statements to the DBMS. In the previous example, con is an open connection, and we will use it in the examples that follow.

3. Creating JDBC Statements

A Statement object is what sends your SQL statement to the DBMS. You simply create a Statement object and then execute it, supplying the appropriate execute method with the SQL statement you want to send. For a SELECT statement, the method to use is executeQuery . For statements that create or modify tables, the method to use is executeUpdate .

It takes an instance of an active connection to create a Statement object. In the following example, we use our Connection object con to create the Statement object stmt :

Statement stmt = con.createStatement();

At this point stmt exists, but it does not have an SQL statement to pass on to the DBMS. We need to supply that to the method we use to execute stmt. For example, in the following code fragment, we supply executeUpdate with the SQL statement from the example above:

**stmt.executeUpdate("CREATE TABLE COFFEES " +
  "(COF_NAME VARCHAR(32), SUP_ID INTEGER, PRICE FLOAT, "
+
  "SALES INTEGER, TOTAL INTEGER)");**

Since we made a string out of the SQL statement and assigned it to the variable createTableCoffees , we could have written the code in this alternate form:

stmt.executeUpdate(createTableCoffees);

4. Executing Statements

We used the method executeUpdate because the SQL statement contained in createTableCoffees is a DDL (data definition language) statement. Statements that create a table, alter a table, or drop a table are all examples of DDL statements and are executed with the method executeUpdate . As you might expect from its name, the method executeUpdate is also used to execute SQL statements that update a table. In practice, executeUpdate is used far more often to update tables than it is to create them because a table is created once but may be updated many times.

Methodologies Used:

A. Programming Language(JAVA)
B. Database(Back-End)

Programming Language(JAVA):

                JAVA is the most widely used object-oriented language today. It is faster and more powerful than Java, another popular object-oriented language, which lacks certain features such as pointers and multiple inheritance.

                Some important concepts of the object-oriented programming language are as follows:

*   Objects
*   Classes
*   Data abstraction and encapsulation
*   Inheritance
*   Polymorphism
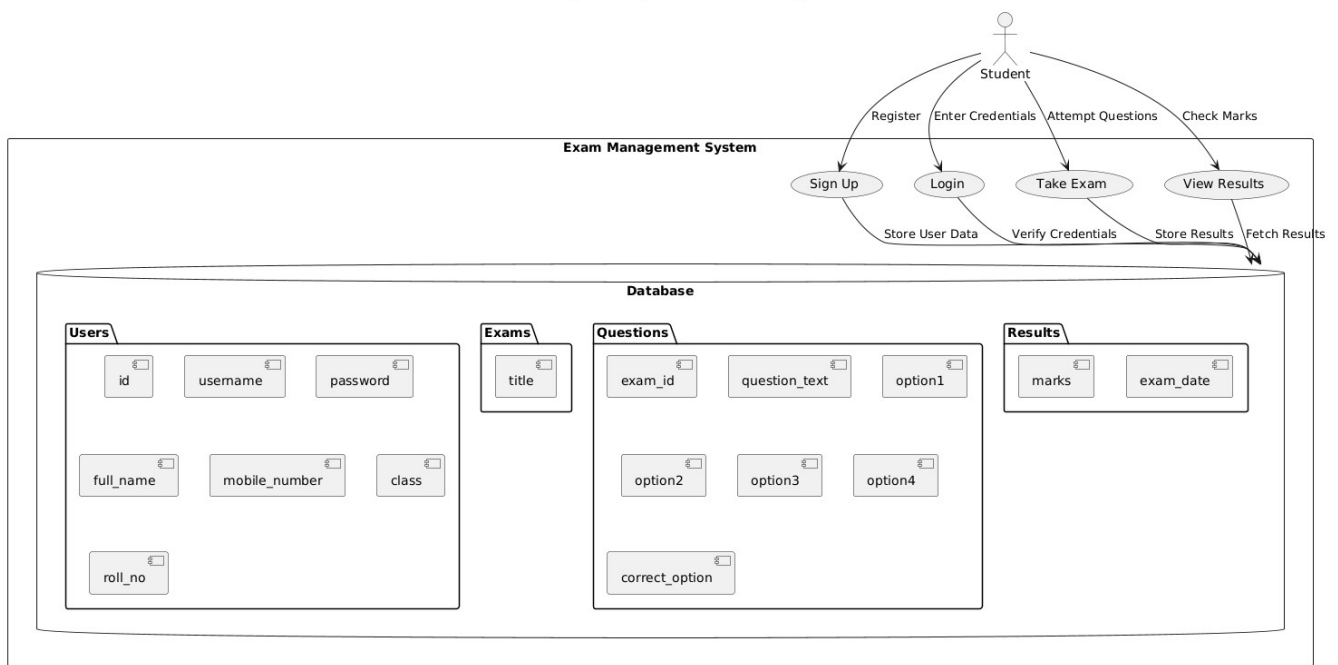*   Dynamic binding
*   Message passing

JDBC :

        JDBC is a Java-based data access technology (Java Standard Edition platform) from Sun Microsystems. It is an acronym as it is unofficially referred to as Java Database Connectivity, with DB being universally recognized as the abbreviation for database. This technology is an API for the Java programming language that defines how a client may access a database. It provides methods for querying and updating data in a database.

JDBC allows multiple implementations to exist and be used by the same application. The API provides a mechanism for dynamically loading the correct Java packages and registering them with the JDBC Driver Manager. The Driver Manager is used as a connection factory for creating JDBC connections.
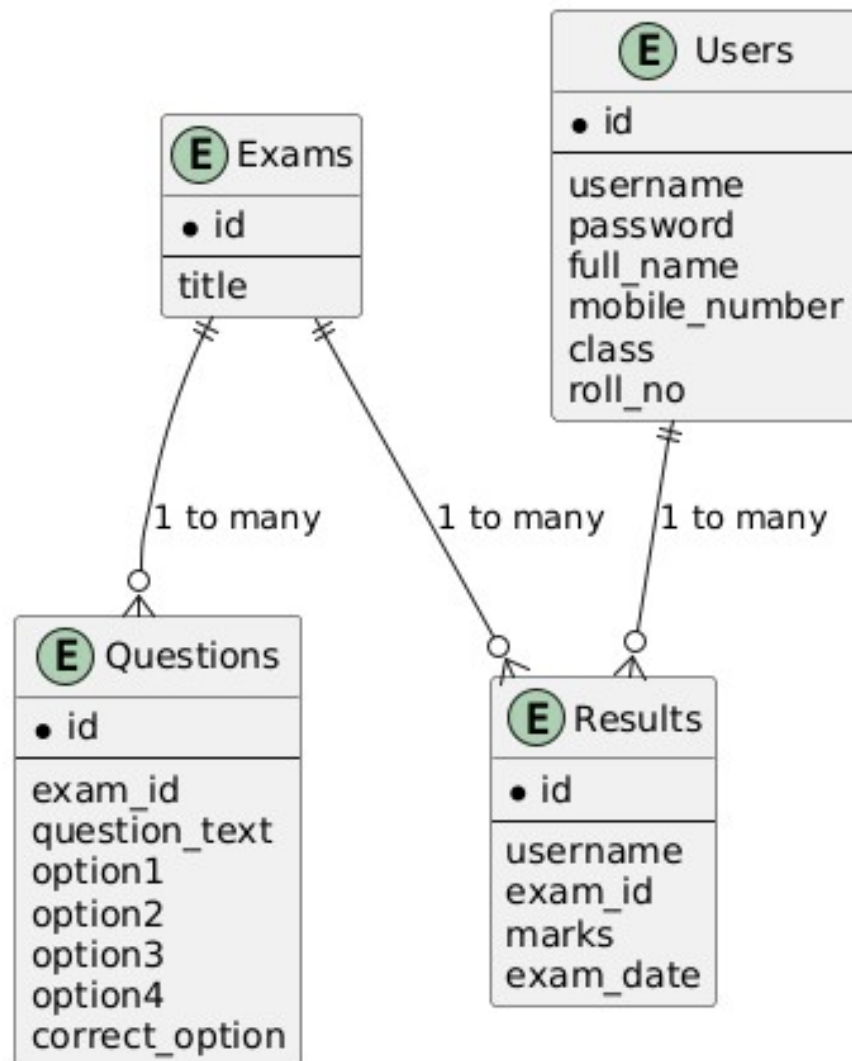JDBC connections support creating and executing statements. These may be update statements such as SQL's CREATE, INSERT, UPDATE and DELETE, or they may be query statements such as SELECT.

Data Flow Diagrams

Exam Management System - Data Flow Diagram

Student

Register | Enter Credentials | Attempt Questions | Check Marks

Exam Management System

(Sign Up)   (Login)   (Take Exam)   (View Results)

Store User Data | Verify Credentials | Store Results | Fetch Results

Database

Users

| id | username | password |

| full_name | mobile_number | class |

| roll_no |

Exams

| title |

Questions

| exam_id | question_text | option1 |

| option2 | option3 | option4 |

| correct_option |

Results

| marks | exam_date |

Exam Management System - Entity-Relationship Diagram

Exams
- id
- title

Users
- id
- username
- password
- full_name
- mobile_number
- class
- roll_no

1 to many | 1 to many | 1 to many

Questions
- id
- exam_id
- question_text
- option1
- option2
- option3
- option4
- correct_option

Results
- id
- username
- exam_id
- marks
- exam_date

SNAP SHOTS
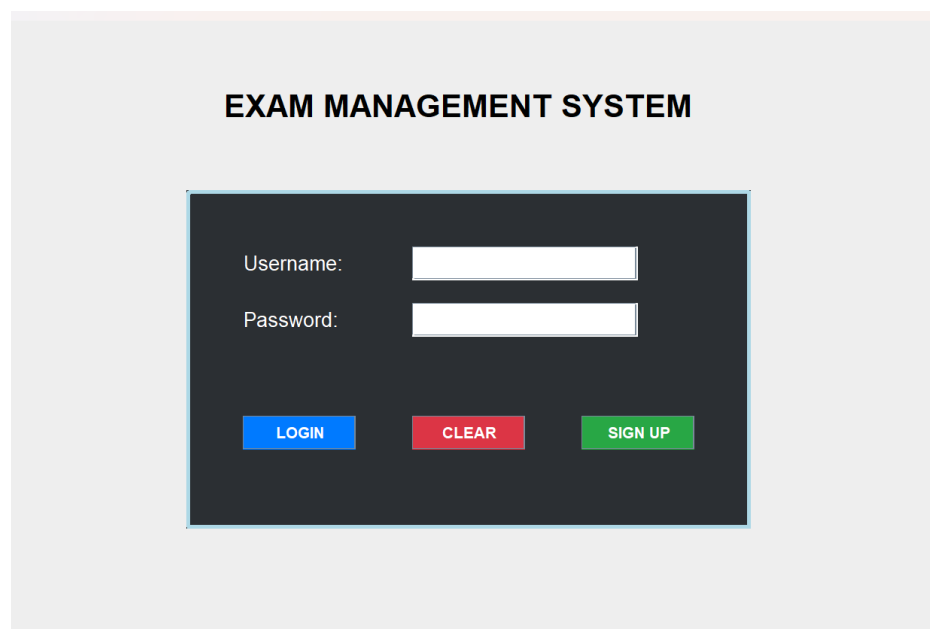
Project Developed During course of Industrial Training:

- Compile the application by typing the command **javac mainlogin.java** on the MS DOS prompt.

- Run the application by typing the command **java mainlogin** on the Command prompt to display the login screen of the Online examination System application.

The figure shows the login screen of the Online examination System application:
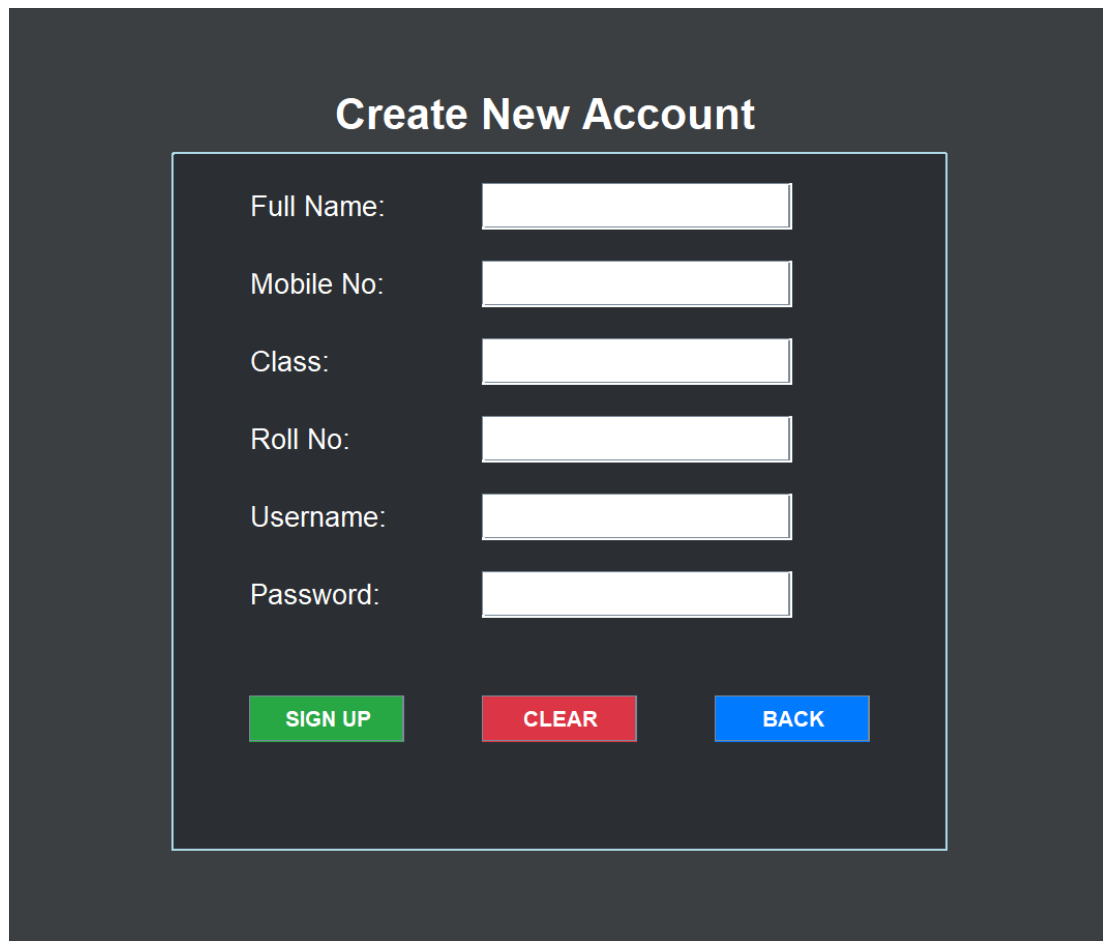
Login page

- The figure shows the Login screen of the Online examination System application that prompts you to enter the login name and password:
- Enter correct username and password and then click ok to open next screen of Online examination System

- If we enter wrong user name or password then the incorrect user name or password error will shown.

SignUp page:

Create New Account

Full Name: [   ]

Mobile No: [   ]

Class: [   ]

Roll No: [   ]

Username: [   ]

Password: [   ]

[SIGN UP]   [CLEAR]   [BACK]

- Click the ok button in login screen will open a menu screen of Online examination system.

Home Page:

Exam Management System - Home

Welcome to Exam Management System

Welcome, Rekibur Uddin!

Available Exams:

Mathematics Basics (ID: 1)	General Science (ID: 2)
History of India (ID: 3)	demo exam 4 (ID: 5)

Exam History:

```
---------------------------------------------------------------
1          Mathematics Basics              2024-12-25          5
2          General Science        2024-12-25          35
3          History of India               2024-12-25          10
```

View History	Logout	Refresh

Rule Page:

Welcome rekib to Exam ID: 1

1. This is an exam based on the syllabus. Answer all questions carefully.

2. The exam consists of multiple-choice questions (MCQs). Only one option is correct.

3. You will have a fixed time to complete the exam. Manage your time carefully.

4. No external resources or IDEs are allowed during the exam.

5. Once you click 'Start,' the timer will begin, and the quiz cannot be paused.

6. Your performance will be recorded, and you will get your results immediately.

Back	Start

20

Exam Page:

Exam Management System

Time Left: 7 seconds

Q1: What is 2 + 2?

- ◯ 3
- ◉ 4
- ◯ 5
- ◯ 6

[Previous] [Next] [Submit]

Admin Page:

Exam Management System - Admin Panel

User ID	Username	Full Name	Mobile	Class	Roll No	Exam ID	Exam Name	Marks	Exam Date
1	rekib	Rekibur Uddin	6003583469	BCA 5th Sem	01	1	Mathematics Basics	5	2024-12-27
1	rekib	Rekibur Uddin	6003583469	BCA 5th Sem	01	3	History of India	10	2024-12-25
1	rekib	Rekibur Uddin	6003583469	BCA 5th Sem	01	2	General Science	35	2024-12-25
1	rekib	Rekibur Uddin	6003583469	BCA 5th Sem	01	1	Mathematics Basics	5	2024-12-25

[Add User] [Delete User] [Refresh] [Add Exam] [View All Exams]

Add Exam Questions — □ ✕

Exam ID: 6

Enter Question:

Option 1:

Option 2:

Option 3:

Option 4:

Correct Option (1-4): `1` ▼

[**Add Question**] [**Save Exam**]

All Exam History:

View All Exams — □ ✕

Exam ID	Title
1	Mathematics Basics
2	General Science
3	History of India
5	demo exam 4

[**Delete Exam**]

Result and Conclusions

The Online Examination is a great improvement over the manual system using case fields and paper. The computerization of the system has sped up the process. In the current system, the front office managing is very slow. The Online Examination System was thoroughly checked and tested with dummy data and thus is found to be very reliable.

This project that I undertook was truly a very rewarding experience for me in more than one way. It has given a big thrust to my technical knowledge as prospective Software professional. It has also helped me enhance my skills on the personal front.

And I feel extremely satisfied by the fact that I have managed to develop the project of course with equal contribution from my team members. I think I have exploited the opportunity that came my way to the fullest extent by increasing my technical know-how and also gaining the valuable work experience apart from studying the other subjects in our curriculum.

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