

ABSTRACT

"Online Examination management System" is a dynamic solution designed for efficient allocation of exam rooms to Faculty for invigilation. Leveraging web-based technology, it streamlines the process, ensuring fair distribution and minimizing conflicts. The system offers real-time updates, user-friendly interfaces, and seamless integration with exam schedules, optimizing the overall examination experience.

CONTENTS

Chapter 1: Introduction	Page no.
1.1 Introduction	1
1.2 Problem Definition	3
1.3 Objective of the problem	3
 Chapter 2: System Analysis	
2.1 Existing System	4
2.2 Proposed System	5
2.3 Literature Survey	7
2.4 System Requirements Specification	8
2.4.1 Functional Requirements	8
2.4.2 Non-Functional Requirements	9
 Chapter 3: System Design	
3.1 ER Diagram	10
3.2 Schema Diagram	11
3.3 Dataflow Diagram	12
 Chapter 4: Implementation	
4.1 Relevant Source Code	13
4.2 Database	18
 Chapter 5: Testing	
6.1 Login Unsuccessful	21
6.2 Login Successful	23
 Chapter 6: User Manual	
6.1 Snapshots of the User Interfaces	25
 Chapter 7: Conclusion	27
 References	28

FIGURES

Figure 1- Entity Relationship Diagram	10
Figure 2- Schema Diagram	11
Figure 3- Dataflow Diagram	12

SNAPSHOTS

Snapshot 1- Users Database	17
Snapshot 2- Faculty Database	17
Snapshot 3- Classrooms Database	18
Snapshot 4- Faculty Allotment Database	18
Snapshot 5- Exam Database	19
Snapshot 6- Admin Login Unsuccessful	20
Snapshot 7- Faculty Login Unsuccessful	21
Snapshot 8- Manager Login Unsuccessful	21
Snapshot 9- Admin Login Successful	22
Snapshot 10- Faculty Login Successful	22
Snapshot 11- Manager Login Successful	23
Snapshot 12- Home Page	24
Snapshot 13- Admin Dashboard	24
Snapshot 14- Faculty Dashboard	25
Snapshot 15- Manager Dashboard	25

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION TO THE ONLINE EXAMINATION MANAGEMENT SYSTEM:

" Online Examination Management System " is a medical information system that follows a client/server architecture.

The application is interactive and assists in assigning faculty to examination rooms by keeping records of classrooms available, faculty and examination details, thereby minimizing the effort involved in assigning manually.

- The primary objective of this application is to utilize technology in aiding exam coordinators and faculty to reduce human effort required for allotting faculty to the Examination room for invigilation.
- To gain access to the application, the user must obtain their username and password from the administrator, as without it, they will be unable to access the system.

Integration Challenges - Explore the difficulties associated with integrating examination management systems into existing examination management systems. - Discuss the interoperability issues that may arise between different systems and their potential impact on workflow efficiency.

Data Security and Privacy Concerns - Address the security risks associated with examination management systems, such as unauthorized access to exam information or data breaches. - Discuss the importance of implementing robust security measures and complying with relevant privacy regulations.

User Interface and User Experience (UI/UX) Issues - Examine potential problems related to the usability and intuitiveness of examination management system interfaces. - Discuss the impact of poor UI/UX on user productivity, error rates, and overall system adoption.

Technical Challenges and System Reliability - Explore technical challenges that may arise during the implementation and maintenance of examination management systems. - Discuss the importance of system reliability and the potential consequences of system downtime or data loss.

The objective of the present work is to design and implement a online examination management system thatwill address the following problems:

- Inaccuracy: Manually assigning faculty and keeping records is prone to human error. This can lead to inaccurate faculty details, classroom details, and examination details.
- Inefficiency: Manually assigning a online examination is a time-consuming and labor-intensive process. This can lead to lost productivity and increased costs.
- Security: Manually assigning data is a security risk. This data could be lost or stolen,or it could be accessed by unauthorized individuals.

The proposed online examination management system will address these problems by automating the following tasks:

- Security: The system will use security features such as user authentication, role-based access control, and data encryption to protect examination management data.
- Efficient Room Allocation: The system will automate the allocation of faculty rooms based on predefined criteria such as subject, faculty preferences, availability of resources.
- Real-time Updates: The system will provide real-time updates on classroom availability and occupancy, allowing faculty members to make informed decisions when selecting or changing their allocated rooms.
- User-friendly Interface: Faculty members will have access to a dashboard displaying relevant information about their assigned rooms, schedules, and any upcoming exams.
- Automated Scheduling: The system will automate the scheduling of exams, considering faculty availability, classroom availability, and other constraints.

1.2 PROBLEM DEFINITION:

Manual faculty room allotment processes are time-consuming, error-prone, and lack efficiency. Faculty members often face challenges in securing appropriate classrooms for conducting examinations, resulting in conflicts, suboptimal resource utilization, and a lack of real-time updates on room availability.

1.3 OBJECTIVE OF THE PROBLEM:

- **Automation of Room Allocation:** Implement a system that automates the process of faculty room allotment based on predefined criteria, ensuring a quick and efficient allocation process.
- **Optimized Resource Utilization:** Develop algorithms to optimize the allocation of faculty rooms, considering factors such as subject, faculty preferences, classroom availability, and availability of resources.
- **Automated Scheduling:** Automate the scheduling of exams, considering faculty availability, room capacity, and other constraints to minimize conflicts and optimize scheduling.
- **Data Security and Privacy:** Prioritize the implementation of robust data security measures to protect sensitive information related to faculty room allotments.
- **Reduced Administrative Workload:** Automate administrative tasks related to faculty room allotment, reducing the workload on administrators and minimizing the likelihood of manual errors.
- **Enhanced Efficiency and Accuracy:** Improve the overall efficiency and accuracy of the faculty room allotment process through automation, reducing delays and errors associated with manual processes.

CHAPTER 2

SYSTEM ANALYSIS

2.1 EXISTING SYSTEM

1. Manual Room Allotment

Faculty room allotment is done manually by administrators or staff members responsible for scheduling exams. Allocation decisions are based on manual assessments of faculty preferences, subject requirements, and room availability.

These are just a few of the many different existing systems for online examination management systems. When choosing a online examination management system, it is important to consider the specific needs of your online examination. Some factors to consider include the size of your online examination, the types of services you offer, and your budget.

2.2 PROPOSED SYSTEM

- **System overview:** The proposed online examination management system is designed to automate and optimize the faculty room allotment process. It leverages technology to streamline scheduling, enhance communication, and improve overall efficiency in managing examination-related activities. The system offers a user-friendly interface accessible through various devices, providing real-time updates and notifications to faculty members.
- **System features:** The system will include the following features:
 - **Automated Room Allocation:** Utilize algorithms to automate the faculty room allotment process, considering factors such as subject requirements, faculty preferences, and room availability.
 - **Optimization of Resource Utilization:** Implement intelligent algorithms to optimize the allocation of faculty rooms, ensuring efficient use of available resources and minimizing conflicts.
 - **Security and Privacy Measures:** Prioritize data security by implementing robust authentication mechanisms and ensuring compliance with relevant data protection regulations.
 - **Reduced Administrative Workload:** Automate administrative tasks related to faculty room allotment to reduce the workload on administrators and enhance the efficiency of the overall process.
 - **Data Backup and Recovery:** Implement regular data backup procedures to safeguard against data loss, with a robust recovery mechanism in place.
- **System security:** The system will be implemented using online examination data. These measures will include:
 - **Data encryption:** All online examination data will be encrypted to protect it from external access.
 - **User authentication:** All users will be required to authenticate themselves before they can access the system.
 - **Role-based access control:** Users will only be able to access the data and features that they are authorized to access.

This system will provide examination coordinators with a comprehensive solution for managing their online examination. The system will help coordinators to improve efficiency, accuracy, and compliance.

GOALS OF PROPOSED SYSTEM

- **Improved efficiency:** A online examination management system can help Exam Coordinators to improve efficiency by automating many of the tasks involved in managing a online examination. This can freeup faculty time so that they can focus on providing invigilation.
- **Increased accuracy:** A online examination management system can help to improve accuracy by reducing the risk of human error
- **Enhanced compliance:** A online examination management system can help to ensure complainiance.

2.3 LITERATURE SURVEY

1. Functionality and Features:

Li et al. (2018): Prescription management, inventory control, medication verification, druginteraction checking, and examination information management.

Cho et al. (2019): Integration with electronic health records for seamless informationexchange.

2. Functionality and Features:

Johnson et al. (2015): Explored features of an automated academic scheduling system including room allocation, timetable management, and faculty preferences.

Patel and Gupta (2017): Discussed the integration of room allocation modules into educational management systems for efficient resource utilization.

3. Benefits and Impact:

Wang and Lee (2016): Investigated the impact of automated room allocation on reducing conflicts, improving overall scheduling efficiency, and enhancing faculty satisfaction.

Sharma et al. (2018): Examined the benefits of online examination management systems in streamlining academic processes, leading to improved student and faculty experiences.

4. Challenges and Implementation:

Chen et al. (2016): Explored challenges related to resistance to change in adopting automated systems for academic scheduling, data security concerns, and strategies for overcoming these challenges.

5. Future Trends:

Kim et al. (2020): Explored the potential integration of emerging technologies such as Internet of Things (IoT) for real-time monitoring of room occupancy and utilization.

Gupta and Singh (2021): Discussed the future trends in adopting cloud-based solutions for scalable and flexible online examination management systems, potentially impacting faculty room allotment processes.

2.4 SYSTEM REQUIREMENTS SPECIFICATION

2.4.1 FUNCTIONAL REQUIREMENTS:

- Room Allocation Automation: The system must automate the faculty room allotment process based on predefined criteria such as subject, faculty preferences, and room availability.
- Real-time Room Availability Updates: Provide real-time updates on room availability and occupancy to faculty members.
- Conflict Resolution Mechanism: Develop an automated conflict resolution mechanism to identify and resolve conflicts, such as overlapping schedules or resource clashes.
- Dashboard for Faculty: Provide faculty members with a user-friendly dashboard displaying relevant information about their assigned rooms, upcoming exams, and any notifications.
- Data Security Measures: Implement robust data security measures to protect sensitive information related to faculty room allotments.

2.4.1.1 SOFTWARE REQUIREMENT:

- Software: JAVA NetBeans IDE
- Operation System: Windows 7 or higher.
- Front End: JAVA
- Back End: MYSQL.

2.4.1.2 HARDWARE REQUIREMENT:

- Processor: Intel Core Duo 2.0 GHz or higher.
- RAM: Minimum 512 MB or Greater.
- Hard disk: 20 GB (Free Space).

2.4.2 NON-FUNCTIONAL REQUIREMENTS:

- System availability: The system must be available 24/7/365.
- Maintainability: The system must be easy to maintain and update.
- Recovery from failure: The system must be able to recover from failures quickly and without loss of data.
- Reliability: The system must be reliable and have a high uptime.
- Response time: The system must have a fast response time.
- Throughput: The system must be able to handle a high volume of transactions.
- Security: The system must be secure and protect data.
- Compliance: The system must comply with all applicable laws and regulations.
- Scalability: The system must be able to scale to meet the needs of the online examination as it grows.
- Flexibility: The system must be flexible enough to adapt to changes in the online examination's business processes.
- Customizability: The system must be customizable to meet the specific needs of the online examination.
- Usability: The system must be easy to use by all staff members, including those with limited technical skills.

CHAPTER 3

SYSTEM DESIGN

3.1 ER DIAGRAM

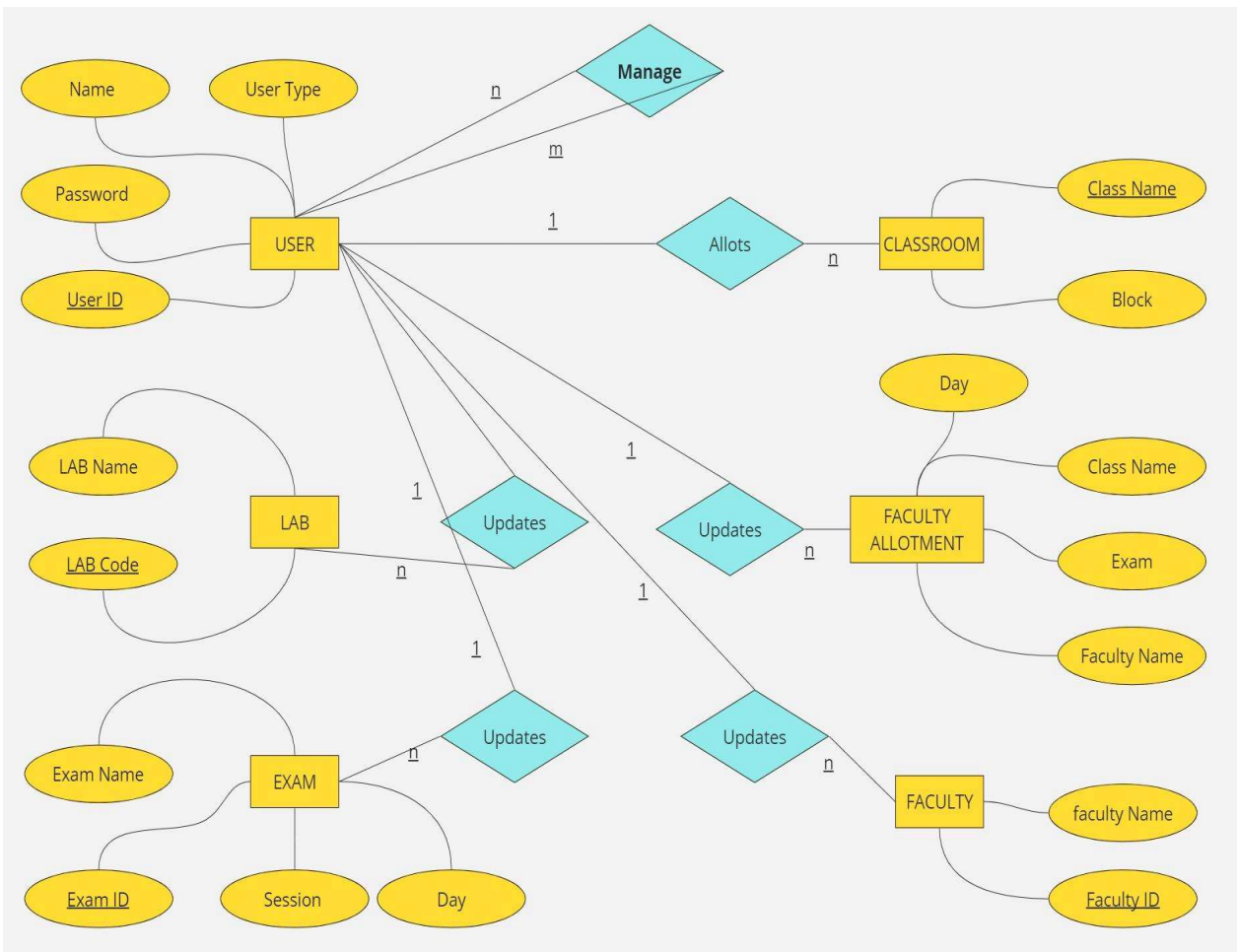


Figure: 3.1: ER Diagram

3.2 SCHEMA DIAGRAM:

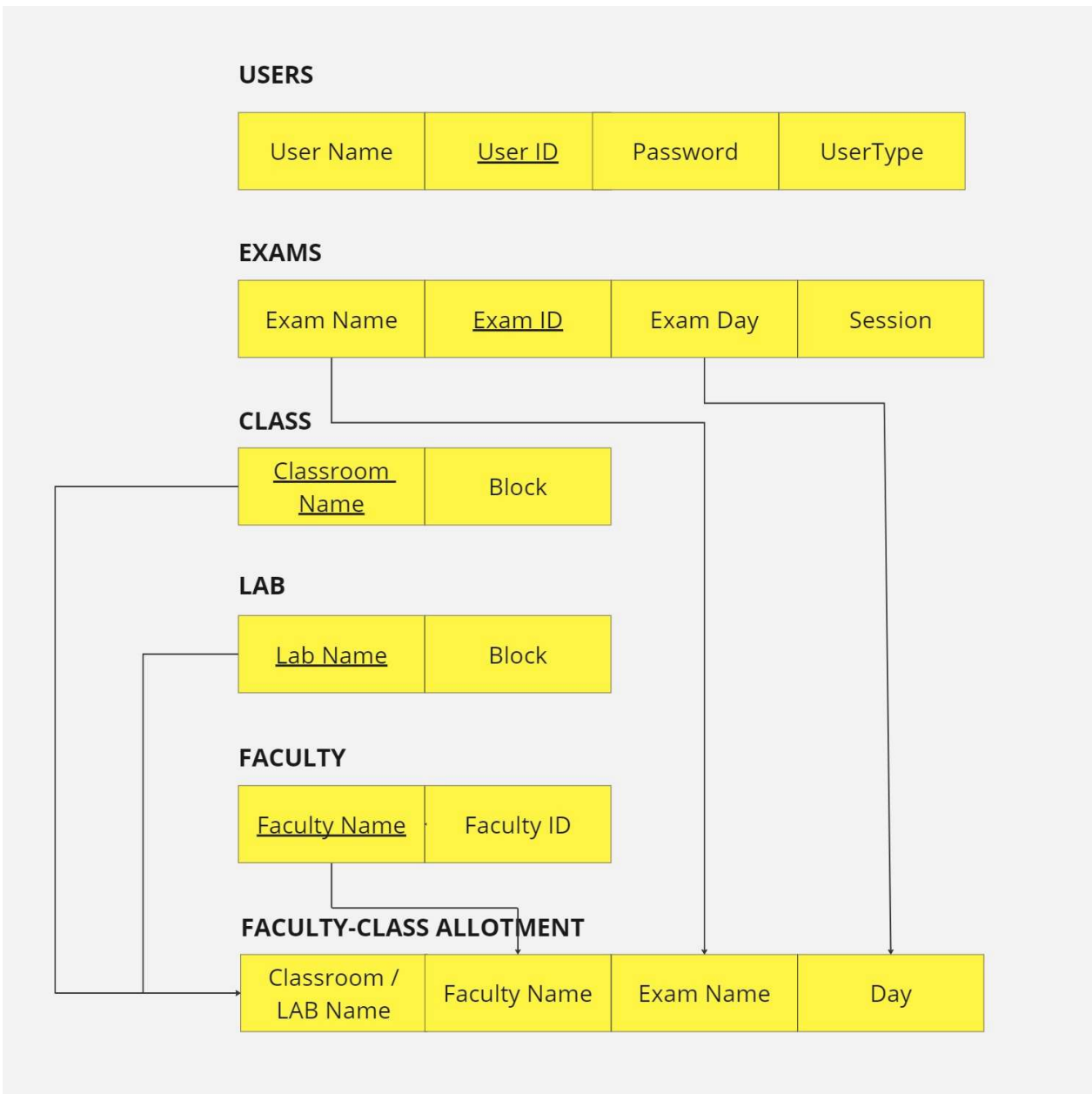


Figure : 3.2 : Schema Diagram

3.3 DATAFLOW DIAGRAM:

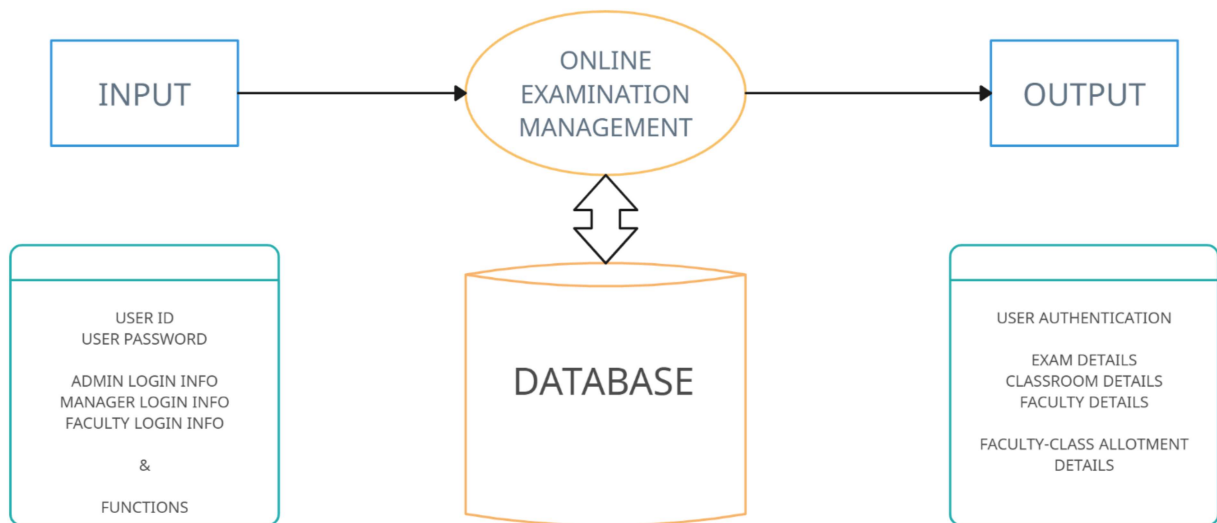


Figure : 3.3 : Dataflow Diagram

CHAPTER 4

IMPLEMENTATION

The proposed project consists of three major modules as follows:

- 1. Admin module**
- 2. Manager module**
- 3. Faculty Module**

Admin Module

- It is only accessible by Admin through Admin Id and password.
- Admin as full control on the online examination management system. Where he can add or remove admin and manager.
- Admin can add new sales to the system and reports.

Manager Module

- Can add, edit and delete faculty details, examination details, classrooms details and Lab details
- Can view the details updated in the relevant details.
- Manager can be a faculty or Exam Coordinator.

Faculty Module

- Can view the Room Allotment Table, Classroom details and Examination details all this in form of table.

4.1 CODE:

```

9      static {
0          try {
1              Class.forName(DBDriver);
2          } catch (ClassNotFoundException ex) {
3              System.out.println(ex);
4          }
5      }
6
7
8
9
0
1      static boolean authenticatefaculty(String UserId, String passwd) {
2          boolean flag = false;
3          try {
4              try (Connection con = DriverManager.getConnection(DBUrl,DBUser,DBPassword); PreparedStatement st = con
5                  st.setString(1,UserId);
6                  st.setString(2,passwd);
7                  try (ResultSet rs = (ResultSet) st.executeQuery()) {
8                      if(rs.next()){
9                          flag=true;
10                     }
11                 }
12             }
13         } catch (SQLException ex) {
14
15         }
16     }
17 }

```

```

1  /**
2   * Creates new form ClassAllotFrame
3   */
4  public ClassAllotFrame() {
5      initComponents();
6      setLocationRelativeTo(null);
7      Connect();
8      Load();
9  }
10 private Connection con;
11 private PreparedStatement pst;
12 private java.sql.ResultSet rs;
13
14 public final void Connect() {
15     try {
16         Class.forName("com.mysql.jdbc.Driver");
17         con = DriverManager.getConnection("jdbc:mysql://localhost/onlineexam","root","2003");
18         System.out.println("Connected to the database");
19     } catch (ClassNotFoundException | SQLException ex) {
20         java.util.logging.Logger.getLogger(exams.class.getName()).log(java.util.logging.Level.SEVERE, null, ex);
21         System.err.println("Failed to connect to the database");
22     }
23 }

```

```

    ^ WARNING: DO NOT MODIFY THIS CODE. THE CONTENT OF THIS METHOD IS ALWAYS
    * regenerated by the Form Editor.
    */
    @SuppressWarnings("unchecked")
    Generated Code

    private void jButton1ActionPerformed(java.awt.event.ActionEvent evt) {
        // TODO add your handling code here:
        LoginFrame lf = new LoginFrame();
        lf.setLocationRelativeTo(null);
        lf.setVisible(true);
    }

    private void jButton2ActionPerformed(java.awt.event.ActionEvent evt) {
        // TODO add your handling code here:
        LoginFrameF lf = new LoginFrameF();
        lf.setLocationRelativeTo(null);
        lf.setVisible(true);
    }

    /**
     * @param args the command line arguments
     */
    public static void main(String args[]) {
        ...va JavaApplication11.java X ManagerFrame.java X addManager.java X ViewFacultyAllot.java X ViewExamDetails.java X ViewLabDeta. < > v
Source Design History
43 }
44 }
45 public final void Load() {
46 try {
47     pst = con.prepareStatement("select * from exams");
48     rs = pst.executeQuery();
49
50     ResultSetMetaData rsd;
51     rsd = (ResultSetMetaData) rs.getMetaData();
52     int c;
53     c = rsd.getColumnCount();
54     DefaultTableModel d = (DefaultTableModel) jTable1.getModel();
55     d.setRowCount(0);
56
57     while (rs.next()) {
58         Vector v = new Vector();
59         for (int i = 1; i <= c; i++) {
60             v.add(rs.getString(i));
61         }
62         d.addRow(v);
63     }
64 } catch (SQLException ex) {
65     Logger.getLogger(exams.class.getName()).log(Level.SEVERE, null, ex);
66 }
67 }

```

```

Generated Code

private void jButton1ActionPerformed(java.awt.event.ActionEvent evt) {
    // TODO add your handling code here:
    String error="";
    if(t1.getText().equals(""))
        error += "Faculty Name is Required\n";
    if(t2.getText().equals(""))
        error += " Faculty id is Required\n";

    if(error.equals(""))
    {
        String fname = t1.getText();
        String userId =t2.getText();

        if(DBManager.registerUser(fname,userId)==true)
        {
            JOptionPane.showMessageDialog(this, "you registered sucessfully");
        }
        else
        {
            JOptionPane.showMessageDialog(this, "Sorry !\n This User id is already in used");
        }
    }
}

```

```

    */
    class UserInfo {

        private String userId;
        private String passwd;
        private String userType;
        private String name;

        public UserInfo() {
        }

        public UserInfo(String userId, String passwd, String UserType, String name) {
            this.userId = userId;
            this.passwd = passwd;
            this.userType = UserType;
            this.name = name;
        }

        public String getUserId() {
            return userId;
        }

        public void setUserId(String userId) {

    }

    */
    public class addManager extends javax.swing.JFrame {

        /**
         * Creates new form addManager
         */
        public addManager() {
            initComponents();
        }

        /**
         * This method is called from within the constructor to initialize the form.
         * WARNING: Do NOT modify this code. The content of this method is always
         * regenerated by the Form Editor.
         */
        @SuppressWarnings("unchecked")
        Generated Code

        private void jButton1ActionPerformed(java.awt.event.ActionEvent evt) {
            // TODO add your handling code here:
            String error="";
            if(t1.getText().equals(""))
                error += "Manager Name is Required\n";
            if(t2.getText().equals(""))
                error += "Manager id is Required\n";
        }
    }

```

```

error += " Manager id is Required\n";
if(t3.getText().equals(""))
error += "Password is Required\n";
if(error.equals(""))
{
    String fname = t1.getText();
    String userId =t2.getText();
    String password = new String(t3.getPassword());

    if(DBManager.registerUser(fname,userId)==true)
    {
        JOptionPane.showMessageDialog(this, "you registered sucessfully");
    }
    else
    {
        JOptionPane.showMessageDialog(this, "Sorry !\n This User id is already in used");
    }
}
else
{
    JOptionPane.showMessageDialog(this,error,"Input Error",JOptionPane.ERROR_MESSAGE);
}

private void jButton2ActionPerformed(java.awt.event.ActionEvent evt) {
    // TODO add your handling code here:
    t1.setText("");
    t2.setText("");
    t3.setText("");
    t2.requestFocus();
}

/**
 * @param args the command line arguments
 */
public static void main(String args[]) {
    /* Set the Nimbus look and feel */
    Look and feel setting code (optional)

    /* Create and display the form */
    java.awt.EventQueue.invokeLater(new Runnable() {
        public void run() {
            new addManager().setVisible(true);
        }
    });
}

```

4.2 DATABASE

lab - Table exams class class facclassallot - Table facclassallot facclassallot faculty exams users x

Limit to 1000 rows

1 • `SELECT * FROM onlineexam.users;`

Result Grid

Name	UserId	Passwd	UserType
Chandrika J	030403	030403	Admin
Anand Babu	112233	232377	faculty
Sudarshan	123123	232377	Admin
NULL	NULL	NULL	NULL

users 1 x

Apply Revert

Figure: 4.2.1: Users database

Limit to 1000 rows

1 • `SELECT * FROM onlineexam.faculty;`

Result Grid

facultyId	facultyName
1	Anand Babu J
10	Krishna Swaroop A
11	Tasmiya Anjum H N
2	Nanditha B R
3	Vinutha M R
4	Shruthi D V
5	Sudarshan G K
6	Nithin K
7	Priyanka H L
8	Sindhu K S
9	Shruthi B S
NULL	NULL

faculty 1 x

Apply Revert

Figure: 4.2.2: Faculty Database

1 • `SELECT * FROM onlineexam.class;`

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content: |

ClassName	Block
CRB1	2
CRB2	2
CRB3	2
CRB4	2
LH1	1
LH2	1
NULL	NULL

Figure: 4.2.3: Classrooms Database

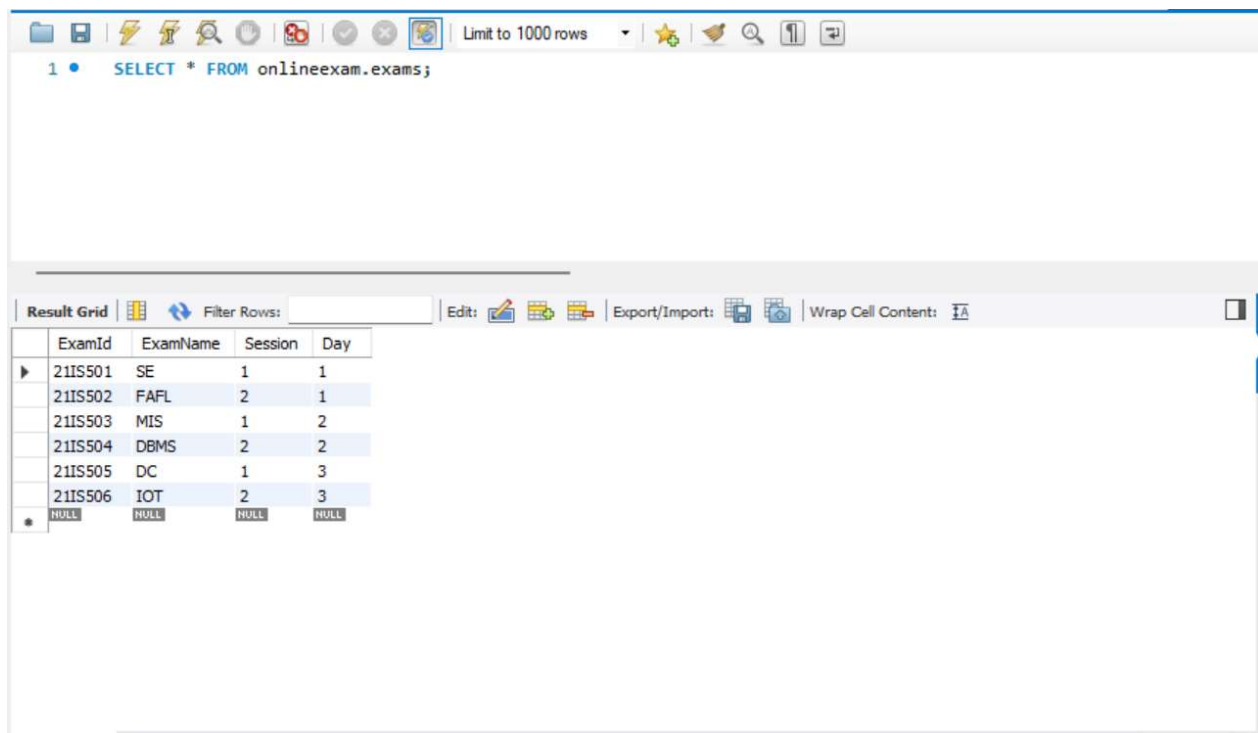
Query 1 | lab - Table | exams | class | class | facclassallot - Table | **facclassallot** x | facclassallot | faculty

1 • `INSERT IGNORE INTO onlineexam.facclassallot (facultyName, ClassName, Day, ExamName)`
2 `SELECT`
3 `(SELECT facultyName FROM onlineexam.faculty ORDER BY RAND() LIMIT 1) AS facultyName,`
4 `(SELECT ClassName FROM onlineexam.class ORDER BY RAND() LIMIT 1) AS ClassName,`
5 `e.day,`
6 `(SELECT ExamName FROM onlineexam.exams) AS ExamName`
7 `FROM onlineexam.exams e ;`
8
9 • `SELECT * FROM onlineexam.facclassallot;`

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content: |

ClassName	FacultyName	ExamName	Day
CRB1	Nithin K	SE	1
CRB2	Sudarshan G K	SE	1
CRB3	Anand Babu J	SE	1
CRB4	Tasmiya Anjum H N	SE	1
LH1	Sudarshan G K	SE	1
LH2	Shruthi D V	SE	1
NULL	NULL	NULL	NULL

Figure: 4.2.4: Faculty Allotment Database



The screenshot shows a database query tool interface. At the top, there is a toolbar with various icons and a text input field containing the SQL query: `1 • SELECT * FROM onlineexam.exams;`. Below the query, there is a section labeled "Result Grid" with a table of results. The table has four columns: ExamId, ExamName, Session, and Day. The results are as follows:

ExamId	ExamName	Session	Day
21IS501	SE	1	1
21IS502	FAFL	2	1
21IS503	MIS	1	2
21IS504	DBMS	2	2
21IS505	DC	1	3
21IS506	IOT	2	3
NULL	NULL	NULL	NULL

Figure: 4.2.5: Exam Database

CHAPTER 5

TESTING

LOGIN PAGE VALIDATION:

1. Open the login page.
2. Verify the presence of username and password fields.
3. Verify the existence of a "Login" button.
4. Leave both fields empty and click "Login". Verify error message.
5. Enter valid username, leave password empty, and click "Login". Verify error message.
6. Enter a valid password, leave username empty, and click "Login". Verify error message.
7. Enter invalid username and password. Click "Login". Verify error message.
8. Enter a valid username and password. Click "Login". Verify successful
- 9 Login and redirection to the appropriate page.

5.1 LOGIN UNSUCCESSFUL

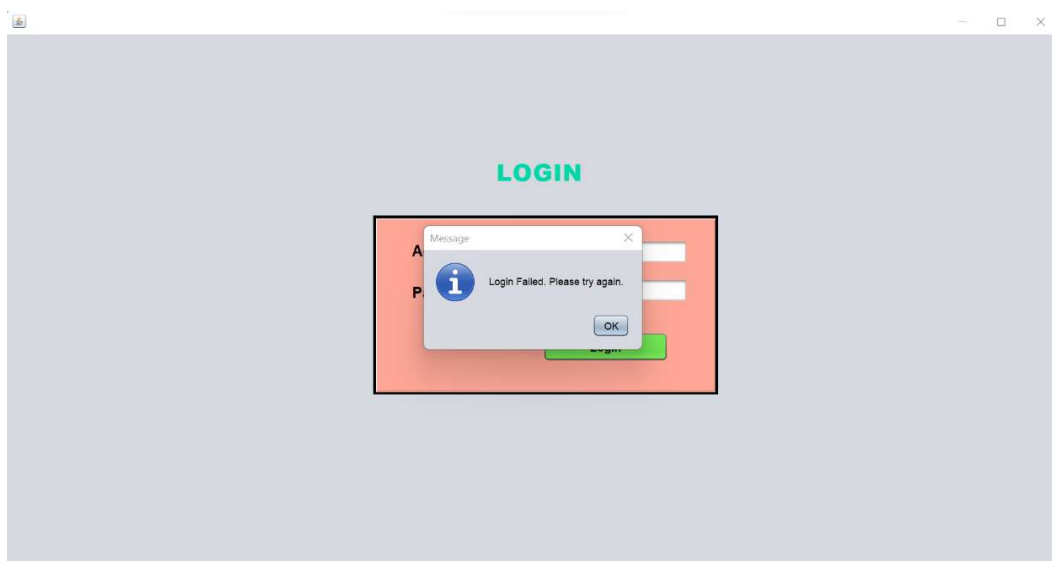


Figure 5.1.1: Admin Login Unsuccessful

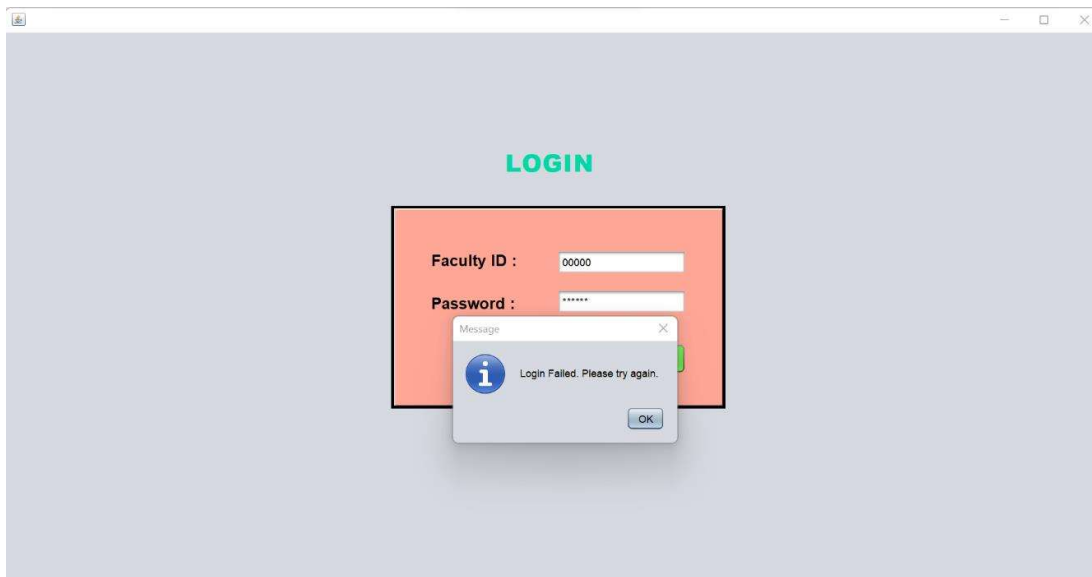


Figure 5.1.2: Faculty Login Unsuccessful

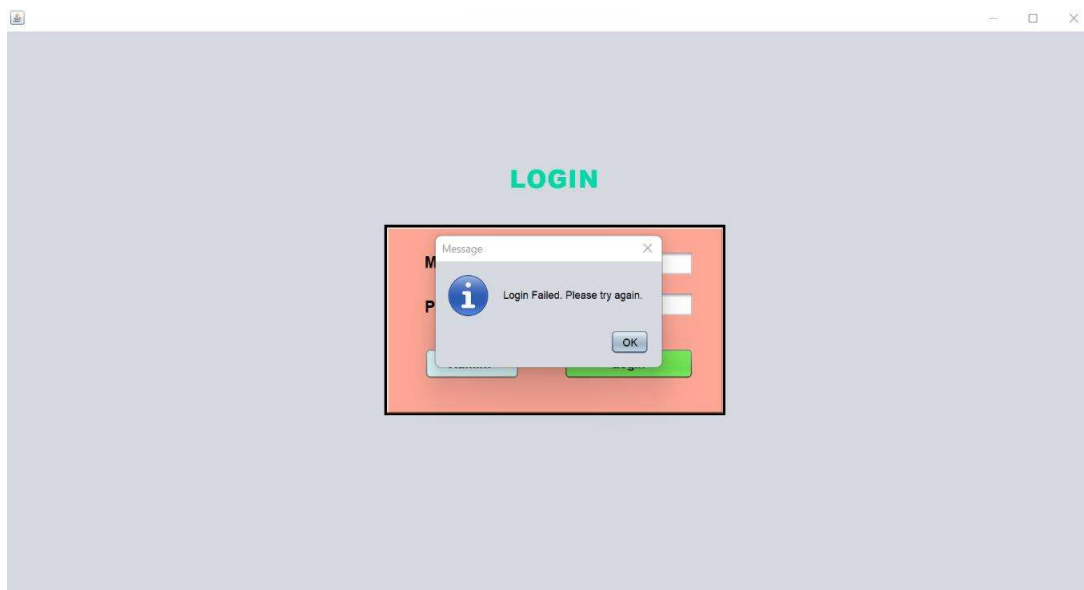


Figure 5.1.3: Manager Login Unsuccessful

5.2 LOGIN SUCCESSFUL

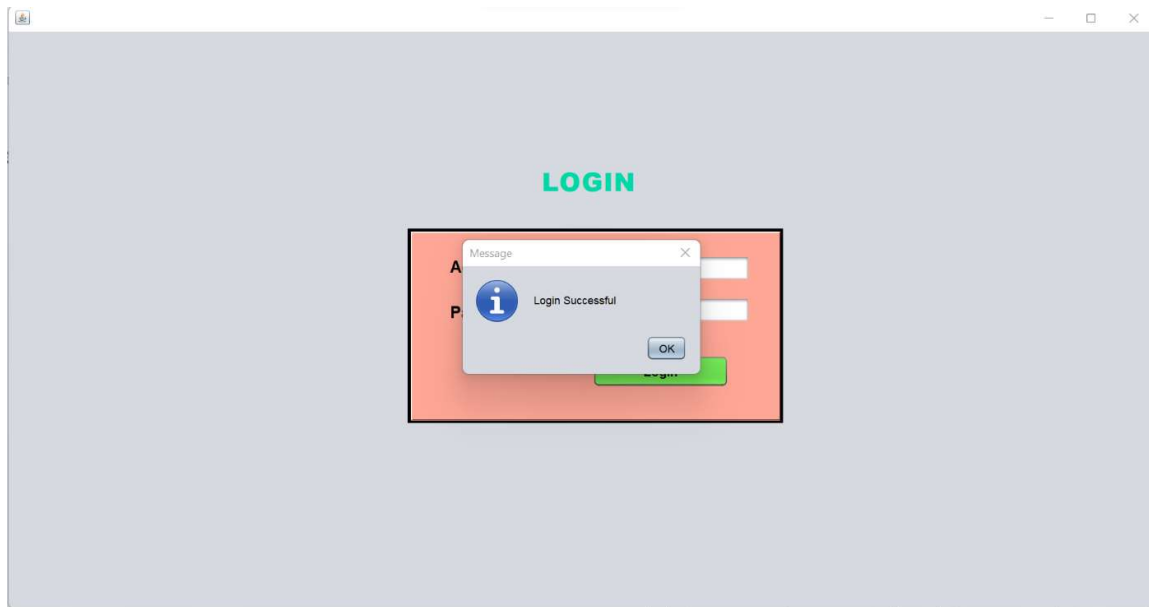


Figure 5.2.1: Faculty Login Successful

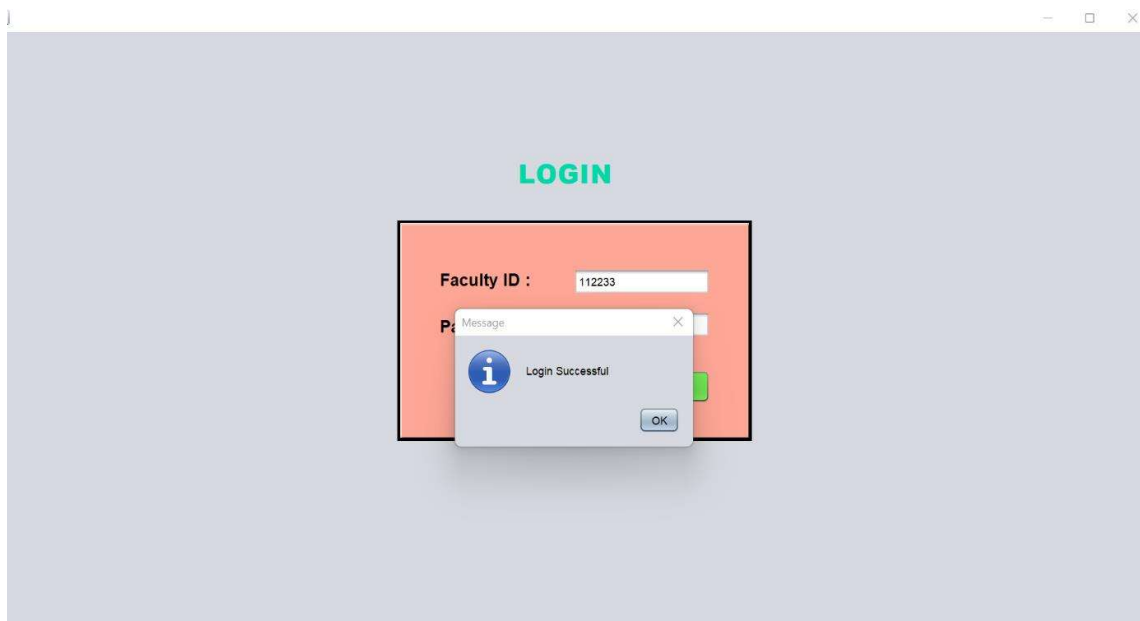


Figure 5.2.2: Admin Login Successful

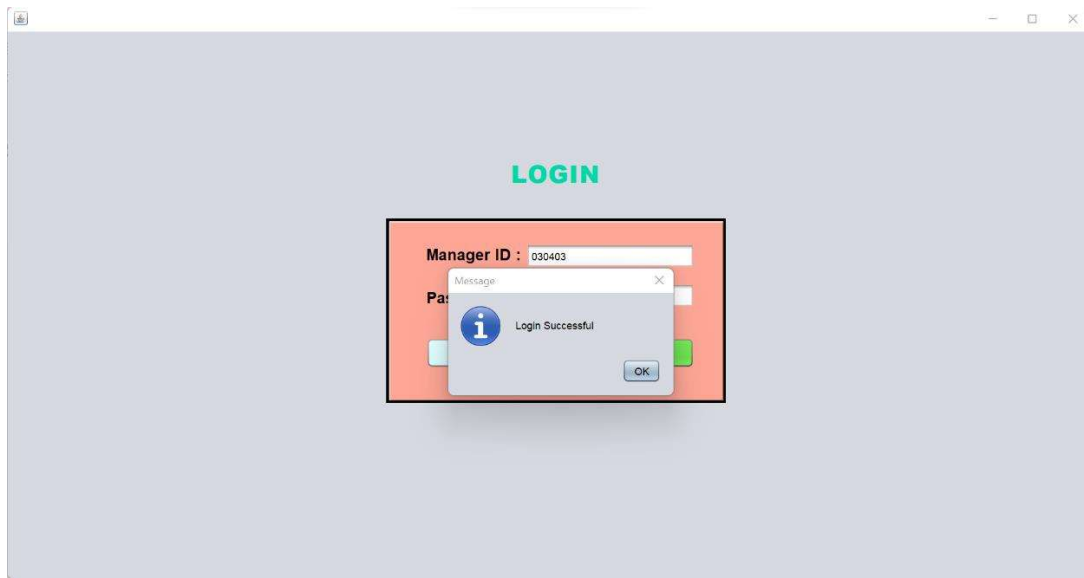
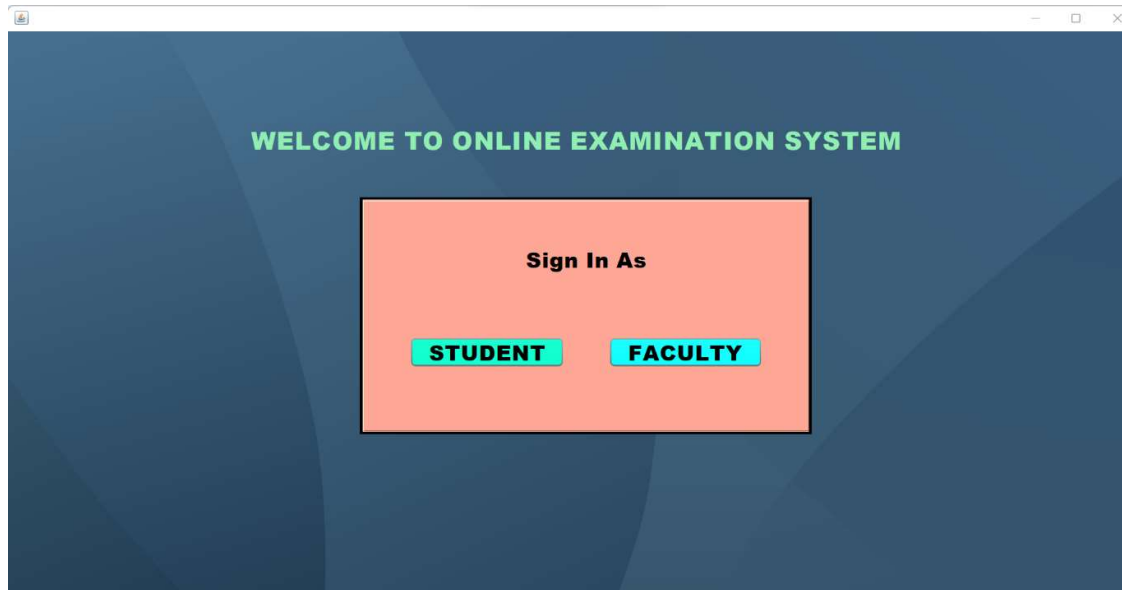


Figure 5.1.3: Manager Login Successful

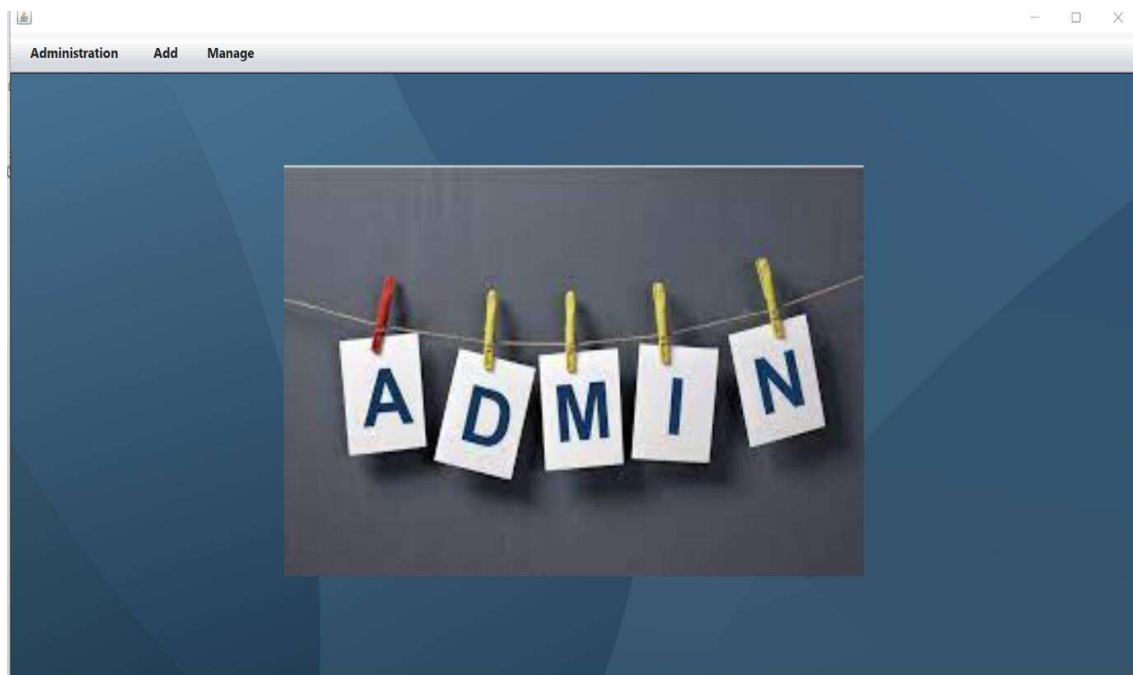
CHAPTER 6

USER MANUAL

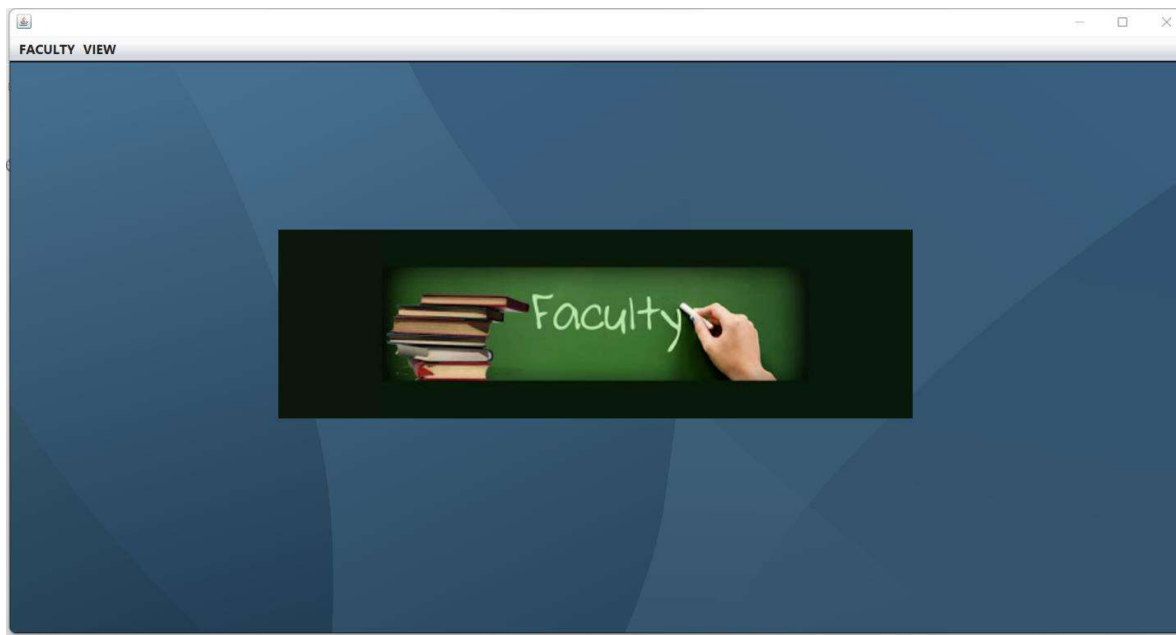
6.1 SNAPSHOTS OF THE USER INTERFACES



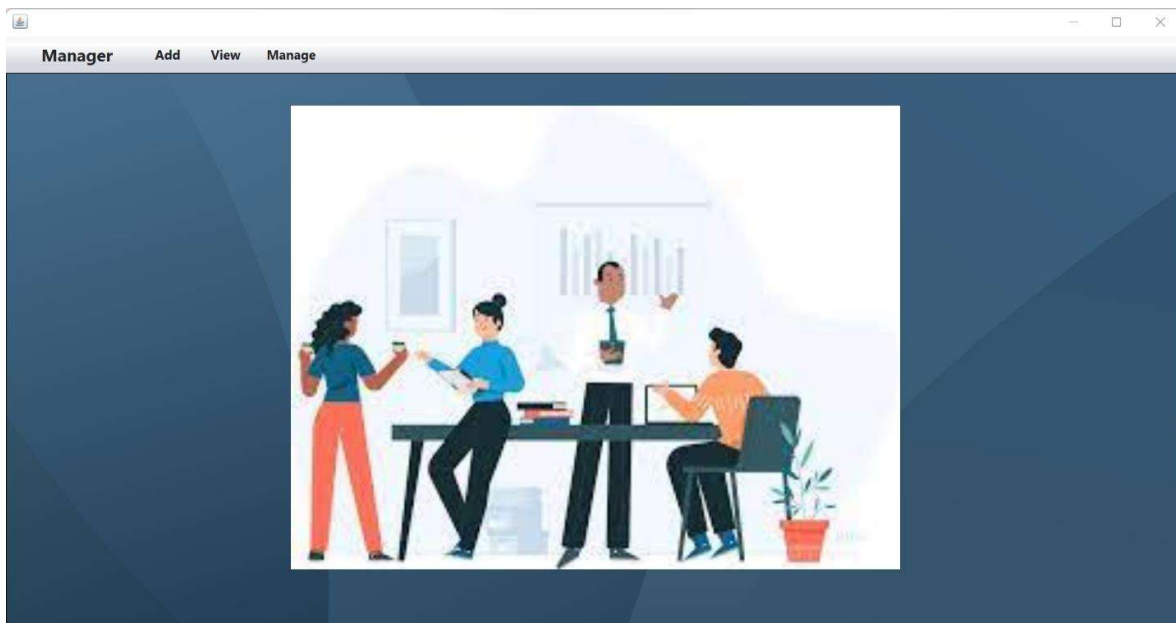
Snapshot: 6.1.1: Home page



Snapshot: 6.1.2: Admin Dashboard



Snapshot: 6.1.3: Faculty Dashboard



Snapshot: 6.1.4: Manager Dashboard

CHAPTER 7

CONCLUSION

In conclusion, the proposed online examination management system, centered on automated faculty room allotment, represents a pivotal advancement in academic administration. By synthesizing insights from relevant literature, the system's key functionalities aim to streamline and optimize the traditionally manual process of room allocation. Through automated algorithms, real-time updates, and conflict resolution mechanisms, the system promises to significantly enhance the efficiency of the faculty room allotment process, mitigating conflicts and ensuring equitable resource utilization.

Moreover, the system's mobile responsiveness and integration with academic calendars contribute to accessibility and seamless coordination. With a focus on data security and privacy, the proposed system prioritizes the protection of sensitive information. As institutions increasingly lean towards digital solutions, this online examination management system emerges as a comprehensive and forward-thinking tool, poised to bring about a positive shift in the landscape of academic scheduling and faculty room allocation.

REFERENCES

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