DOCUMENTATION:UNIVERSITY ERP SYSTEM

VARUN MEHTA-2024607

MANNAT RAJ SINGH- 2024333

1. INTRODUCTION

Our project implements a University ERP Desktop application using Java Swing, JDBC, and MySQL.

It has 3 main dashboards-

1) Student
2) Instructor
3) Admin

The system follows a layered structure: Domain -> DAO -> Service -> UI for clean separation.

2. LAYOUT

ERP /

|

|-- .idea/

|-- out/

|-- src/

| |-- authen/

| |-- erp/

| | |-- data/

| | |-- domain/

| | |-- dto/

| | |-- service/

| | |-- ERPConnector

| |

| |-- Test/

| |

| |-- ui/

| | |-- Admin/

| | | |-- panels/

| | | |-- AdminDashboardFrame.java

| | |

| | |-- Instructor/

| | | |-- panels/

| | | |-- InstructorDashboardFrame.java

| | |

| | |-- Student/

| | | |-- panels/

| | | |-- StudentDashboardFrame.java

| | |

| | |-- ERPMain.java

| | |-- LoginFrame.java

| | |-- RoleRouter.java

| |

| |-- Main.java

|

3. HOW ROLES AND MAINTENANCE ENFORCED

- Every user logs in through the users_auth table.
- After login, the system saves a session containing:
  userId

username
role (Admin / Instructor / Student)

- Based on the role stored in the session:
    - Admins get access to all admin features
      Instructors only see instructor options
      Students only see student functions

- Users can do different things based on their role:
- Admin - Can manage the entire system:
    - Add/remove users and courses
    - Assign teachers to classes
    - Control system settings and backups
- Instructor - Can manage their classes:
    - View their assigned sections
    - Calculate and enter student grades
    - Export class data
    - Class stats
- Student - Can manage their own enrollment:
    - Browse Catalog
    - Register for courses
    - Drop courses
    - Check their grades and transcript
    - View timetable

4. FINAL-GRADE WEIGHTING RULE

- Each section can have any number of assessment components — such as Quiz, Assignment, Project, Midsem, Endsem, Viva, etc.

- Instructors can freely add for each section.

- The component structure can vary from course to course and instructor to instructor (no fixed categories).

- Each component has an input-based weightage.

- Total weightage of all components must sum to 100 to ensure correct final grade calculation.

- If the grade is 90 or above, return “A.”
- If it is 80 or above, return “B.”
- If it is 70 or above, return “C.”
- If it is 60 or above, return “D.”
- Otherwise, return “F.”

5. EXTRAS ADDED

- **Profile Pages**: Both students and instructors have their own profile, showing basic details such as name, user id.
- **Account Lockout**: The account gets temporarily block for 30 seconds after 5 incorrect attempts.
- **Change Password**: Users can change their password in the login frame.
- **CSV Import/Export**: Instructors can upload and download student grades into a CSV file.
- **Backup & Restore**: The admin can backup and restore the university database.

6. AUTHENTICATION DATABASE TABLES

```
mysql> use auth_db;
Database changed
mysql> show tables;
+----------------------+
| Tables_in_auth_db    |
+----------------------+
| users_auth           |
+----------------------+
1 row in set (0.00 sec)
```

```
mysql> desc users_auth;
+----------------+-----------------------------------+------+-----+---------+----------------+
| Field          | Type                              | Null | Key | Default | Extra          |
+----------------+-----------------------------------+------+-----+---------+----------------+
| user_id        | int                               | NO   | PRI | NULL    | auto_increment |
| username       | varchar(50)                       | NO   |     | NULL    |                |
| role           | enum('STUDENT','INSTRUCTOR','ADMIN') | NO   |     | NULL    |                |
| password_hash  | varchar(255)                      | NO   |     | NULL    |                |
| status         | enum('ACTIVE','LOCKED')           | YES  |     | ACTIVE  |                |
| last_login     | datetime                          | YES  |     | NULL    |                |
| failed_attempts | int                              | YES  |     | 0       |                |
| lock_time      | datetime                          | YES  |     | NULL    |                |
+----------------+-----------------------------------+------+-----+---------+----------------+
8 rows in set (0.00 sec)
```

7. ERP DATABASE TABLES

```
mysql> show tables;
+-----------------------+
| Tables_in_univ_erp    |
+-----------------------+
| assessment_components |
| courses               |
| enrollments           |
| grades                |
| instructors           |
| notifications         |
| section_labels        |
| sections              |
| settings              |
| students              |
+-----------------------+
10 rows in set (0.02 sec)
```

```
mysql> desc assessment_components;
+-------------+--------------+------+-----+---------+----------------+
| Field       | Type         | Null | Key | Default | Extra          |
+-------------+--------------+------+-----+---------+----------------+
| id          | int          | NO   | PRI | NULL    | auto_increment |
| section_id  | int          | NO   |     | NULL    |                |
| name        | varchar(50)  | NO   |     | NULL    |                |
| weight      | double       | NO   |     | NULL    |                |
+-------------+--------------+------+-----+---------+----------------+
4 rows in set (0.00 sec)
```

```
mysql> desc courses;
+------------+---------------+------+-----+---------+----------------+
| Field      | Type          | Null | Key | Default | Extra          |
+------------+---------------+------+-----+---------+----------------+
| course_id  | int           | NO   | PRI | NULL    | auto_increment |
| code       | varchar(20)   | NO   | UNI | NULL    |                |
| title      | varchar(200)  | NO   |     | NULL    |                |
| credits    | int           | NO   |     | NULL    |                |
+------------+---------------+------+-----+---------+----------------+
4 rows in set (0.00 sec)
```

```
mysql> desc enrollments;
+---------------+-----------------------------------------------------+------+-----+----------+----------------+
| Field         | Type                                                | Null | Key | Default  | Extra          |
+---------------+-----------------------------------------------------+------+-----+----------+----------------+
| enrollment_id | int                                                 | NO   | PRI | NULL     | auto_increment |
| student_id    | int                                                 | NO   |     | NULL     |                |
| section_id    | int                                                 | NO   |     | NULL     |                |
| status        | enum('ENROLLED','DROPPED','WAITLISTED','COMPLETED') | YES  |     | ENROLLED |                |
+---------------+-----------------------------------------------------+------+-----+----------+----------------+
4 rows in set (0.00 sec)
```

```
mysql> desc grades;
+----------------+-------------+------+-----+---------+----------------+
| Field          | Type        | Null | Key | Default | Extra          |
+----------------+-------------+------+-----+---------+----------------+
| grade_id       | int         | NO   | PRI | NULL    | auto_increment |
| enrollment_id  | int         | NO   |     | NULL    |                |
| component      | varchar(50) | NO   |     | NULL    |                |
| score          | double      | YES  |     | NULL    |                |
| final_grade    | varchar(10) | YES  |     | NULL    |                |
+----------------+-------------+------+-----+---------+----------------+
5 rows in set (0.00 sec)
```

```
mysql> desc instructors;
+-------------+--------------+------+-----+---------+-------+
| Field       | Type         | Null | Key | Default | Extra |
+-------------+--------------+------+-----+---------+-------+
| user_id     | int          | NO   | PRI | NULL    |       |
| department  | varchar(100) | YES  |     | NULL    |       |
| title       | varchar(50)  | YES  |     | NULL    |       |
+-------------+--------------+------+-----+---------+-------+
3 rows in set (0.00 sec)
```

```
mysql> desc section_labels;
+------------+-------------+------+-----+---------+----------------+
| Field      | Type        | Null | Key | Default | Extra          |
+------------+-------------+------+-----+---------+----------------+
| label_id   | int         | NO   | PRI | NULL    | auto_increment |
| section_id | int         | NO   | UNI | NULL    |                |
| course_id  | int         | NO   | MUL | NULL    |                |
| label      | varchar(50) | NO   |     | NULL    |                |
+------------+-------------+------+-----+---------+----------------+
4 rows in set (0.00 sec)
```

```
mysql> desc notifications;
+-----------------+------------+------+-----+-------------------+-------------------+
| Field           | Type       | Null | Key | Default           | Extra             |
+-----------------+------------+------+-----+-------------------+-------------------+
| notification_id | int        | NO   | PRI | NULL              | auto_increment    |
| user_id         | int        | NO   |     | NULL              |                   |
| message         | text       | NO   |     | NULL              |                   |
| created_at      | timestamp  | YES  |     | CURRENT_TIMESTAMP | DEFAULT_GENERATED |
| is_read         | tinyint(1) | YES  |     | 0                 |                   |
+-----------------+------------+------+-----+-------------------+-------------------+
5 rows in set (0.00 sec)
```

```
mysql> desc sections;
+---------------+-----------------------------------+------+-----+---------+----------------+
| Field         | Type                              | Null | Key | Default | Extra          |
+---------------+-----------------------------------+------+-----+---------+----------------+
| section_id    | int                               | NO   | PRI | NULL    | auto_increment |
| course_id     | int                               | NO   |     | NULL    |                |
| instructor_id | int                               | YES  |     | NULL    |                |
| day_time      | varchar(100)                      | YES  |     | NULL    |                |
| room          | varchar(50)                       | YES  |     | NULL    |                |
| capacity      | int                               | NO   |     | NULL    |                |
| semester      | varchar(20)                       | YES  |     | NULL    |                |
| year          | int                               | YES  |     | NULL    |                |
| status        | enum('OPEN','CLOSED','CANCELLED') | YES  |     | OPEN    |                |
+---------------+-----------------------------------+------+-----+---------+----------------+
9 rows in set (0.00 sec)
```

```
mysql> desc settings;
+-------+--------------+------+-----+---------+-------+
| Field | Type         | Null | Key | Default | Extra |
+-------+--------------+------+-----+---------+-------+
| k     | varchar(100) | NO   | PRI | NULL    |       |
| v     | varchar(200) | YES  |     | NULL    |       |
+-------+--------------+------+-----+---------+-------+
2 rows in set (0.00 sec)
```

```
mysql> desc students;
+---------+--------------+------+-----+---------+-------+
| Field   | Type         | Null | Key | Default | Extra |
+---------+--------------+------+-----+---------+-------+
| user_id | int          | NO   | PRI | NULL    |       |
| roll_no | varchar(30)  | YES  | UNI | NULL    |       |
| program | varchar(100) | YES  |     | NULL    |       |
| year    | int          | YES  |     | NULL    |       |
+---------+--------------+------+-----+---------+-------+
4 rows in set (0.00 sec)
```

8. FEW FEATURES

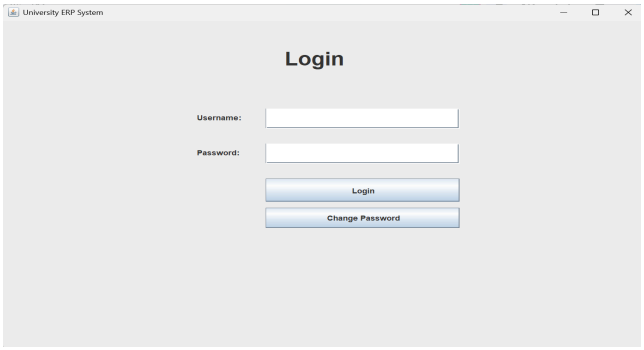

Figure 1: Login

Figure 2: Change Password

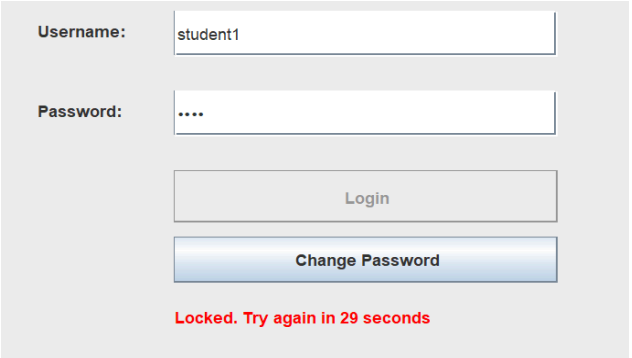

Figure 3: Lockout

STUDENT

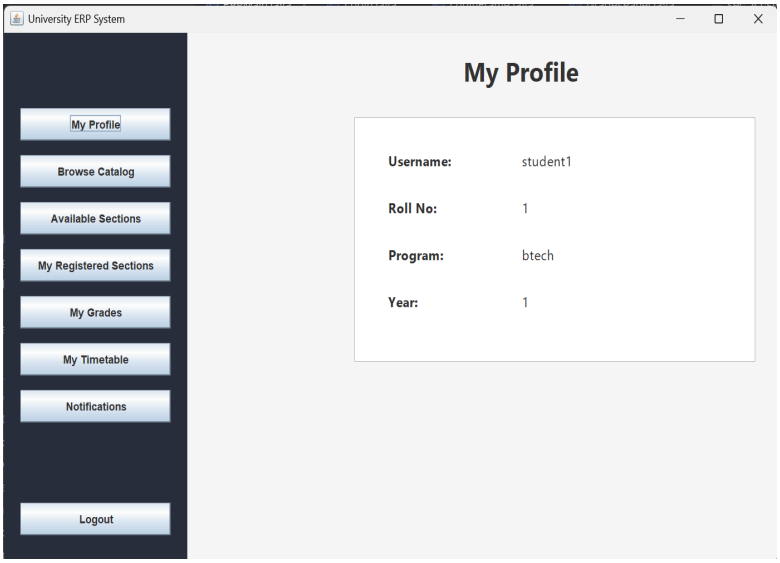

Figure 4: Student Dashboard

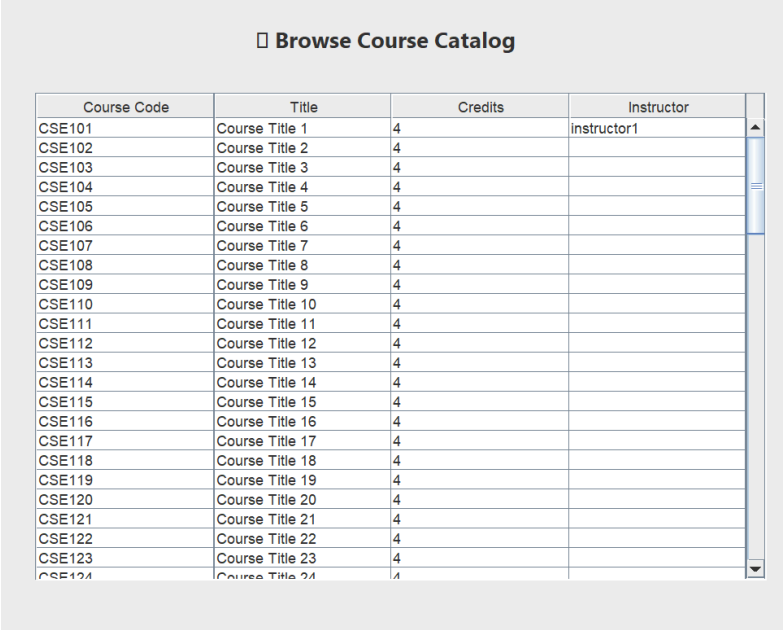

Figure 5: Browse Catalog

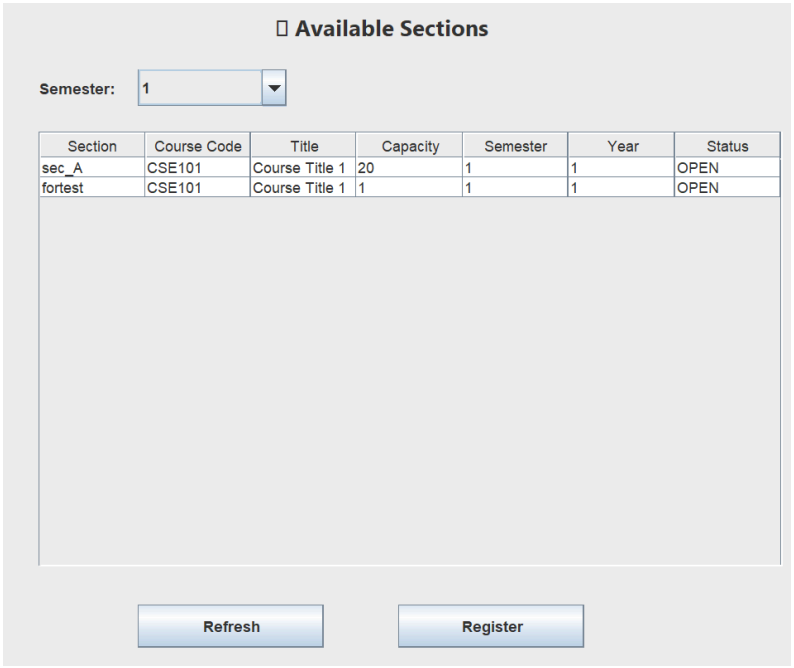

Figure 6: Register Section

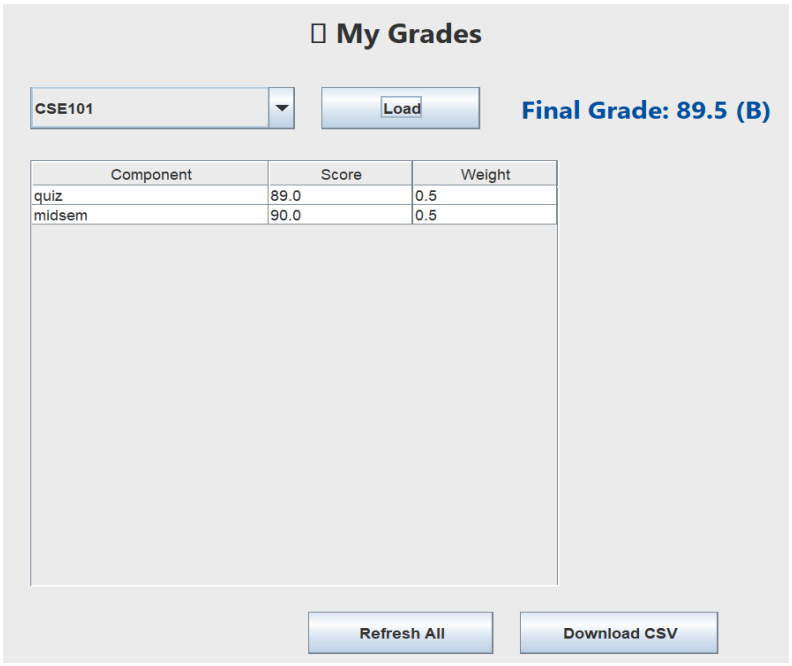

Figure 7: My grades

INSTRUCTOR

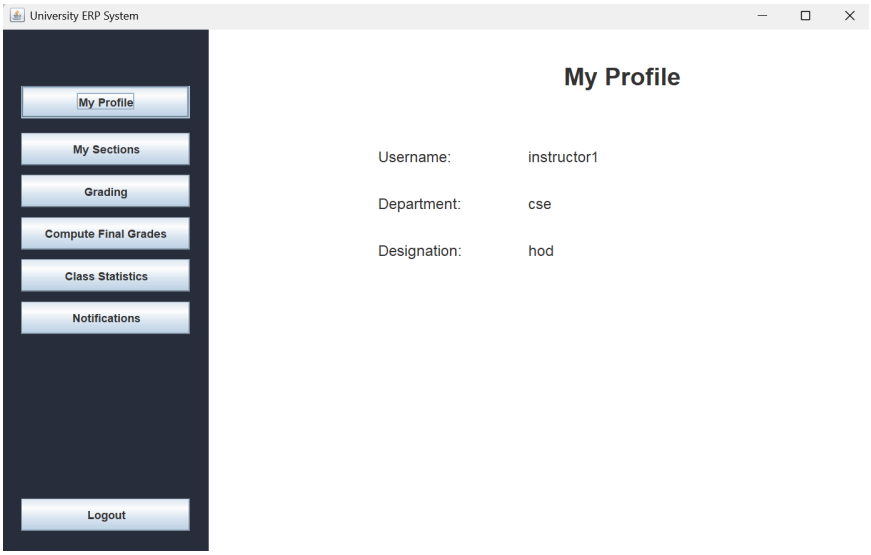

Figure 8: Instructor Profile

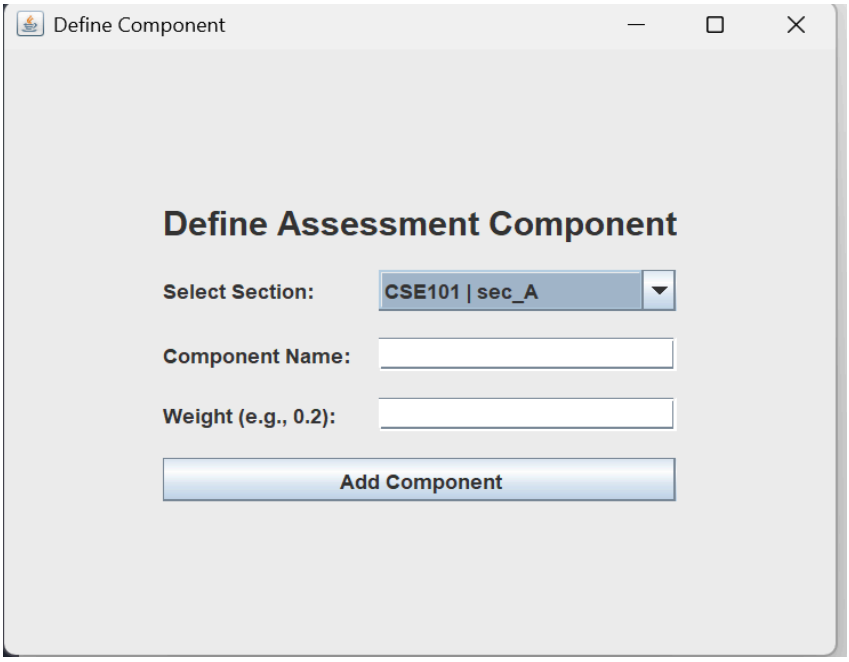

Figure 9: Assessment Component

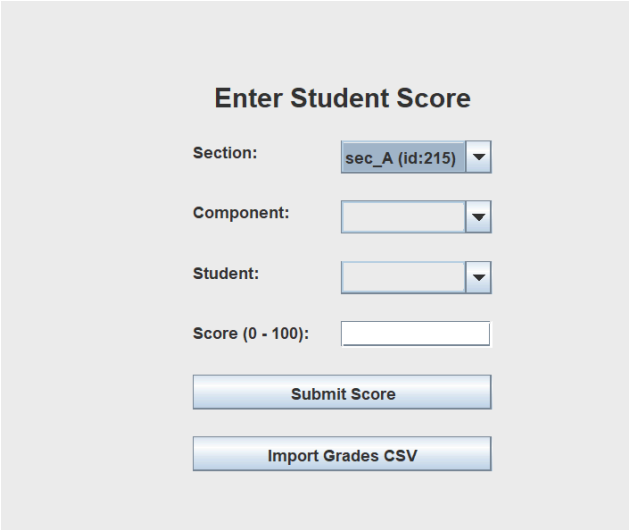

Figure 10: Enter Score

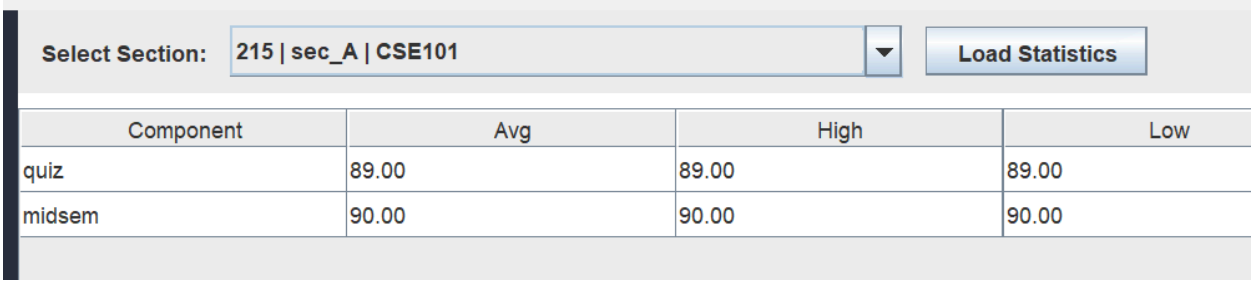

Figure 11: Class Statistics

ADMIN

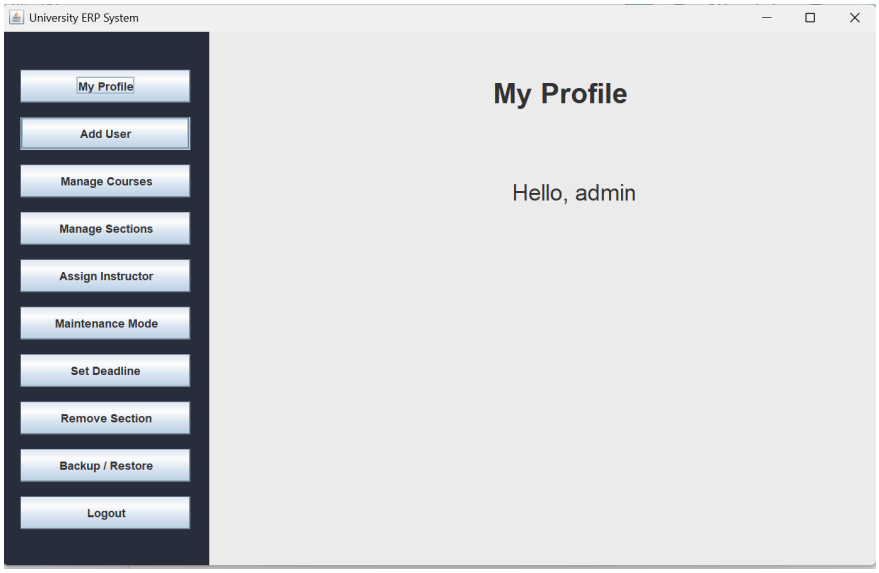

Figure 12: Admin Dashboard

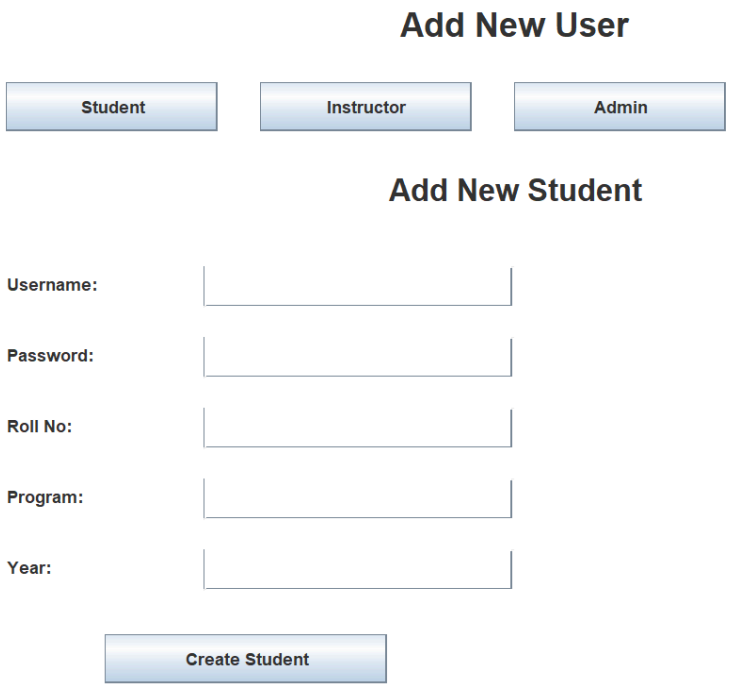

Figure 13: Add Users(Stduent / Instructor / Admin)

Figure 14: Maintenance Mode

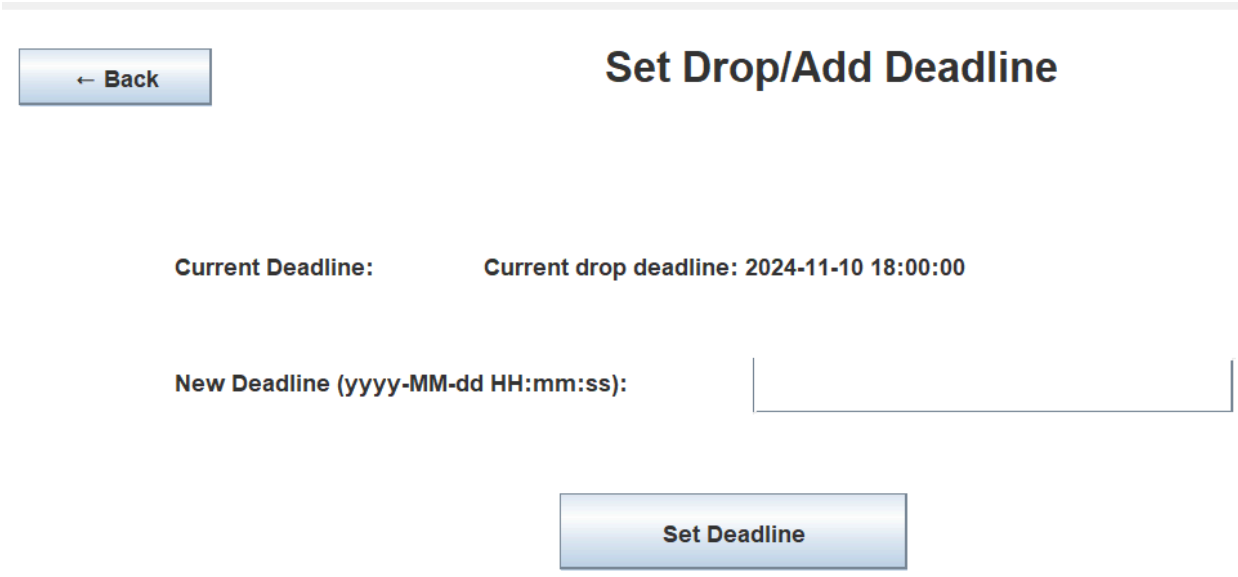

Figure 15:Set Deadline

9. CONCLUSION

Overall, this project helped us understand how a real university ERP works internally. We implemented role-based access, separate databases for authentication and academic data, maintenance mode control, and a full registration + grading workflow. The project has scope for many more features, but even in its current form it is stable and covers all important requirements of the assignment