Database Systems
Mid Term Project

Instructions:

- The project is supposed to be completed by each student as the part of mid term lab exam.
- Even registration numbers will pick project A and odd registration numbers will pick project B
- Any type of plagiarism will be STRICTLY taken and may lead to serious penalties in the course
- Database is provided with the each project. Restore the same database for connectivity with the frontend. Name of database should be MidProjectDb
- Project should be managed on **GitLab** from February 24, 2025 and should be committed on daily basis or after each chunk of activities.
- Name of repository on Gitlab should follow the following naming conventions: DBS25P019(if registration number is 19).
- Add samyan.uet as collaborator in repository. Repository should be private.
- You are NOT allowed to use Entity Framework for connectivity of database, queries should be written to retrieve and manipulate data.
- Submission of project will be taken on eduko. Submission should NOT include the binary files.
- Any change in the schema of database is NOT allowed.

Grading Criteria:

Project will be evaluated based on the following parameters

- Completion of project features
- Ability to provide professional and easy to use UI/UX
- Connectivity of database
- Exception handling and readable errors for the user
- Responsive UI
- Maintainable, readable and modular code
- Reports in PDF format in professional style
- Ability to provide more features and reports based on the provided database

Milestones:

Milestone name	Deadline
User Interface	February 28, 2025
Backend Implementation	March 5, 2025
Business Reports	March 10, 2025
Project Report	March 15, 2025

Project A: ITEC Event Management System

The **Information Technology Exhibition and Competition (ITEC)** is an annual event organized by the **Department of Computer Science, UET Lahore**. The event includes various activities such as **competitions, exhibitions, seminars, and non-tech events**. It is managed by faculty members and students, with responsibilities distributed across multiple organizing committees.

Currently, the **event is managed manually using spreadsheets, emails, and physical records**, leading to:

- **Data inconsistency** in participant registrations and payments.
- **Difficulty in managing committee assignments and duties.**
- **Inefficiencies in financial tracking** (sponsorships, registration fees, and expenses).
- **Manual scheduling**, leading to **conflicts in event timings and venue allocation**.
- **Lack of automated reporting** for participation, financial transactions, and event results.

To streamline event management, a **centralized Event Management System** is required to **digitize and automate the entire process**.

The system must address the following challenges:

- **Event Management**: Maintain structured event categories, schedules, and venues.
- **Participant Registration & Fee Management**: Track event registration fees and payments.
- **Committee Management**: Assign faculty and student members to specific organizing committees.
- **Duty Assignments**: Ensure each committee member (faculty or student) has a clear role and task.
- **Financial Tracking**: Manage event funding, sponsorships, registration fees, and expenses.
- **Venue Allocation**: Prevent scheduling conflicts by managing venue assignments.
- **Automated Reports**: Provide detailed reports on participants, finances, and event performance.

A **desktop-based Windows Form Application using C# and MySQL** will be developed to **streamline event planning, participant management, committee roles, financial tracking, and duty assignments**.

Key Features

1. ITEC Editions Management

- Create and manage **ITEC editions** (e.g., ITEC 2024, ITEC 2025).
- Link all events, participants, and finances to a specific edition.

2. Event Management

- Add, update, and remove **events** (Competitions, Exhibitions, Seminars, Non-Tech).
- Assign **organizing committees** for each event.
- Schedule event **dates, times, and venues**.

3. Participant Registration & Fee Tracking

- Register participants as **students, professionals, guest speakers, or judges**.
- Track participation in **multiple events**.
- Allow **individual or team-based registrations**.
- **Manage registration fees** based on event type.
- Track **payment status** (**Pending, Paid, Canceled**).

4. Committee & Role Management

- Create **organizing committees** (e.g., Logistics, Technical, Marketing, Sponsorship).
- Assign **faculty and students** to committees.
- Define committee roles (e.g., **Faculty Advisor, Student Lead, Volunteer**).

5. Duty Assignment & Tracking

- Assign **tasks to faculty and student members** in each committee.
- Track task progress (**Pending, In Progress, Completed**).

6. Financial Management & Sponsorship Tracking

- Record **sponsorships, ticket sales, and other income sources**.
- Track **event expenses** (venue bookings, logistics, marketing, hospitality).
- Track **registration fees collected** for each event.
- Generate **budget reports** showing income vs. expenses.

7. Venue Allocation & Conflict Resolution

- Assign **venues** (e.g., Auditorium, Classrooms, Open Areas) to events.
- Check for **time conflicts** before finalizing venue allocations.

8. Event Results Management

- Record **competition results** (positions and scores).
- Generate **rankings and leaderboards**.

9. Automated Report Generation

- Generate **Participant Reports** by event, category, and role.
- Provide **Committee Assignment Reports** listing faculty and student responsibilities.
- Generate **Financial Reports** summarizing event income and expenses.
- Provide **Event Schedule Reports** for display and printing.

Database of project A is available at https://drive.google.com/file/d/1Llhr6jUpmLy2-5CIZfaYOEhZ-eqRNZUr/view?usp=sharing

Project B: Faculty Workload and Resource Allocation System

The **Department of Computer Science, UET Lahore** manages faculty workload and resource allocation each semester. Faculty members handle multiple responsibilities, including **teaching, supervising research, administrative duties, and requesting essential resources** such as **board markers, consumables, and lab space**.

Currently, these processes are managed manually through **spreadsheets and emails**, leading to:

- **Data inconsistency and tracking issues**.
- **Inefficiencies in faculty workload distribution**.
- **Difficulty in managing faculty requests for essential resources**.
- **Delays in generating reports for department planning and accreditation bodies (NCEAC, HEC)**.
- **Lack of authentication and role-based access control, leading to security risks**.

To overcome these challenges, the department wants to develop a **Faculty Workload and Resource Allocation System**, a **Windows Form Application using C# and a relational database** to streamline workload management, resource allocation, and faculty requests.

The manual process of faculty workload and resource allocation presents several challenges:

- **Workload Imbalance**: Some faculty members are overburdened while others have fewer assignments.
- **Tracking Issues**: Maintaining records for **teaching assignments, research supervision, and administrative duties** is difficult.
- **Resource Allocation Complexity**: Assigning **classrooms, labs, and consumables** is inefficient.
- **Faculty Requests Management**: Managing requests for **board markers, stationery, consumables, and lab equipment** is unstructured.
- **Role-Based Security & Authentication**: Users should only access features relevant to their roles.

A **centralized, database-driven application** will be developed to manage **faculty workload assignments, track faculty requests, enforce authentication, and efficiently allocate department resources**.

Key Features

1. User Authentication & Role Management

- **Secure login system** with hashed passwords.
- **Role-based access control (RBAC)** for different users.
- **Forgot password & account recovery system**.
- **User roles**:
    - **Department Head**: Assigns workload, approves faculty requests, and manages resource allocation.
    - **Faculty Members**: Views assigned courses, submits resource requests, and tracks request status.
    - **Administrative Staff**: Updates faculty profiles, manages course allocations, and processes faculty requests.

2. Faculty Management

- Add, update, and delete **faculty profiles**.
- Store faculty details (**Name, Designation, Research Interests, Total Teaching Hours Available**).
- Assign **faculty roles** using predefined values from a lookup table.

3. Workload Assignment

- Assign **courses** to faculty members for each semester.
- Assign **final year projects and research supervision**.
- Track **administrative duties** (e.g., committee roles, coordination).

4. Resource Allocation

- Assign **classrooms and labs** to faculty members.
- Manage faculty **requests for board markers, stationery, and consumables**.
- Allow faculty to **track the status of their requests**.

5. Faculty Requests Management

- Faculty members can request **board markers, stationery, consumables, and lab space**.
- Requests can be **approved, rejected, or marked as fulfilled**.

- Track the **inventory of consumables** and **ensure timely procurement**.

Database of project B is available at https://drive.google.com/file/d/1ytqY4PHRfHZ6chOiahwF2dPix-VtYICy/view?usp=sharing