FYP Management

Session: 2022-2026

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Course:

CS-262L Database Systems

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1 Introduction

The "Final Year Project Management System" aims to revolutionize the project management process within the Department of Computer Science at UET Lahore. This desktop application is designed to replace the outdated spreadsheet-based system currently in use. By leveraging modern technology and streamlined processes, the project seeks to enhance efficiency, organization, and transparency throughout the entire project lifecycle.

1.1 Objectives

1.1.1 Streamlined Management:

Simplify the management of final year projects by providing a centralized platform for all project-related activities.

1.1.2 Enhanced Collaboration:

Facilitate collaboration among students, advisors, and industry experts by offering seamless communication channels and clear assignment tracking.

1.1.3 Efficient Evaluation:

Automate the evaluation process, allowing for timely feedback and assessment of project progress.

1.1.4 Comprehensive Reporting:

Generate detailed reports on project status, evaluation results, and student performance to aid decision-making and accountability.

1.1.5 User-Friendly Interface:

Develop an intuitive user interface that is easy to navigate and understand, catering to users with varying levels of technical expertise.

2 Enhancing Project Management

The process of streamlining project management within the Department of Computer Science at UET Lahore is crucial for several reasons:

2.1 Efficiency Improvement

The current manual system, reliant on spreadsheets, is time-consuming and prone to errors. By introducing a centralized digital platform, tasks such as project assignment, evaluation,

and reporting can be automated, saving time and reducing the likelihood of mistakes.

2.2 Enhanced Collaboration

A streamlined project management system promotes collaboration among students, faculty advisors, and industry experts. It provides a centralized hub where stakeholders can easily communicate, share resources, and track project progress, leading to better outcomes.

2.3 Transparency and Accountability

With a digital system in place, all project-related information is stored in a centralized database, ensuring transparency and accountability. This allows for easy tracking of project milestones, evaluation criteria, and individual contributions, fostering a culture of accountability among project participants.

2.4 Data-Driven Decision Making

By generating comprehensive reports and analytics, a streamlined project management system empowers decision-makers to make informed choices based on real-time data. This enables faculty advisors and committee members to identify trends, allocate resources efficiently, and intervene proactively when necessary.

2.5 Adaptability to Change

In the fast-paced environment of academia, it's essential to have a flexible project management system that can adapt to changing requirements and circumstances. A digital platform allows for easy updates, modifications, and scalability, ensuring it remains relevant and effective over time.

3 Target Audience

The faculty project committee members are responsible for overseeing the final year project process. They are involved in checking project proposals, assigning advisors to student groups, and keeping records of project progress and evaluations. Additionally, they play a crucial role in ensuring compliance with departmental guidelines and providing support and guidance to both students and faculty advisors throughout the project lifecycle.

4 Project Features

4.1 Manage Students

The application allows the project committee to manage student information, including their names, contact details, and registration numbers. It provides functionality to add, edit, and

delete student records.

4.2 Manage Advisors

The application allows the project committee to manage advisor information, including their names, designations, and salaries. It provides functionality to add, edit, and delete advisor records.

4.3 Manage Projects

The application enables the project committee to manage project information, including project titles and descriptions. It provides functionality to add, edit, and delete project records.

4.4 Formation of Student Groups

The application allows the project committee to form student groups for each project. It provides functionality to create groups and assign students to them.

4.5 Assignment of Projects to Groups

The application allows the project committee to assign projects to student groups. It provides functionality to link projects to groups and specify the date of assignment.

4.6 Assignment of Multiple Advisors to Projects

The application enables the project committee to assign multiple advisors to each project. It provides functionality to assign main advisors, co-advisors, and industry advisors to projects.

4.7 Manage Evaluations

The application allows the project committee to manage project evaluations. It provides functionality to create evaluation criteria, specify total marks and weightage, and record evaluation results.

4.8 Mark Evaluations Against a Group

The application allows the project committee to mark evaluations against student groups. It provides functionality to enter marks obtained by groups in each evaluation.

4.9 Generate Reports

The application allows the project committee to generate various reports in PDF format. This includes a list of projects with advisory boards and student lists, marksheets of projects

showing marks in each evaluation against each student and project, and any other reports deemed necessary by the committee.

5 Technology Stack

5.1 Backend Logic: C#

C# was selected for implementing the backend logic of the application. It provides a robust and efficient environment for developing core functionalities, with features such as strong typing and support for object-oriented programming principles.

5.2 Frontend Framework: Windows Forms

Windows Forms was chosen as the frontend framework for designing the user interface of the application. It offers a familiar and user-friendly interface for desktop applications on the Windows platform, enabling the creation of intuitive and responsive UI components.

5.3 Database Management System: MS SQL Server

SQL Server serves as the database management system (DBMS) for storing and managing project-related data. It provides a reliable and scalable platform for data storage, with features such as transaction support and data integrity constraints.

6 System Requirements

The system requirements mean that these IDE, framework, and packages you will need to run my project. The system requirements for this project are as follows.

Table 1: System Requirements

Language Used	C#
IDE Used	Visual Studio 2022
Framework	.NET 4.7.2
Database	Microsoft SQL Server
Packages Used	• Guna.UI2.WinForms 2.0.4.6 • iTextSharp 5.5.13.3

7 User Interface Design

7.1 UI/UX Design Principles

The user interface (UI) and user experience (UX) design of our application adhere to the following principles:

7.1.1 Simplicity

We prioritize simplicity in our UI design to ensure ease of use for all users. By keeping the interface clean and uncluttered, we aim to minimize cognitive load and facilitate intuitive navigation.

7.1.2 Consistency

Consistency is maintained throughout the application to provide a familiar and predictable user experience. I maintain consistent design elements, layout patterns, and interaction behaviors across all screens and functionalities.

7.1.3 Accessibility

Accessibility is a key consideration in our UI/UX design, ensuring that the application is usable by individuals with diverse abilities. I adhere to accessibility standards such as color contrast, keyboard navigation, and screen reader compatibility to make the application accessible to all users.

7.1.4 Feedback and Error Handling

We provide clear and informative feedback to users at every interaction to keep them informed about the system's status and their actions' outcomes. Additionally, I implemented robust error handling mechanisms to guide users in resolving errors and preventing data loss.

7.1.5 Visual Hierarchy

A clear visual hierarchy is established in the UI design to prioritize important information and guide users' attention.

7.2 Screenshots

Here are some screenshots of key interface elements:

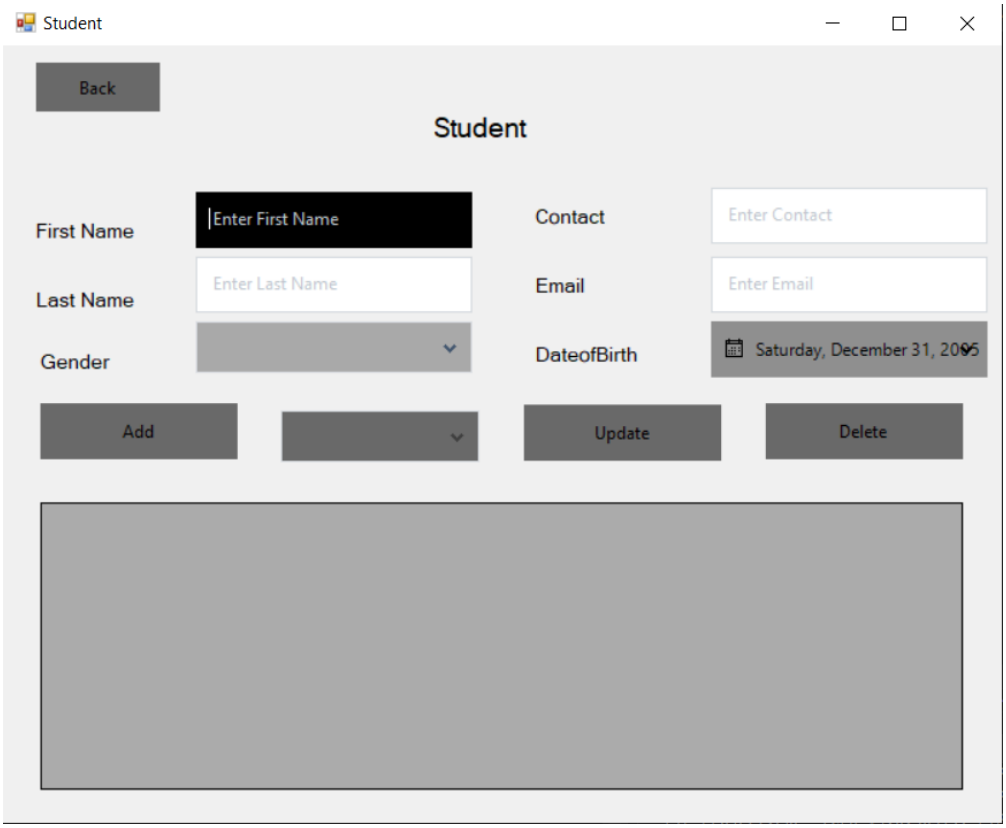

Figure 1: Manage Student Interface

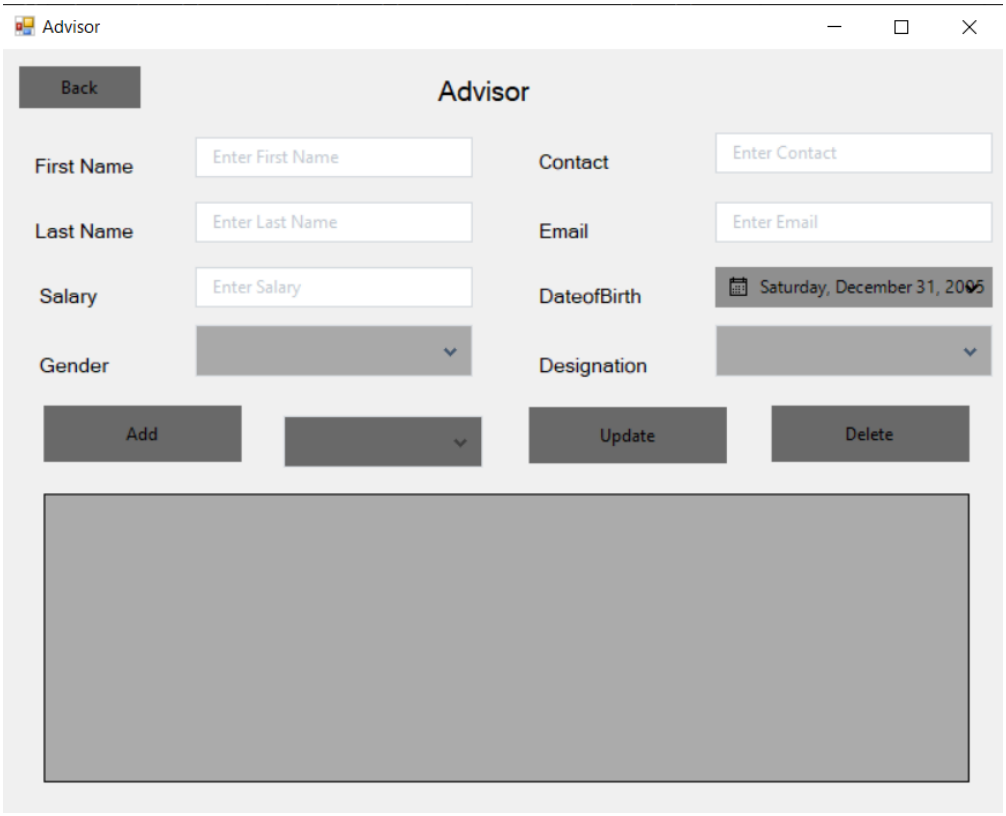

Figure 2: Manage Advisor Interface

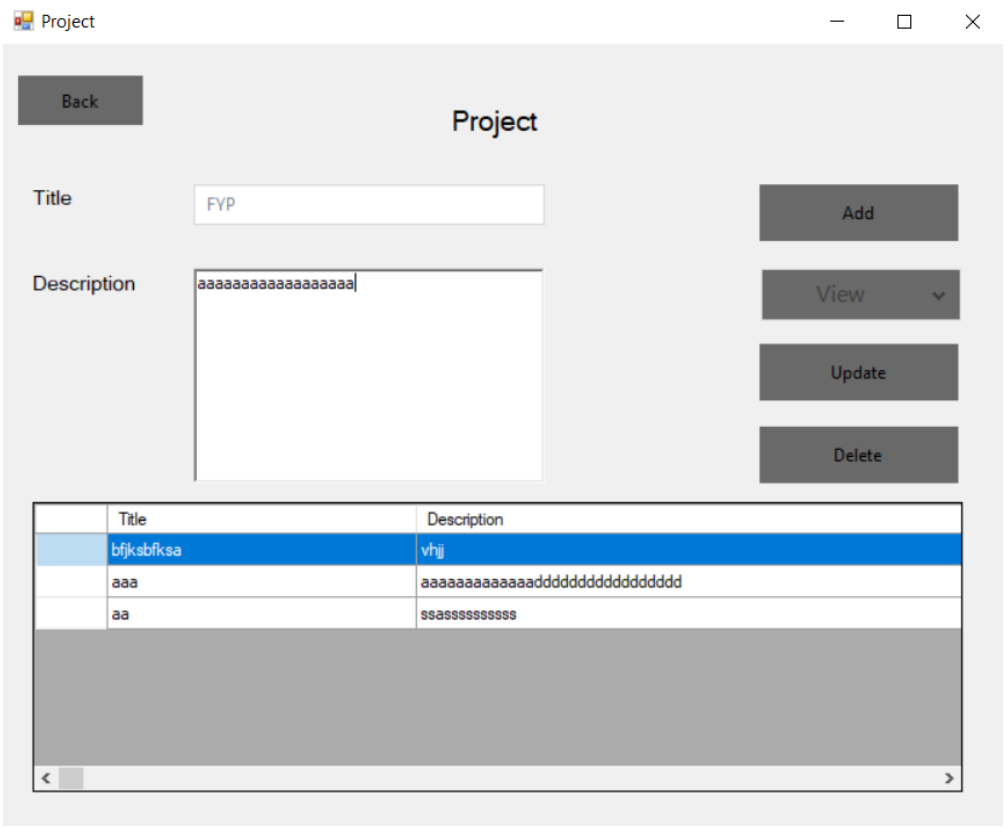

Figure 3: Project Management Screen

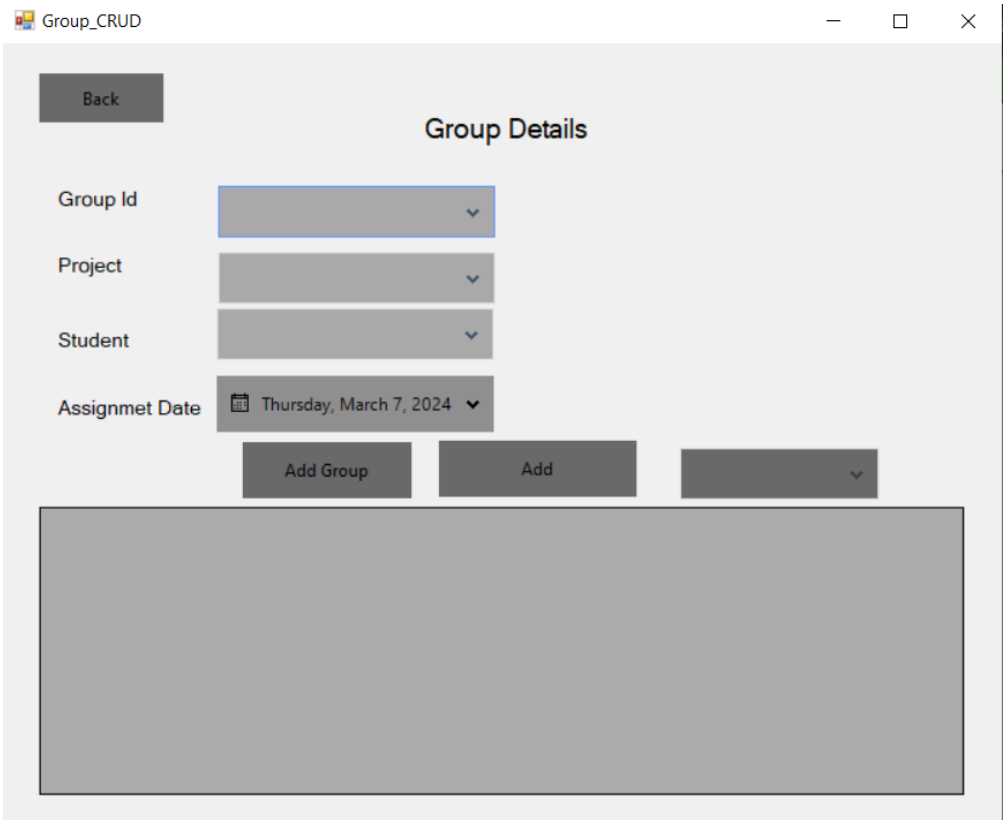

Figure 4: Group Management Interface

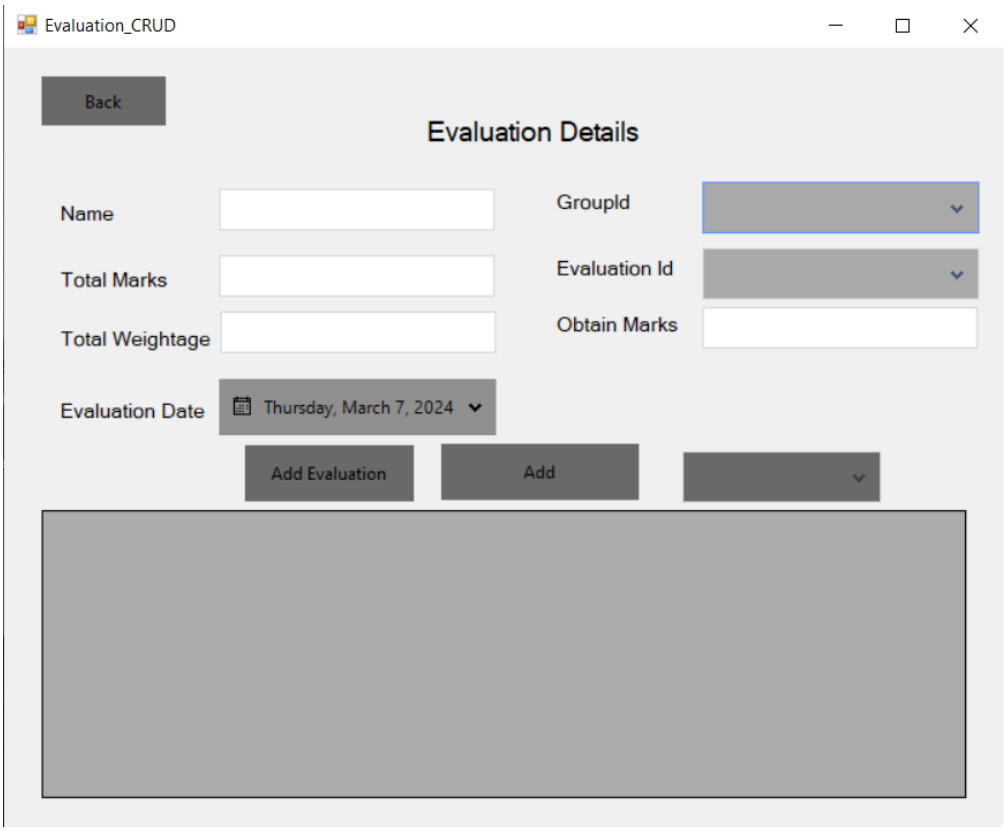

Figure 5: Evaluation Management Interface

8 Schema Explanation

8.1 Lookup Table

– This table stores various lookup values that are used in the project for gender, status, designation, and advisor role.

– The **Id** column is a unique identifier for each lookup value.

– The **Value** column stores the actual value (e.g., Male, Female, Active, etc.).

– The **Category** column specifies the category of the lookup value (e.g., GENDER, STATUS, DESIGNATION, ADVISOR ROLE).

8.2 Project Table

– This table stores information about the projects available for final year students.

– The **Id** column is a unique identifier for each project.

– The **Description** column stores the description of the project.

– The **Title** column stores the title of the project.

8.3 Group Table

– This table stores information about student groups formed for each project.

– The **Id** column is a unique identifier for each group.

– The **Created On** column stores the date when the group was created.

8.4 Evaluation Table

– This table stores information about the evaluations conducted for each project.

– The **Id** column is a unique identifier for each evaluation.

– The **Name** column stores the name of the evaluation.

– The **TotalMarks** column stores the total marks for the evaluation.

– The **TotalWeightage** column stores the total weightage for the evaluation.

8.5 Advisor Table

– This table stores information about advisors involved in the projects.

– The **Id** column is a unique identifier for each advisor.

– The **Designation** column stores the designation of the advisor.

– The **Salary** column stores the salary of the advisor.

8.6 Person Table

– This table stores information about persons involved in the project (students, advisors, etc.).

– The **Id** column is a unique identifier for each person.

– The **FirstName** column stores the first name of the person.

– The **LastName** column stores the last name of the person.

– The **Contact** column stores the contact information of the person.

– The **Email** column stores the email address of the person.

– The **DateOfBirth** column stores the date of birth of the person.

– The **Gender** column stores the gender of the person, referencing the Lookup table.

8.7 GroupProject Table

– This table stores the relationship between projects and student groups.

– The **ProjectId** column references the **Id** column in the Project table.

– The **GroupId** column references the **Id** column in the Group table.

– The **AssignmentDate** column stores the date when the project was assigned to the group.

8.8 GroupEvaluation Table

– This table stores the relationship between evaluations and student groups.

– The **GroupId** column references the **Id** column in the Group table.

– The **EvaluationId** column references the **Id** column in the Evaluation table.

– The **ObtainedMarks** column stores the marks obtained by the group in the evaluation.

– The **EvaluationDate** column stores the date when the evaluation was conducted.

8.9 Student Table

– This table stores information about students.

– The **Id** column is a unique identifier for each student.

– The **RegistrationNo** column stores the registration number of the student.

8.10 ProjectAdvisor Table

– This table stores the relationship between projects and advisors.

– The **AdvisorId** column references the **Id** column in the Advisor table.

– The **ProjectId** column references the **Id** column in the Project table.

– The **AdvisorRole** column stores the role of the advisor in the project, referencing the Lookup table.

9 Reports Generated

9.1 List of Projects with Advisory Board and Students

The application generates a comprehensive report listing all projects along with their respective advisory boards and student groups. This report provides an overview of project allocations and the associated faculty advisors, co-advisors, and industry advisors.

9.2 Marks Sheet Showing Evaluations

The system generates detailed marks sheets that display evaluations against each student and project. These marks sheets provide a breakdown of evaluation criteria, total marks, and marks obtained by individual students for each assessment component.

9.3 Group Details

The application provides a dedicated report titled "Group Details" that offers comprehensive information about student groups formed for each project. This report includes details such as group ID, project assignment date, list of students within each group. It serves as a valuable resource for project management and facilitates efficient communication and collaboration among group members.

9.4 All Students

The system generates a report titled "All Students," presenting a complete list of all students involved in the final year project. This report includes student details such as name, registration number, contact information, and other relevant identifiers. It serves as a reference document for project coordinators, faculty advisors, and administrative staff to track student participation and ensure effective communication.

9.5 All Advisors with Details

The application generates a detailed report providing comprehensive information about faculty advisors associated with the final year projects. This report includes advisor details such as

name, designation, contact information.

10 Error Handling and Exception Management

In the Final Year Project (FYP) management system, comprehensive error handling mechanisms are employed to detect and address errors promptly. This includes validating user inputs, checking for system constraints, and anticipating potential failure points in the workflow.

10.1 Exception Handling

Exception handling is implemented to gracefully manage unexpected situations that may arise during runtime. This involves catching and handling exceptions to prevent application crashes and data loss.

10.2 User-Friendly Error Messages

When errors occur, the system provides clear and informative error messages to users. These messages are designed to be understandable and actionable, guiding users on how to resolve the issue.

10.3 Readability and Clarity

Error messages are crafted with readability and clarity in mind, ensuring that users can easily comprehend the nature of the problem and the steps needed to address it.

11 Limitations

While the project has made substantial progress, it is essential to acknowledge certain limitations:

11.1 Validation Challenges:

The system may encounter difficulties in implementing comprehensive data validation mechanisms, leading to potential data inconsistencies or inaccuracies.

11.2 Scalability Concerns:

As the volume of data and user interactions grows, the system's scalability may become a limiting factor, potentially affecting performance and responsiveness.

11.3 Limited Customization:

The system's current architecture may offer limited flexibility for customization according to specific institutional or user requirements, hindering adaptability.

11.4 Dependency on External Systems:

Integration with external systems or APIs may introduce dependencies and vulnerabilities, posing risks related to data integrity and system reliability.

11.5 Usability Complexity:

Despite efforts to enhance user experience, the system's complexity may still pose usability challenges for certain users, leading to resistance or suboptimal utilization.

11.6 Accessibility Considerations:

The system's accessibility for users with disabilities or diverse needs may require further attention to ensure compliance with accessibility standards.

These limitations highlight areas where further attention and improvement may be necessary to address potential risks and enhance the project's overall effectiveness.

12 Future Work

12.1 Enhanced Validation Mechanisms:

Implementing more robust data validation mechanisms to ensure data integrity and accuracy.

12.2 Scalability Improvements:

Explore techniques to enhance the system's scalability to handle larger volumes of data and user interactions.

12.3 Customization Options:

Provide more flexibility for customization to meet diverse user requirements and preferences.

12.4 Integration with Emerging Technologies:

Investigate integration with emerging technologies such as machine learning or blockchain to enhance system capabilities and functionality.

12.5 User Experience Enhancements:

Continuously improve the user experience through user interface updates, usability testing, and feedback-driven improvements.

13 Summary

The project aims to develop a robust project management system tailored for final year projects, with a focus on optimizing processes and fostering collaboration among stakeholders. Through the implementation of a centralized digital platform, the system automates various tasks, enhances efficiency, and fosters transparency throughout the project lifecycle.

13.1 Link of Repository

More tracking of the project can be found on the given repository below:
`https://gitlab.com/afeera/dbmidproject-2022-cs-151`