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**WORK: Software Engineering-Iteration 1**

1. **Introduction:**

**1.1 Purpose:**

This Software Requirements Specification (SRS) document delineates the functional and non-functional requirements for the Final Year Project Management System (FYPMS). The FYPMS aims to address the inefficiencies and challenges associated with managing final year projects in an undergraduate academic setting. This document serves as a formal statement of the software requirements for the FYPMS, providing a comprehensive overview for stakeholders involved in its development, implementation, and evaluation.

**1.2 Document Conventions:**

In preparing this Software Requirements Specification (SRS) document for the Final Year Project Management System (FYPMS), the following standards and typographical conventions have been adhered to:

**Font**: The document is formatted using Times New Roman font, with a font size of 12 for the body text and 14 for section headings and so on.

**Alignment**: All text is aligned to the left.

**Headers and Subheadings**: Section headings are numbered in accordance with the IEEE format and are formatted in bold and with a larger font size to distinguish them from the body text.

**Priority**: Each requirement statement is assigned its own priority level, which is indicated within the requirement statement itself. Priority levels range from "Must-have" (essential requirements for system functionality) to "Nice-to-have" (desirable but not critical requirements).

**Emphasis**: Key terms or phrases within the document may be italicized or bolded for emphasis as necessary.

**Lists**: Lists, such as bulleted or numbered lists, are used to organize information for clarity and readability.

**References**: Any external references or citations within the document are listed in the References section, following IEEE citation style guidelines.

These conventions ensure consistency and clarity throughout the SRS document, facilitating understanding and interpretation by stakeholders involved in the FYPMS project.

**1.3 Intended Audience and Reading Suggestions:**

**Intended Audience:**

The Software Requirements Specification (SRS) document for the Final Year Project Management System (FYPMS) is intended for various stakeholders involved in the development, evaluation, and utilization of the software system. The primary audience includes:

***Developers:*** Those responsible for designing, coding, and implementing the FYPMS software such as my group members.

***Project Managers:*** Individual overseeing the development process and ensuring alignment with project goals and timelines which is our Scrum Master Muhammad Waleed.

***Faculty Supervisors:*** Academic staff providing guidance and feedback on the technical aspects of the project.

***Users***: Undergraduate students participating in the final year project process as project leaders, group members, or evaluators.

***Testers***: Individuals responsible for testing the functionality and performance of the FYPMS to ensure it meets specified requirements which are us as well.

***Documentation Writers:*** Those tasked with creating user manuals, help guides, and technical documentation for the FYPMS.

**Reading Suggestions:**

The SRS document is organized to provide a comprehensive overview of the requirements and specifications for the FYPMS software system. Readers are recommended to follow the suggested sequence for optimal understanding:

***Overview Sections:*** Begin by reading the introductory sections, including the "Introduction" and "Purpose," to gain an understanding of the scope and objectives of the FYPMS project.

***Detailed Project Description:*** Proceed to review the detailed project description section, which provides context and background information on the FYPMS, its stakeholders, and its objectives.

***External Interface Requirements***: Explore the section detailing the external interface requirements, including user interfaces, hardware interfaces, and software interfaces.

***System Features***: Delve into the functional requirements section, which outlines the specific features and functionalities of the FYPMS, such as user registration, project management, evaluation processes etc.

***Other Non-functional Requirements:*** Review the section covering non-functional requirements, which includes quality attributes such as reliability, usability, security, and performance expectations.

***Diagrams***: Examine any accompanying diagrams, such as use-case diagrams, activity diagrams, and sequence diagrams, which provide visual representations of the FYPMS system and its interactions.

**1.4 Project Scope:**

**Overview:**

The Final Year Project Management System (FYPMS) is a software solution designed to streamline and enhance the management process for final year projects (FYPs) within an undergraduate academic setting. The FYPMS aims to address the inefficiencies and challenges associated with manual management practices by providing a centralized platform for coordinating and monitoring all aspects of the FYP lifecycle.

**Purpose and Objectives:**

The primary purpose of the FYPMS is to facilitate efficient collaboration, communication, and coordination among stakeholders involved in the FYP process, including undergraduate students, faculty supervisors, FYP Committee members, and system administrators. By automating various tasks and providing robust features, the FYPMS seeks to achieve the following objectives:

***Efficiency***: Streamline administrative tasks such as student registration, supervisor assignment, evaluation submission, and result generation to save time and resources.

***Transparency***: Enhance visibility and transparency in the FYP process by providing stakeholders with access to project details, evaluation criteria, and feedback mechanisms.

***Collaboration***: Foster collaboration and teamwork among students, supervisors, and evaluators by facilitating group creation, supervisor assignment, and evaluation panel formation.

***Quality Assurance***: Ensure the quality and rigor of the FYP evaluation process through standardized assessment criteria, timely feedback, and performance monitoring.

***Security***: Implement robust security measures to safeguard sensitive information, ensure data integrity, and protect against unauthorized access or misuse.

**Corporate Goals and Business Strategies:**

The development and implementation of the FYPMS align with the broader corporate goals and business strategies of academic institutions, particularly in the realm of educational excellence, innovation, and stakeholder satisfaction. By providing a modern, efficient, and user-friendly platform for managing final year projects, the FYPMS contributes to the institution's objectives of:

***Enhancing Academic Quality:*** By facilitating more effective supervision, evaluation, and feedback mechanisms, the FYPMS helps ensure the academic quality and rigor of final year projects.

***Improving Stakeholder Experience***: By simplifying administrative processes and enhancing collaboration, the FYPMS enhances the overall experience for students, faculty, and staff involved in the FYP process.

***Promoting Innovation:*** By leveraging technology to streamline workflows and enhance communication, the FYPMS fosters a culture of innovation and continuous improvement within the academic community.

**1.5 References:**

**Vision and Scope Document**

*Title:* Final Year Project Management System Vision and Scope

*Author*: Muhammad Ali Khan, Muhammad Waleed, Murtaza Kazmi

*Version* Number: 1.0

*Source or Location*: GitHub

**System Requirements Specifications (SRS) Template**

*Title*: Software Requirements Specification (SRS) Template

*Author*: Institute of Electrical and Electronics Engineers (IEEE)

*Source or Location*: SRS

**Use Case Documents**

*Title*: FYPMS Use Case Scenarios

*Author*: Muhammad Ali Khan, Muhammad Waleed, Murtaza Kazmi

*Version* *Number*: 1.1

*Source or Location*: GitHub

1. **Overall Description:**

**2.1 Product Perspective:**

The Final Year Project Management System (FYPMS) is a new, self-contained software product designed to address the challenges associated with managing final year projects (FYPs) within an undergraduate academic environment. The FYPMS is not a replacement for existing systems but rather a standalone solution developed to streamline and enhance the management process for FYPs as an assignment.

**Context and Origin:**

Traditionally, the management of final year projects in academic institutions has been characterized by manual processes, including paper-based documentation, email communications, and spreadsheet tracking. However, these methods often prove to be inefficient, error-prone, and lacking in transparency. Recognizing the need for a more effective and streamlined approach, the FYPMS was conceived as a software solution to automate key aspects of the FYP lifecycle and improve collaboration among stakeholders.

**2.2 Product Functions:**

The Final Year Project Management System (FYPMS) is designed to perform the following major functions:

**User Registration and Authentication:** Allows users to register with the system and authenticate using login credentials.

**Role-Based Access Control:** Defines roles such as students, faculty supervisors, FYP Committee members, and administrators, and assigns specific privileges to each role.

**Project Management:** Enables students to create project groups, assign supervisors, and manage project details such as titles, descriptions, and deadlines.

**Evaluation Process:** Facilitates the creation of evaluation panels by FYP Committee members, submission of evaluations by panel members, and feedback submission by supervisors.

**Deadline Management:** Sets deadlines for project submissions, evaluations, and presentations, and sends automated notifications and reminders to stakeholders.

**Reporting and Analytics:** Generates reports on project status, evaluation outcomes, supervisor workload, and grade statistics for analysis and decision-making.

**User Interface:** Provides a user-friendly interface for easy navigation, interaction, and access to system features and functionalities and many more…

These functions collectively aim to automate tasks, improve communication channels, and ensure efficient management of final year projects within the academic institution.

**2.3 User Classes and Characteristics:**

**Student Users:**

*Frequency of Use:* Regular and ongoing throughout the academic year.

*Subset of Product Functions Used:* Project creation, group management, submission of project details, viewing evaluations and feedback.

*Technical Expertise*: Varied levels of technical proficiency, ranging from basic computer skills to intermediate.

*Educational Level*: Undergraduate students enrolled in final year projects.

*Characteristics:* Typically possess project management skills, collaborate with group members, and require access to project-related information and deadlines.

**Faculty Supervisors:**

*Frequency of Use:* Regular, especially during project supervision and evaluation phases of the semester.

*Subset of Product Functions Used*: Assignment of students to projects, evaluation of student work, submission of feedback.

*Technical Expertise:* Proficient in academic and subject matter expertise, may have varying levels of technical proficiency.

*Educational Level*: Faculty members with expertise in relevant academic disciplines.

*Characteristics:* Experienced in project supervision, provide guidance and feedback to students, require access to project details and evaluation criteria.

**FYP Committee Members:**

*Frequency of Use*: Periodic, primarily during evaluation and decision-making processes.

*Subset of Product Functions Used*: Creation of evaluation panels, review of project submissions, grading.

*Technical Expertise*: Proficient in academic and evaluation processes, may have varying levels of technical proficiency.

*Educational Level*: Faculty members or academic staff with experience in final year project evaluation.

*Characteristics:* Responsible for ensuring fair and thorough evaluation of projects, require access to evaluation criteria and project submissions.

**2.4 Operating Environment:**

The Final Year Project Management System (FYPMS) will operate within the following environment:

**Hardware Platform:**

* The FYPMS will be a web-based application and will therefore be platform-independent.
* It will be accessible from the device with internet connectivity, including desktop computers and laptops.
* The system should be responsive and adaptable to various screen sizes and resolutions.

**Operating System and Versions:**

The FYPMS will be compatible with modern web browsers, including:

* Google Chrome, Mozilla Firefox, Microsoft Edge, Apple Safari etc.

**Software Components and Applications:**

The FYPMS will peacefully coexist with other software components and applications commonly used in an academic environment, including:

* Database Management Systems (e.g., MySQL)
* Web Servers (e.g., HTTP Server and Local Host)
* Programming Languages and Frameworks (e.g., C-Sharp, HTML, CSS, SQL, JavaScript)

**2.5 Design and Implementation Constraints:**

The development of the Final Year Project Management System (FYPMS) will be subject to the following constraints:

**Corporate or Regulatory Policies:**

Compliance with institutional policies and regulations governing data privacy, security, and intellectual property rights.

Adherence to academic standards and guidelines for project management and evaluation processes.

**Hardware Limitations:**

Consideration of hardware limitations, such as capacity, bandwidth constraints, and scalability requirements to accommodate potential user growth at one time.

**Specific Technologies, Tools, and Databases:**

Utilization of specific technologies, tools, and databases as per project requirements. Adoption of web development frameworks, programming languages, and database management systems compatible with the project's objectives and constraints.

**Security Considerations:**

Implementation of robust security measures to safeguard sensitive data, prevent unauthorized access, and mitigate potential security threats such as implementing checks in SQL Database.

**Design Conventions and Programming Standards:**

Adherence to design conventions, programming standards, and best practices to ensure maintainability, scalability, and code readability and other concepts of Software Engineering taught in the class.

**Communication Protocols:**

Compliance with standard communication protocols and data formats for seamless interaction with external systems and secondary actors.

**2.6 User Documentation:**

The following user documentation components will be delivered along with the Final Year Project Management System (FYPMS) software:

**User Manuals:**

Comprehensive user manual and guiding document with a demo at university providing detailed instructions on how to use the various features and functionalities of the FYPMS.

It will cover topics such as user registration, project creation, supervisor assignment, evaluation processes, reporting, and system administration.

**2.7 Assumptions and Dependencies:**

**Assumptions:**

***Availability of Resources*:** It is assumed that necessary resources, including hardware, software, and human resources, will be available throughout the development and deployment phases of the FYPMS project.

***Stakeholder Cooperation*:** Assumption is made regarding the cooperation and active involvement of stakeholders, including students, faculty supervisors, FYP Committee members, and system administrators, in providing feedback and participating in testing and training activities.

***Compliance with Institutional Policies***: It is assumed that the FYPMS will comply with all institutional policies, regulations, and academic standards governing data privacy, security, and intellectual property rights.

***Technical Compatibility***: Assumption is made regarding the compatibility of the FYPMS with standard web browsers and operating systems, ensuring seamless access and usability for users across different platforms and devices

***Accurate Requirements Understanding***: Assumption is made that the requirements captured in the SRS accurately reflect the needs and expectations of stakeholders, and any changes will be effectively communicated and managed.

**Dependencies:**

***Regulatory Compliance***: Dependencies exist on the adherence to regulatory requirements and standards governing data privacy, security, and intellectual property rights, which may impact the design and implementation of the FYPMS.

1. **External Interface Requirements:**

**3.1 User Interfaces:**

The Final Year Project Management System (FYPMS) will feature user interfaces that facilitate interaction between users and the software components. These interfaces will adhere to usability principles and design standards to ensure an intuitive and efficient user experience. Below are the logical characteristics of each interface:

**Login Interface:**

* This interface will provide fields for users to input their credentials (username and password) to access the system.
* It will include standard buttons such as "Login" and "Forgot Password" for user authentication and password recovery.
* Error message display standards will be followed to notify users of invalid login attempts or authentication failures.

**Dashboard Interface:**

* The dashboard will serve as the main interface upon successful login, providing an overview of important information and actionable items.
* It will feature widgets, charts, and summary tables displaying project status, upcoming deadlines, notifications, and task lists.
* Users will be able to navigate to different sections of the system from the dashboard using navigation menus or tiles.

**Project Management Interface:**

* This interface will allow students to create, manage, and view details of their final year project.
* Students will have options to update project details, track progress, and submit project deliverables.

**Supervisor Interface:**

* Supervisors will have access to interfaces for managing assigned projects, evaluating student work, and providing feedback.
* They will be able to view project details, review submissions, enter evaluation scores, and submit feedback forms.

**Committee Interface:**

* FYP Committee members will have interfaces for creating evaluation panels, reviewing project submissions, and finalizing grades.
* They will be able to assign projects to evaluation panels, monitor evaluation progress, and generate reports.
* Buttons for panel creation, evaluation submission, and report generation will be available.

**3.2 Hardware Interfaces:**

The Final Year Project Management System (FYPMS) will interact with various hardware components to facilitate its operation. These interfaces encompass both logical and physical characteristics, ensuring seamless communication between the software product and the hardware components of the system:

**Supported Device Types:**

The FYPMS will support a wide range of device types, including:

* Desktop computers
* Laptops

**Data and Control Interactions:**

* The software will interact with hardware components primarily for data input and output purposes wherever needed.
* Data interactions may include user input through keyboards, mice, or other input devices, as well as output to displays and printers.

**Communication Protocols:**

* Communication between the software product and hardware components will be facilitated using standard communication protocols, ensuring compatibility and interoperability offered by the Operating System itself.

**Physical Characteristics:**

* The physical characteristics of hardware interfaces may vary depending on the device types and form factors supported by the FYPMS.
* For desktop and laptop computers, hardware interfaces may include USB ports, HDMI ports for external displays, and audio jacks for audio output.

**3.3 Software Interfaces:**

The Final Year Project Management System (FYPMS) will interact with various software components to fulfill its functionalities. These software interfaces include connections with databases, operating systems, tools, libraries. Below are the details of these connections:

**Database Management System (DBMS):**

* The FYPMS will interface with SQL database management system (SQLDBMS) to store and retrieve project-related data.
* Specific database systems and versions to be used will be finalized during the development phase.
* Data items coming into the system include project details, user information, evaluation scores, and feedback comments.

**Operating System (OS):**

* The FYPMS will be compatible with various operating systems, including Windows, Linux, and macOS, as it will be a web-based application.
* The software will utilize standard protocols and conventions to ensure cross-platform compatibility.

**Web Development Frameworks and Libraries:**

* The FYPMS may utilize web development frameworks and libraries such as for HTML, CSS, JavaScript, C-Sharp etc.
* These frameworks and libraries will provide essential functionalities for building web applications, including session management, and database interactions etc.

**Data Sharing Mechanism:**

* Data sharing between software components will primarily occur through APIs (Application Programming Interfaces) exposed by each component.
* APIs will define the services needed, communication protocols, and data formats for exchanging information between different modules of the FYPMS.
* Implementation constraints, if any, related to data sharing mechanisms will be specified based on the chosen architecture and technology stack.

**3.4 Communication Interfaces:**

The Final Year Project Management System (FYPMS) will utilize various communications functions to facilitate interactions between users, external systems, and the software itself. These communication interfaces include email, web browser, network server communications protocols, electronic forms, and more. Below are the requirements associated with each communication function:

**Web Browser Communication:**

* Users will interact with the FYPMS through web browsers, accessing the system via HTTP (Hypertext Transfer Protocol) or HTTPS (HTTP Secure).
* Web browser communication will involve rendering HTML (Hypertext Markup Language) pages generated by the FYPMS server and processing user input through forms and requests.
* The FYPMS will support modern web browsers with compatibility for HTML5, CSS3, and JavaScript standards etc.

**Network Server Communications Protocols:**

* Communication between the FYPMS server and client devices will be facilitated by standard network protocols such as TCP/IP (Transmission Control Protocol/Internet Protocol).
* HTTP or HTTPS will be used as the communication protocol for client-server interactions over the network.

**Security and Encryption:**

* Communication security will be ensured by implementing HTTPS for all web browser interactions, encrypting data transmission between clients and the server.
* Data transfer rates and synchronization mechanisms will be optimized to ensure efficient communication and responsiveness of the system.

1. **System Features:**

**4.1 System Feature 1:**

**User Registration and Authentication**

**4.1.1 Description and Priority**

This feature enables users to register with the system and authenticate themselves using login credentials. It is of high priority as it forms the foundation for user interaction with the system.

**4.1.2 Stimulus/Response Sequences**

Stimulus: User navigates to the registration page.

Response: System displays registration form.

Stimulus: User submits registration form.

Response: System validates user inputs and creates a new user account if inputs are valid.

**4.1.3 Functional Requirements**

REQ-1: The system shall provide a registration form with fields for user information such as name, email, and password.

REQ-2: The system shall validate user inputs to ensure they meet specified criteria (e.g., valid email format, password strength).

REQ-3: Upon successful registration, the system shall send a verification email to the user's provided email address.

REQ-4: The system shall allow registered users to log in using their email address and password.

REQ-5: The system shall authenticate user credentials against stored user data.

REQ-6: The system shall provide appropriate error messages for invalid login attempts.

**4.2 System Feature 2:**

**Role-Based Access Control**

**4.2.1 Description and Priority**

This feature allows the assignment of specific privileges to users based on their roles within the system. It is of high priority as it ensures proper access control and security.

**4.2.2 Stimulus/Response Sequences**

Stimulus: Administrator navigates to user management interface.

Response: System displays user roles and privileges options.

Stimulus: Administrator assigns roles and privileges to users.

Response: System updates user profiles with assigned roles and privileges.

**4.2.3 Functional Requirements**

REQ-1: The system shall define roles such as student, supervisor, committee member, and administrator.

REQ-2: The system shall allow administrators to assign specific privileges to each role.

REQ-3: Users shall be granted access to functionalities based on their assigned roles.

REQ-4: Role assignments shall be stored in the system database and retrieved during user authentication.

REQ-5: The system shall restrict access to sensitive functionalities based on user roles.

**4.3 System Feature 3:**

**Student Group Creation for FYPs**

**4.3.1 Description and Priority**

This feature enables students to create groups for their Final Year Projects (FYPs). It is of high priority as it facilitates collaboration among students and ensures proper organization of FYP groups.

**4.3.2 Stimulus/Response Sequences**

Stimulus: Student navigates to the group creation interface.

Response: System displays a form for entering group details.

Stimulus: Student submits the group creation form.

Response: System validates group information and creates a new group if inputs are valid.

**4.3.3 Functional Requirements**

REQ-1: The system shall provide a group creation form with fields for entering project title, description, and member information.

REQ-2: The system shall allow students to specify group members by selecting registered users from a list or entering their email addresses.

REQ-3: Group details entered by students shall be stored in the system database.

REQ-4: The system shall ensure that each group has a unique identifier and associated project details.

REQ-5: Upon successful group creation, the system shall notify group members via email.

**4.4 System Feature 4:**

**Supervisor Assignment to Student Groups**

**4.4.1 Description and Priority**

This feature allows faculty supervisors to be assigned to student groups based on availability and expertise. It is of high priority as it ensures proper guidance and mentorship for FYP groups.

**4.4.2 Stimulus/Response Sequences**

Stimulus: Administrator or FYP coordinator navigates to the supervisor assignment interface.

Response: System displays options for assigning supervisors to student groups.

Stimulus: Administrator or FYP coordinator assigns supervisors to student groups.

Response: System updates group profiles with assigned supervisors.

**4.4.3 Functional Requirements**

REQ-1: The system shall provide an interface for administrators or FYP coordinators to assign supervisors to student groups.

REQ-2: Supervisors shall be assigned to student groups based on availability and expertise, considering factors such as research interests and workload.

REQ-3: The system shall limit the number of FYP groups each supervisor can oversee to ensure equitable distribution of workload.

REQ-4: Assigned supervisors shall have access to group details and be able to provide guidance and feedback to group members.

REQ-5: Changes to supervisor assignments shall be logged in the system for auditing purposes.

**4.5 System Feature 5:**

**Panel Creation by FYP Committee**

**4.5.1 Description and Priority**

This feature enables the Final Year Project (FYP) Committee members to create evaluation panels for assessing student projects. It is of high priority as it ensures the establishment of evaluation panels, which are crucial for the assessment process.

**4.5.2 Stimulus/Response Sequences**

Stimulus: FYP Committee member accesses the panel creation interface.

Response: System presents options for creating a new evaluation panel.

Stimulus: FYP Committee member specifies panel details and assigns panel members.

Response: System updates panel information and notifies panel members.

**4.5.3 Functional Requirements**

REQ-1: The system shall provide an interface for FYP Committee members to create evaluation panels.

REQ-2: FYP Committee members shall be able to specify panel details, including panel name, description, and members.

REQ-3: The system shall allow FYP Committee members to assign panel members from a list of registered users.

REQ-4: Each evaluation panel shall have a unique identifier and associated details stored in the system database.

REQ-5: Upon panel creation, the system shall send notifications to panel members with details about their assignments.

**4.6 System Feature 6:**

**Evaluation Form Creation for Panel Members**

**4.6.1 Description and Priority**

This feature enables the FYP Committee to create evaluation forms for panel members to assess student projects. It is of high priority as it defines the criteria and mechanisms for evaluating FYPs.

**4.6.2 Stimulus/Response Sequences**

Stimulus: FYP Committee member accesses the evaluation form creation interface.

Response: System displays options for creating a new evaluation form.

Stimulus: FYP Committee member defines assessment criteria and scoring mechanisms.

Response: System generates the evaluation form based on specified criteria.

**4.6.3 Functional Requirements**

REQ-1: The system shall provide an interface for FYP Committee members to create evaluation forms.

REQ-2: FYP Committee members shall be able to define assessment criteria, weightings, and scoring mechanisms for each evaluation form.

REQ-3: The system shall generate evaluation forms dynamically based on the defined criteria.

REQ-4: Evaluation forms shall include fields for panel members to input assessment scores and provide feedback.

REQ-5: Completed evaluation forms shall be stored in the system database for record-keeping and analysis.

**4.7 System Feature 7:**

**Deadline Management for Submissions and Evaluations**

**4.7.1 Description and Priority**

This feature facilitates the setting and management of deadlines for project submissions, evaluations, and presentations within the Final Year Project Management System (FYPMS). It is of high priority as it ensures timely completion of project milestones and assessment activities.

**4.7.2 Stimulus/Response Sequences**

Stimulus: Administrator or FYP coordinator accesses the deadline management interface.

Response: System presents options for setting and managing deadlines.

Stimulus: Administrator or FYP coordinator sets deadlines for project submissions, evaluations, and presentations.

Response: System updates deadline information and sends notifications to relevant stakeholders.

**4.7.3 Functional Requirements**

REQ-1: The system shall provide an interface for administrators or FYP coordinators to set deadlines for project submissions, evaluations, and presentations.

REQ-2: Deadlines shall be configurable for different phases of the project lifecycle (e.g., proposal submission, final submission, evaluation).

REQ-3: The system shall send automated notifications and reminders to stakeholders as deadlines approach.

REQ-4: Stakeholders shall be able to view upcoming deadlines through the system interface.

REQ-5: The system shall enforce deadline constraints to prevent late submissions or evaluations.

**4.8 System Feature 8:**

**Group Member Management**

**4.8.1 Description and Priority**

This feature enables group leaders to manage membership within their project groups, including adding and removing members as necessary. It is of high priority as it ensures accurate representation of group composition and facilitates collaboration among group members.

**4.8.2 Stimulus/Response Sequences**

Stimulus: Group leader accesses the group member management interface.

Response: System displays options for managing group membership.

Stimulus: Group leader adds or removes members from the group.

Response: System updates group membership and notifies affected users.

**4.8.3 Functional Requirements**

REQ-1: The system shall provide an interface for group leaders to manage membership within their project groups.

REQ-2: Group leaders shall be able to add new members to the group by selecting registered users from a list or entering their email addresses.

REQ-3: Group leaders shall be able to remove members from the group if necessary.

REQ-4: The system shall maintain an accurate record of group composition, including the names and roles of group members.

REQ-5: Changes to group membership shall be logged in the system for auditing purposes.

**4.9 System Feature 9:**

**Project Title and Description Management**

**4.9.1 Description and Priority**

This feature allows students to manage the title and description of their final year projects (FYPs) within the Final Year Project Management System (FYPMS). It is of medium priority as it provides students with the ability to update and maintain project information.

**4.9.2 Stimulus/Response Sequences**

Stimulus: Student accesses the project management interface.

Response: System displays options for managing project details.

Stimulus: Student updates the title or description of their project.

Response: System stores the updated information and notifies relevant stakeholders if necessary.

**4.9.3 Functional Requirements**

REQ-1: The system shall provide an interface for students to update the title and description of their FYPs.

REQ-2: Students shall be able to edit project details such as title and description at any time during the project lifecycle.

REQ-3: The system shall store project title and description information in a database for future reference.

REQ-4: Changes to project title and description shall be reflected in relevant system interfaces and reports.

REQ-5: The system shall maintain version history for project titles and descriptions to track changes over time.

**4.10 System Feature 10:**

**Supervisors' Workload Management**

**4.10.1 Description and Priority**

This feature enables the monitoring and management of the workload of faculty supervisors within the Final Year Project Management System (FYPMS). It is of high priority as it ensures equitable distribution of FYP supervision responsibilities among faculty members.

**4.10.2 Stimulus/Response Sequences**

Stimulus: Administrator or FYP coordinator accesses the workload management interface.

Response: System presents options for monitoring and managing supervisors' workloads.

Stimulus: Administrator or FYP coordinator reviews supervisors' workload and redistributes projects if necessary.

Response: System updates supervisors' workload assignments and notifies affected parties.

**4.10.3 Functional Requirements**

REQ-1: The system shall provide an interface for administrators or FYP coordinators to monitor supervisors' workloads.

REQ-2: The system shall track the number of FYPs assigned to each supervisor and display workload statistics in a clear and understandable format.

REQ-3: Administrators or FYP coordinators shall be able to redistribute FYPs among supervisors to balance workload as needed.

REQ-4: Supervisors shall be notified of changes to their workload assignments.

REQ-5: The system shall maintain an audit trail of workload management actions for accountability and transparency purposes.

**4.11 System Feature 11:**

**Evaluation Submission by Panel Members**

**4.11.1 Description and Priority**

This feature allows panel members to submit evaluations for the final year projects (FYPs) assigned to them within the Final Year Project Management System (FYPMS). It is of high priority as it enables the assessment and grading of student projects by panel members.

**4.11.2 Stimulus/Response Sequences**

Stimulus: Panel member accesses the evaluation submission interface.

Response: System presents options for submitting evaluations.

Stimulus: Panel member provides assessment scores and feedback for assigned FYPs.

Response: System stores evaluation data and updates project status accordingly.

**4.11.3 Functional Requirements**

REQ-1: The system shall provide an interface for panel members to access assigned FYPs for evaluation.

REQ-2: Panel members shall be able to view project details, assessment criteria, and submission deadlines.

REQ-3: The system shall allow panel members to submit evaluation scores and feedback for assigned FYPs.

REQ-4: Submitted evaluations shall be stored securely in the system database for review and analysis.

REQ-5: The system shall provide confirmation of successful evaluation submission to panel members.

**4.12 System Feature 12:**

**Review and Feedback Submission by Supervisors**

**4.12.1 Description and Priority**

This feature enables supervisors to provide reviews and feedback on student projects within the Final Year Project Management System (FYPMS). It is of high priority as it facilitates constructive criticism and guidance for student project improvement.

**4.12.2 Stimulus/Response Sequences**

Stimulus: Supervisor accesses the review and feedback submission interface.

Response: System presents options for providing feedback.

Stimulus: Supervisor provides review comments and feedback for assigned student projects.

Response: System stores feedback data and notifies students of received feedback.

**4.12.3 Functional Requirements**

REQ-1: The system shall provide an interface for supervisors to access assigned student projects for review.

REQ-2: Supervisors shall be able to view project details, submitted documents, and evaluation scores.

REQ-3: The system shall allow supervisors to provide review comments and feedback on student projects.

REQ-4: Submitted feedback shall be stored securely in the system database and associated with respective student projects.

REQ-5: The system shall notify students of received feedback and provide options for follow-up discussions if necessary.

**4.13 System Feature 13:**

**Tracking Missing Evaluations and Submissions**

**4.13.1 Description and Priority**

This feature enables stakeholders to track missing evaluations and submissions within the Final Year Project Management System (FYPMS). It is of high priority as it ensures timely completion of assessment activities and helps identify outstanding tasks for follow-up.

**4.13.2 Stimulus/Response Sequences**

Stimulus: Administrator or FYP coordinator accesses the tracking interface.

Response: System presents options for tracking missing evaluations and submissions.

Stimulus: Administrator or FYP coordinator generates reports on missing evaluations and submissions.

Response: System provides a list of FYPs with missing evaluations or submissions.

**4.13.3 Functional Requirements**

REQ-1: The system shall provide an interface for administrators or FYP coordinators to track missing evaluations and submissions.

REQ-2: Administrators or FYP coordinators shall be able to generate reports listing FYPs with missing evaluations or submissions.

REQ-3: The system shall identify incomplete evaluations and submissions and highlight them for attention.

REQ-4: Stakeholders shall be able to view detailed information about missing evaluations and submissions for follow-up actions.

REQ-5: The system shall send automated notifications to stakeholders for pending evaluation tasks.

**4.14 System Feature 14:**

**Viewing Project Details by Students**

**4.14.1 Description and Priority**

This feature allows students to view details of their assigned projects within the Final Year Project Management System (FYPMS). It is of medium priority as it provides students with access to essential project information for better project management and understanding.

**4.14.2 Stimulus/Response Sequences**

Stimulus: Student logs in to the system and navigates to the project details interface.

Response: System displays project details associated with the student's assigned project.

Stimulus: Student selects a specific project to view details.

Response: System presents project title, description, supervisor information, and other relevant details.

**4.14.3 Functional Requirements**

REQ-1: The system shall provide an interface for students to view details of their assigned projects.

REQ-2: Students shall be able to access project title, description, supervisor information, and group members' details.

REQ-3: Project details shall be presented in a clear and organized format for easy comprehension.

REQ-4: The system shall ensure that only authorized students have access to project details assigned to them.

REQ-5: Students shall have the option to download project-related documents and materials if available.

**4.15 System Feature 15:**

**Viewing Assigned Panels by Students**

**4.15.1 Description and Priority**

This feature enables students to view the evaluation panels assigned to their projects within the Final Year Project Management System (FYPMS). It is of medium priority as it provides students with transparency regarding the assessment process and the composition of evaluation panels.

**4.15.2 Stimulus/Response Sequences**

Stimulus: Student accesses the assigned panels interface.

Response: System displays a list of evaluation panels assigned to the student's project.

Stimulus: Student selects a specific evaluation panel to view details.

Response: System presents information about panel members, criteria, and other relevant details.

**4.15.3 Functional Requirements**

REQ-1: The system shall provide an interface for students to view assigned evaluation panels for their projects.

REQ-2: Students shall be able to access information about panel members, evaluation criteria, and other relevant details.

REQ-3: Evaluation panel details shall be presented in an organized format for easy comprehension.

REQ-4: The system shall ensure that only authorized students have access to information about evaluation panels assigned to their projects.

REQ-5: Students shall have the option to download evaluation panel-related documents and materials if available.

**4.16 System Feature 16:**

**Viewing Evaluation Comments and Feedback by Students**

**4.16.1 Description and Priority**

This feature allows students to view evaluation comments and feedback provided by panel members and supervisors within the Final Year Project Management System (FYPMS). It is of medium priority as it supports students in understanding assessment outcomes and areas for improvement.

**4.16.2 Stimulus/Response Sequences**

Stimulus: Student accesses the evaluation comments and feedback interface.

Response: System displays a list of evaluation comments and feedback for the student's project.

Stimulus: Student selects a specific evaluation to view detailed comments and feedback.

Response: System presents comments and feedback provided by panel members and supervisors.

**4.16.3 Functional Requirements**

REQ-1: The system shall provide an interface for students to view evaluation comments and feedback for their projects.

REQ-2: Students shall be able to access detailed comments and feedback provided by panel members and supervisors.

REQ-3: Evaluation comments and feedback shall be presented in a structured format for easy understanding.

REQ-4: The system shall ensure that only authorized students have access to evaluation comments and feedback for their projects.

REQ-5: Students shall have the option to download evaluation comments and feedback for their records and further review.

**4.17 System Feature 17:**

**Viewing Deadlines for Submissions and Presentations by Students**

**4.17.1 Description and Priority**

This feature enables students to view deadlines for project submissions and presentations within the Final Year Project Management System (FYPMS). It is of medium priority as it ensures students are aware of key milestones and timelines for their projects.

**4.17.2 Stimulus/Response Sequences**

Stimulus: Student accesses the deadlines interface.

Response: System displays a list of deadlines for project submissions and presentations.

Stimulus: Student selects a specific deadline to view detailed information.

Response: System presents deadline details, including dates and submission requirements.

**4.17.3 Functional Requirements**

REQ-1: The system shall provide an interface for students to view deadlines for project submissions and presentations.

REQ-2: Students shall be able to access detailed information about each deadline, including dates and submission requirements.

REQ-3: Deadline information shall be presented in a clear and organized format for easy comprehension.

REQ-4: The system shall ensure that only authorized students have access to deadline information for their projects.

REQ-5: Students shall receive automated notifications and reminders for approaching deadlines.

**4.18 System Feature 18:**

**Viewing Grades of FYPs by Students**

**4.18.1 Description and Priority**

This feature allows students to view grades and evaluations for their final year projects (FYPs) within the Final Year Project Management System (FYPMS). It is of medium priority as it provides students with transparency in assessment outcomes.

**4.18.2 Stimulus/Response Sequences**

Stimulus: Student accesses the grades interface.

Response: System displays a list of FYPs with associated grades and evaluations.

Stimulus: Student selects a specific FYP to view detailed assessment information.

Response: System presents grades, evaluation scores, and comments provided by panel members and supervisors.

**4.18.3 Functional Requirements**

REQ-1: The system shall provide an interface for students to view grades and evaluations for their FYPs.

REQ-2: Students shall be able to access detailed assessment information, including grades, evaluation scores, and comments.

REQ-3: Assessment information shall be presented in a structured format for easy understanding.

REQ-4: The system shall ensure that only authorized students have access to assessment information for their projects.

REQ-5: Students shall have the option to download assessment reports for their records and further review.

**4.19 System Feature 19:**

**Audit Trail for Tracking User Actions**

**4.19.1 Description and Priority**

This feature allows the Final Year Project Management System (FYPMS) to track user actions and system activities for auditing purposes. It is of high priority as it ensures accountability, transparency, and security within the system.

**4.19.2 Stimulus/Response Sequences**

Stimulus: User performs an action within the FYPMS (e.g., login, project update).

Response: System logs the user action along with relevant details such as timestamp and user identity.

Stimulus: Administrator or auditor accesses the audit trail interface.

Response: System presents a log of user actions and system activities for review and analysis.

**4.19.3 Functional Requirements**

REQ-1: The system shall automatically log user actions and system activities for auditing purposes.

REQ-2: Logged information shall include details such as user identity, timestamp, action performed, and affected data.

REQ-3: The system shall provide an interface for authorized users to search and filter audit trail records based on specified criteria.

REQ-4: Audit trail records shall be stored securely in the system database with restricted access.

REQ-5: The system shall ensure that audit trail records are tamper-proof and immutable to maintain data integrity.

**4.20 System Feature 20:**

**Secure Data Encryption for Sensitive Information**

**4.20.1 Description and Priority**

This feature ensures the secure encryption of sensitive information within the Final Year Project Management System (FYPMS), such as passwords and personal data. It is of high priority as it protects confidential data from unauthorized access and ensures compliance with privacy regulations.

**4.20.2 Stimulus/Response Sequences**

Stimulus: User submits sensitive information (e.g., password, personal details) to the system.

Response: System encrypts the sensitive data using strong encryption algorithms before storing it in the database.

Stimulus: Authorized user accesses encrypted data.

Response: System decrypts the data and presents it in plain text to the user for authorized access.

**4.20.3 Functional Requirements**

REQ-1: The system shall employ industry-standard encryption algorithms to encrypt sensitive information before storing it in the database.

REQ-2: Sensitive data, including passwords and personal details, shall be encrypted at rest to prevent unauthorized access.

REQ-3: The system shall ensure that encryption keys are securely managed and stored to prevent unauthorized decryption of encrypted data.

REQ-4: Authorized users with appropriate privileges shall have access to decryption capabilities to view encrypted data when necessary.

REQ-5: The system shall enforce data encryption and decryption policies consistently across all components and interfaces.

**4.21 System Feature 21:**

**Admin Interface for Managing System Settings and Configurations**

**4.21.1 Description and Priority**

This feature provides an administrative interface within the Final Year Project Management System (FYPMS) for managing system settings and configurations. It is of high priority as it empowers administrators to maintain and customize the system according to organizational requirements.

**4.21.2 Stimulus/Response Sequences**

Stimulus: Administrator accesses the admin interface.

Response: System presents options for managing system settings and configurations.

Stimulus: Administrator modifies system settings or configurations.

Response: System applies the changes and updates system behavior accordingly.

**4.21.3 Functional Requirements**

REQ-1: The system shall provide an intuitive and user-friendly admin interface for managing system settings and configurations.

REQ-2: Administrators shall be able to customize system parameters such as user roles, permissions, notification preferences, and deadline settings.

REQ-3: The admin interface shall include features for adding, editing, or deleting system resources such as users, projects, and evaluation criteria.

REQ-4: Changes made through the admin interface shall be reflected in real-time across the system to ensure consistency.

REQ-5: The system shall enforce access controls to restrict admin functionalities to authorized users only.

**4.22 System Feature 22:**

**User Profile Management**

**4.22.1 Description and Priority**

This feature allows users to manage their profiles within the Final Year Project Management System (FYPMS), including updating personal information and preferences. It is of medium priority as it enhances user experience and ensures accurate user data.

**4.22.2 Stimulus/Response Sequences**

Stimulus: User accesses the profile management interface.

Response: System presents options for updating user profile information.

Stimulus: User modifies profile details or preferences.

Response: System applies the changes and updates the user profile accordingly.

**4.22.3 Functional Requirements**

REQ-1: The system shall provide a user-friendly interface for users to manage their profiles.

REQ-2: Users shall be able to update personal information such as name, email, contact details, and password.

REQ-3: The profile management interface shall include options for users to customize their notification preferences and communication settings.

REQ-4: Changes made to user profiles shall be validated and stored securely in the system database.

REQ-5: The system shall maintain an audit trail of profile updates for accountability and security purposes.

**4.23 System Feature 23:**

**Search Functionality for Finding Specific Projects or Users**

**4.23.1 Description and Priority**

This feature enables users to search for specific projects or users within the Final Year Project Management System (FYPMS). It is of medium priority as it enhances user productivity by providing efficient access to relevant information.

**4.23.2 Stimulus/Response Sequences**

Stimulus: User accesses the search interface.

Response: System presents options for entering search queries.

Stimulus: User enters a search query for specific projects or users.

Response: System retrieves and displays search results matching the query.

**4.23.3 Functional Requirements**

REQ-1: The system shall provide a search interface accessible to users.

REQ-2: Users shall be able to search for projects based on criteria such as project title, description, supervisor, or group members.

REQ-3: Users shall be able to search for users based on criteria such as name, email, or role.

REQ-4: The search functionality shall support partial matching and filtering options to refine search results.

REQ-5: Search results shall be presented in a clear and organized format for easy navigation and selection.

**4.24 System Feature 24:**

**Help and Support Documentation for Users**

**4.24.1 Description and Priority**

This feature provides help and support documentation for users of the Final Year Project Management System (FYPMS). It is of medium priority as it assists users in navigating the system and understanding its features.

**4.24.2 Stimulus/Response Sequences**

Stimulus: User accesses the help and support section.

Response: System presents options for accessing user documentation and support resources.

Stimulus: User selects a specific help topic or documentation.

Response: System displays relevant documentation or support materials.

**4.24.3 Functional Requirements**

REQ-1: The system shall provide access to comprehensive help and support documentation for users.

REQ-2: Help documentation shall cover topics such as system navigation, feature functionalities, troubleshooting, and frequently asked questions (FAQs).

REQ-3: The help and support section shall include user guides, tutorials, and reference materials in various formats (e.g., text, video).

REQ-4: Users shall be able to search and browse help topics efficiently within the system.

REQ-5: The help and support documentation shall be regularly updated to reflect changes and improvements in the system.

1. **Other Non-Functional Requirements:**

**5.1 Performance Requirements:**

The performance requirements for the Final Year Project Management System (FYPMS) are as follows:

**Response Time:**

The system shall respond to user interactions (e.g., page loading, data retrieval) within 2 seconds under normal operating conditions.

Rationale: Prompt response times enhance user experience and productivity, ensuring efficient usage of the system.

**Database Query Performance:**

Database queries executed by the system shall complete within 1 second for commonly performed operations such as project searches and user profile updates.

Rationale: Fast database query performance ensures timely retrieval and manipulation of data, contributing to overall system responsiveness.

**Scalability:**

The system architecture shall be designed to scale horizontally to accommodate an increase in user base or data volume.

Rationale: Scalability ensures that the system can handle growth in usage and data without sacrificing performance, allowing for seamless expansion as the user base grows.

**Availability:**

The system shall maintain at least 95% uptime availability all the time.

Rationale: High availability ensures that the system is accessible to users whenever needed, minimizing disruptions to project management activities.

**5.2 Safety Requirements:**

The safety requirements for the Final Year Project Management System (FYPMS) are as follows:

**Data Security:**

The system shall implement robust data security measures, including encryption of sensitive information such as user credentials and project data, to prevent unauthorized access and data breaches.

**Backup and Recovery:**

The system shall regularly backup project data and configurations to ensure data integrity and facilitate recovery in case of system failures or disasters in the Database.

**Access Control:**

The system shall enforce role-based access control to restrict user privileges and ensure that users only have access to functionalities and data relevant to their roles.

**Error Handling:**

The system shall implement robust error handling mechanisms to detect and recover from errors gracefully, preventing system crashes and data corruption.

**5.3 Security Requirements:**

The security requirements for the Final Year Project Management System (FYPMS) are as follows:

**User Authentication:**

The system shall implement strong user authentication mechanisms to verify the identity of users accessing the system.

**Access Control:**

The system shall enforce role-based access control to restrict access to sensitive functionalities and data based on user roles and permissions.

**Data Encryption:**

The system shall encrypt sensitive data both at rest and in transit to prevent unauthorized access or data breaches.

**Data Integrity:**

The system shall ensure data integrity by implementing measures to detect and prevent unauthorized modification or tampering of data.

**Security Auditing:**

The system shall maintain audit logs of user activities and system events to facilitate security monitoring and forensic analysis in the Database.

**5.4 Software Quality Attributes:**

The software quality attributes for the Final Year Project Management System (FYPMS) are as follows:

**Usability:**

The system shall prioritize usability to ensure that users can easily navigate the interface and perform tasks efficiently.

**Reliability:**

The system shall exhibit high reliability to minimize system failures and ensure consistent performance.

**Maintainability:**

The system shall be designed for ease of maintenance and future enhancements, allowing developers to make changes efficiently.

**Scalability:**

The system shall be scalable to accommodate growing user bases and increasing data volumes without sacrificing performance.

**Security:**

The system shall prioritize security to protect user data and prevent unauthorized access or breaches.

**5.5 Business Rules:**

**Role-Based Access Control:**

Only authenticated users with specific roles are authorized to perform certain functions within the system.

For example, only FYP Committee members can create evaluation panels, while only project supervisors can submit project reviews.

**Supervisor Limitations:**

Each project supervisor can oversee a maximum number of Final Year Projects (FYPs) to ensure fair workload distribution and effective supervision.

The system shall enforce this limitation to prevent supervisors from being overloaded with projects.

**Evaluation Deadlines:**

Panel members are required to submit their evaluations for assigned FYPs within the specified deadline set by the FYP Committee.

Late submissions may incur penalties, affecting the overall evaluation process and project outcomes.

**Project Registration:**

Students are required to register their project groups within a specified timeframe at the beginning of each academic semester.

Failure to register within the designated period may result in exclusion from the final year project program.

**Group Membership:**

Students can only be members of one project group at a time to avoid conflicts of interest and ensure fair project evaluation.

Group leaders have the authority to manage group membership, including adding or removing members with the consent of all group members.

**Evaluation Criteria:**

The evaluation criteria for assessing FYPs are predefined and communicated to panel members in advance.

Panel members are required to evaluate projects based on these criteria, ensuring consistency and fairness in the evaluation process.

1. **Diagrams:**