

Requirement & Design Specification

**Student Project Portal System (SPPS)**

**Version: 3.0**

– Hanoi, September 2023 –

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# **Overview**

## **Overall Description**

### **1.1 Product Overview**

The context diagram of our SPP project management software illustrates its external interactions with administrators, management instructors, and students. This diagram visually represents the data flows, demonstrating the intricate workings of the SPP system as teachers and students engage with the program. Through this diagram, we can observe how teachers and students utilize the system to manage projects efficiently. The user-friendly SPP Project Management System plays a crucial role in enhancing student project management, offering robust features and intuitive tools for optimal project supervision and coordination.

### **1.2 Business Rules**

| **ID** | **Rule Definition** |
| --- | --- |
| BR-01 | Students must submit their project and assignments before the assigned deadlines. Late submissions will result in a deduction of marks. |
| BR-02 | Assignments must be delivered through the online system; physical submissions are not accepted. |
| BR-03 | Students are allowed to request late submission with a valid reason. However, there are specific time frames. |
| BR-04 | Students may submit assignments late, but points will be deducted at a flat rate for each day late. |
| BR-05 | Students will be graded based on the quality of their assignments and adherence to deadlines. |
| BR-06 | Each member of the group is expected to contribute equally. Assessments should include an evaluation of individual contributions. |
| BR-07 | Project and assignment must have a size less than 50MB. |
| BR-08 | Students will receive feedback within two weeks of assignment submission. |
| BR-09 | Students can request re-submission within assigned deadlines of receiving feedback, and the highest possible grade for re-submissions is capped at a certain percentage. |
| BR-10 | Assignment scores must not be publicly disclosed but should be accessible only to the individual student. |
| BR-11 | Ensure that student personal data is secure and complies with data protection regulations. |

## 

## **User Requirements**

### **2.1 Actors**

|  |  |  |
| --- | --- | --- |
| **#** | **Actor** | **Description** |
| 1 | Guest | Users who have not logged in the system. |
| 2 | Registered User | Users who can login and access the system's features. |
| 3 | Administrator | Users who can manage users, subjects and system settings. |
| 4 | Subject Manager | Users who can manage classes, subject settings, subject assignments. |
| 5 | Class Manager | Users who can manage assigned classes,class issue settings, class students, projects, project members. |
| 6 | Project Mentor | Users who can manage assigned projects, evaluate project submisions. |
| 7 | Team Leader | Users who can manage project milestones, project issue settings, and submit assignment results. |
| 8 | Student | Users who can manage project issues, manage work updates, view assignment details. |

### 

### **2.2 Use Cases**

#### **a. Use Case Diagram(s)**

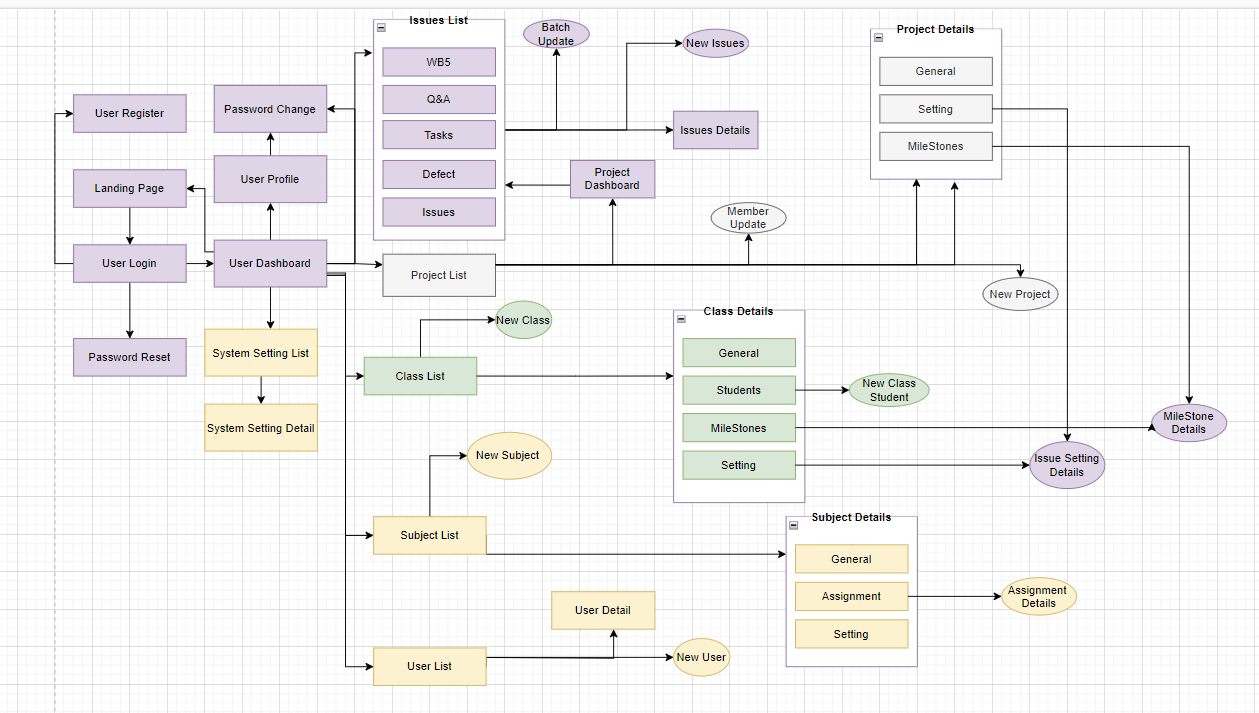
|  |
| --- |
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|  |
|  |

#### **b. Descriptions**

|  |  |  |  |
| --- | --- | --- | --- |
| **ID** | **Use Case** | **Actors** | **Use Case Description** |
| UC-1 | View Landing Page | Guest | Users first see this page. |
| UC-2 | Register User | Guest | Register new user to access feature of system |
| UC-3 | Login System | Registered User | Provide authentication and authorization for registered user |
| UC-4 | Login With Google | Registered User | Provide authentication and authorization by Google for registered user |
| UC-5 | Reset Password | Registered User | Reset and create new password in case of forgetting the old one |
| UC-6 | View Dashboard | Registered User | Users can see the information and statistics. |
| UC-7 | Logout | Registered User | Users who logged in can logout the system. |
| UC-8 | View Profile | Registered User | Users who logged in can view his/her profile. |
| UC-9 | Update Profile | Registered User | Users can update their profile. |
| UC-10 | Change Password | Registered User | Users can change their password. |
| UC-11 | View User List | Admin | Admin can see a list of all users. |
| UC-12 | View User Detail | Admin | Admin clicks on each user in the list to see details. |
| UC-13 | Change Status User | Admin | Admin can change the status of the user's account. |
| UC-14 | Update User Info | Admin | Admin can update user information. |
| UC-15 | View Subject List | Admin | Admin can see a list of all subjects. |
| UC-16 | View Subject Detail | Admin, Subject Manager | Admin and subject manager clicks on each subject in the list to see detail. |
| UC-17 | Add Subjects | Admin, Subject Manager | Admin and subject manager can add new subjects. |
| UC-18 | Update Subjects | Admin, Subject Manager | Admin and subject manager can update subject information. |
| UC-19 | Change Status Subjects | Admin, Subject Manager | Admin and subject manager can activate or deactivate the subject. |
| UC-20 | View Setting List | Admin | Admin can see a list of all system settings. |
| UC-21 | View Setting Detail | Admin | Admin clicks on each setting in the list to see detail. |
| UC-22 | Add System Settings | Admin | Admin can add new settings. |
| UC-23 | Update System Settings | Admin | Admin can update settings. |
| UC-24 | Change Status System Settings | Admin | Admin can activate or deactivate. |
| UC-25 | View Subject Assignment List | Admin, Subject Manager | The Subject Manager can see a list of subject assignments. |
| UC-26 | Add Subject Assignment | Admin, Subject Manager | The Subject Manager can add new subject assignments. |
| UC-27 | Update Subject Assignment | Admin, Subject Manager | The Subject Manager can update subject assignments. |
| UC-28 | Delete Subject Assignment | Admin, Subject Manager | The Subject Manager can delete subject assignments. |
| UC-29 | View Assignment Details | Admin, Subject Manager, Student | The Subject Manager and students can delete subject assignments. |
| UC-30 | View List Subject Settings | Admin, Subject Manager | The Subject Manager can see a list of subject settings. |
| UC-31 | View Subject Setting Details | Admin, Subject Manager | The Subject Manager can see subject settings details. |
| UC-32 | Add Subject Setting | Admin, Subject Manager | The Subject Manager can add a new subject setting. |
| UC-33 | Update Subject Setting | Admin, Subject Manager | The Subject Manager can update subject settings. |
| UC-34 | Change Status Subject Setting | Admin, Subject Manager | The Subject Manager can active/deactive subject settings. |
| UC-35 | View List Classes | Admin, Subject Manager | The Subject Manager can see a list of classes. |
| UC-36 | Add New Class | Admin, Subject Manager | The Subject Manager can add a new class. |
| UC-37 | Update Class Details | Admin, Subject Manager | The Subject Manager can update classes. |
| UC-38 | Update Class Assignment | Admin, Subject Manager | The Subject Manager can update class assignments. |
| UC-39 | Change Status Class | Admin, Subject Manager | The Subject Manager can start or cancel class. |
| UC-40 | View List Assigned Classes | Admin, Class Manager | Class Manager can see assigned classes |
| UC-41 | Update Class Description | Admin, Class Manager | Class Manager can update class description. |
| UC-42 | Update Class Assignments | Admin, Class Manager | Class Manager can change information of class assignments |
| UC-43 | View List Project Member | Admin, Class Manager | Class Managers can view the list of members assigned to a specific project. |
| UC-44 | Remove Member | Admin, Class Manager | Class Managers can remove members from a class or project. |
| UC-45 | Import Member From Excel | Admin, Class Manager | Class Managers can import member information from an Excel file. |
| UC-46 | Assign Member As Leader | Admin, Class Manager | Class Managers can assign a member as the leader of a project or class. |
| UC-47 | Move Member To Other Project | Admin, Class Manager | Class Managers can transfer a member from one project or class to another. |
| UC-48 | Update Project's Member With Note | Admin, Class Manager | Class Managers can update a project's member records with relevant notes. |
| UC-49 | View List Issue Settings | Admin, Class Manager, Team Leader | Class Managers, and Team Leaders can view a list of issue settings. |
| UC-50 | Add Issue Setting | Admin, Class Manager, Team Leader | Class Managers, and Team Leaders can add new issue settings. |
| UC-51 | Update Issue Settings | Admin, Class Manager, Team Leader | Class Managers, and Team Leaders are authorized to modify and update existing issue settings as needed. |
| UC-52 | Change Status Issue Settings | Admin, Class Manager, Team Leader | Class Managers, and Team Leaders can modify the status of issue settings. |
| UC-53 | View Issue Setting Details | Admin, Class Manager, Team Leader | Class Managers, and Team Leaders can access specific details of issue settings. |
| UC-54 | View List Project | Admin, Class Manager | Class Managers can view a list of projects. |
| UC-55 | Add Project | Admin, Class Manager | Class Managers can add new projects. |
| UC-56 | View Project Details | Admin, Class Manager | Class Managers can access and review project details. |
| UC-57 | Change Status Project | Admin, Class Manager, Project Mentor | Class Managers, and Project Mentors can change the status of a project. |
| UC-58 | Delete Inactive Project | Admin, Class Manager | Class Managers can delete inactive projects. |
| UC-59 | Update Project Details | Admin, Class Manager, Project Mentor | Class Managers, and Project Mentors can update project details. |
| UC-60 | View List Class Student | Admin, Class Manager | Class Manager can see list of student that has signed up to the class |
| UC-61 | Add Student To Class | Admin, Class Manager | Subject Manager can add student to the specific class he/shemanage |
| UC-62 | View Student Details | Admin, Class Manager | Class Managers can access detailed information about students. |
| UC-63 | Update Class Student Status With Note | Admin, Class Manager | Class Managers can update the status of class students, including adding notes as needed. |
| UC-64 | Import List Class Student | Admin, Class Manager | Class Managers can import a list of class students from excel. |
| UC-65 | Export List Class Student | Admin, Class Manager | Subject Manager can export list class student to excel file |
| UC-66 | View List Assigned Projects | Admin, Project Mentor | Project Mentor can access a list of projects assigned to students. |
| UC-67 | View Project Details | Admin, Project Mentor | Project Mentor can access details of specific projects. |
| UC-68 | Change Team Leader | Admin, Project Mentor | Project Mentors can change the team leader for a project. |
| UC-69 | View Submission | Admin, Project Mentor | Project Mentors can view student submissions. |
| UC-70 | Evaluate Submission | Admin, Project Mentor | Project Mentors can evaluate student submissions. |
| UC-71 | Download Submission | Admin, Project Mentor | Project Mentors can download student submissions. |
| UC-72 | Reject Submission | Admin, Project Mentor | Project Mentors can reject student submissions. |
| UC-73 | Submit Assignment Result | Team Leader | Team Leader can submit assignment results. |
| UC-74 | View List Milestones | Team Leader | Team Leader can view a list of project milestones. |
| UC-75 | Add Milestone | Team Leader | Team Leader can add project milestones. |
| UC-76 | Update Milestone | Team Leader | Team Leader can update project milestones. |
| UC-77 | Delete Pending Milestone | Team Leader | Team Leader can delete pending project milestones. |
| UC-78 | View List Issues | Student | Students can view a list of project issues. |
| UC-79 | Add Issue | Student | Students can add project issues. |
| UC-80 | Import Issue From Excel | Student | Students import project issues from an Excel file. |
| UC-81 | Export Issue To Excel | Student | Students can export project issues to an Excel file. |
| UC-82 | Batch Update Issue | Student | Students can perform batch updates on project issues. |
| UC-83 | Update Issue | Student | Students can update project issues. |
| UC-84 | View List Work Updates | Student | Students view a list of work updates. |
| UC-85 | Delete Work | Student | Students can delete work records. |
| UC-86 | Update Work | Student | Students can update work records. |
| UC-87 | Add Work Update | Student | Students can add work updates. |
| UC-88 | View Work Update Details | Student | Students access detailed information on work updates. |
| UC-89 | View List Assignment Milestones | Student | Students can view a list of assignment milestones. |
| UC-90 | View Evaluation | Student | Students can access and view their and other evaluations. |
| UC-91 | View Team Submission | Student | Students can view team submissions. |
| UC-92 | Gitlab Synchronization | Class Manager, Project Mentor, Team Leader, Student | Users synchronize data with Gitlab for project management purposes. |

## **3. Overall Functionalities**

### **3.1 Screens Flow**



### **3.2 Screen Descriptions**

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Feature** | **Screen** | **Description** |
| 1 | User and Access Management | Landing Page | * The entry point to the platform, offering an engaging introduction to its purpose. |
| 2 | User and Access Management | User Register | * Allows new users to sign up for the platform by providing necessary information. |
| 3 | User and Access Management | User Login | * Provides a secure login process for registered users to access their accounts. |
| 4 | User and Access Management | Password Reset | * Enables users to reset their forgotten passwords, ensuring account security. |
| 5 | User and Access Management | User Profile | * Allows users to view and edit their personal information and settings. |
| 6 | User and Access Management | Password Change | * Permits users to change their existing passwords for security reasons. |
| 7 | User and Access Management | Dashboard | * A personalized space displaying key data, notifications, and insights. |
| 8 | System Setting Management | Setting List | * Offers an overview of various settings available on the platform. |
| 9 | System Setting Management | Setting Detail | * Allows users to configure and modify specific settings in detail. |
| 10 | User and Access Management | User List | * Provides a list of all users registered on the platform. |
| 11 | User and Access Management | New User | * A screen for administrators to add new users to the system. |
| 12 | User and Access Management | User Detail | * Offers detailed information about a specific user. |
| 13 | Subject Management | Subject List | * Displays a list of subjects or topics on the platform. |
| 14 | Subject Management | New Subject | * Allows the addition of new subjects or topics. |
| 15 | Subject Management | Subject Detail | * Subject Detail: Provides comprehensive information about a specific subject. |
| 16 | Subject Management | Subject Setting Detail | * Allows customization of settings for a particular subject. |
| 17 | Subject Management | Assignment Detail | * Displays detailed information about assignments, tasks, or projects. |
| 18 | Class Management | Class List | * Lists all classes or groups on the platform. |
| 19 | Class Management | New Class | * Enables the creation of a new class or group. |
| 20 | Class Management | Class Detail | * Offers a comprehensive view of a specific class or group. |
| 21 | Class Management | New Class Student | * Allows the addition of students to a class. |
| 22 | Project Management | Project Allocation | * Manages the allocation of projects to users or groups. |
| 23 | Project Management | New Project | * Provides the ability to create new projects on the platform. |
| 24 | Project Management | Project List | * Lists all projects available on the platform. |
| 25 | Project Management | Project detail | * Offers detailed insights into a specific project. |
| 26 | Issue Management | Issue Setting List | * Displays available issue settings or configurations. |
| 27 | Issue Management | Issue Setting Detail | * Allows customization of issue settings in detail. |
| 28 | Project Management | Milestone List | * Lists all milestones achieved or in progress. |
| 29 | Project Management | Milestone Detail | * Provides detailed information about a specific milestone. |
| 30 | Synchronization | Group Label Sync | * Manages synchronization of labels for groups. |
| 31 | Synchronization | Group Milestone Sync | * Manages synchronization of milestones for groups. |
| 32 | Synchronization | Project Label Sync | * Manages synchronization of labels for projects. |
| 33 | Synchronization | Project Milestone Sync | * Manages synchronization of milestones for projects. |
| 34 | Synchronization | Project Issue Sync | * Manages synchronization of issues for projects. |

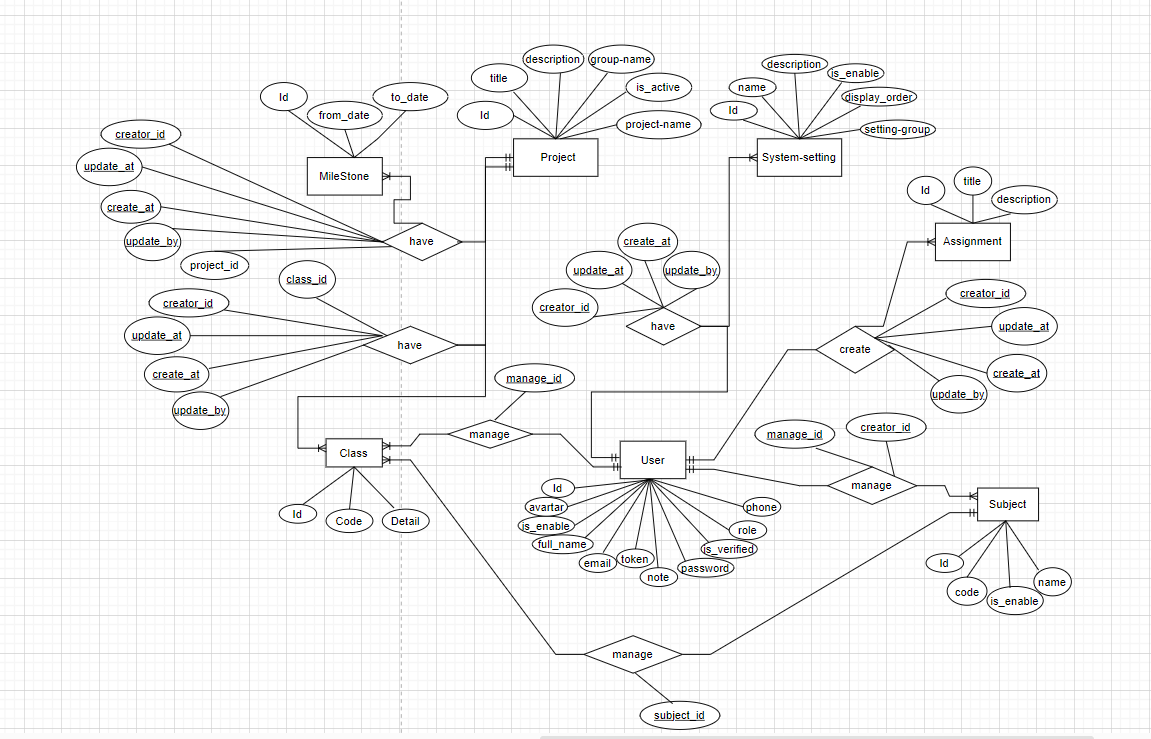
### **3.3** [**Screen Authorization**](#_heading=h.4d34og8)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Screen** | **Admin** | **Subject Manager** | **Class Manager** | **Project Mentor** | **Team Leader** | **Student** |
| Landing Page | x | x | x | x | x | x |
| User Register | x | x | x | x | x | x |
| User Login | x | x | x | x | x | x |
| Password Reset | x | x | x | x | x | x |
| User Profile | x | x | x | x | x | x |
| Password Change | x | x | x | x | x | x |
| Dashboard | x | x | x | x | x | x |
| Setting List | x |  |  |  |  |  |
| Setting Detail | x |  |  |  |  |  |
| User List | x |  |  |  |  |  |
| New User | x |  |  |  |  |  |
| User Detail | x |  |  |  |  |  |
| Subject List | x | x |  |  |  |  |
| New Subject | x | x |  |  |  |  |
| Subject Detail | x | x |  |  |  |  |
| Subject Setting Detail | x | x |  |  |  |  |
| Assignment Detail | x | x | x |  | x | x |
| Class List | x | x |  |  |  |  |
| New Class | x | x |  |  |  |  |
| Class Detail | x | x | x |  |  |  |
| New Class Student | x | x | x |  |  |  |
| Project Allocation | x | x | x |  |  |  |
| New Project | x | x | x |  |  |  |
| Project List | x | x | x | x |  |  |
| Project detail | x | x | x | x | x | x |
| Issue Setting List | x | x | x |  | x |  |
| Issue Setting Detail | x | x | x |  | x |  |
| Milestone List | x | x | x |  | x |  |
| Milestone Detail | x | x | x |  | x | x |
| Group Label Sync | x | x | x |  | x |  |
| Group Milestone Sync | x | x | x |  | x |  |
| Project Label Sync | x | x | x |  | x |  |
| Project Milestone Sync | x | x | x |  | x |  |
| Project Issue Sync | x | x | x |  | x |  |

### **3.4 Non-UI Functions**

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Feature** | **System Function** | **Description** |
| 1 | Verification | Send Email Verification | After registering, send an email which contains a link to verify for the user. Without verification, users can not use any feature of this system. |
| 2 | Authentication | Token-based Authentication | After signing in, users will access this system with better security by JWT security. |
| 3 | Authorization | Role and Permission Management | Define user roles and permissions to provide access to system features. |

### **3.5 Entity Relationship Diagram**



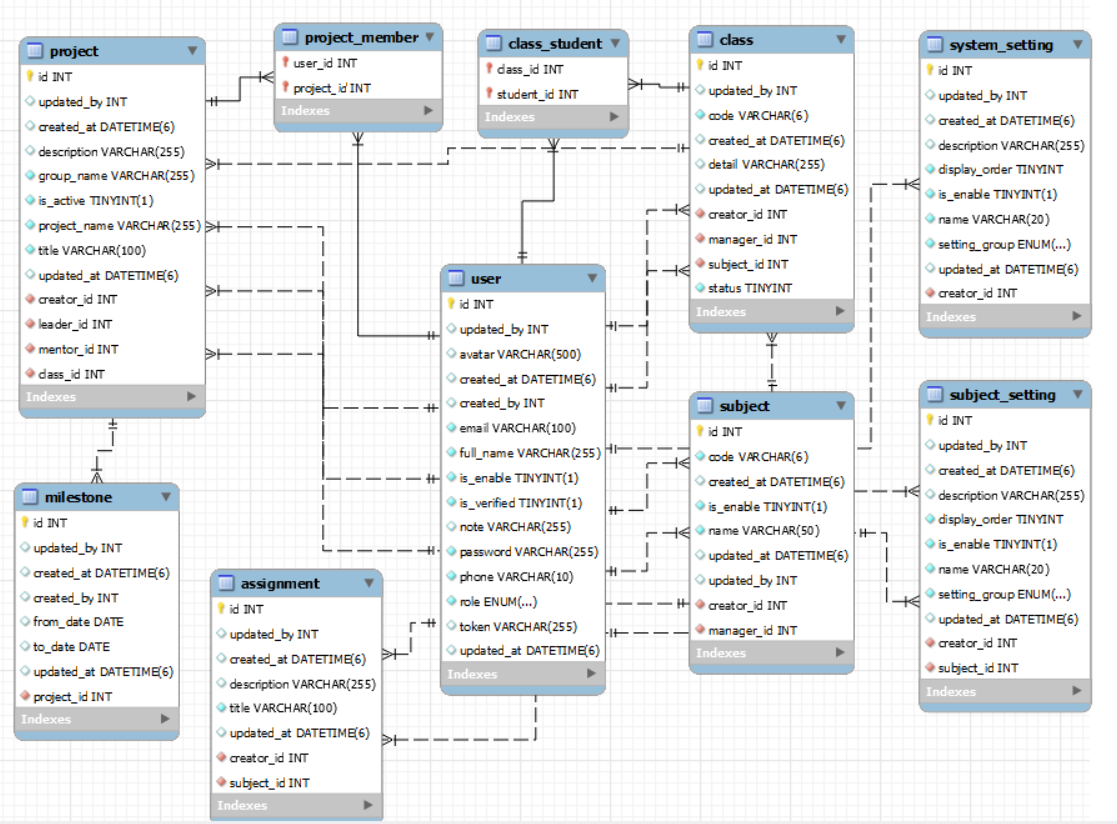
|  |  |  |
| --- | --- | --- |
| **No** | **Entity** | **Description** |
| 1 | User | A basic entity in an application's database structure that represents an individual user interacting with the system. This table stores important user information and forms the basis for authentication, role assignment to individuals, authorization, and user personalization. |
| 2 | Subject | An entity with the role of subject manager, representing the user who manages the assigned subject. |
| 3 | Class | An entity with the role of class manager, representing the user who manages the assigned class and is the lecture |
| 4 | Project | Projects assigned by the class manager to each group in the class are participated in by student members in the class. |
| 5 | Milestone | Milestones are for projects that have a start time and an end time and can be regularly updated by the project creator. |
| 6 | Assignment | Assignments are assigned to subjects or classes and are created by the subject manager or class manager |
| 7 | System-setting | Consists of semesters, permitted email domains and all the system roles |

## 

## **4. System High Level Design**

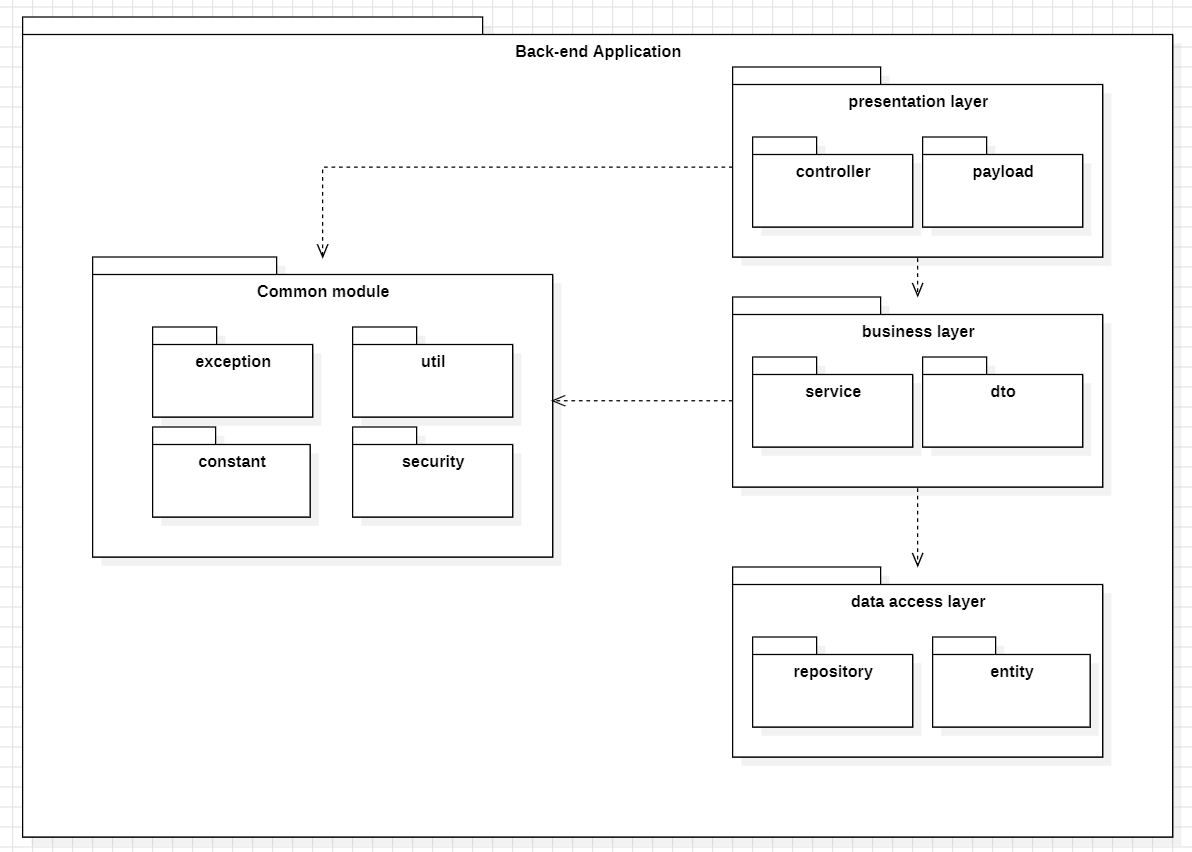
### **4.1 Database Design**

#### **4.1.1. Database Schema**



### **4.2 Code Packages**

#### **4.2.1. Package Diagram**



#### **4.2.1. Package descriptions**

|  |  |  |
| --- | --- | --- |
| **No** | **Package** | **Description** |
| 01 | controller | Contains classes responsible for handling HTTP requests and managing the application's request-routing logic. |
| 02 | exception | Houses classes and exception types used to handle and manage exceptional situations in the application |
| 03 | payload | Contains classes used for transferring data between controllers, services, or other components in the application |
| 04 | constant | Stores classes or files holding constants and fixed values used throughout the application. |
| 05 | entity | Contains classes representing data objects or database tables. These classes are typically mapped to the database. |
| 06 | service | Holds the business logic of this application. |
| 07 | serviceImpl | Contains the implementations of the service interfaces. These classes implement the methods defined in the service interfaces and contain the specific business logic of the application. |
| 08 | security | Encapsulates security-related components that safeguard the application against a wide range of security threats and vulnerabilities. |
| 09 | util | Contains utility classes and methods that provide common functionality used across different parts of the application. Here is data encoded and encrypted. |
| 10 | repository | Contains classes responsible for database interaction, such as CRUD operations on entities. These classes often use Spring Data JPA or a similar technology for data access. |

# **IV. Appendix**

## **1. Assumptions & Dependencies**

AS-1: The project team will have the necessary skills and experience to complete the project successfully.

AS-2: The stakeholders will be available to provide timely feedback and approvals.

AS-3: The project will not be significantly impacted by external factors, such as changes in technology.

AS-4: faculty and administrative staff are adequately trained to use the new student management system effectively.

AS-5: This system will comply with all applicable information security laws and regulations.

AS-6:

DE-1: The project is dependent on the successful integration of student data from various sources, such as enrollment systems, course registration, and grading systems.

DE-2: Dependencies exist on upgrading hardware infrastructure to support the new software. This includes server capacity and network improvements.

DE-3: The training of faculty and staff depends on the completion of software development. Delays in development will affect the training schedule.

DE-4: Dependencies exist on timely security audits to ensure the protection of student data. Delays in security audits may impact project timelines.

## **2. Limitations & Exclusions**

LI-1: The project has a limited time of 3 months(one semester) to implement the project student management system. There will be no resources to extend this period.

LI-2: The project uses limited resources, includes 5 development members and costs no money.

EX-1: Online Payment Feature: The project does not include an online payment feature for tuition fees or project fees.

EX-2: Integration with University Fee System: The project does not deeply integrate with the university's tuition fee system. Tuition fees will be managed through a different system.

EX-3: Advanced System Features: The project does not encompass advanced features like study note management or student event management. These features may be considered for future projects.

## **3. Messages List**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **#** | **Message code** | **Message Type** | **Context** | **Content** |
| 1 | MSG01 | In line | There is not any search result | No search result. |
| 2 | MSG02 | Pop-up, with red text | Input-required fields are empty | The \* field is required. |
| 3 | MSG03 | Toast message | Updating asset(s) information successfully | Update asset(s) successfully. |
| 4 | MSG04 | Toast message | Adding new asset successfully | Add assets successfully. |
| 5 | MSG05 | Toast message | Confirming email of asset hand-over is sent successfully | A confirmation email has been sent to {email\_address}. |
| 6 | MSG06 | Toast message | Resetting asset information successfully | Return asset(s) successfully. |
| 7 | MSG07 | Toast message | Deleting asset information successfully | Delete asset(s) successfully. |
| 8 | MSG08 | Pop-up, with red text | Input value length > max length | Exceed max length of {max\_length}. |
| 9 | MSG09 | In line | Username or password is not correct when clicking sign-in | Incorrect username or password. Please check again. |
| 10 | MSG10 |  |  |  |