1. Introduction

The proposed system is a comprehensive Student Information Management System (SDMS) designed to streamline the interaction between users (Students and Administrators) and the system's database. The system provides dedicated workflows for user registration, personal data updating, fee management, academic grade tracking, and course administration. The SDMS serves as a unified portal to simplify core administrative and academic processes.

2. Objectives

The system aims to achieve the following key objectives:

Ensure Data Accuracy: Provide a mechanism to validate the correctness of input data before it is saved to the database.

Facilitate Record Management: Enable users to efficiently modify their own records (Students) or any student's record (Administrators).

Provide Academic Transparency: Allow students to access and view their current and historical term grades, and generate a complete transcript.

Simplify Financial Transactions: Offer a clear and secure method for students to check their outstanding fee balances and complete electronic payments.

3. Functional Requirements

Functional requirements describe the specific functions and tasks the system must perform, based on the provided Activity Diagrams:

User Management and Registration:

The system must allow new users to register and existing users to log in.

The system must differentiate access paths based on the user's role (Student or Admin).

Student Information Editing:

The Admin must be able to modify any student information in the system (Edit Everything).

The Student must be able to edit only their own information (e.g., contact info and password).

The system must include a process for checking data validity before saving changes, providing error messages for invalid input.

Academic Grade Management:

The system must allow students to select and view grades for the current term or past terms (including a complete transcript).

The system must provide an option to print or generate a PDF document of the requested grades.

Fee and Payment Management:

The system must allow the student to check for any outstanding fee balance.

The system must support multiple payment options (e.g., Credit Card or Online Banking).

The system must be able to process the payment, update the student record, and generate a receipt upon successful payment.

Course Management:

The system must allow for administrative course actions, such as creating or updating existing courses.

The system must support course searching by multiple criteria (e.g., credit hours or name).

The system must allow students to choose and exchange courses.

4. Non-Functional Requirements

Non-functional requirements describe the quality attributes that ensure the system's effectiveness and reliability:

Security: The system must incorporate robust authentication mechanisms (login) to ensure users only access the functions permitted by their role.

Reliability: The system must ensure that database updates and financial transactions are processed correctly, with a defined retry mechanism in case of payment failure.

Usability: The system interfaces, particularly in the payment and grading sections, must be intuitive and clear to facilitate ease of use and task execution for all users.

Performance: The system should display large data sets (grade tables or financial statements) quickly and be highly responsive.