AADIKAVI BHANUBHAKTA CAMPUS

Vyas-01, Damauli, Tanahun

A Major Project Proposal on

RESULT आयो : A RESULT MANAGEMENT SYSTEM

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1. Introduction

The Result Management System (RMS) will be an innovative web-based application designed to accept, store, and process raw data efficiently, while also providing predictive analysis capabilities, keeping results accessible until they are needed. The RMS will feature rapid processing and result generation, significantly reducing the stress and time involved in preparing results. It will maintain a comprehensive database encompassing student, teacher, class, subject-specific marks, class-specific results, and various reports. Security will be a top priority, with robust measures in place to protect the integrity and confidentiality of academic records. The system will provide different levels of access based on user roles, with common users having restricted functions and administrators enjoying broader privileges to manage and maintain the system.

Implementing the RMS will ease administrative burdens, allowing educators to concentrate more on teaching and supporting students. The system will also minimize human errors, ensuring that students' academic records are precise and trustworthy. Easy access to academic information for students and parents will foster transparency and encourage proactive involvement in the student's educational journey. Students will be able to view, download, and print grade sheets in real-time, promoting engagement and clarity in the educational process. Automated report generation will significantly reduce administrative time and resources by efficiently producing grade sheets. In summary, the RMS will simplify result preparation and management with its swift processing, extensive data storage, high security standards, and user-friendly interface, making it an essential tool for educational institutions.

2. Problem Statement

The existing result management system has major problems with tracking student progress. It doesn't provide detailed analytics or visual tools like progress graphs, making it hard to see how students are doing over time. The reports are basic and only show final grades without highlighting strengths or weaknesses. Additionally, there is no real-time feedback, which makes it difficult to identify and address learning issues promptly.

Moreover, the system fails to give targeted progress grades. It uses a broad grading approach that doesn't reflect specific skills or areas where students need improvement.

To address these issues, the result management system needs significant enhancements which will ensure a more comprehensive understanding of student performance and foster better academic outcomes. Furthermore, investing in a comprehensive student management system can be more cost-effective in the long run compared to purchasing a standalone result management system. While the initial cost may be higher, an integrated system streamlines various administrative tasks, including attendance, grading, scheduling, and communication, thereby reducing the need for multiple disparate systems and minimizing overall operational costs.

3. Objective

3.1 Primary Objective:

- To develop an automated system to generate the result.
- To enable the comparison of previous and current results, provide graphical analysis, and offer automated feedback.

3.2 Secondary Objective:

- To provide access levels and functionalities based on user roles, granting administrators broader management capabilities while restricting common user access to essential functions only.
- To implement a feature for displaying popup notices to users for important updates and announcements.
- To design an intuitive, easy-to-navigate user interface to enhance usability for all users, regardless of their technical expertise.

4. Scope and Limitations

4.1 Scope

Our RMS Web based application will be used by schools to automate the result generation process. The Result Management System (RMS) project will develop a secure, web-based application to efficiently process and store academic data, ensuring results are readily accessible. The system will feature automated report generation, user role management, and intuitive interfaces to streamline administrative tasks and enhance transparency for students and parents. Robust security measures and easy

profile management will be integral components to safeguard data integrity and user experience.

4.2 Limitation

- Dependency on Internet Access.
- Data entry errors may lead to inaccuracies.
- Initial Cost and Time Investment.

5. Methodology

5.1 Requirement Identification

5.1.1 Study of existing system

- **Veda** : Veda (https://veda-app.com) is a cloud-based School and College MIS and Digital Learning Platform used by over 900 schools in Nepal. Its Result Management System simplifies result creation, printing, and downloading, with options for web, mobile app, or Excel upload. The system includes features for exam scheduling and past result records. Veda enhances efficiency, accessibility, and data management in educational institutions. During our visit to Barahi Awasiya Madhyamik Bidhyalaya, we observed Veda's implementation, noting its effectiveness in simplifying administrative tasks. The system's flexibility and online result publication feature were particularly noteworthy, enhancing communication and transparency between the school and parents.

- **Dynamic Academic ERP:** Dynamic Academic ERP (https://mydynamicerp.com/) is a comprehensive school management system designed to streamline administrative processes and enhance the overall efficiency of educational institutions. During our site visit to Damauli Model Academy, we had the opportunity to observe firsthand how this system operates in a real-world setting. The Dynamic Academic ERP system at Damauli Model Academy appeared to be well-integrated, offering modules for student management, grade reporting, and other essential functions. Our interactions with school staff provided valuable insights into the user experience and functionality of the system, highlighting its strengths and areas for improvement. This visit was instrumental in our study of

existing systems, as it allowed us to compare the features and performance of Dynamic Academic ERP with our proposed result management system.

5.1.2 Requirement Collection:

- **Interviews:** In our effort to understand and assess the systems utilized in educational institutions, we conducted informational interviews with school representatives. These interviews provided valuable insights into the inner workings of their systems and will inform our approach in developing a result management system.
- **Surveys and Questionnaires:** We created a Google Form questionnaire to streamline data collection from school representatives for our result management system. This survey tool enables us to gather essential information, ensuring our system is tailored to meet the specific needs of educational institutions effectively.
- **Observations:** During the interviews with school representatives, we observed a variety of systems and processes in place, including manual record-keeping and the use of basic digital tools. These observations highlighted the need for a more efficient and integrated result management system to streamline administrative tasks and improve data management.
- **Document Analysis:** We reviewed several articles related to result management systems in educational institutions. These articles provided valuable insights into the challenges faced by schools in managing results, as well as best practices and technological solutions adopted in similar settings. The analysis informed our understanding of current trends and guided the development of our proposed system.

5.1.3 Requirement Analysis

5.1.3.1 Functional requirement

The most important stakeholders along with a short outline of their most important functionalities are the following:

1. User: User of the system in three different roles: Admin, Teacher and Student.

2. Administration (Admin)

2.1 Login

2.1.1 Login into the system with username and password.

2.2 Manage Student

2.2.1 Add the student with their attributes.

2.2.2 Edit the student records.

2.2.3 Remove the student records.

2.3 Manage Teacher

2.3.1 Add the teacher with their attributes.

2.3.2 Edit the teacher records.

2.3.3 Remove the teacher records.

2.4 Manage Class

2.4.1 Add and save attributes of class

2.4.2 Edit and save attributes of class

2.4.3 Remove attributes of class

2.5 Manage Subject

2.5.1 Add and save attributes of subject

2.5.2 Edit and save attributes of subject

2.5.3 Remove attributes of subject

2.6 Manage Exam

2.6.1 Create and save attributes of exam.

2.6.2 Remove attributes of exam.

2.7 Manage Grade sheet

2.7.1 Generate grade sheet

2.7.2 Print grade sheet

2.7.3 Download grade sheet

2.8 Manage Ledger

2.8.1 View ledger

2.8.2 Download ledger

2.8.3 Print ledger

2.9 Publish result.

2.10 View Profile

2.11 View Analysis Graph.

2.12 Logout

3. Teacher

3.1 Login

3.1.1 Login into the system with username and password.

3.2 Manage Subject Marks.

3.2.1 Enter subject marks

3.2.2 Edit subject marks

3.3 Manage Ledger

3.3.1 View ledger

3.3.2 Print ledger

3.3.3 Download ledger

3.4 Manage grade sheet 3.4.1

Generate grade sheet.

3.4.2 View grade sheet.

3.4.3 Download grade sheet

3.4.4 Print grade sheet

3.5 View student details.

3.5.1 View progress graph and feedback.

3.6 View profile.

3.7 View Analysis graph 3.8 Logout

4. Student

4.1 Login

4.1.1 Login into the system with username and password.

4.2 Manage Grade sheet

4.2.1 View grade sheet.

4.2.2 Download grade sheet.

4.2.3 Print grade sheet

4.3 View profile.

4.4 View progress graph and feedback.

4.5 Logout

5.1.3.2 Non-Functional requirement

- Performance: Ensure fast response times and minimal downtime.
- Reliability: Maintain system availability and prevent data loss.
- Usability: Provide a user-friendly interface requiring minimal training.
- Scalability: Accommodate future growth and increase data volume.

- Security: Implement strong measures to protect data from unauthorized access or tampering.
- Compatibility: Ensure compatibility with various hardware and software environments.
- Maintainability: Design the system for ease of maintenance, updates and bug fixing.

5.2 Feasibility study

5.2.1 Economic Feasibility:

The economic feasibility of the Result Management System project involves a thorough analysis of the costs and benefits.

5.2.1.1 Cost Estimation

Cost Estimation depends on various factors such as the scope of the project, complexity of system requirements, development resources and implementation timeline.

S.N.	Cost Categories	Estimated Cost	Frequency
1.	Paper print cost	3000	One Time
2.	Development Charge per person Cost	5000*4=20,000	One Time
3.	DNS Hosting Cost	6000	Annual
4.	User Support and Maintenance	4000	Annual
5	Training, Minor maintenance, travel	2,000	Annual
	Total Cost	35,000	

Table No. 1: Cost Estimation

5.2.1.2 Payback Period:

Payback period refers to the time it takes to recover the initial investment made in implementing the system through the generated benefits or cost savings.

Net Annual Cash Inflow = Total Annual Cash Inflows −Total Annual Cash Outflows

= 70,000 – 17,000

= 53,000

Payback period = initial investment / net annual cash inflow

=35,000 / 53,000

= 7 months

5.2.1.3 Return On Investment

The return on investment (ROI) is a financial metric used to evaluate the profitability of an investment relative to its cost. It measures the percentage return or profit generated from an investment over a specific period of time. ROI = (Net profit / initial investment) * 100

Here,

Net profit = Net annual cash inflow (53,000) – Initial investment (35,000) = 18,000

So, ROI = Net profit / initial investment * 100

= 18,000 / 35,000 * 100

= 51.42 %

Since, ROI is positive which indicates that the project is generate in profits. Therefore, higher ROI signifies a better return relative to the initial investment.

5.2.2 Technical Feasibility

Our project Result Management System is designed into the technologies like Postgre SQL which are the most recent technologies to develop a web based system and design databases. The system is compatible with the existing hardware and software. Therefore, the project team feels it is capable of making use of the available technology to build Result Management System. Hence the system is technically feasible.

5.2.2.1 Hardware specification

- Laptop/ Desktop
- Internet

5.2.2.2 Software specification

- HTML 5
- CSS 3
- JavaScript ES14

- Bootstrap 5.3
- Next.js 14(Front-end Framework)
- Vercel 34.2.3
- Supabase 2.0.0(Back-end Framework)
- Postgre SQL 15.2
- Visual Studio Code 1.89

5.3 Tools Used

5.3.1 Analysis and Design Tools

- **Wireframing Tools:** Figma (prototypes of the user interface). This help visualize the layout, navigation, and interaction flow of the system.
- **Unified Modeling Language (UML) Tools:** Use Case Diagram, ER Diagram, State Diagram, Class Diagram, Activity Flow Diagram, etc.
- **Prototyping Tools:** Figma allow the creation of interactive and high-fidelity prototypes of the system's user interface. They facilitate user testing and feedback gathering during the design phase.
- **Version Control Systems:** Version control systems such as Git are essential for managing and tracking changes to source code, documentation, and other project artifacts. They enable collaboration, code sharing, and version tracking among the development team.
- **System Design tools:** Draw.io, Team Gantt , Figma

5.3.2 Implementation tool

- **Draw.IO**

  Draw.io is a free diagramming tool that can be used to create different types of diagrams, such as use case diagrams, ER diagrams, flowcharts, and class diagrams It is a user-friendly online diagramming tool that allows you to create various types of diagrams, charts, and visual representations. It provides a simple and intuitive interface for designing diagrams, making it easy for both beginners and experienced users.

- **Figma**

  Figma is a collaborative web-based design tool used for creating user interfaces and prototypes. It allows multiple users to work on the same design file

simultaneously, enhancing team collaboration. Key features include design systems, real-time collaboration, and advanced prototyping. Figma supports plugins and integrations with other tools.

- **GITHUB**

  GitHub is a software project management and collaboration platform for developers. It stores and shares code, lets multiple people work on the same project, and keeps track of changes to the code. It also offers project management features, facilitates continuous integration and deployment, and enables documentation of projects.

5.3.2.1 Front end tools

- **HTML5**

  HTML 5 is the latest version of the Hypertext Markup Language used for structuring and presenting content on the web. It introduces new elements, attributes, and behaviors, improving support for multimedia, graphics, and user interaction without the need for plugins.

- **CSS3**

  CSS 3 is the latest evolution of the Cascading Style Sheets language, bringing new features like animations, transitions, and improved layout capabilities to enhance web design. It provides greater flexibility and control over the presentation of web pages, making it easier to create visually engaging and responsive websites.

- **Bootstrap5.3**

  Bootstrap 5.3 is an updated version of the popular front-end framework, featuring enhanced utilities, expanded component options, and improved responsiveness for modern web development. It continues to build on its jQuery-free foundation, offering developers greater flexibility and efficiency in creating visually appealing and functional web applications.

- **Next.js14**

  Next.js 14 is a powerful React framework that introduces advanced features like server-side rendering, static site generation, and improved data fetching capabilities for enhanced performance and scalability. It simplifies the development process with built-in support for TypeScript, dynamic routing, and

an integrated image optimization tool, making it easier to build modern, highperformance web applications.

- **JavascriptES14**

  JavaScript ES14, the latest ECMAScript update, introduces new features such as the Array.prototype.toSorted method and the hashbang syntax for improved script execution. It enhances developer experience with more robust and intuitive functionalities, streamlining code efficiency and readability in modern JavaScript applications.

5.3.2.2 Back end tools

- **Supabase2.0.0**

  Supabase 2.0.0 is an upgraded open-source backend-as-a-service platform that provides real-time databases, authentication, and storage solutions with enhanced performance and scalability. This version introduces improved APIs, more robust security features, and a streamlined development workflow, making it easier to build and manage modern web and mobile applications.

- **PostgreSQL15.2**

  PostgreSQL 15.2 is a robust, open-source relational database system known for its advanced features and performance improvements. This version includes enhanced query optimization, better support for parallel processing, and improved security features, making it ideal for handling complex data workloads efficiently.

6. High level design of Proposed System

6.1 ER Diagram (Entity Relationship Diagram)

An Entity-Relationship Diagram (ERD) is a visual representation of the entities within a system and the relationships between them. It is used in database design to illustrate data structure and relationships, ensuring data integrity and coherence. ERDs help developers and stakeholders understand the system's data flow, making it easier to design, manage, and modify databases effectively.

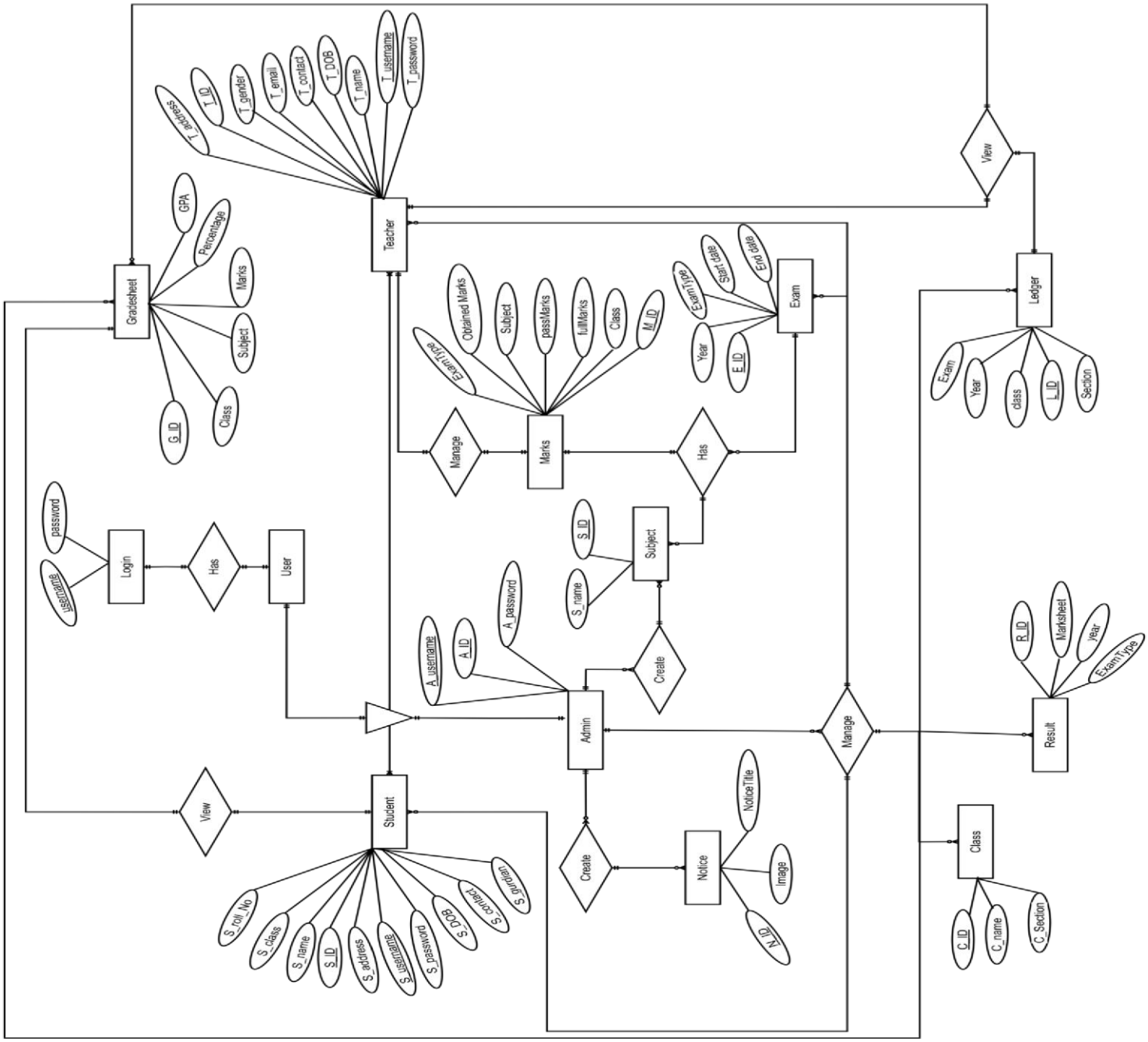


Figure 1: ER Diagram of RMS

6.2 Use Case Diagram

A use case is a detailed description of how users interact with a system to achieve a specific goal. It outlines the steps involved and defines the system's behavior under various conditions. Use cases are essential for capturing functional requirements, guiding system design, and ensuring all user interactions are considered, making them crucial for developing user-centered software solutions.

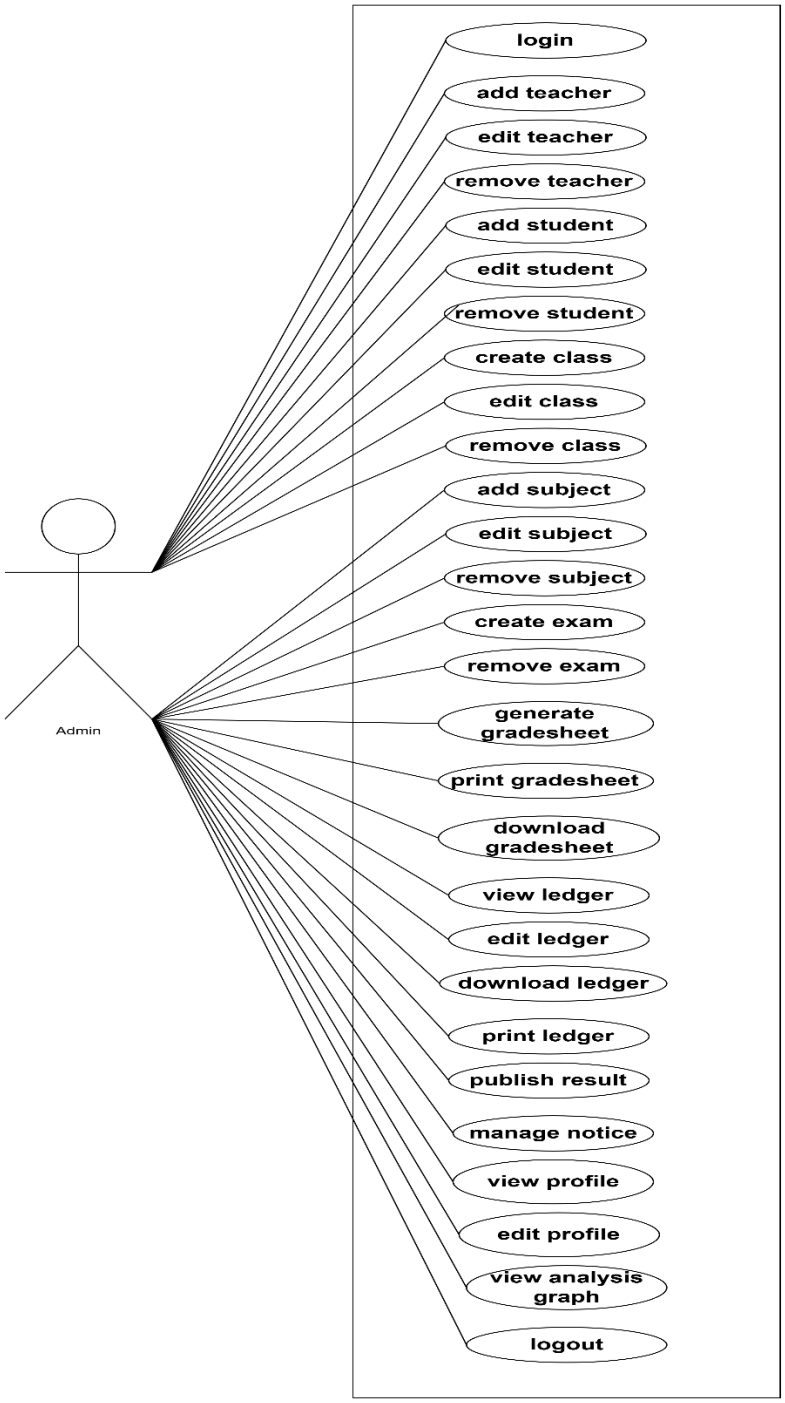


Figure 2: Use Case Diagram for Admin

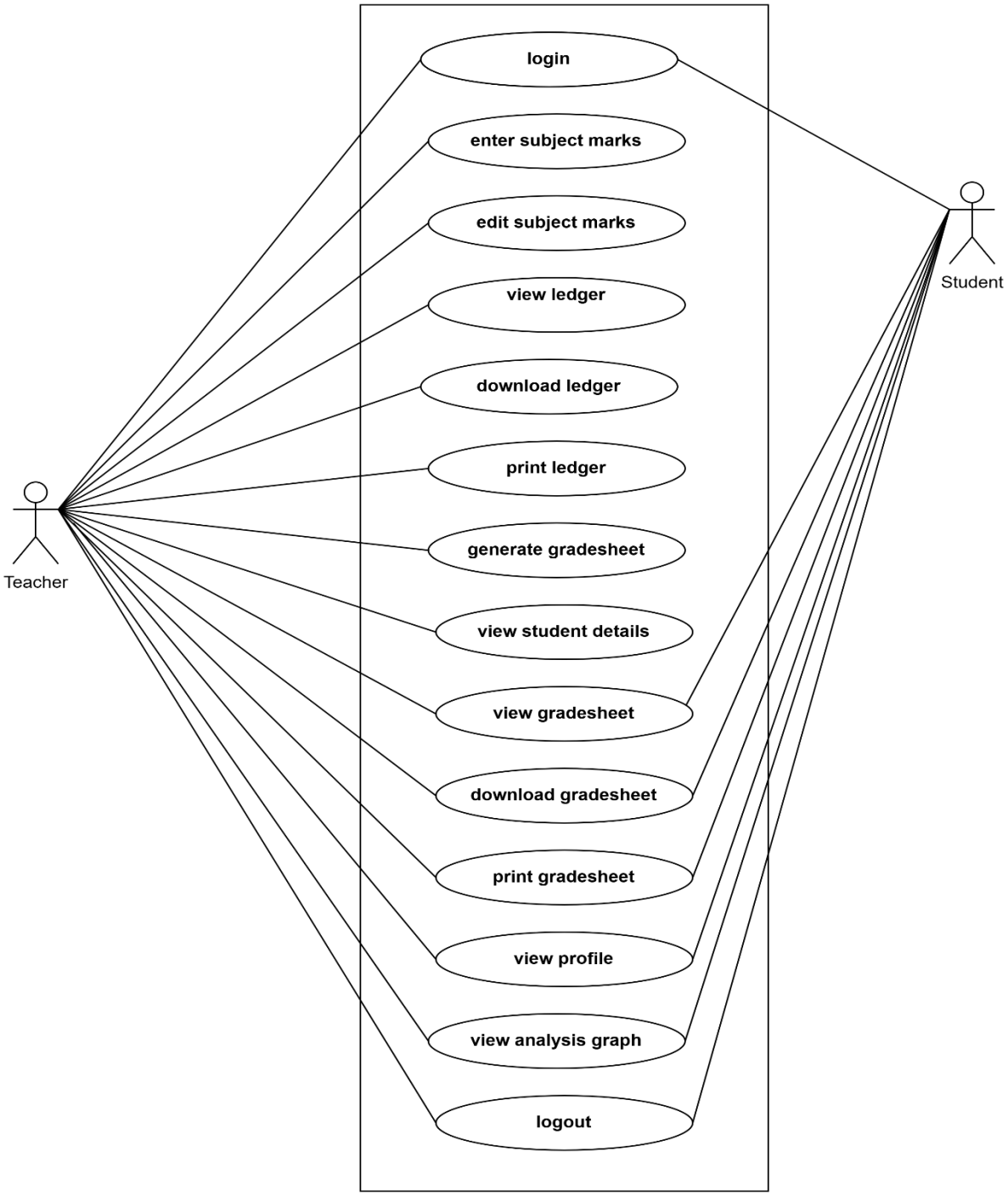


Figure 3: Use Case Diagram for Teacher and Student

6.3 System Flowchart

A system flowchart is a graphical representation of the sequence of processes, decisions, inputs, and outputs within a system. It uses standardized symbols to depict data flow and system operations, helping to visualize complex processes. System flowcharts are crucial for

analyzing, designing, and documenting systems, facilitating clear communication among developers, stakeholders, and users, and ensuring efficient system functionality.

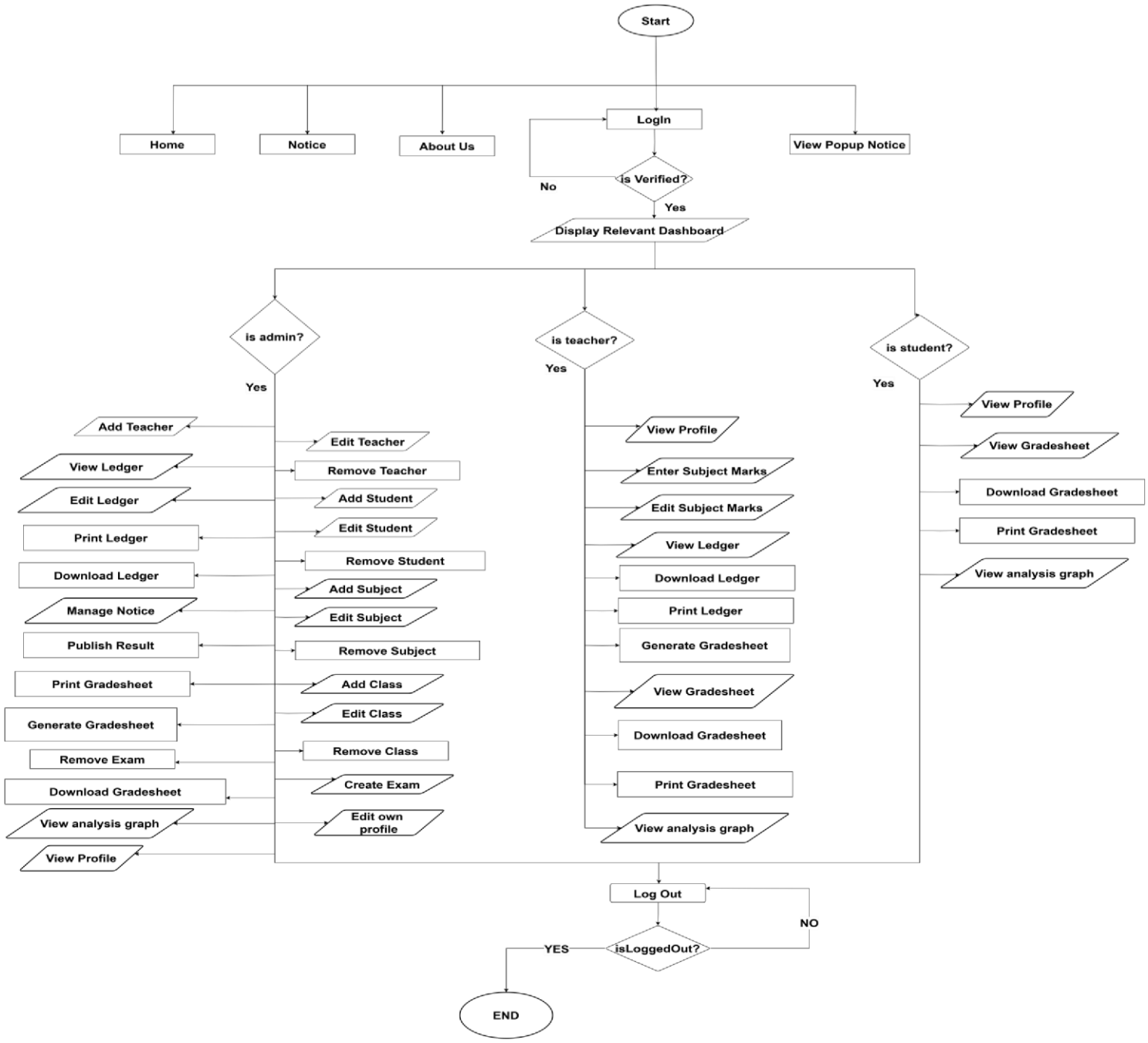
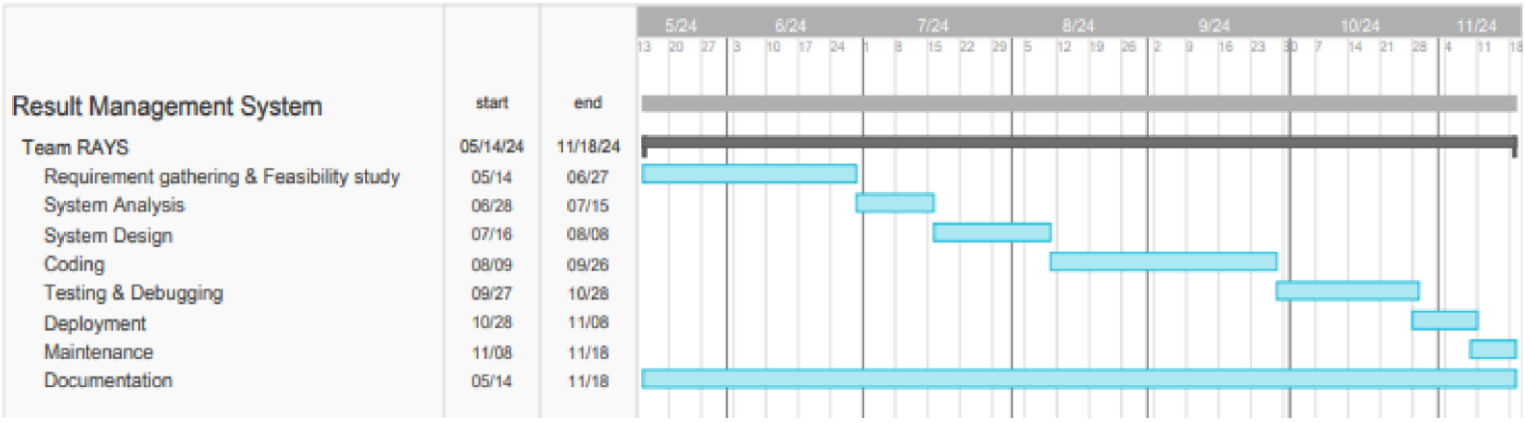


Figure 4: System Flowchart of RMS

7. Gantt chart to show the project time planning

A Gantt chart is a visual tool used in project management to plan, schedule, and track tasks and activities over time. It helps project managers and team members understand the project's timeline, dependencies, and progress.



Task	Start Date	End Date	No. of Estimated Days
Requirement gathering & Feasibility study	2024/05/14	2024/06/27	46 days
System Analysis	2024/06/28	2024/07/15	17 days
System Design	2024/07/16	2024/08/08	22 days
Coding	2024/08/09	2024/09/26	47 days
Testing and Debugging	2024/09/27	2024/10/26	29 days
Deployment	2024/10/28	2024/11/08	11 days
Maintenance	2024/11/08	2024/11/18	10 days
Documentation	2024/05/14	2024/11/18	180 days

Figure 5: Gantt Chart of RMS

8. Expected Output

The Result Management System aims to streamline and efficiently handle academic results, including accurate recording, calculation, and publication. It should provide easy access for stakeholders such as students, parents, and educators, facilitating informed decision-making and academic progress tracking.