Exam Result Management System

A PROJECT REPORT

Submitted by

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In fulfillment for the award of the degree

of

BACHELOR OF ENGINEERING

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LDRP Institute of Technology and Research, Gandhinagar

Kadi Sarva Vishwavidyalaya

2022- 2023

LDRP INSTITUTE OF TECHNOLOGY AND RESEARCH GANDHINAGAR

CE-IT Department

CERTIFICATE

This is to certify that the Project Work entitled **Exam Result Management System** has been carried out by **AKBARI YAGNIKKUMAR ASHOKBHAI (20BECE30003)** under my guidance in fulfilment of the degre e of Bachelor of Engineering in Computer Engineering Semester-6 of Kadi Sarva Vishwavidyalaya University during the academic year 2022-2023.

Prof. Hitesh Barot	Dr. Sandip Modha
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This is to certify that the Project Work entitled **Exam Result Management System** has been carried out by **GAGIYA JAIMIN HASMUKHBHAI (221SBECE30006)** under my guidanc e in fulfilment of the degre e of Bachelor of Engineering in Computer Engineering Semester-6 of Kadi Sarva Vishwavidyalaya University during the academic year 2022-2023.

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Prof. Hitesh Barot	Dr. Sandip Modha
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LDRP ITR	**LDRP ITR**

Presentation-I for Project-I

1. Name & Signature of Internal Guide	
2. Comments from Panel Members	
3. Name & Signature of Panel Members	

ACKNOWLEDGEMENT

We take this opportunity to humbly express our gratitude to all those who are concerned with our project. Working in a good environment and motivation enhances the quality of the work and that's what we got from our college through our 6th-semester project based on the web portal to show Students' marks.

We are glad to receive this golden opportunity under the expert guidance of Prof. Hitesh Barot from the Computer Engineering department of LDRP-ITR, Gandhinagar. We are sincerely indebted to him for allowing us to work on this project. His continuous guidance and help have proved to play a key role in our success in overcoming the challenges that we faced during the course of our project work.

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To conclude, we thank all the people who had directly or indirectly helped us complete our project.

AKBARI YAGNIKKUMAR ASHOKBHAI

DARJI DHRUV MANISHKUMAR

DAVE MEET ANIL

GAGIYA JAIMIN HASMUKHBHAI

ABSTRACT

Nowadays, the Exam result display method in college is manual and so complex for faculty. Faculty do Student records, Exam records, student results, and result declarations of all tasks in a manual way. so it is very time-consuming and has a high chance of errors occurring. The exam department is declaring students' results on the noticeboard, therefore some students create a crowded and noisy environment in the college. Students can see any student marks and start comparing them with other students. Our project tries to solve this problem. We are building a web portal-based System to maintain student records, Exam records, student results, and result declarations this all tasks do in an online and automatic way. Faculty just upload all Students and exam data in the system and students can see their details and result on the web portal. So, Faculty just focus on his and the student's productivity. Students can see his details, current result, and previous year's results anytime anywhere. And also faculty can see all student details, current results and previous year results on this system anytime and anywhere.

LIST OF FIGURES

LIST OF TABLES

TABLE OF CONTENTS

1 INTRODUCTION

1.1 Introduction

The purpose of this project will be to solve students' records, Exam records, students' results, and result declaration of all tasks in a simple and easy way. Faculty just upload all Students and exam data in the system and students can see their details and result on the web portal. So, Faculty just focus on his and the student's productivity. Student can see their details and result anytime anywhere. And also, faculty can see all student details and result on this system anytime and anywhere.

1.2 Aim and Objective of the work

The aim of this project is for a student can see their details and result anytime anywhere. And also, faculty can see all student details and result on this system anytime and anywhere.

1.2.1 Project Objectives:

Some objectives specify how the system should work to fulfilling the purpose of developing it. Below are the objectives of the Exam Result Management System:

- The system should provide a good user interface.
- This system is based on a web portal.
- This system should minimize complexity and should provide efficiency.
- This system should provide security as we are dealing with the databases.
- In this system Students can see their details, current result, and previous year’s result, also faculty can see any student details.

1.3 Brief Literature Review

Exam result display method in college is manual and so complex for faculty. Faculty do Student records, Exam records, student results, and result declarations of all tasks in a manual way. So, it is very time-consuming and has a high chance of errors occurring. Our project tries to solve this problem. We are building a web portal-based System to maintain student records, Exam records, student results, and result declarations this all tasks do in an online and automatic way. Faculty just upload all Students and exam data in the system and students can see their details and result on the web portal.

1.4 Problem definition

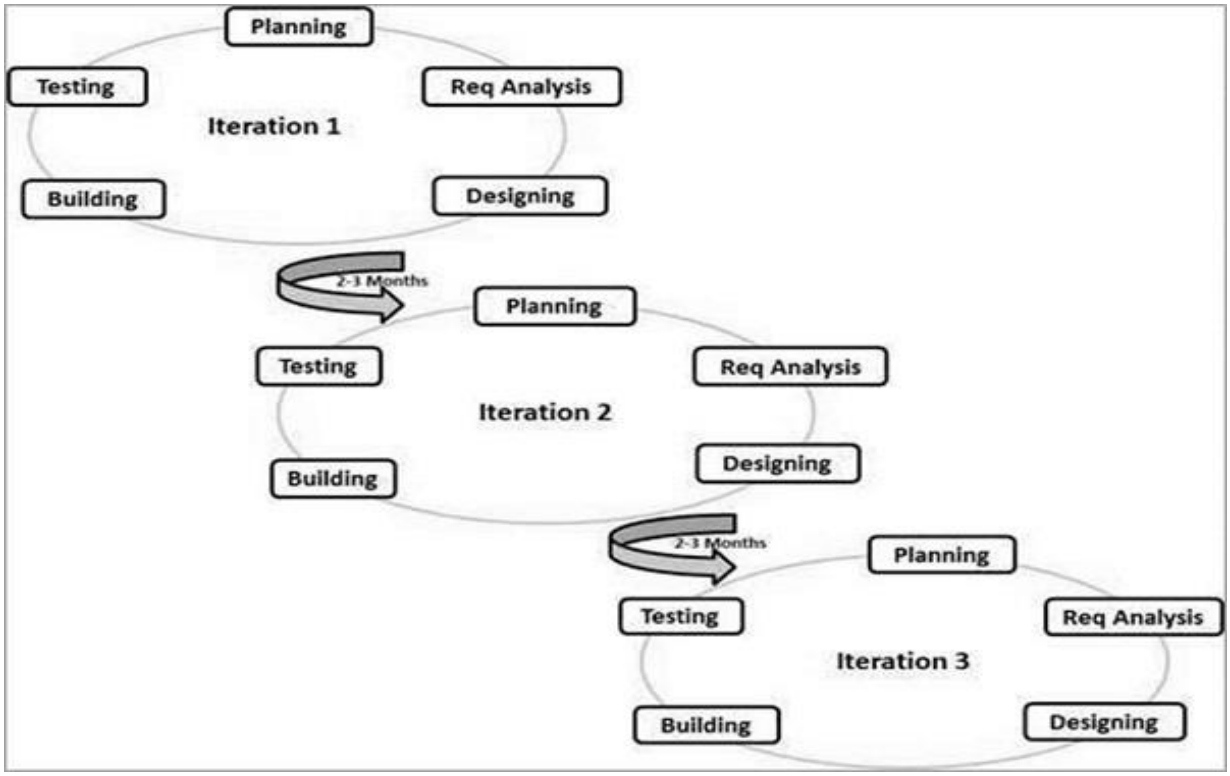
Nowadays, the Exam result display method in college is manual and so complex for faculty. so, it is very time-consuming and has a high chance of errors occurring. The exam department is declaring students' results on the noticeboard; therefore some students create a crowded and noisy environment in the college. Our project tries to solve this problem.

1.5 Plan of their work

The model that is referred to for the development of the project is the Agile model. This model is a combination of iterative and incremental process models with a focus on process adaptability and customer satisfaction by rapid delivery of working software products. Agile Methods break the product into small incremental builds. These builds are provided in iterations. Each iteration typically lasts from about one to three weeks. Every iteration involves cross-functional teams working simultaneously on various areas -

- Planning
- Requirements Analysis
- Design
- Coding
- Unit Testing and
- Acceptance Testing.

At the end of the iteration, a working product is displayed to the customer.



2 TECHNOLOGY AND LITERATURE REVIEW

2.1 Tools and Technology

2.1.1 Figma

Using it for frontend purposes, it makes a very user-friendly interface. Figma is a collaborative web application for interface design, with additional offline features enabled by desktop applications for macOS and Windows. The feature set of Figma focuses on user interface and user experience design, with an emphasis on real-time collaboration, utilizing a variety of vector graphics editors and prototyping tools. The Figma mobile app for Android and iOS allows viewing and interacting with Figma prototypes in real time on mobile and tablet devices.

It is a modern interface design tool. It is a free, online UI tool to create, collaborate, prototype, and handoff. It is used to easily share the current state of designs for critiques, collaboration, feedback, or buy-in. It allows multiple people to view and edit the at the same time or asynchronously.

2.1.2 Node.js

Using for Backend purposes, this part is very complex for our project.
Node.js is a cross-platform, open-source server environment that can run on Windows, Linux, Unix, macOS, and more. Node.js is a back-end JavaScript runtime environment, that runs on the V8 JavaScript Engine, and executes JavaScript code outside a web browser.

Node.js lets developers use JavaScript to write command line tools and for server-side scripting. The functionality of running scripts server-side produces dynamic web page content before the page is sent to the user's web browser. Consequently, Node.js represents a "JavaScript everywhere" paradigm, unifying web application development around a single programming language, rather than different languages for server-side and client-side scripts.

Node.js has an event-driven architecture capable of asynchronous I/O. These design choices aim to optimize throughput and scalability in web applications with many input/output operations, as well as for real-time Web applications (e.g., real-time communication programs and browser games).

The Node.js distributed development project was previously governed by the Node.js Foundation and has now merged with the JS Foundation to form the Open JS Foundation. Open JS Foundation is facilitated by the Linux Foundation's Collaborative Projects program.

2.1.3 MongoDB

Using for Database purposes, In This part store users' data in the database in JSON format. MongoDB is a source-available cross-platform document-oriented database program. Classified as a NoSQL database program, MongoDB uses JSON-like documents with optional schemas. MongoDB is developed by MongoDB Inc. and licensed under the Server-Side Public License (SSPL) which is deemed non-free by several distributions.

2.1.4 ReactJS

Using for frontend purposes, React (also known as React.js or ReactJS) is a free and open-source front-end JavaScript library for building user interfaces based on UI components. It is maintained by Meta (formerly Facebook) and a community of individual developers and companies. React can be used as a base in the development of single-page, mobile, or server-rendered applications with frameworks like Next.js. However, React is only concerned with state management and rendering that state to the DOM, so creating React applications usually requires the use of additional libraries for routing, as well as certain client-side functionality.

2.1.5 ExpressJS

Express.js, or simply Express, is a back-end web application framework for building RESTful APIs with Node.js, released as free and open-source software under the MIT License. It is designed for building web applications and APIs. It has been called the de facto standard server framework for Node.js.

The original author, TJ Holowaychuk, described it as a Sinatra-inspired server, meaning that it is relatively minimal with many features available as plugins. Express is the back-end component of popular development stacks like the MEAN, MERN, or MEVN stack, together with the MongoDB database software and a JavaScript front-end framework or library.

3 SYSTEM REQUIREMENTS STUDY

3.1 USER CHARACTERISTICS

3.2 HARDWARE AND SOFTWARE REQUIREMENTS

3.3 ASSUMPTIONS AND DEPENDENCIES

3.1 User Characteristics

Analyzing user characteristics is an important aspect of any project. It allows us to clearly define and focus on who the end users are for the project. Also, it allows for checking the progress of the project. Also, it allows checking the progress of the project to ensure that we are still developing the system for end users. The user must have the following characteristics:

- User must have basic knowledge of Computers.
- User should have basic knowledge of the Browser.
- User can easily interact with the proposed system.

3.2 Software and Hardware Requirements

Software and Hardware Requirements are used to describe the minimum hardware and software requirements to run the Software. These requirements are described below.

3.2.1 Software Requirements

- Client:
    - Operating System: Windows, Linux, Mac, Android, or IOS
    - Web Browser: Latest version of any Browsers Google Chrome, Mozilla Firefox, Apple Safari
- Server:
    - Operating System: Windows or Linux OS
    - Database: MongoDB
    - Technologies: Figma, NodeJS, various JavaScript Libraries

3.2.2 Hardware Requirements

- Client:
    - Internet Connection
    - Latest version of the System.
- Server:
    - Internet Connection
    - Latest version of the System.

3.3 Assumptions and Dependencies

3.3.1 Assumptions

- Database transactions are assumed to be secure and reliable.
- We provide a user-friendly interface so that any user can easily navigate through the system, but he/she should be capable of providing valid credentials for successful login.
- User is the person having enough knowledge of the internet and browser.
- The server used for data storage is always secured.

3.3.2 Dependencies

- The system is dependent upon the user's valid credentials. If the user inputs the wrong username or password, he/she will not be allowed to log in to the system.
- This system depends on the databases, server, and internet as all the information is collected and then stored in the database in the server through a secure internet connection.
- All the users of the system will be assigned a specific role. According to these role searches and every user will be allowed to access a predefined set of features.

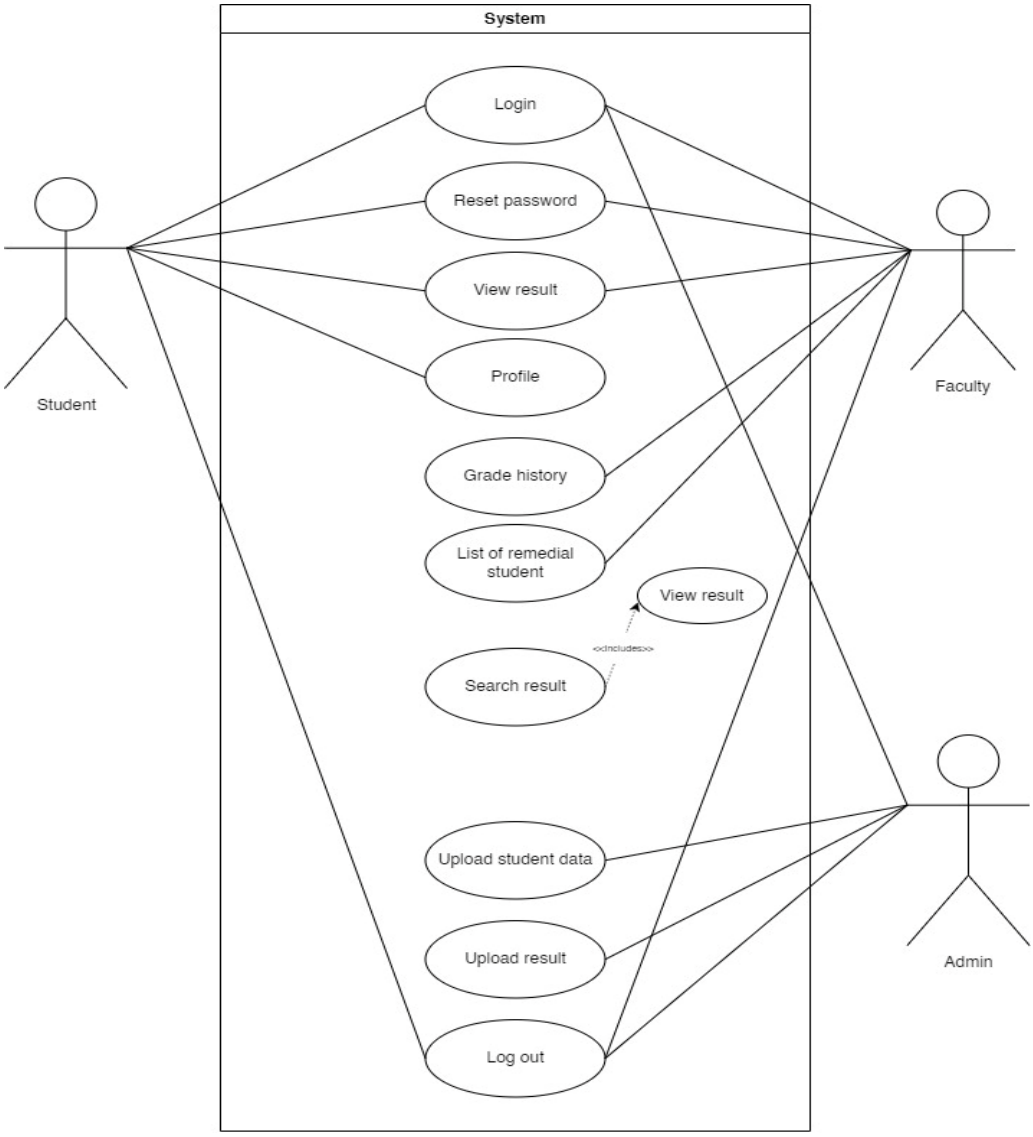
4 SYSTEM DIAGRAMS

4.1 System Activity

A use case diagram shows the relationship among actors and uses cases within a system. Hence it provides the characteristics of the actors whose behavior and relationships can be well understood using the diagrams elaborated here.

An end-user can perform various tasks on the application; he may use signs or upload a new sign on his own. On the other hand, the system would respond to the operations done by the user. It would display the sign clips and store the uploaded sign in the defined category. Also, it would provide a message whenever needed for confirmation.

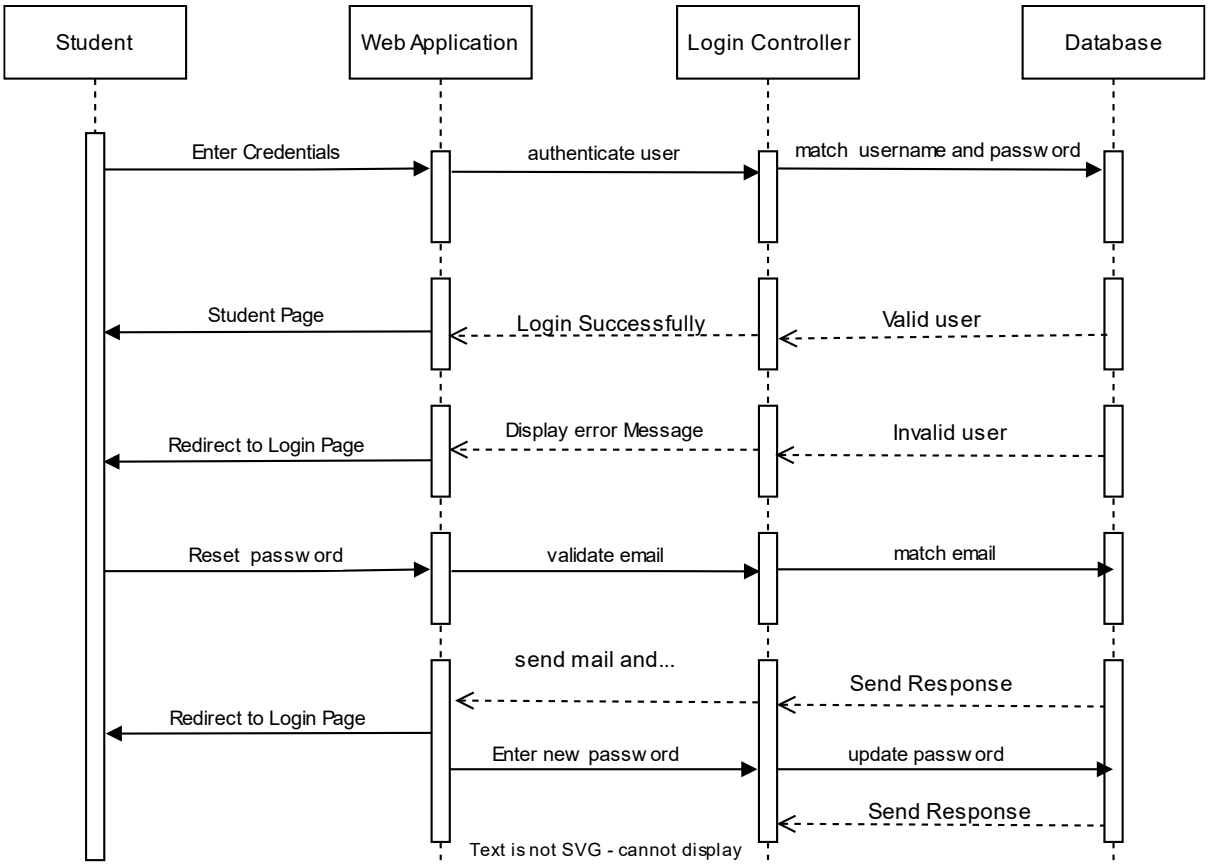
Here the rectangle indicates the system boundary, out of which there are actors found who perform various operations on the system which are the end-user and the system here. An elliptical shape shows the use case while the connecting links between an actor and a use case are said to be communicated.



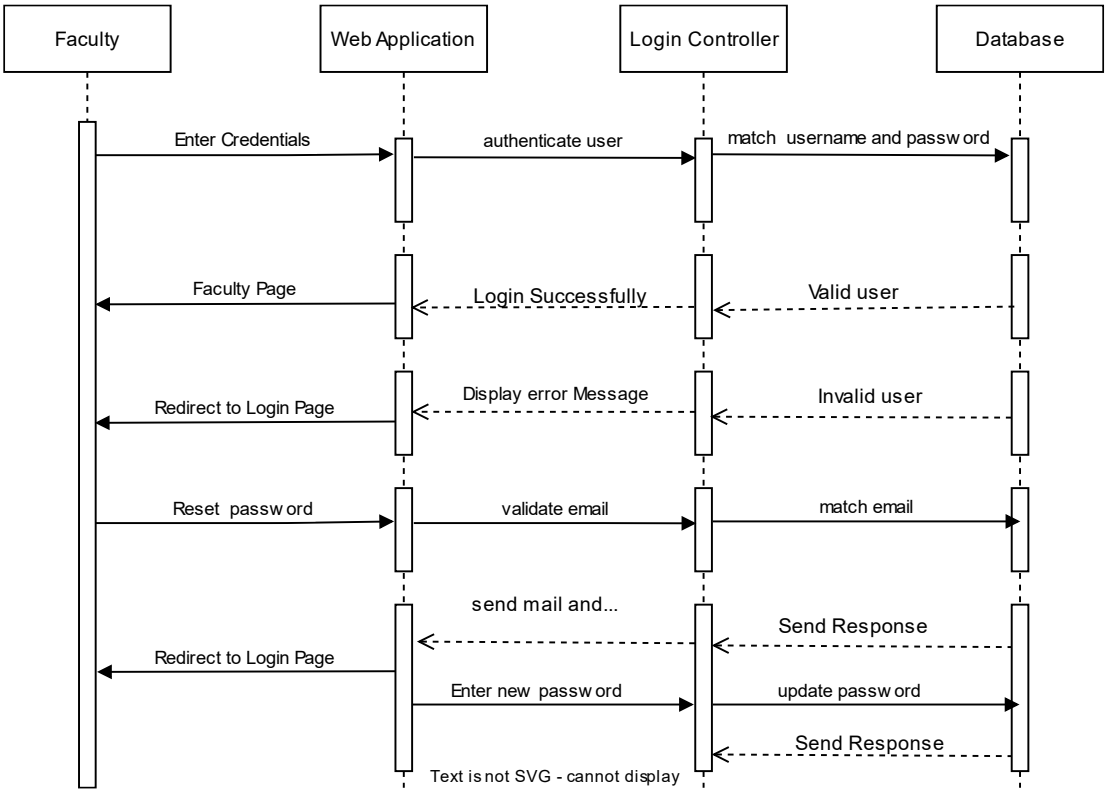
4.2 Sequence Diagram

A sequence diagram represents an Interaction, which is a set of messages exchanged among objects within the collaboration to affect a desired operation or result. Here are the sequence diagrams for various interactions among the user, system, and data storage. It must be noted that the rectangle box on the top of the diagram indicates the object or actor and the dashed lines beneath to it show the object's lifeline. A no Other tangles following and followed by the dashed lines in a vertical manner show the activation period of the object or actor when it performs some actions. A solid arrow conveys a message while the dashed arrow gives a return message. These message names are written along with their respective arrows as shown further in the diagram.

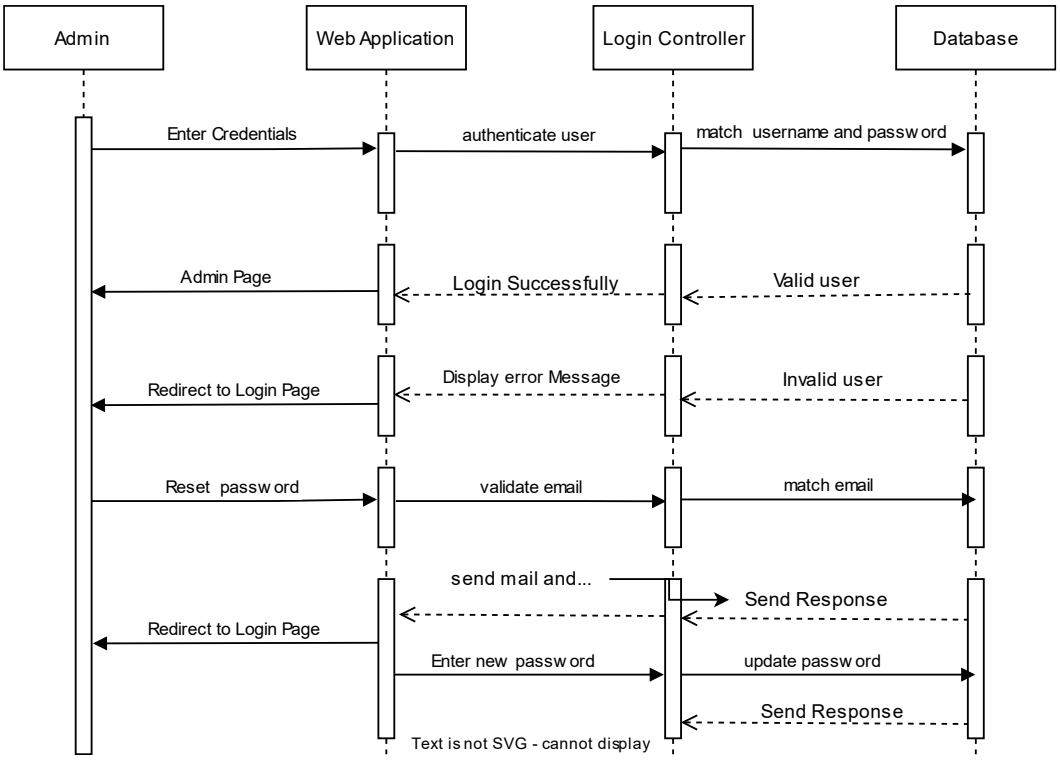
4.2.1 Sequence Diagram Student Login



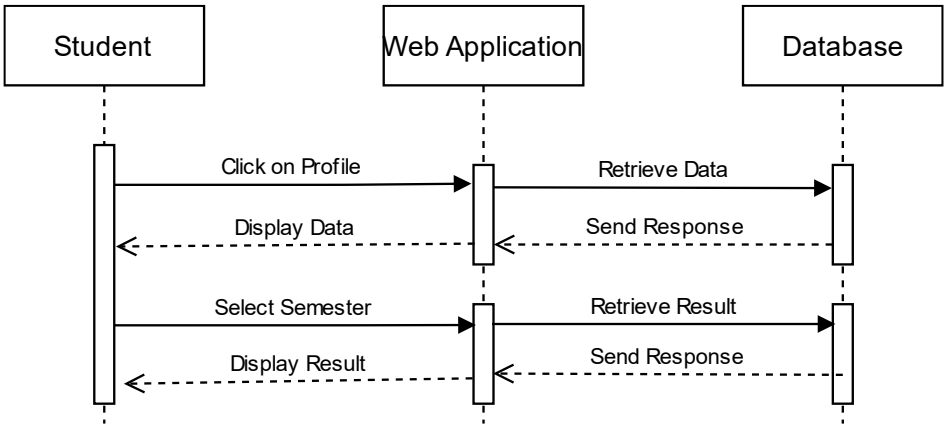
4.2.2 Sequence Diagram Faculty Login



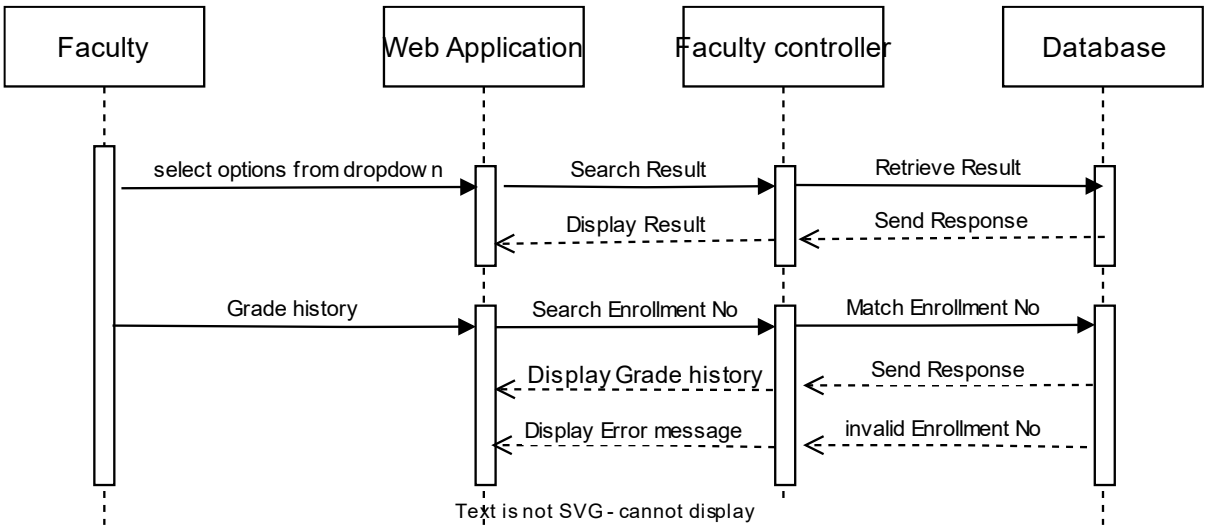
4.2.3 Sequence Diagram Admin Login



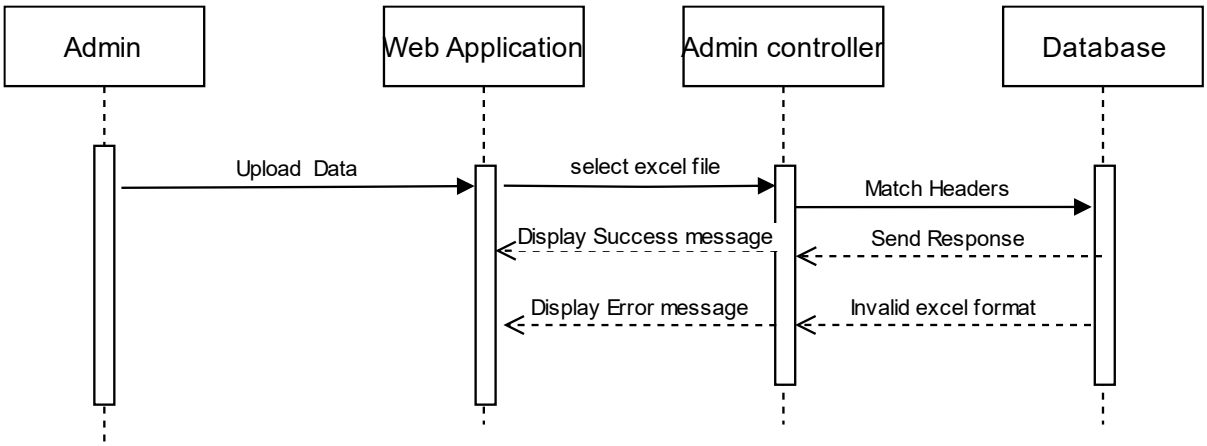
4.2.4 Sequence Diagram Student



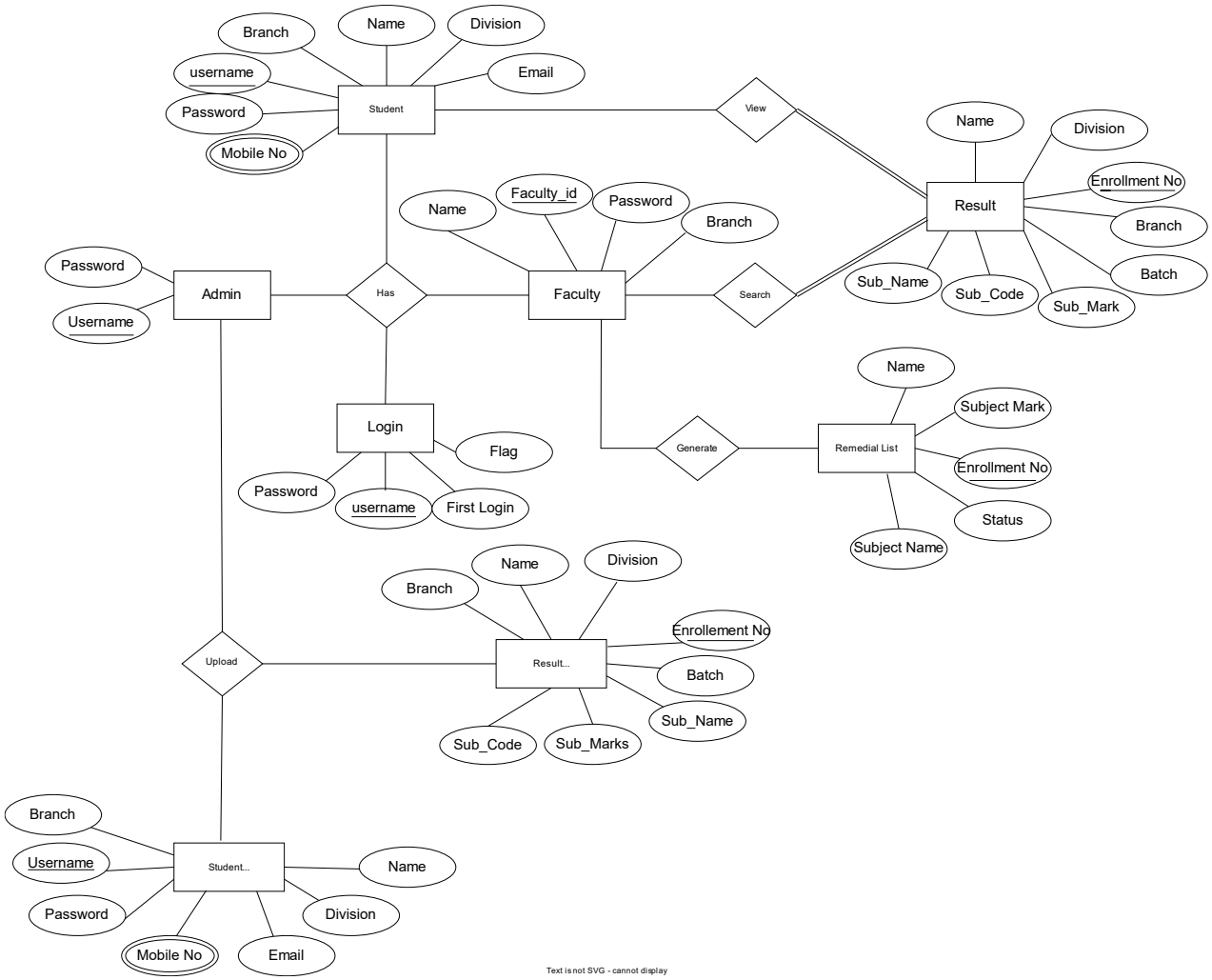
4.2.5 Sequence Diagram Faculty



4.2.6 Sequence Diagram Admin

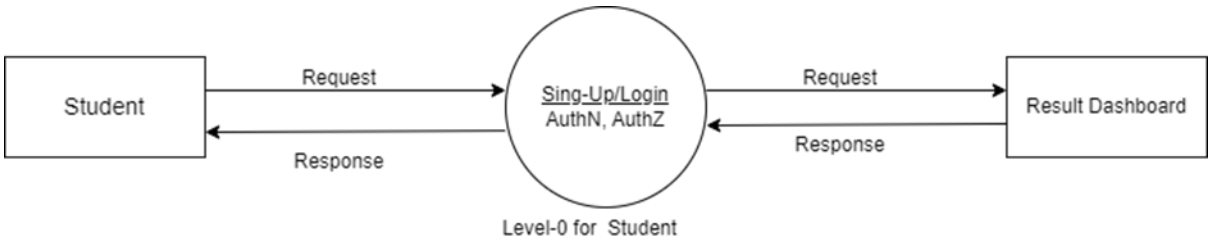


4.3 Entity Relationship Diagram



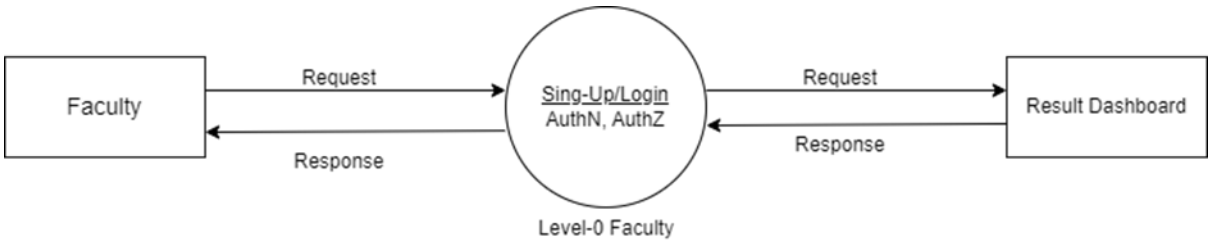
4.4 Data Flow Diagram

4.4.1 Data Flow Diagram level 0 student



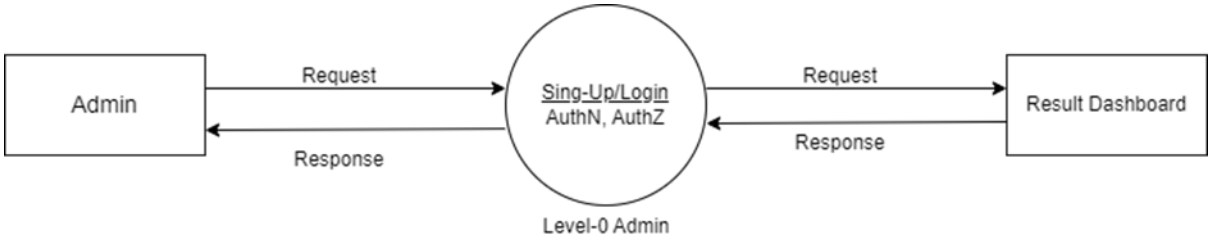
Level-0 for Student

4.4.2 Data Flow Diagram Level 0 Faculty



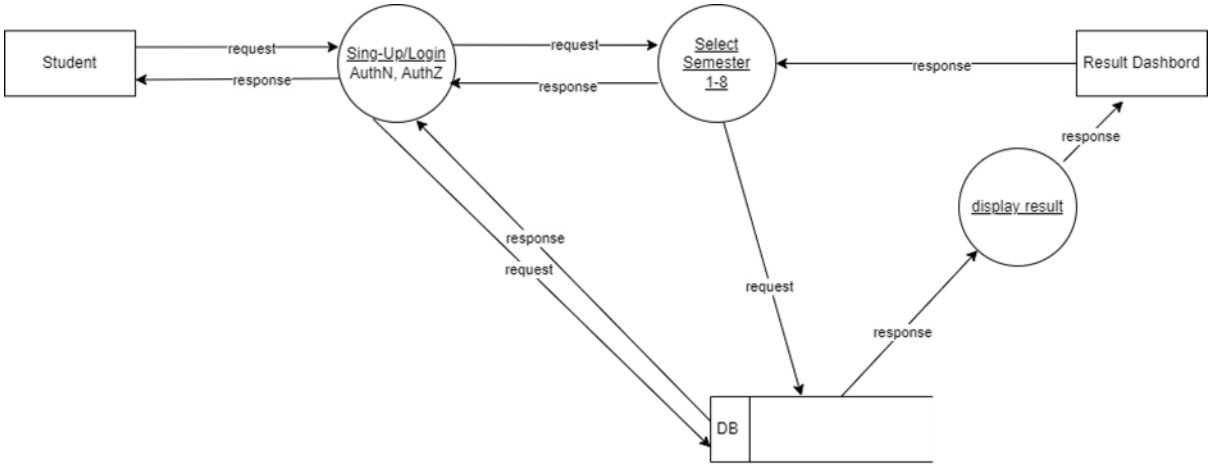
Level-0 Faculty

4.4.3 Data Flow Diagram Level 0 Admin



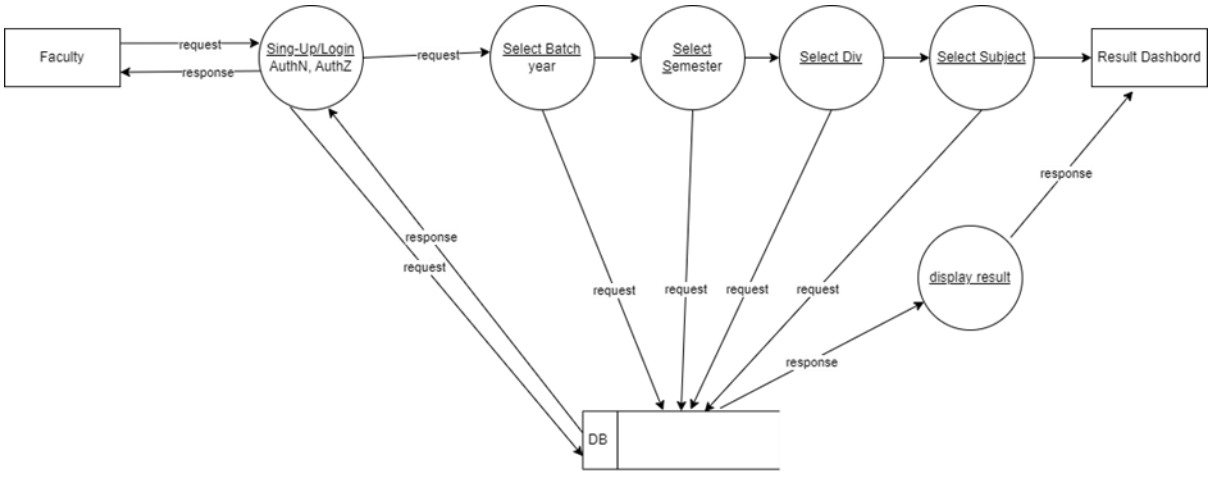
Level-0 Admin

4.4.4 Data Flow Diagram Level 1 Student



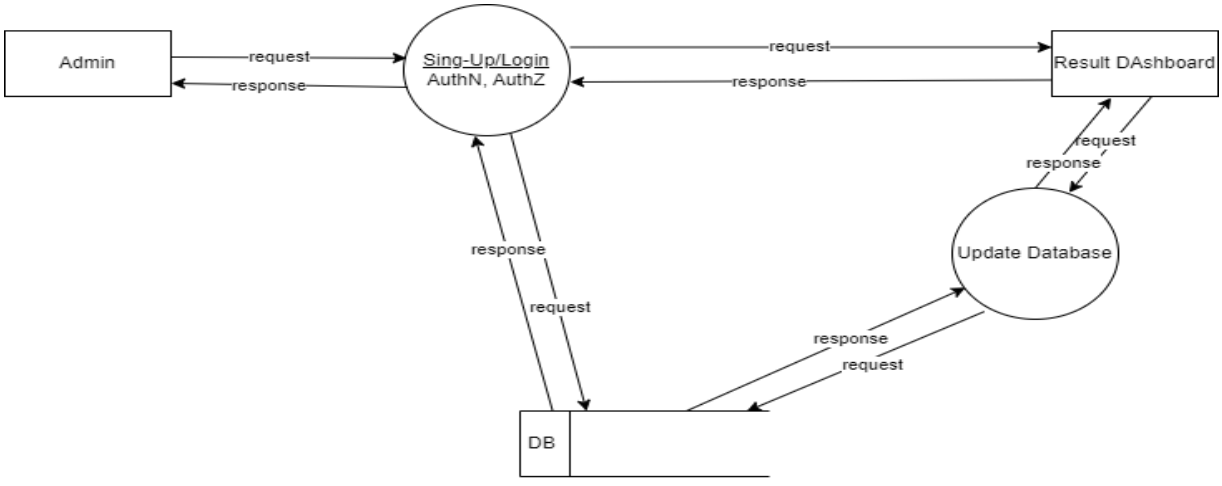
Level-1 Student

4.4.5 Data Flow Diagram Level 1 Faculty



Leven-1 Faculty

4.4.6 Data Flow Diagram Level 1 Admin



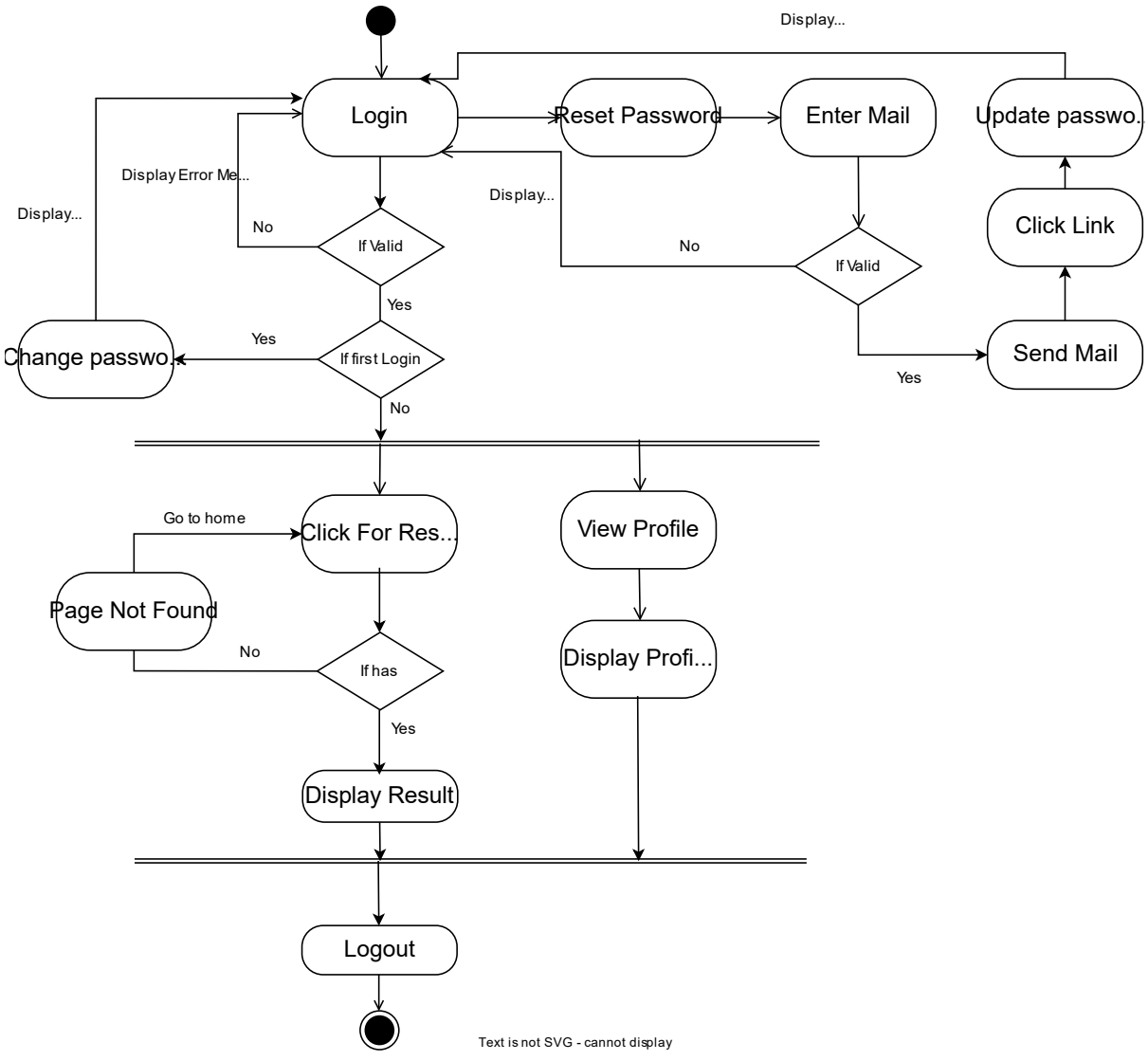
Leven-1 Admin

4.5 Activity Diagram

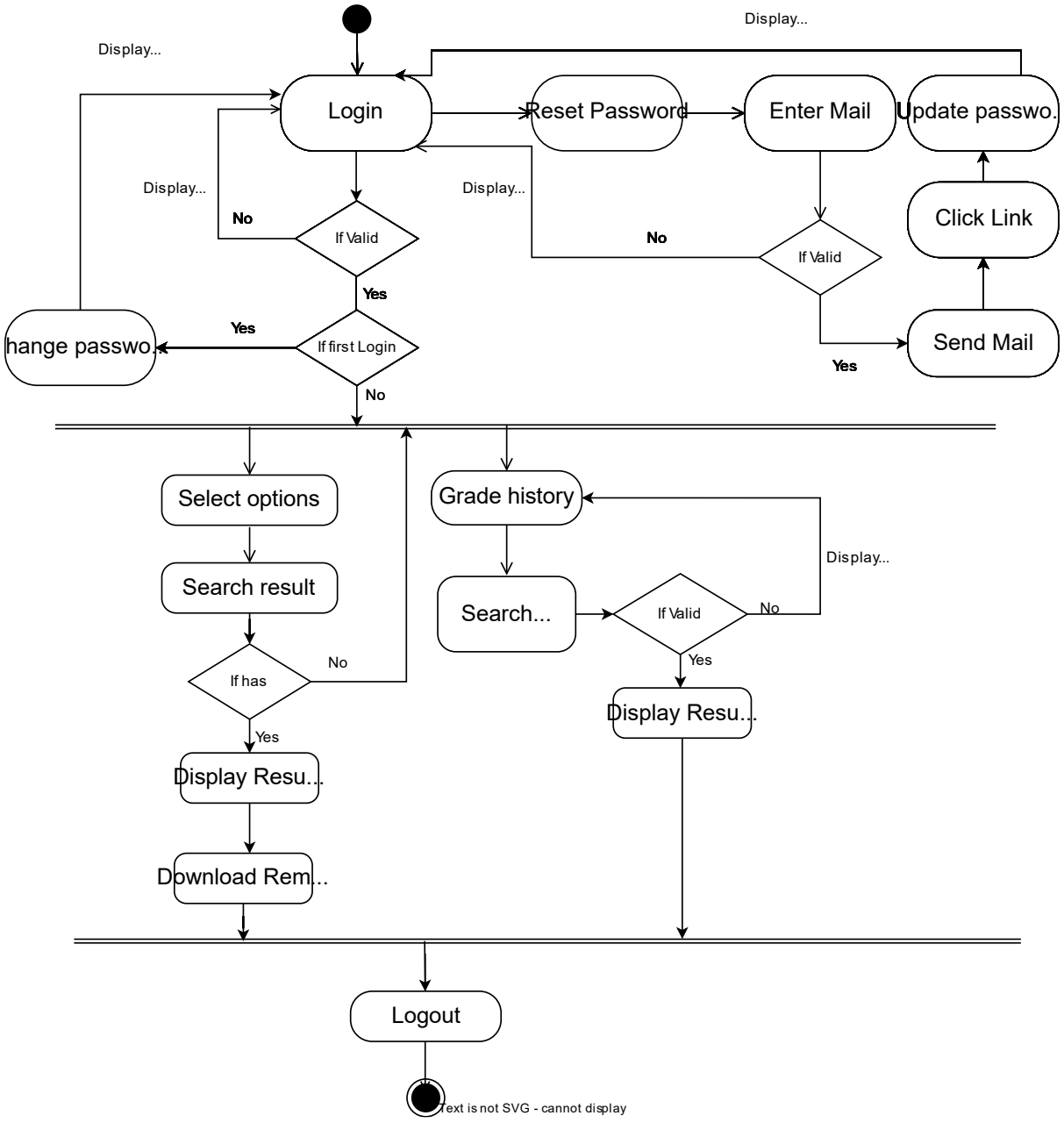
An activity diagram is a special case of a state diagram in which all (or at least most) of the states are action states and in which all (or at least most) of the transitions are triggered by the completion of the actions in the source states.

Below are the activity diagrams for the actions performed by the end-user and the response of the system.

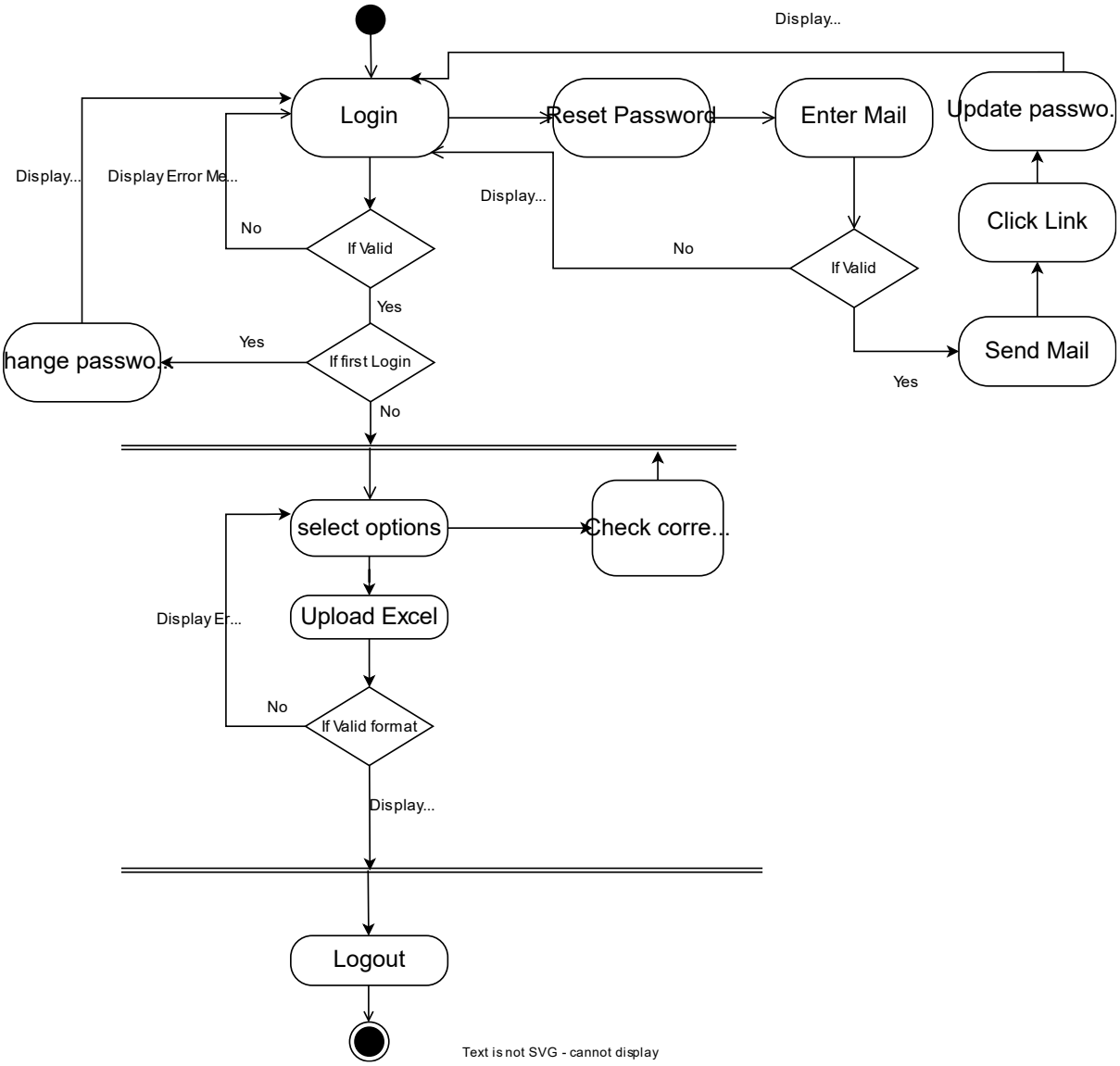
4.5.1 Activity Diagram for Student



4.5.2 Activity Diagram Faculty



4.5.3 Activity Diagram Admin



5 DATA DICTIONARY

5.1 Data Dictionary

The current web application uses MongoDB Database to store, access, and retrieve the data.

Following is the data dictionary that describes the required tables along with their fields.

5.1.1 Student Data Dictionary

Attributes	Datatypes	Description	Size	Required?
Username	Varchar	Primary key	15	Yes
Password	Varchar		15	Yes
Name	Varchar		N/A	Yes
Mobile No	int		10	No
Email	Varchar		30	Yes
Division	Varchar		1	Yes
Branch	Varchar		10	Yes

5.1.2 Faculty Data Dictionary

Attributes	Datatypes	Description	Size	Required?
Faculty id	Varchar	Primary key	15	Yes
Faculty Password	Varchar		15	Yes
Faculty Name	Varchar		15	Yes
Branch	Varchar		15	Yes

5.1.3 Admin Data Dictionary

Attributes	Datatypes	Description	Size	Required?
Username	Varchar	Primary key	15	Yes
Password	Varchar		15	Yes

5.1.4 Login Data Dictionary

Attributes	Datatypes	Description	Size	Required?
Username	Varchar	Primary key	15	Yes
Password	Varchar		15	Yes
Flag	int		1	Yes
First Login	Boolean		True/False	Yes

5.1.5 Result Data Dictionary

Attributes	Datatypes	Description	Size	Required?
Enrollment No	Varchar	Primary key	15	Yes
Name	Varchar		N/A	Yes
Division	Varchar		1	Yes
Batch	int		10	Yes
Branch	Varchar		10	Yes
Sub_Name	Varchar		15	Yes
Sub_Code	Varchar		15	Yes
Sub_Mark	Int		3	Yes

5.1.6 Remedial Data Dictionary

Attributes	Datatypes	Description	Size	Required?
Enrollment No	Varchar	Primary key	15	Yes
Name	Varchar		N/A	Yes
Subject Name	Varchar		15	Yes
Subject Mark	int		3	Yes
Status	Varchar		N/A	Yes

5.1.7 Student Excel Sheet

Attributes	Datatypes	Description	Size	Required?
Username	Varchar	Primary key	15	Yes
Password	Varchar		15	Yes
Name	Varchar		N/A	Yes
Division	Varchar		1	Yes
Branch	Varchar		10	Yes
Mobile No	int		10	No
Email	Varchar		30	Yes

5.1.7 Result Excel Sheet

Attributes	Datatypes	Description	Size	Required?
Enrollment No	Varchar	Primary key	15	Yes
Name	Varchar		N/A	Yes
Division	Varchar		1	Yes
Batch	int		10	Yes
Branch	Varchar		10	Yes
Sub_Name	Varchar		15	Yes
Sub_Code	Varchar		15	Yes
Sub_Mark	Int		3	Yes

6 RESULTS, DISCUSSION, AND CONCLUSION

6.1 RESULT

6.2 DISCUSSION

6.3 CONCLUSION

6.1 Result

The result is, this system is solve students' as well as faculty's problems. All manual and complex tasks are converted into simple and automatic tasks. So, faculty focus on their and students' productivity. Students can see their current and previous results on the web portal and faculty can see student' data and result on the portal.

6.2 Discussion

Exam Result Management System removes old, complex, and time-consuming processes. And convert it into an online, simple, and automatic way.

6.3 Conclusion

Exam Result Management System web application helps the faculty of a college to get rid of their manual system of keeping track of all the student's performance through this application.

It allows the Exam Department to manage all end users and view all the reports. Help faculty to enter their records online at anywhere anytime.

Hence it helps each user (student and faculty) to keep track of just their records and also bifurcates the workload among the end users which is currently not deployed.

7 References

7.1 References

1) GTU online result system https://www.gturesults.in/
2) NTA online result http://ntaresults.nic.in
3) Figma for design https://www.figma.com/
4) JavaScript Doc https://developer.mozilla.org/en-US/docs/Web/JavaScript
5) JavaScript Doc https://devdocs.io/javascript/
6) NodeJS Dependencies https://nodejs.org/en/docs/meta/topics/dependencies/
7) NodeJS Documentation https://nodejs.org/en/docs/
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