Software Requirements Specification

for

EXAM ALTERATION HELPER

Version 1.0 approved

Prepared by TEAM 6

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Revision History

Name	Date	Reason For Changes	Version

1. Introduction

1.1 Purpose

The purpose of the Exam Alteration Helper system is to provide a user-friendly and efficient solution that automates various tasks related to exam scheduling and alteration. The system aims to streamline the workflow for both faculty members and administrators, ensuring smooth communication, accurate scheduling, and effective management of exam slots and requests.

The key objectives of the Exam Alteration Helper system include:

- Facilitating the creation and management of exam schedules.
- Allowing faculty members to request and manage alterations to their exam slots.
- Enabling administrators to review and process exam alteration requests.
- Enhancing communication among faculty members and administrators regarding exam scheduling changes.
- Providing notifications and reminders to relevant stakeholders about exam schedule updates.

The Exam Alteration Helper system will contribute to improved efficiency, reduced administrative burden, and enhanced collaboration among faculty members and administrators, ultimately resulting in a better experience for both faculty members and students.

1.2 Document Conventions

This SRS follows standard conventions for documenting software requirements. Requirements are presented in a structured format, including functional and non-functional requirements. Each requirement statement is assigned its own priority to indicate its importance. Additionally, any abbreviations or acronyms used in this document will be defined for clarity.

1.3 Intended Audience and Reading Suggestions

This SRS document is intended for various stakeholders involved in the development and deployment of the Exam Alteration Helper system. The primary audience includes developers, project managers, quality assurance teams, and other individuals responsible for the system's design, implementation, and testing. Additionally, faculty members, administrators, and other end-users may refer to this document to gain an understanding of the system's functionalities.

To maximize the benefits of this SRS document, readers are recommended to start by reviewing the overview sections to gain a holistic understanding of the Exam Alteration Helper system and its goals. Subsequently, readers can delve into the feature-specific sections that align with their roles

and responsibilities. Developers may focus on technical details and system architecture, while project managers may concentrate on timelines, milestones, and resource allocation.

1.4 Product Scope

The Exam Alteration Helper system encompasses a wide range of features and functionalities to facilitate efficient exam scheduling and alterations. The system enables faculty members to manage their exam schedules, request slot exchanges, and receive notifications regarding schedule updates. Administrators can review and process these alteration requests, ensuring accurate and fair allocation of exam slots.

Key features within the scope of the Exam Alteration Helper system include:

- User login and authentication to ensure secure access for faculty members and administrators.
- User management functionality to enable administrators to create, modify, and remove faculty accounts.
- Exam scheduling management to allow administrators to allocate exam rooms, faculty members, and time slots for various courses and exams.
- Exam slot exchange capability, enabling faculty members to request slot exchanges with other faculty members, subject to approval by the system and relevant administrators.
- Notification functionality to keep faculty members and administrators informed about exam schedule updates, slot exchange requests, and their outcomes.

By addressing these features, the Exam Alteration Helper system aims to simplify the exam scheduling process, reduce administrative efforts, and enhance communication and collaboration among faculty members and administrators.

1.5 References

The development of the Exam Alteration Helper system draws insights and inspiration from the following references:

- "Faculty Dashboard Management System" by Academia ERP: This reference project, focusing on managing faculty information, course management, attendance management, and scheduling, provides valuable insights and best practices that can be adapted to the development of the Exam Alteration Helper system.
- "Faculty Management System" by FreeProjectz: This reference project, which encompasses managing faculty information, course management, attendance management, and grade management, offers relevant insights and lessons learned that can contribute to the development of the Exam Alteration Helper system.

2. Overall Description

2.1 Product Perspective

The Exam Alteration Helper is an independent software system that serves as a centralized hub for managing exam alterations. It does not replace any existing systems but can be integrated with other software systems utilized by the institution, such as student information systems or scheduling systems. The system provides a dedicated platform to handle the entire lifecycle of exam alteration requests, from submission to approval and scheduling. It maintains its own database to store and retrieve relevant information securely.

2.2 Product Functions

The Exam Alteration Helper offers a wide range of robust functions to support the management of exam alterations. These functions include:

1. Exam alteration request submission: Faculty members can easily submit exam alteration requests through the system. They can provide detailed information, such as the reason for the request, the desired alteration type (e.g., change of date, change of venue), and any supporting documents or notes. The system allows faculty members to attach relevant files and add comments to ensure clear communication.

2. Review and approval workflow: The system provides a streamlined workflow for reviewing and approving exam alteration requests. Administrators have access to a dashboard where they can review submitted requests. They can evaluate the validity of the requests based on predefined criteria and make informed decisions. The system ensures transparency by providing clear status updates and notifications to all stakeholders involved in the review process.

3. Communication and notifications: Efficient communication channels are incorporated within the system to facilitate seamless collaboration between faculty members, administrators, and students. Faculty members can communicate with administrators regarding their requests, seek clarifications, or provide additional information. The system sends automated notifications to all relevant parties to keep them informed about the progress, approval status, and any updates or changes related to the exam alterations.

4. Exam alteration scheduling: Administrators can utilize the system's advanced scheduling capabilities to efficiently manage approved exam alterations. The system checks for potential conflicts with existing exams or other events to ensure a smooth scheduling process. It generates updated exam schedules that reflect the approved alterations and automatically notifies the affected faculty members and students about the changes. This helps minimize confusion and ensures that everyone is aware of the revised exam details.

5. Reporting and analytics: The system provides comprehensive reporting and analytics features to offer valuable insights into the exam alteration process. Administrators can generate reports on exam alteration trends, approval rates, and processing times. These reports can assist in evaluating the efficiency of the system, identifying areas for

improvement, and making data-driven decisions. The analytics capabilities enable administrators to analyze historical data and gain a deeper understanding of the exam alteration patterns.

2.3 User Classes and Characteristics

The Exam Alteration Helper caters to two primary user classes: faculty members and administrators.

Faculty members: Faculty members are the key users of the system, actively participating in the exam alteration process. They possess various levels of technical expertise and may come from diverse educational backgrounds. The system aims to empower faculty members by providing a user-friendly interface that allows them to efficiently manage exam alterations, ensure fair accommodations for students, and minimize disruptions. Faculty members can easily navigate the system, submit alteration requests, communicate with administrators, and access relevant information regarding their requests.

Administrators: Administrators play a crucial role in overseeing the exam alteration process. They are responsible for reviewing and approving alteration requests, managing the scheduling process, and ensuring efficient communication with faculty members and students. Administrators require comprehensive control and access to the system to effectively manage the workflow, make informed decisions, and maintain transparency throughout the process. The system provides administrators with a comprehensive dashboard that presents an overview of submitted requests, facilitates the review and approval process, and offers tools for efficient communication with faculty members and students. Administrators should have the necessary privileges and access rights to manage the system effectively.

2.4 Operating Environment

The Exam Alteration Helper operates in a web-based environment, accessible through standard web browsers such as Google Chrome, Mozilla Firefox, and Microsoft Edge. It ensures cross-platform compatibility and can be accessed from various devices, including desktop computers, laptops, tablets, and smartphones. The system is hosted on a robust server infrastructure with adequate processing power, memory, and storage. A stable internet connection is essential to ensure uninterrupted access to the software.

2.5 Design and Implementation Constraints

To ensure the success and effectiveness of the Exam Alteration Helper, several design and implementation constraints should be considered:

- Technology stack: The system will be developed using modern web technologies such as JavaScript, React.js and backend frameworks such as Express.js, Node.js, and MySQL. The technology stack should be selected based on its compatibility, scalability, and security features.

- Security and privacy: The system must comply with data protection regulations and ensure the security and confidentiality of user data. It should implement robust authentication and authorization mechanisms, data encryption, and access controls to safeguard sensitive information.
- Scalability and performance: The system should be designed to handle a growing number of users and increasing data storage requirements. It should employ efficient database management techniques and optimize performance to ensure smooth operation even during peak usage periods.
- Integration with existing systems: The Exam Alteration Helper may need to integrate with other institutional systems, such as student information systems or scheduling systems. Integration should be seamless and adhere to standardized communication protocols to ensure smooth data flow between systems.
- User interface design: The system should follow user interface design conventions, providing a modern and intuitive user experience. It should prioritize ease of use, clear navigation, informative feedback, and responsiveness across different devices and screen sizes.

2.6 User Documentation

User documentation plays a vital role in assisting users in understanding and effectively utilizing the Exam Alteration Helper. The user documentation components delivered with the software may include:

- User manuals: Comprehensive guides explaining the functionalities and usage of the Exam Alteration Helper. The user manuals will provide step-by-step instructions and explanations to help users navigate and utilize the system effectively.
- On-line help: Contextual help accessible within the system, providing guidance on specific tasks and features. Users can access relevant help content while using the system, offering real-time assistance and clarification.
- Tutorials: Step-by-step tutorials or video guides to assist users in understanding and utilizing specific features of the system. Tutorials can provide a more interactive and visual learning experience for users.

The user documentation will follow standard industry conventions, using clear and concise language to ensure ease of understanding for users. It will be accessible in PDF format and integrated within the Exam Alteration Helper, providing convenient access to the documentation resources.

2.7 Assumptions and Dependencies

Assumptions:

- Users (faculty members, administrators, and students) have basic computer literacy skills and can access the Exam Alteration Helper through a standard web browser.
- The server hosting the Exam Alteration Helper has adequate resources to handle the expected traffic and usage patterns.
- Relevant data, such as faculty and student information, course schedules, and exam records, are available in a standardized digital format.
- Necessary permissions and approvals are obtained for integrating with other existing systems, such as student information systems and scheduling systems.

Dependencies:

- The Exam Alteration Helper depends on the availability and accuracy of the data sources, such as student information systems and scheduling systems, to retrieve relevant information for the exam alteration process.
- The system relies on third-party software components and libraries, such as database management systems and web frameworks, to ensure efficient functionality and performance.
- The successful design and development of the Exam Alteration Helper depend on the availability of qualified developers and designers with relevant skills and expertise.
- The implementation and deployment of the system may be subject to corporate or institutional policies and guidelines, such as security and data privacy regulations, which must be followed.

By considering these aspects in the Overall Description section, the Exam Alteration Helper project can be effectively communicated, providing a comprehensive understanding of the system and its functionalities.

3. External Interface Requirements

3.1 User Interfaces

1. Admin Interface:
    - The admin interface will provide a web-based dashboard for administrators to manage the exam alteration process efficiently.

- Upon logging in, administrators will be greeted with a home screen displaying an overview of the system's features and options.
- The dashboard will include a menu or navigation panel to access different functionalities and features.
- Admins will have the ability to view and manage exam alteration requests, including approving or rejecting requests.
- The interface will display a list of pending alteration requests, along with relevant details such as the course, exam date, and the reason for alteration.
- Admins will be able to filter and search for specific alteration requests based on criteria such as course or exam date.
- The interface will allow admins to view the details of a particular request and make decisions accordingly.
- Admins will have the option to communicate with faculty members regarding the alteration request through built-in messaging or email integration.
- The interface will provide a notification system to alert admins about new alteration requests, pending approvals, or any important updates.

2. Faculty Interface:

- The faculty interface will provide a web-based portal for faculty members to initiate and manage exam alteration requests.
- Faculty members will be able to log in and access their dashboard, which will display their assigned courses and relevant options.
- The interface will allow faculty members to submit new alteration requests by providing details such as the course, exam date, reason for alteration, and any supporting documents.
- Faculty members can track the status of their alteration requests and view updates or comments from administrators.
- The interface will provide a messaging system for faculty members to communicate with administrators regarding their alteration requests.
- Faculty members will have the ability to view a history of their past alteration requests and their corresponding outcomes.
- The interface will include notifications to inform faculty members about the status changes of their alteration requests or any additional information required.

3.2 Hardware Interfaces

The Exam Alteration Helper system will be a web-based application that will run on standard hardware and software platforms. The system will require access to a reliable internet connection and a modern web browser such as Google Chrome, Mozilla Firefox, or Safari.

There are no specific hardware components or devices required to interface with the system. However, users may need to have access to hardware such as computers, laptops, tablets, or smartphones to use the system.

3.3 Software Interfaces

The application will be built using the MERN stack and will use the following software components:

- MySQL as the database management system
- Express.js as the web application framework
- React.js for building the user interface
- Node.js for server-side scripting

The application will also integrate with the following external software components:

- Email service providers for sending email notifications to users
- Message service providers for sending message notifications to users

3.4 Communications Interfaces

The Exam Alteration Helper system will utilize the following communications interfaces:

- Web Browser Communication: The system will use standard HTTP/HTTPS protocols for communication between the user interfaces and the server, ensuring secure data transmission over the internet.
- Email Communication: The system will send and receive email notifications using standard email protocols (e.g., SMTP) for communication with faculty members and administrators, providing timely updates and facilitating collaboration.

These external interface requirements will ensure that the Exam Alteration Helper system provides user-friendly interfaces for administrators and faculty members to efficiently manage exam alteration requests, communicate effectively, and track the status and history of requests.

4. System Features

1. User login and Authentication

1.1 Create faculty account:

Stimulus: The admin navigates to the user management section.

Response: The system presents a form to enter the faculty member's username and password.

Stimulus: The admin submits the form.

Response: The system creates a new faculty account with the provided credentials and stores it in the database.

Stimulus: The system sends an email to the faculty member with their account credentials.

1.2 Faculty login and password recovery:

Stimulus: The faculty member accesses the login page.

Response: The system displays a login form prompting the faculty member to enter their username and password.

Stimulus: The faculty member clicks on the "Forgot password?" link.

Response: The system presents a password recovery form where the faculty member can enter their email address.

Stimulus: The faculty member submits the form.

Response: The system verifies the email address and sends a password recovery email with instructions to reset the password.

2. User Management

2.1 Update personal information:

Stimulus: The faculty member navigates to their profile page.

Response: The system displays the faculty member's current personal information, including name, contact details, and any other relevant fields.

Stimulus: The faculty member updates their personal information.

Response: The system saves the changes and updates the faculty member's information in the database.

2.2 Remove faculty account:

Stimulus: The admin accesses the user management section.

Response: The system presents a list of faculty accounts.

Stimulus: The admin selects a faculty account to remove.

Response: The system prompts the admin to confirm the deletion.

Stimulus: The admin confirms the deletion.

Response: The system deletes the faculty account from the database.

2.3 Assign privileges:

Stimulus: The admin accesses the user management section.

Response: The system displays a list of faculty accounts.

Stimulus: The admin selects a faculty account to assign privileges.

Response: The system presents a form with different privilege options.

Stimulus: The admin selects the desired privileges for the faculty account.

Response: The system saves the changes and updates the faculty account's privileges in the database.

3. Exam Scheduling

3.1 Manage exam room availability:

Stimulus: The admin accesses the exam scheduling section.

Response: The system displays a calendar view showing the available exam rooms and time slots.

Stimulus: The admin selects a specific exam schedule and time slot.

Response: The system allows the admin to assign an available exam room and faculty member to the selected schedule and time slot.

3.2 Generate exam scheduling reports:

Stimulus: The admin selects the report generation option in the exam scheduling section.

Response: The system generates a comprehensive report with detailed information on exam schedules, allocated rooms, and faculty assignments.

3.3 View exam schedule:

Stimulus: A faculty member logs into the system.

Response: The system displays the faculty member's assigned exam schedule, including the course, date, time, and exam room.

4. Exam Slot Exchange

4.1 Request slot exchange:

Stimulus: A faculty member accesses the slot exchange section.

Response: The system presents a list of available slots for exchange.

Stimulus: The faculty member selects a slot to exchange and specifies the preferred slot they would like to receive.

Response: The system sends a slot exchange request to the selected faculty member.

4.2 Approve or deny slot exchange requests:

Stimulus: A faculty member receives a slot exchange request notification.

Response: The system displays the details of the request, including the requesting faculty member and the proposed slot exchange.

Stimulus: The faculty member approves or denies the request.

Response: The system updates the status of the slot exchange

5. Other Nonfunctional Requirements

5.1 Performance Requirements

- Conduct performance testing to ensure that the system responds to user input within 2 seconds under normal operating conditions.
- Perform load testing to determine the maximum number of concurrent users the system can handle without significant performance degradation.
- Implement a transaction processing mechanism that can handle at least 5000 transactions per minute.
- Ensure that the system has a minimum uptime of 99.9% to minimize downtime and ensure availability.
- Optimize the system to handle a database of up to 1 million records efficiently.

5.2 Safety Requirements

- Implement appropriate security measures to ensure the confidentiality of sensitive student information, such as Roll num and personal details.
- Enforce access controls to prevent unauthorized access to student quiz scores and other sensitive data.
- Implement data backup and recovery mechanisms to safeguard against data loss and corruption.
- Perform thorough testing to identify and mitigate any potential safety risks to users or other individuals.
- Provide clear warnings and error messages to prevent user errors that may lead to safety risks.
- Establish a system to log and track safety incidents or errors for review and improvement purposes.

5.3 Security Requirements

- Develop a secure user authentication system to ensure that only authorized users can access and interact with the exam alteration helper.
- Encrypt sensitive user data, such as passwords and exam alteration requests, both in transit and at rest.
- Implement logging and monitoring mechanisms to detect and prevent security breaches.
- Comply with relevant data protection regulations and standards, such as FERPA and GDPR.
- Conduct regular security assessments and penetration testing to identify and address vulnerabilities.

5.4 Software Quality Attributes

- Design an intuitive and user-friendly interface for the exam alteration helper, providing clear instructions and error messages to facilitate ease of use.
- Ensure the reliability of the system, aiming for high availability with minimal downtime for maintenance or upgrades.
- Design and implement the system in a modular and well-documented manner to facilitate future maintenance and enhancements.

- Optimize the system's performance to handle increasing numbers of users and requests.
- Implement comprehensive testing, including defining test cases and test data, to ensure the system's testability.

5.5 Business Rules

- Implement user authentication and authorization features to ensure that only authorized users, such as faculty members and students, can access the exam alteration helper.
- Establish access controls to restrict access and modification of exam alteration requests to relevant faculty members and administrators.
- Design features to enable faculty members to review and modify exam alteration requests for the courses they are teaching.
- Implement privacy controls to ensure that exam alteration requests and outcomes are only accessible to relevant faculty members and students involved.
- Develop functionality to track and monitor the status and progress of exam alteration requests.

6. Other Requirements

Database requirements: The system should be able to store and retrieve data efficiently and securely. The database should be scalable to accommodate future growth in data volume.

Internationalization requirements: The system should be designed to support multiple languages and cultures. The user interface should be easily translatable to different languages and should accommodate different date and time formats.

Legal requirements: The system should comply with all relevant laws and regulations regarding data privacy and security. The system should be designed to protect the privacy and security of user data and should allow users to control their own data.

Reuse objectives: The system should be designed with modularity and reusability in mind to support future development and maintenance. The system should be easy to extend and modify, and should be built using standard and open technologies to promote interoperability and reduce vendor lock-in.

Appendix A: Glossary

SRS: Software Requirements Specification

UI: User Interface

API: Application Programming Interface

CRUD: Create, Read, Update, Delete

CSV: Comma-Separated Values

SQL: Structured Query Language

SSL: Secure Sockets Layer

HTTPS: Hypertext Transfer Protocol Secure

OAuth: Open Authorization

REST: Representational State Transfer

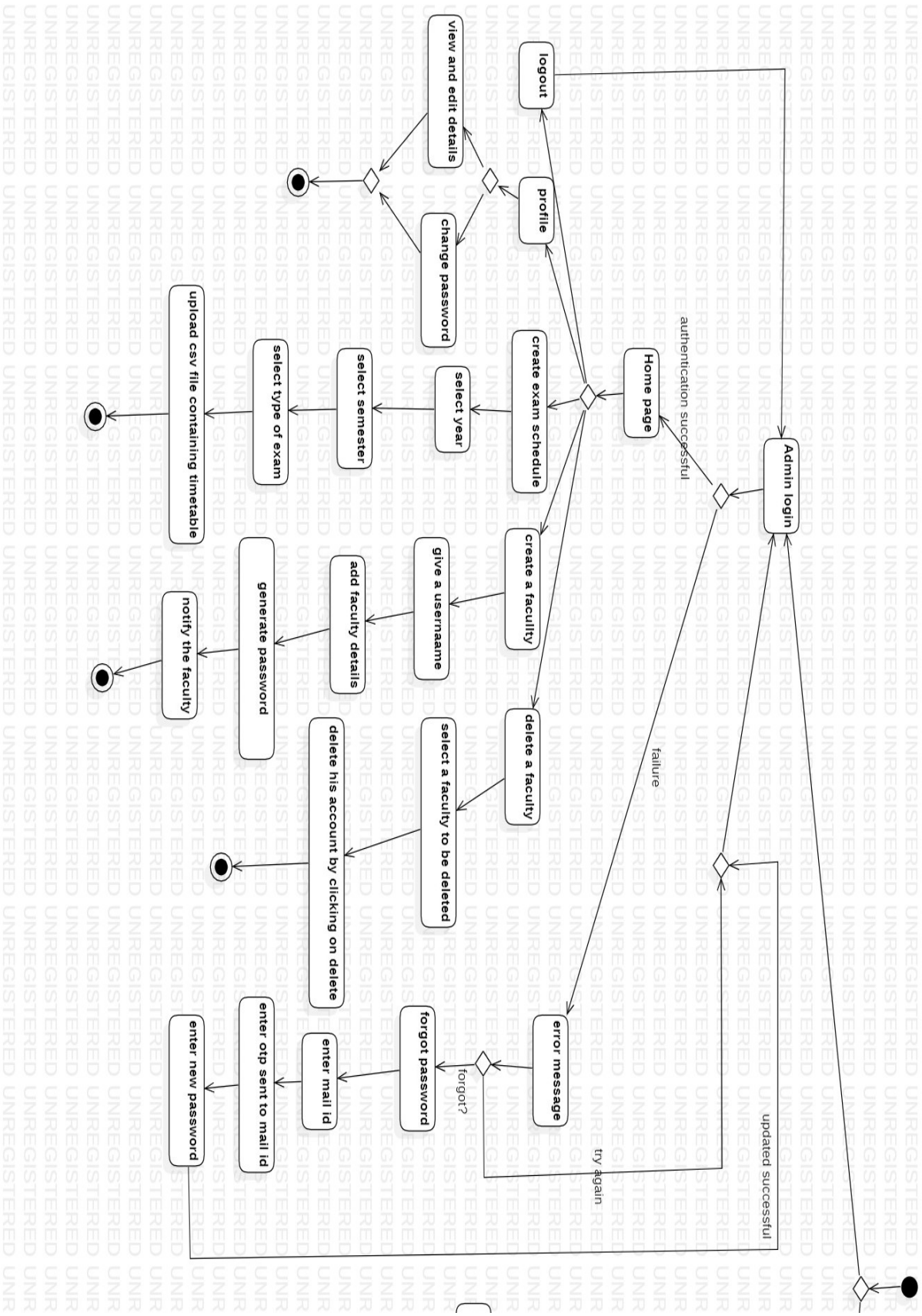
HTML: Hypertext Markup Language

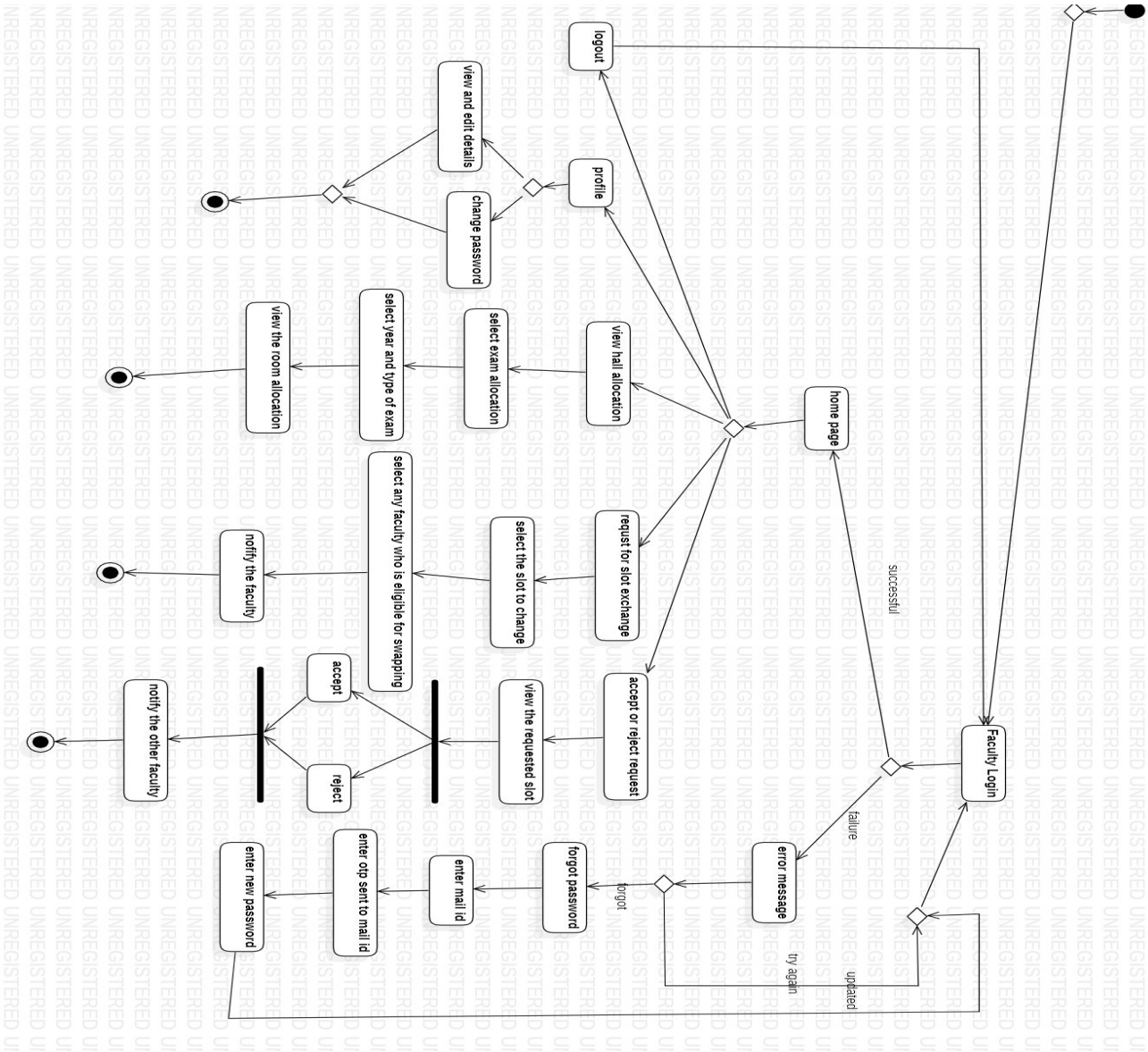
CSS: Cascading Style Sheets

JS: JavaScript

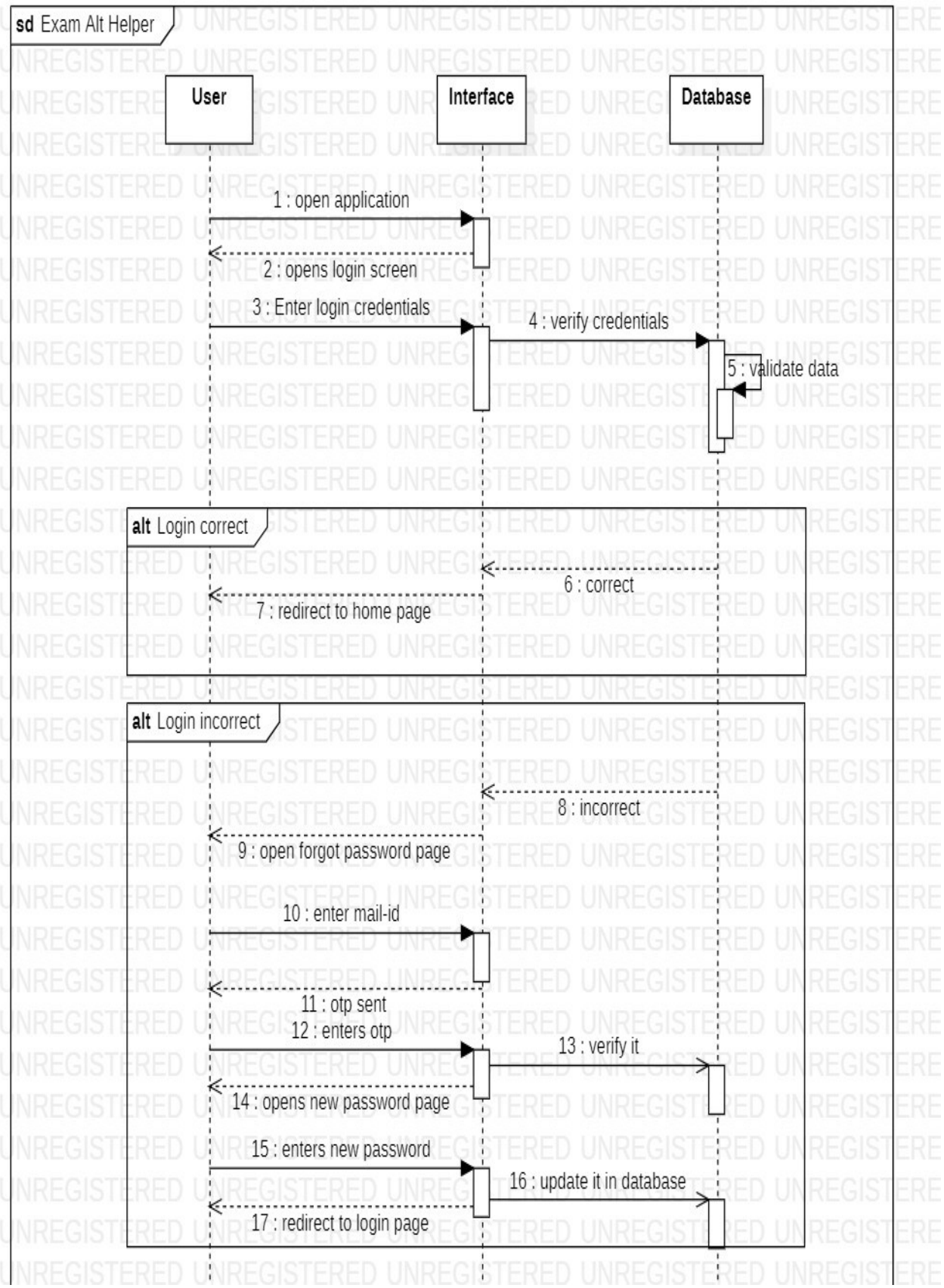
Appendix B: Analysis Models

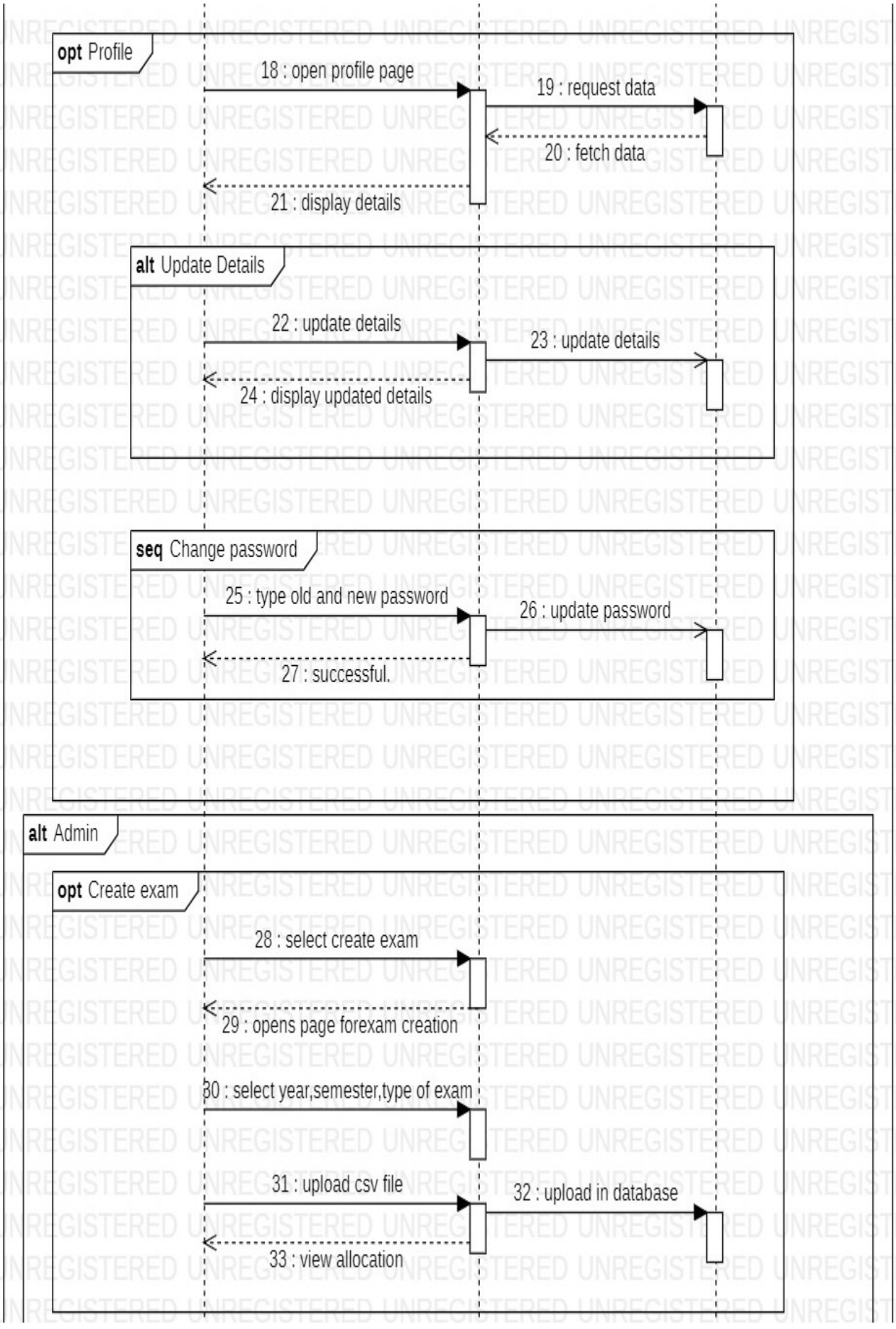
ACTIVITY DIAGRAM

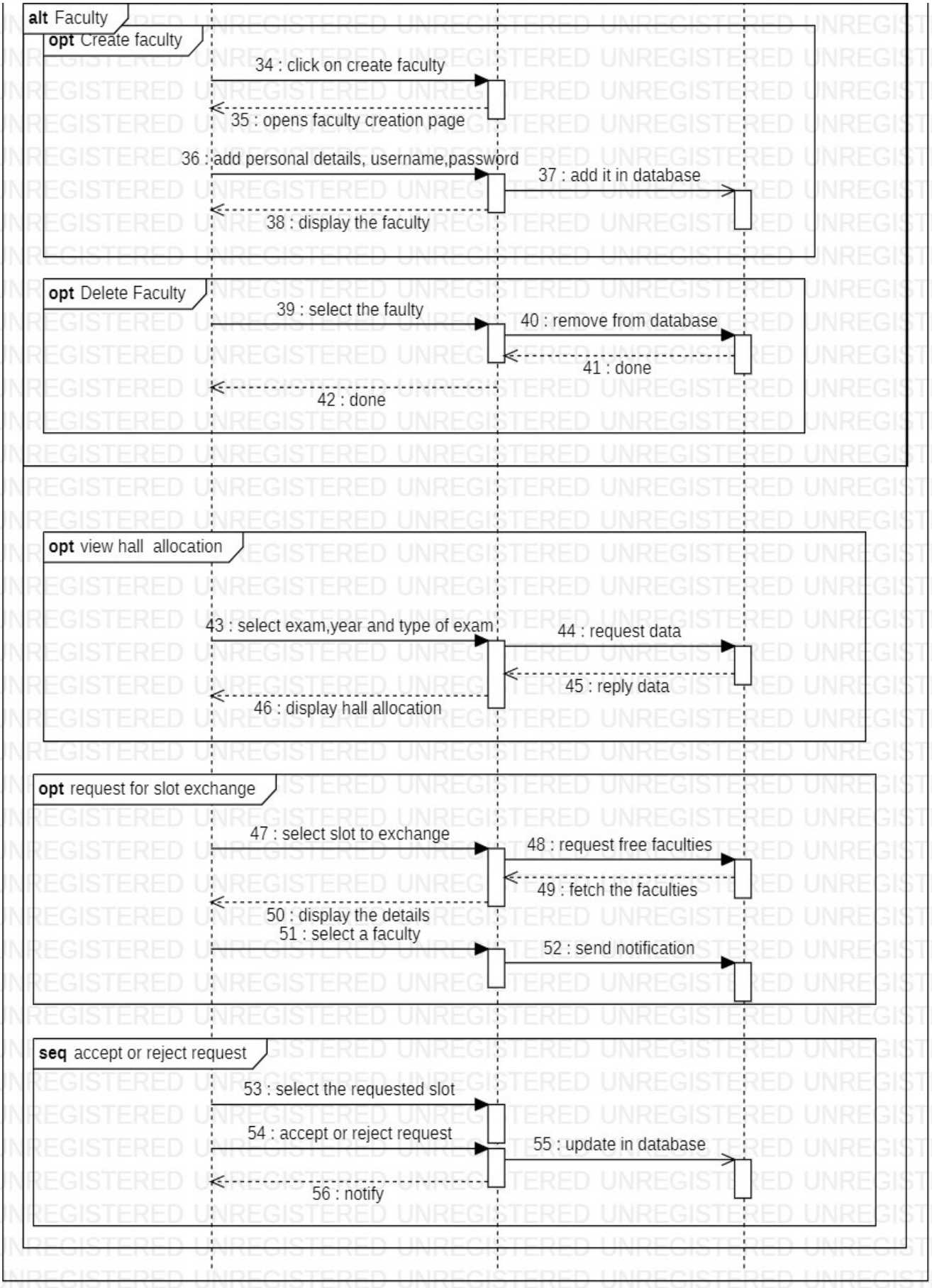

Admin login
authentication successful
failure
Home page
logout
profile
view and edit details
change password
create exam schedule
select year
select semester
select type of exam
upload csv file containing timetable
create a faculty
give a usernaame
add faculty details
generate password
notify the faculty
delete a faculty
select a faculty to be deleted
delete his account by clicking on delete
error message
try again
forgot?
forgot password
enter mail id
enter otp sent to mail id
enter new password
updated successful



Time Sequence diagram

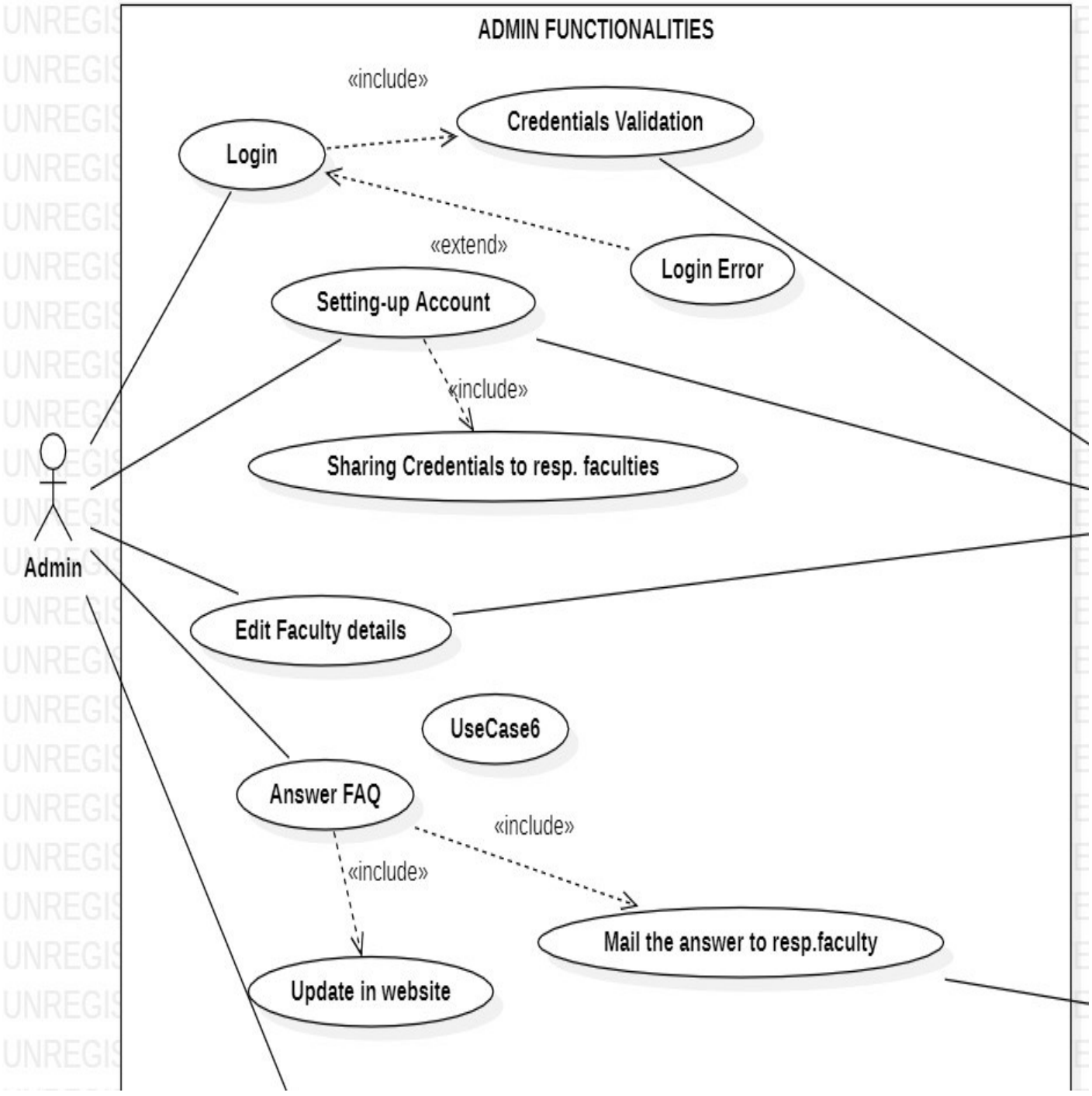

sd Exam Alt Helper
User
Interface
Database
1 : open application
2 : opens login screen
3 : Enter login credentials
4 : verify credentials
5 : validate data
alt Login correct
6 : correct
7 : redirect to home page
alt Login incorrect
8 : incorrect
9 : open forgot password page
10 : enter mail-id
11 : otp sent
12 : enters otp
13 : verify it
14 : opens new password page
15 : enters new password
16 : update it in database
17 : redirect to login page


opt Profile
18 : open profile page
19 : request data
20 : fetch data
21 : display details
alt Update Details
22 : update details
23 : update details
24 : display updated details
seq Change password
25 : type old and new password
26 : update password
27 : successful.
alt Admin
opt Create exam
28 : select create exam
29 : opens page forexam creation
30 : select year,semester,type of exam
31 : upload csv file
32 : upload in database
33 : view allocation

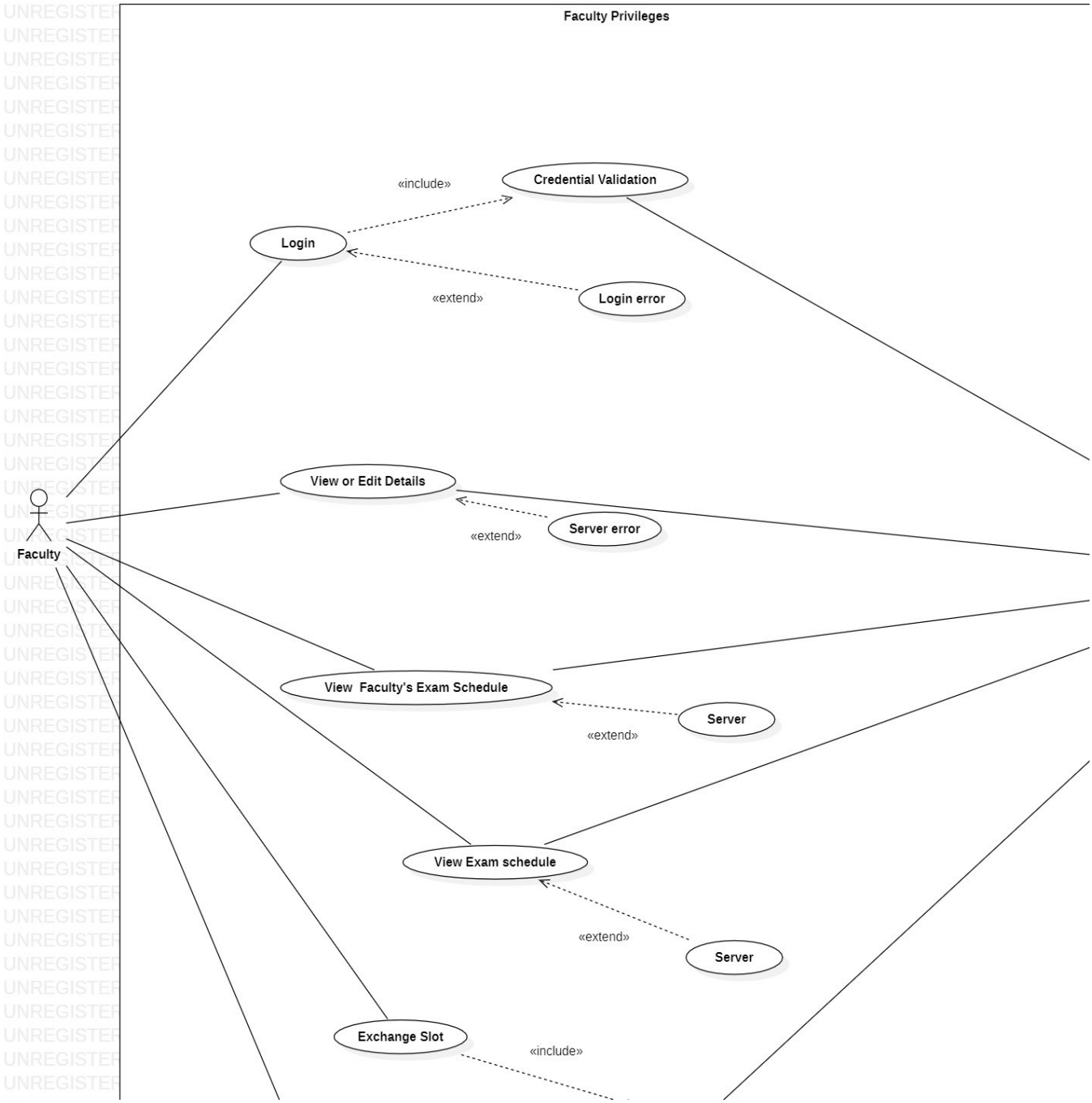

alt Faculty
opt Create faculty
34 : click on create faculty
35 : opens faculty creation page
36 : add personal details, username,password
37 : add it in database
38 : display the faculty
opt Delete Faculty
39 : select the faulty
40 : remove from database
41 : done
42 : done
opt view hall allocation
43 : select exam,year and type of exam
44 : request data
45 : reply data
46 : display hall allocation
opt request for slot exchange
47 : select slot to exchange
48 : request free faculties
49 : fetch the faculties
50 : display the details
51 : select a faculty
52 : send notification
seq accept or reject request
53 : select the requested slot
54 : accept or reject request
55 : update in database
56 : notify

Use Case Diagram

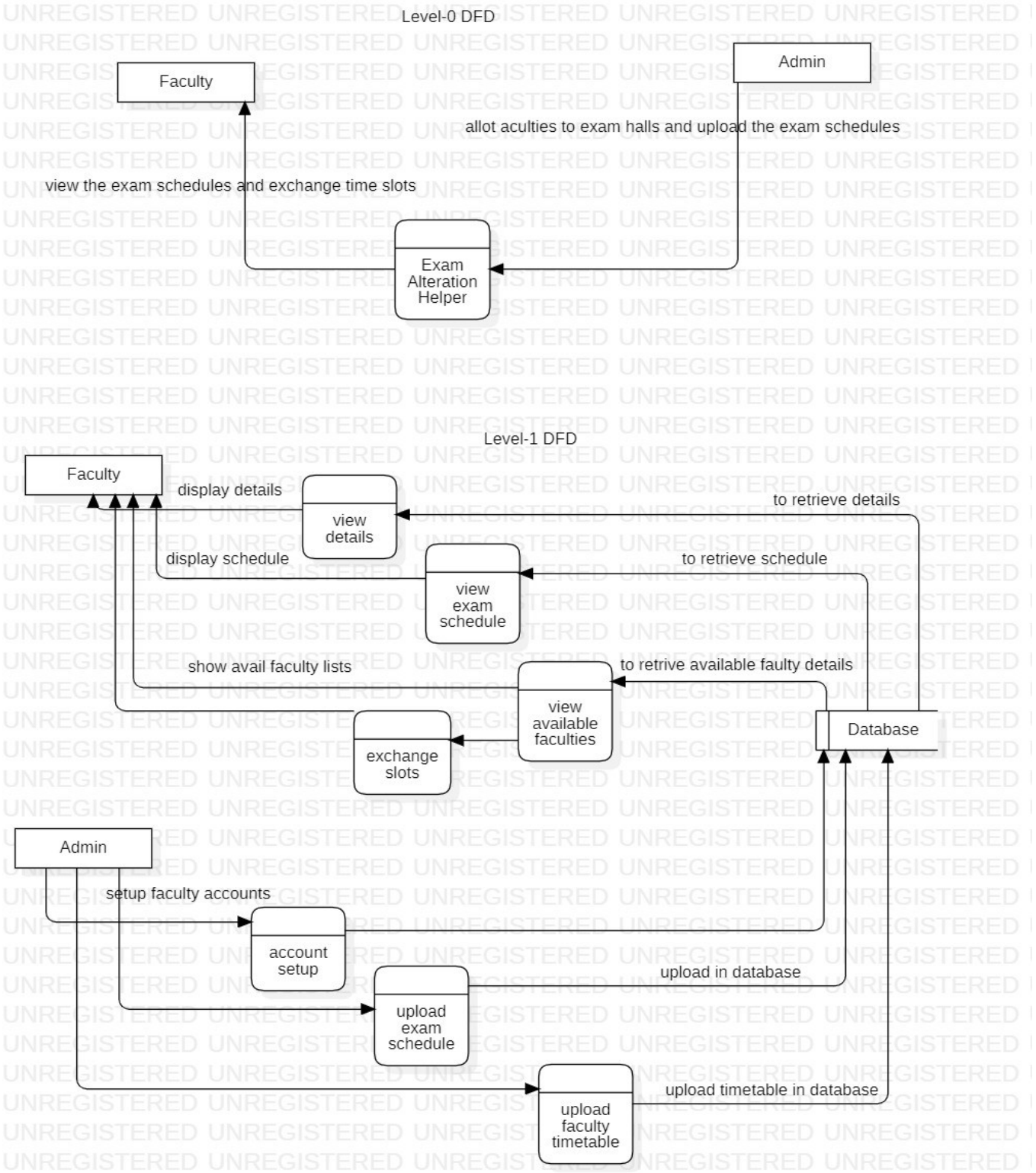
Admin:

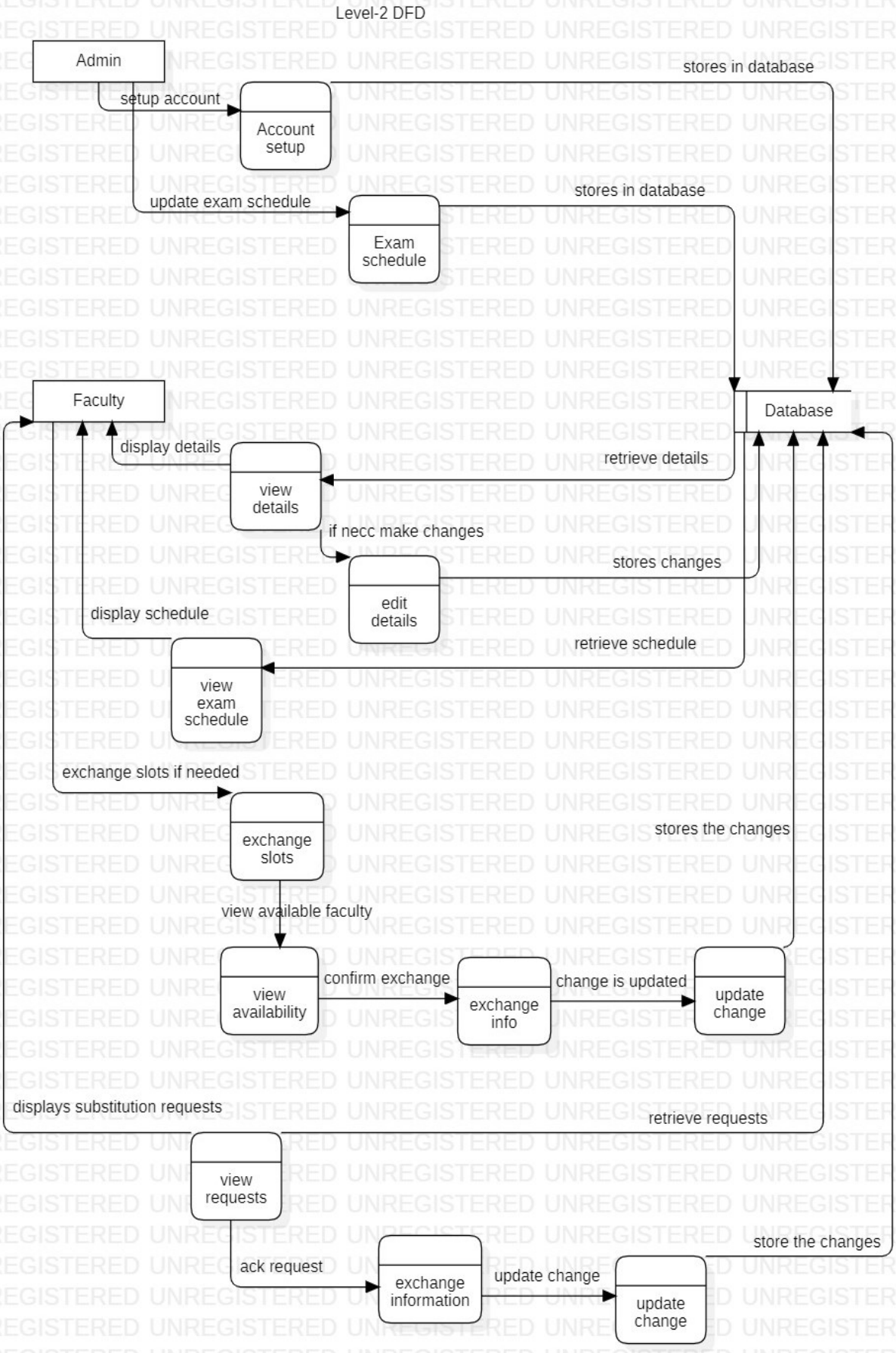


Faculty:


Faculty Privileges
Credential Validation
«include»
Login
Login error
«extend»
View or Edit Details
Server error
«extend»
Faculty
View Faculty's Exam Schedule
Server
«extend»
View Exam schedule
«extend»
Server
Exchange Slot
«include»

Data Flow Diagram




Level-2 DFD
Admin
setup account
Account setup
stores in database
update exam schedule
Exam schedule
stores in database
Faculty
Database
display details
view details
retrieve details
if necc make changes
edit details
stores changes
display schedule
view exam schedule
retrieve schedule
exchange slots if needed
exchange slots
stores the changes
view available faculty
view availability
confirm exchange
exchange info
change is updated
update change
displays substitution requests
retrieve requests
view requests
ack request
exchange information
update change
update change
store the changes

Appendix C: To Be Determined List

The TBD list collects a numbered list of the TBD (to be determined) references that remain in the SRS so they can be tracked to closure. This ensures that all requirements are properly defined, and any outstanding issues or questions are addressed before the project moves forward.