YEDITEPE UNIVERSITY

FACULTY OF ENGINEERING

ISE 402 - CSE 344
INTERDISCIPLINARY PROJECT
EARTHQUAKE MANAGEMENT SYSTEM

by

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1 Introduction

1.1 Purpose

Earthquakes affect millions of people. These natural disasters can cause loss of life, injuries, structural damage, economic loss, and social breakdown.

Before the earthquake, people should see the assembly areas close to them and have information about how the building they are located in will be affected by the earthquake, etc... These are important requirements for minimizing the problems encountered after an earthquake. And the most important part of the earthquake management system is the post-earthquake emergency phase. Coordination and communication are vital at this stage where SAR efforts are ongoing.

This project aims to work to improve the life safety and quality of life of people with the earthquake management system. For this purpose, awareness can be raised for people living in areas with high earthquake risk to be prepared for disasters, pre-disaster, and post-disaster planning can beprovided to meet the needs of people and animals in the post-disaster recovery process. In addition,with this project, structural measures can be taken to reduce the damages caused by disasters. For example, operations such as strengthening or demolishing risky structures. (structures that have bad construction quality and are old),constructing disaster-resistant structures can be carried out.

In conclusion, this project is designed to reduce the damage caused during and after earthquakes and to protect people's and animals' lives. The earthquake management system offers a comprehensive approach covering preparation, intervention, and recovery stages for earthquake events before, during, and after. This system is developed to increase the safety of people living in areas with high earthquake risk, minimize damage, and facilitate faster recovery of communities.

1.2 Background

An earthquake, also known as a quake, tremor or temblor, is a natural phenomenon caused by the sudden release of energy in the Earth's crust, resulting in the shaking, rolling or vibrating of the ground. Earthquakes can occur anywhere on the Earth's surface, but are most commonly caused by the movement of tectonic plates.

When two plates collide, they can get stuck together, and the pressure builds up until the plates suddenly shift, releasing a burst of energy in the form of seismic waves. These waves travel through the Earth's crust and can be felt as shaking on the surface.

The intensity of an earthquake is measured on the Richter scale, which ranges from 1 to 10, with 10 being the most powerful. Earthquakes can cause significant damage to buildings, infrastructure, and communities, and can also trigger other natural disasters such as tsunamis and landslides.

Earthquakes can have a significant impact on individuals and communities, both physically and emotionally. How much people will get affected depends on the building quality and how much the land can absorb the power of the Earthquake where they reside. The lower the build quality and the softer the land gets, the more it affects people living on those lands.

Overall, the impact of earthquakes on individuals and communities is complex and multifaceted. While physical damage is often the most immediately visible consequence, the emotional and psychological toll can be equally significant, particularly for those who experience the quake first-hand. As a result, it is essential for governments and organizations to prioritize disaster preparedness and response, as well as to provide support and resources for those affected by earthquakes and other natural disasters.

In the 6th February 2023 Turkey experienced the 2 most powerful earthquakes (7.8 Kahramanmaraş, 7.5 Kahramanmaraş) since 1999 Marmara Earthquake. Resulting in over 45 000 lives have been lost and many more injured. Apart from the lives and and damage in property this earthquake highlighted that there are still issues in national emergency respond team (AFAD). These issue are including but not limited to: Lack of coordination in the earthquake zone, movement of emergency the supplies, deployment of emergency medical units etc.

By developing the "Earthquake Management System" we aim to assist both the people who are directly affected by the earthquake and also the working personnel helping people on the site and from remote locations. We use the convenience of the mobile devices, to help us minimize the aftermath of the earthquake by helping with coordination of emergency supplies, medical supplies and SAR teams. We believe that this application will help to improve the trust in the government services before, during and after earthquakes.

1.3 Motivation

Statement of Problems With The Existing System

Currently, in the existing system, the management of emergency personnel, emergency materials, and emergency healthcare personnel at the scene is carried out without the use of any technological system by AFAD. This system is not a system that everyone can see. The current system is as follows:

- Due to the improper distribution of emergency materials, either some places receive excess materials or the required places do not receive any materials. In this situation, it is not possible to determine how much material each region needs.

- In terms of personnel management, just like with materials, there may be a shortage of personnel that can be directed to the needed region or there may be congestion by directing too many personnel to certain areas, which can hinder the work in that region. At the same time, the inability to direct personnel to the areas where they may be needed also negatively affects the critical 'time' factor in this process.

- There are also disruptions in accessing healthcare personnel and equipment that arise due to injuries and illnesses in the regions. Deaths that could have been prevented or

permanent damage to individuals occur because the required health unit/medication does not arrive on time or does not arrive at all.

- There is no section related to animals in the current system.
- There is not enough work related to earthquake preparation in the current system.
- In the generally chaotic environment, units cannot be directed properly.

The New System

In the system we have developed, all management will be carried out through a mobile application, and everyone within the scope of the designated authorities can access the necessary information from this system. The authorized personnel can enter data into the system both on-site and off-site (without having to be present in the area) through this application. The system we have developed is as follows:

- The necessary locations for emergency materials and the required amount of emergency materials in these locations are automatically determined by the system and presented to the relevant personnel.
- After the earthquake, users located in the emergency area determined by the system can make emergency equipment requests.
- Before and after an earthquake, the locations and contents of units where emergency supplies are located can be viewed by everyone.
- The locations where search and rescue vehicles and personnel are needed, as well as the required number of search and rescue vehicles and personnel in these locations, are automatically determined by the system and made available to the relevant personnel.
- Before the earthquake, everyone can view the locations of search and rescue units, but their contents cannot be viewed. Only authorized personnel can view their contents.
- After the earthquake, the content of search and rescue units located in the emergency zone determined by the system becomes open to everyone.
- The required locations for healthcare personnel and the required quantity of healthcare personnel in those locations are automatically determined by the system and made available to the relevant personnel.

- The same applies to the work to be done for animals.

- Before the earthquake, the locations of healthcare units can be viewed by everyone, but their content can only be viewed to a limited extent. Detailed content can only be viewed by authorized personnel.

- After the earthquake, the contents of the emergency health units located in the emergency zone determined by the system become available to everyone.

- Users can view the location of the nearest gathering area to them according to the registered residence in the system and benefit from building information query service.

- In the system we have developed, the aim is to ensure necessary preparation and coordination before, during, and after emergencies

2 Functional Requirements

2.1 Description of The System Functionalities

Login Function:

When users login, they enter their email and password. They click the "Login" button. The system detects whether the user is a standard user or an employee based on their email extension. The login data must match in the background.

Users are able to:

- View the age values of their buildings.
- Obtain information about material depots. They can also view their contents, but cannot change them.
- View the locations of search and rescue centers, but cannot view or change their contents.
- View the locations of health facilities and partially view their contents.

Emergency Meeting Point:

The user is shown the nearest location, but other locations can also be visible to the user.

Employees:

- Emergency Depot Manager: Can change the contents of material depots.
- System Administrator: Has full authority to do everything. Can also add and make changes to employees. Can change employee permissions.

- Search and Rescue Management:
    - Human Resources can see everything related to search and rescue centers but can only change human data.
    - Material Management can see everything related to search and rescue centers but can only change equipment data.
- Users cannot see the contents of search and rescue centers.
- Health Facility Management:
    - Human side can only change human data.
    - Animal side can only change animal data.

Normal users have limited visibility. They can also partially see what they can view.

During Earthquakes:

Notifications are not sent for earthquakes below 5, but notifications are sent to users for every earthquake above 5.

After Earthquakes:

- The full content of all health-related information in the earthquake-affected areas will be disclosed.
- This process is applied to the area within a certain radius based on the severity of the earthquake.
- The same applies to search and rescue centers.
- Users will be granted the right to request emergency assistance after earthquakes.
- Users cannot specify the number of people, but can request supplies for a certain area.
- Based on the type of product requested, the request is sent to the relevant management based on the total number of requests, and distribution is made by the relevant management.
- The Material Manager is responsible for distributing supplies to earthquake-affected areas.
- Material reinforcement can be provided from environmental management to earthquake-affected areas.
- The emergency "After Earthquake" mode can be manually turned off, but is automatically enabled at the beginning."

2.2 Description of The System Users

User:

- The user is the most fundamental type of user in the system.
- Everyone in the system regardless of their permission level is a user of the system. Therefore everyone can perform everything the user can do.
- Every user have the following information in the system:
- Name-Surname
- E-mail
- Password
- Blood type
- House location (In the generated map)
- Gender
- Age
- Security Question
- Notes (Extra info)
- The user has the most basic permission.

Emergency Supply Manager:

- Emergency Supply Manager is one of the working personnel roles in the system.
- The emergency Supply Manager is responsible for inputting data into the emergency supply warehouse.

System Administrator:

- System Administrator is one of the working personnel roles in the system.
- System Administrator has the highest permission level in the system
- System Administrator can change the permission level of the other users.

Human Resource Manager for SAR:

- Human Resource Manager for SAR is one of the working personnel roles in the system.
- Human Resource Manager for SAR is responsible for managing the human resources in search and rescue centers.
- Human Resource Manager for SAR can view search and rescue center information in a detailed way.

Equipment Manager for SAR:

- The equipment Manager for SAR is one of the working personnel roles in the system.
- The equipment Manager for SAR is responsible for managing the equipment that will be used by search and rescue teams in the search and rescue centers.
- The equipment Manager for SAR can view search and rescue center information in a detailed way.

Human Medical Supply Manager:

- Human Medical Supply Manager is one of the working personnel roles in the system.
- Human Medical Supply Manager is responsible for managing the medical supplies for humans in medical supply units.
- Human Medical Supply Manager can view medical supply unit information in a detailed way.

Animal Medical Supply Manager:

- Animal Medical Supply Manager is one of the working personnel roles in the system.
- Animal Medical Supply Manager is responsible for managing the medical supplies for animals in medical supply units.
- Animal Medical Supply Manager can view medical supply unit information in a detailed way.

2.3 Specific Requirements

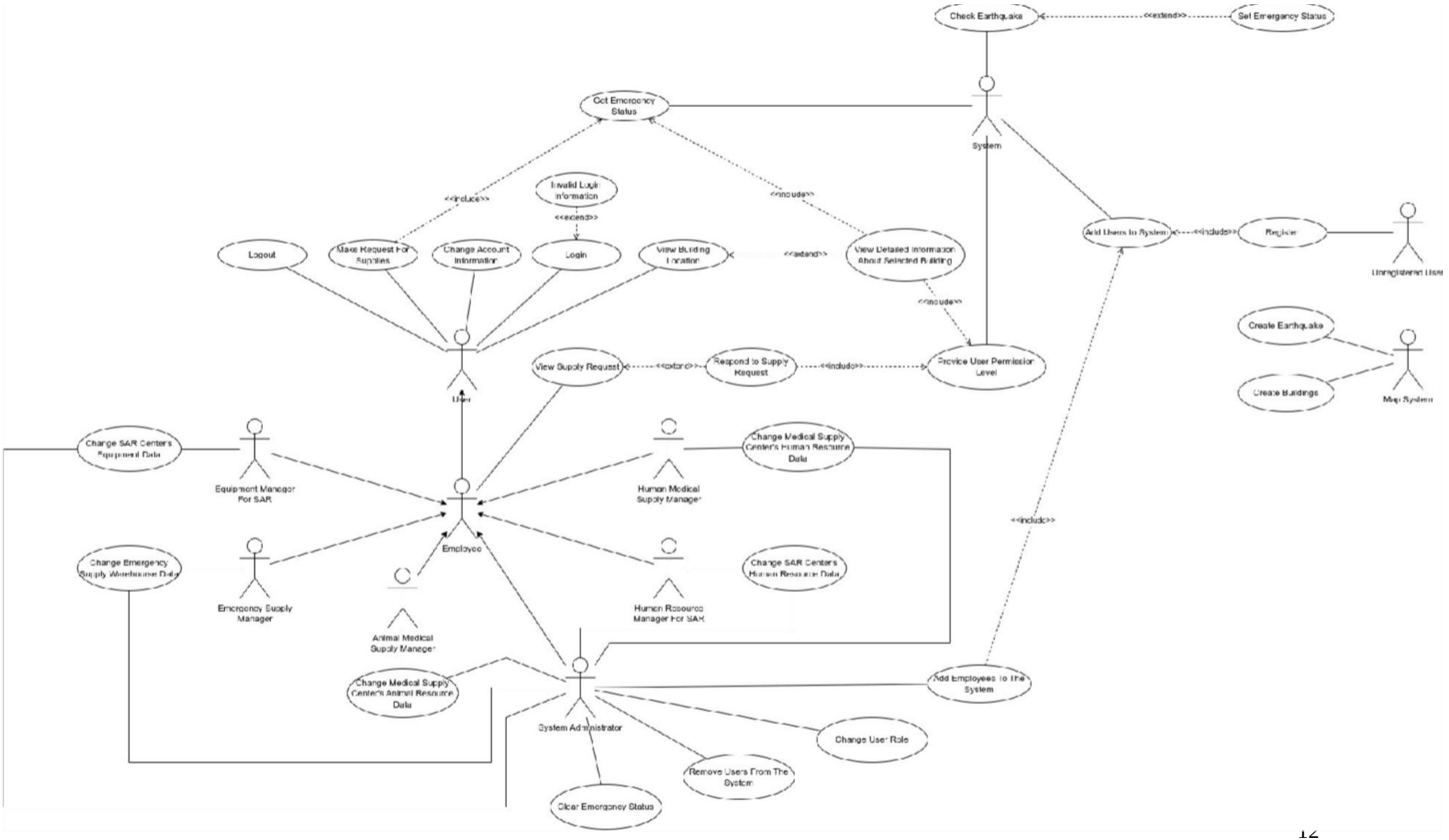
Functional Requirements

- The system shall provide a user registration form that includes fields for the user to enter their personal information.
- The system shall store users' personal data, including name, email address,password, blood type, home, gender, age and other information.
- The system shall immediately send notifications to all registered users When the system detects an earthquake with a magnitude of 5.0 or greater.
- The system shall allow users to log in using their email address and personal password.
- The system shall differentiate individuals into two categories: personnel and users.
- The system shall automatically register personnel by collecting their personal information, including name, job title, and contact details, and creating a personnel record. The system shall validate the accuracy of the information provided by personnel and ensure that the record is complete before allowing personnel access to the system's administrative features.
- The system shall automatically assign a unique identification number to each personnel record upon registration.
- The system shall enforce the access controls specified by the administrator and prevent unauthorized access to system resources.
- The system shall determine user access levels based on their email address domain.
- The system shall provide system administrators with full access to all administrative features and resources within the system.
- The system shall allow system administrators to add and remove personnel from the system by providing an administrative feature to create, modify, and delete personnel records.
- The system shall allow system administrators to modify the access privileges of employees.
- The system shall provide users with the ability to view the contents of the material storage.

- The system shall provide users with the ability to view the locations of search and rescue centers.
- The system shall prevent users from viewing the contents of search and rescue centers.
- The system shall consist of four main departments: medical supply managers, system administration, search and rescue management, and emergency supply management.
- The system shall allow the emergency supply management to coordinate food and supply logistics during an earthquake.
- The system shall divide the "medical supply management" department into two distinct departments: "human medical supply management" and animal "medical supply management" departments.
- The system shall divide the search and rescue management department into two distinct departments: human resources management and equipment management.
- The system shall enable the human resources manager to allocate search and rescue personnel to different regions.
- The system allows the equipment management to coordinate the vehicles during an earthquake.
- The system enables the human management to view the content and quantity of health equipment for humans.
- The system allows the human management to coordinate the distribution and management of medical equipment for the disaster response.
- The system allows the animal management to view the content and quantity of health equipment for humans.
- The system allows the animal management to coordinate health equipment for animals.
- The system enables users to view the age values of the buildings they reside in.
- The system allows users to access the location information of supply warehouses.
- The system allows users to view the contents of the supply warehouse areas.
- The system does not allow users to modify the contents of the supply storage facilities.
- The system allows users to view the location of search and rescue centers.
- The system shall enforce access controls to prevent unauthorized users from viewing or accessing the contents of search and rescue centers.
- The system shall enforce access controls to prevent unauthorized users from modifying the contents of search and rescue centers.
- The system shall allow emergency supply managers to modify the contents of emergency supply depots based on changing supply needs and availability.
- The system shall allow HR management to view the contents of the search and rescue center to assess the availability of resources and equipment for emergency response teams.
- The system shall allow HR management to modify the personnel coordination data of the search and rescue center to update and maintain accurate information about the emergency response teams.
- The system allows the equipment management to view the content of the search and rescue center.

- The system allows the human resources management to modify vehicle coordination information related to the search and rescue center.
- The system restricts access to the content of the search and rescue center to authorized personnel only.
- The system should have a secure user authentication mechanism that only allows authorized personnel to access and modify the health materials information.
- The system should provide access to the human healthcare administrator to view the inventory of animal healthcare materials.
- The system enables users to see the location of health units.
- The system provides each user with the nearest emergency gathering area.
- The system allows each user (excluding those near it) to see other emergency gathering areas.
- The system enables the gradual visibility of the current situation of departments during an earthquake.
- The system allows users to see the contents of the equipment and teams in search and rescue management after an earthquake.
- The system allows the equipment and team content of search and rescue managers to be seen at the centers according to the severity of the earthquake.
- The system allows users to see how much health equipment is available in health units.
- The system allows the full opening of all information related to health in earthquake-affected areas after the earthquake.
- The system enables the opening of all information related to search and rescue centers after the earthquake.
- The system provides users with the right to request emergency assistance after the earthquake.
- The system allows users to request materials for a specific area after the earthquake.
- The system cannot choose the amount of material requested by the user for a specific area after the earthquake.

Use Case Diagram



Use Case Priority List

Use Case	Priority Rank	Reason
Add Employees To The System	Medium	Adding employees to the system is important but does not affect any critical functionality.
Add Users To System	Medium	Adding new users to system is important but does not affect any critical functionality of the system.
Change Account Information	Medium	A user changing some of its personal information may affect some functionality of the system.
Change Emergency Supply Warehouse Data	High	Changing emergency unit data is a critical use case.
Change Medical Supply Center's Animal Resource Data	High	Changing emergency unit data is a critical use case.
Change Medical Supply Center's Human Resource Data	High	Changing emergency unit data is a critical use case.
Change SAR Center's Equipment Data	High	Changing emergency unit data is a critical use case.
Change SAR Center's Human Resource Data	High	Changing emergency unit data is a critical use case.
Change User Role	Medium	Changing user role is important but does not affect any critical functionality.
Check Earthquake	High	System checks for earthquakes periodically and changes the system changes if it receives a signal therefore this function is critical for the system.
Clear Emergency Status	High	Clearing emergency status causes system to change states which affects many critical functionality therefore this use case is critical.
Create Buildings	High	Creation of buildings is critical because the system the system operates on computer generated data.
Create Earthquake	High	Creation of earthquake is critical because the emergency system changes states according to emergency status.
Get Emergency Status	High	It is critical that the system returns correctly if there is an emergency or not.
Invalid Login Information	High	The system shall not allow users to login with incorrect

		credentials.
Login	High	The system will not be able to function if no one is able to login to the system.
Logout	Low	The system's critical functionality does not getaffected if a user cannot logout.
Make Request For Supplies	High	It is critical that users which are affected by the earthquake shall be able to make request for supplies.
Provide User Permission Level	High	Many of the system's critical functionality relies on this use case, therefore this use case must function at all times.
Register	Low	Registration of a unregistered user does not affect any critical functionality.
Remove Users From The System	Low	Removing a certain user does not affect any critical functionalityof the system.
Respond to Supply Request	High	Employees responding to a supply request is a critical use case.
Set Emergency Status	High	Emergency status does change the state of the system so many critical functionality get affected, because of this setting emergency status is a critical use case.
View Building Location	High	Users shall be able to locate building locations with no exceptions.
View Detailed Information About Selected Building	High	Users and shall be able to view detailed information about buildings according to their permission level.
View Supply Request	High	Employees viewing emergency supply requests is a critical use case.

Use Case Specifications

Use case ID: UC01	**Use Case:** Add Employees To The System
Primary Actors: System Administrator	
Precondition: System is operational. System administrator is logged into the system.	
Main Flow: 1. System Administrator runs add new employee functionality. 2. System prompts System Administrator to enter new Employee's information. 3. System Administrator confirms entered information by pressing the Add Employee button. 4. Inclusion point: Add Users to System 5. System Administrator gets notified that a new employee has been created successfully.	
Post conditions: 1. New employee has been added to the database.	
Alternative Flow: Add Users to System Failed	
Preconditions: Use case "Add Users to System" returned with error message.	
Alternative Flow: The flow starts after inclusion point "Add Users to System". 1. System Administrator receives a message why adding employee to system failed.	
Post conditions: None.	

Use case ID: UC02	**Use Case:** Add Users to System
Primary Actors: System	
Preconditions: System is operational.	
Main Flow: 1. System receives a request to add new users. 2. System checks if given user's information does match system's rules. 3. System adds given user to the database and returns successfully created.	
Post conditions: 1. A new user has been created and added to the database.	
Alternative Flow: Invalid Information	
Preconditions: User's information does not match with the system's rules. Therefore user cannot be added to the database.	
Alternative Flow: The flow starts after Main Flow point 2. 1. System returns which information does invalidates system's rules in an error message.	
Post conditions: None.	

Use case ID: UC03	**Use Case:** Change Account Information
Primary Actors: User	
Preconditions: System is operational. User is logged into the system.	
Main Flow: 1. User runs "Change Account Information" function. 2. User selects the field of information they wish to modify.	

3. User modifies the selected information.
4. Steps 2 and 3 are repeated until the user has modified all the information fields they wish to change.
5. User confirms the changes by pressing “Confirm Changes”.
6. System checks if changed information does match the system’s rules.
7. System updates users information with the modified ones.

Post conditions:

1. User’s information has been updated.

Alternative Flow: Invalid Information

Preconditions: Modified information entered by the user does not match the system’s rules.

Alternative Flow:

The flow starts after main flow 6.

1. System keeps the current information of the user unchanged.
2. System notifies user which fields they have entered incorrectly.

Post conditions: None.

Use case ID: UC04	**Use Case:** Change Emergency Supply Warehouse Data
Primary Actors: Emergency Supply Manager , System Administrator	
Preconditions: System is operational. Emergency Supply Manager or System Administrator is logged into the system.	
Main Flow:	

1. Emergency Supply Manager or System Administrator runs “Change Emergency Supply Warehouse Data” function.
2. Emergency Supply Manager or System Administrator enters a new amount of data.
3. Emergency Supply Manager or System Administrator confirms the entered information by pressing Change Emergency Supply Warehouse Data button.
4. Emergency Supply Manager or System Administrator gets notified that the data for the Emergency Supply Warehouse has been changed successfully.

Post conditions:

1. Emergency Supply Warehouse data has been updated.

Use case ID: UC05	**Use Case:** Change Medical Supply Center’s Animal Resource Data

Primary Actors: Animal Medical Supply Manager, System Administrator

Preconditions: System is operational. Animal Medical Supply Manager or System Administrator is logged into the system.

Main Flow:

1. Animal Medical Supply Manager or System Administrator runs “Change Medical Supply Center’s Animal Resource Data” function.
2. Animal Medical Supply Manager or System Administrator enters a new amount of data.
3. Animal Medical Supply Manager or System Administrator confirms the entered information by pressing Change Medical Supply Center’s Animal Resource Data button.
4. Animal Medical Supply Manager or System Administrator gets notified data for the Medical Supply Center’s Animal Resource has been changed successfully.

Post conditions: 1. Medical Supply Center's Animal Resource data has been updated.

Use case ID: UC06	**Use Case:** Change Medical Supply Center's Human Resource Data
Primary Actors: Human Medical Supply Manager , System Administrator	
Preconditions: System is operational. Human Medical Supply Manager or System Administrator is logged into the system.	
Main Flow: 1. Human Medical Supply Manager or System Administrator runs "Medical Supply Center's Human Resource Data" function. 2. Human Medical Supply Manager or System Administrator enters a new amount of data. 3. Human Medical Supply Manager or System Administrator confirms the entered information by pressing Change Medical Supply Center's Human Resource Data button. 4. Human Medical Supply Manager or System Administrator gets notified that the data for Medical Supply Center's Human Resource Data has been changed successfully.	
Post conditions: 1. Medical Supply Center's Human Resource data has been updated.	

Use case ID: UC07	**Use Case:** Change SAR Center's Equipment Data
Primary Actors: Equipment manager for SAR , System Administrator	

Preconditions: System is operational. Equipment manager for SAR or System Administrator is logged into the system.
Main Flow: 1. Equipment manager for SAR or System Administrator runs “Change SAR Center’s Equipment Data” function 2. Equipment manager for SAR or System Administrator enters a new amount of data. 3. Equipment manager for SAR or System Administrator confirms the entered information by pressing Change SAR Center’s Equipment Data button. 4. Equipment manager for SAR or System Administrator gets notified that the data for SAR Center’s Equipment has been changed successfully.
Post conditions: 1. SAR Center’s Equipment data has been updated.

Use case ID: UC08	**Use Case:** Change SAR Center’s Human Resource Data
Primary Actors: Human Resource Manager for SAR , System Administrator	
Preconditions: System is operational. Human Resource Manager for SAR or System Administrator is logged into the system.	
Main Flow: 1. Human Resource Manager for SAR or System Administrator runs “Change SAR Center’s Human Resource Data” function 2. Human Resource Manager for SAR or System Administrator enters a new amount of data.	

3. Human Resource Manager for SAR or System Administrator confirms the entered information by pressing Change SAR Center's Human Resource Data button. 4. Human Resource Manager for SAR or System Administrator gets notified that the data for SAR Center's Human Resource has been changed successfully.
Post conditions: 1. SAR Center's Human Resource data has been updated.

Use case ID: UC09	**Use Case:** Change User Role
Primary Actors: System Administrator	
Preconditions: System is operational. System Administrator is logged into the system.	
Main Flow: 1. System Administrator runs "Change User Role" function 2. System Administrator enters a new role for the user. 3. System Administrator confirms the entered role by pressing Change User Role button. 4. System Administrator gets notified that the user role has been changed successfully.	
Post conditions: 1. Role of the user is updated.	

Use case ID: UC10	**Use Case:** Check Earthquake
Primary Actors: System	
Preconditions: System is operational.	
Main Flow:	

1. System checks if earthquake has been detected by sensors.
2. Extension point: Set Emergency Status
3. Repeat step 1 every 10 seconds.

Post conditions:

None.

Use case ID: UC11	**Use Case:** Clear Emergency Status
Primary Actors: System Administrator	
Preconditions: System is operational. System Administrator is logged into the system. System is currently in emergency state.	
Main Flow: 1. System Administrator runs function “Clear Emergency Status”. 2. System changes back to normal mode and clear all emergency requests and notifications.	
Post conditions: 1. System is back to normal state. 2. All emergency request notifications are cleared from the system.	

Use case ID: UC12	**Use Case:** Create Buildings
Primary Actors: Map System	
Preconditions: Map must be generated before system is operational.	
Main Flow: 1. Map System generates a 100x100 building matrix.	

2. Map System places emergency units (Emergency Supply Warehouse, SAR Center, Medical Supply Center) according to rules in NFRs. 3. Map System sets some buildings as emergency gather up locations according to rules in NFRs.
Post conditions: 1. A 100x100 building matrix is generated that will be used as a map for the system.

Use case ID: UC13	**Use Case:** Create Earthquake
Primary Actors: Map System	
Preconditions: System is operational for at least 5 minutes. System is not in emergency state.	
Main Flow: 1. Pick a random number between 0-9 (including 0 and 9). 2. Repeat step 1 with 1 minute interval until a number greater than 5 is picked.	
Post conditions: 1. An earthquake will be created.	

Use case ID: UC14	**Use Case:** Get Emergency Status
Primary Actors: System	
Preconditions: System is operational.	
Main Flow: 1. A function requests to get the system state. 2. System returns whether it is in emergency state or not.	

Post conditions: 1. Returns system state.

Use case ID: UC15	**Use Case:** Invalid Login Information
Primary Actors: User	
Preconditions: System is operational. An input has entered by the User for the requested information to login. Login attempt has failed.	
Main Flow: 1. System checks why the login attempt has failed. 2. System returns the fail reason in an error message.	
Post conditions: Fail reason returned in an error message.	

Use case ID: UC16	**Use Case:** Login
Primary Actors: User	
Preconditions: System is operational. User must open the login page and user should not be logged into the system.	
Main Flow: 1. User must enter the requested information(mail address and password). 2. User confirms the information that was entered by pressing Login Button. 3. Extension point: Invalid Login Information. 4. User gets notified that the login has been completed successfully.	

Post conditions: 1. User has been successfully logged into the system.
Alternative Flow: Invalid Login Information
Preconditions: Information has been entered by the user does not match the system's rules or the Information is false.
Alternative Flow: The flow starts after main flow 3. 1. User gets notified by an error message which is returned.
Post conditions: 1. User is forwarded back to the login screen.

Use case ID: UC17	**Use Case:** Logout
Primary Actors: User	
Preconditions: System is operational. User must be logged in .	
Main Flow: 1. User runs logout function. 2. System prompts for confirmation. 3. User confirms action by pressing logout button and logs out from the system successfully.	
Post conditions: 1. User logged out from the system successfully.	

Use case ID: UC18	**Use Case:** Make Request For Supplies
Primary Actors: User	
Preconditions: System is operational. User is logged into the system.	
Main Flow: 1. Inclusion point: Get Emergency Request 2. System checks if there is an emergency status. 3. User selects which supplies they want to request. 4. User presses confirm button to confirm the supply request.	
Post conditions: 1. Request for supplies has been sent.	
Alternative Flow: System is Not In Emergency State	
Preconditions: System is not in emergency state (System is in normal state).	
Alternative Flow: Alternative flow starts from point 2 in Main Flow. 1. User is warned that they are not able to request supplies during non-emergency situations.	
Post conditions: None.	

Use case ID: UC19	**Use Case:** Provide User Permission Level
Primary Actors: System	
Preconditions: System is operational.	
Main Flow:	

1. A function requests current user's permission level.
2. System returns current user's permission level.

Post conditions: None.

Use case ID: UC20	**Use Case:** Register

Primary Actors: Unregistered User

Preconditions: System is operational. Application is open.

Main Flow:

1. Unregistered User presses the Register button.
2. System prompts Unregistered User to enter the information that Users must have.
3. Unregistered User confirms entered information by pressing to the second register button.
4. Inclusion point: Add Users To System.
5. A user has been successfully created.

Post conditions:

1. A User has been added to database.

Alternative Flow: Invalid Information

Preconditions: Entered information does not match System's rules.

Alternative Flow:

The flow starts after Main Flow point 4

1. System returns which information does invalidate system's rules in an error message.

Post conditions: None.

Use case ID: UC21	**Use Case:** Remove Users From The System
Primary Actors: System Administrator	
Preconditions: System is operational. System Administrator is logged into the system.	
Main Flow: 1. System Administrator runs remove users from the system functionality. 2. System prompts System Administrator to enter the information about the user that they want to remove. 3. System Administrator confirms entered information by pressing the Remove User button. 4. System checks if entered information matches with any User Information. 5. The user has been successfully removed from the system.	
Post conditions: A user has been removed from the database successfully.	
Alternative Flow: Invalid Information	
Preconditions: Entered information does not match with any users information.	
Alternative Flow: The flow starts after main flow point 4. 1. No user is removed. 2. System notifies System Administrator with an error message.	
Post conditions: None.	

Use case ID: UC22	**Use Case:** Respond To Supply Request
Primary Actors: Employee	
Preconditions: Employee presses respond button.	
Main Flow: 1. Inclusion point: Provide User Permission Level 2. System checks all requests that employee can respond. 3. Employee can see all related requests and respond them.	
Post conditions: 1. A window which includes related requests has been opened by the system.	
Alternative Flow: No requests.	
Preconditions: There is not any related requests.	
Alternative Flow: The flow starts after Main Flow point 2 1. System returns “There is not any requests you can respond” in an error message.	
Post conditions: None.	

Use case ID: UC23	**Use Case:** Set Emergency Status
Primary Actors: System	
Preconditions: System is operational. System detected earthquake.	
Main Flow: 1. Change system state to emergency.	
Post conditions: 1. System is in emergency state.	

Use case ID: UC24	**Use Case:** View Building Location
Primary Actors: User	
Preconditions: System is operational. User is logged into system.	
Main Flow: 1. User selects the building that they want to view. 2. Extension Point: View Detailed Information About Selected Building	
Post conditions: 1. All the buildings can be seen to the User.	

Use case ID: UC25	**Use Case:** View Detailed Information About Selected Building
Primary Actors: User	
Preconditions: System is operational. User is logged into the system. User wants to get detailed information about the building.	
Main Flow: 1. Inclusion point: Provide user permission level 2. If user has the permission; user views detailed information about selected building. Else; Inclusion point: Get Emergency Status 3. User views the detailed information about buildings.	
Post conditions: 1. User views detailed information about selected building.	
Alternative Flow: No Permission to View Detailed Information	

Preconditions: User has no permission to view detailed information
Alternative Flow: Alternative flow starts from point 2 Main Flow. 1. No detailed information is shown to the user.
Post conditions: None.
Alternative Flow 2: System is in Emergency State
Preconditions: Get Emergency State returned that system is in emergency state.
Alternative Flow 2: Alternative flow 2 starts from point 2 (else) Main Flow. 1. If selected building is in emergency zone: Return detailed building information. Else: Return nothing. 2. Display the returned result to the user.
Post condition: 1. Returned result is displayed to the user.

Use case ID: UC26	**Use Case:** View Supply Request
Primary Actors: Employee	
Preconditions: System is operational. Employee is logged into the system.	
Main Flow: 1. All requests are displayed to the employee 2. Extension point: Respond to Supply Request	
Post conditions: 1. All requests are in Employee's screen.	

3 Non-Functional Requirements

3.1 Non- Functional Requirements

- The software should load quickly, be responsive, and have few lags or crashes.
- The software should covers elements like speed, scalability, and resource usage.
- The system must have a navigation and information architecture rating of at least 80%, as measured by user testing conducted with a representative sample of users.
- The application should be designed to run smoothly and efficiently on different devices without performance issues.
- The software should be safe and secure, guarding against theft or unwanted access to user data.
- The software should be contains elements like authentication and authorization.
- The application should prevent unauthorized access by limiting the number of login attempts.
- The security system should provide a means for the user to re-authenticate their identity through personal information.
- The app should covers with succinct and clear documentation, a modular architecture, and clean and effective code.
- The application should be simple to maintain and upgrade.
- The application must have an availability rating of at least 99.9%, as measured by monitoring system up time over a period of one month.
- The application shall be developed targeting Android API Level 24 (Android 7.0).
- The app should comprises elements like error handling, fault tolerance, and recovery procedures.
- The app should be refers to the amount of storage it offers.
- The application must allow users to customize settings and save them for future use, as measured by user testing conducted with a representative sample of users.
- The application should produce a sound level appropriate for the intended use.
- The application's battery usage should be minimized to ensure longer phone usage time.
- The application should use the number of critical failures observed during testing over a month, the application must have a reliability rating of 99.9%.
- The application must have a Mean Time Between Critical Failures (MTBCF) of at least 30 days, as measured by tracking the time between critical failures over a period of one year.
- The application must have a usability rating of at least 80%, as measured by user testing conducted with a representative sample of users.
- The application shall be developed using Android Studio version 2022.1.1 Patch 2 or higher.

3.2 Volere Template

Requirement ID: 01	**Requirement Type:** NFR Performance
Description: The software should load quickly, be responsive, and have few lags or crashes**.**	
Rationale: It enhances user experience, minimizes work flow disruptions, and reduces the risk of data loss, leading to increased productivity and user satisfaction.	
Fit Criteria: Feedback from the customer.	

Requirement ID: 02	**Requirement Type:** NFR Performance
Description: The software should cover elements like speed, scalability, and resource usage.	
Rationale: Uses resources efficiently, organizations can not only provide a better user experience but also maximize their return on investment, minimize downtime, and avoid the need for costly hardware upgrades.	
Fit Criteria: Software test in background.	

Requirement ID: 03	**Requirement Type:** NFR Usability
Description: The system must have a navigation and information architecture rating of at least 80%, as measured by user testing conducted with a representative sample of users.	
Rationale: A high rating indicates that users are able to find the information they need quickly and easily, reducing frustration and improving productivity.	
Fit Criteria: Software test in background.	

Requirement ID: 04	**Requirement Type:** NFR Performance
Description: The application should be designed to run smoothly and efficiently on different devices without performance issues.	
Rationale: Ultimately, optimizing the application's performance on different devices can help organizations reach a wider audience, maximize their return on investment, and maintain a competitive edge.	
Fit Criteria: Feedback from the customer.	

Requirement ID: 05	**Requirement Type:** NFR Security
Description: The software should be safe and secure, guarding against theft or unwanted access to user data.	
Rationale: A breach of user data can lead to severe consequences, such as identity theft, financial loss, and reputation damage.	
Fit Criteria: Cybersecurity testing and analysis.	

Requirement ID: 06	**Requirement Type:** NFR Security
Description: The software should be contains elements like authentication and authorization.	
Rationale: It can help organizations comply with industry regulations and standards for data protection, reducing the risk of legal consequences and reputation damage in the event of a breach.	
Fit Criteria: Cybersecurity testing and analysis.	

Requirement ID: 07	**Requirement Type:** NFR Security
Description: The application should prevent unauthorized access by limiting the number of login attempts.	
Rationale: This security measure can also help organizations comply with industry regulations and standards for data protection, reducing the risk of legal consequences and reputation damage in the event of a breach.	
Fit Criteria: Cybersecurity testing and analysis.	

Requirement ID: 08	**Requirement Type:** NFR Security
Description: The security system should provide a means for the user to re-authenticate their identity through personal information.	
Rationale: The security system can prevent unauthorized access and protect sensitive data. This requirement also helps to ensure that the system is user-friendly and easy to use, as it allows the user to easily reset their credentials in case they forget their login information or need to verify their identity.	
Fit Criteria: Cybersecurity testing and analysis.	

Requirement ID: 09	**Requirement Type:** NFR Reliability
Description: The app should covers with succinct and clear documentation, a modular architecture, and clean and effective code.	
Rationale: Clean and effective code will improve readability and reduce the likelihood of errors or bugs, making it easier to maintain and improve the application over time.	
Fit Criteria: Feedback from customer.	

Requirement ID: 10	**Requirement Type:** NFR Reliability
Description: The application should be simple to maintain and upgrade.	
Rationale: simpler maintenance and upgrade processes can also reduce the costs associated with maintaining and upgrading the application over time.	
Fit Criteria: Feedback from stakeholder.	

Requirement ID: 11	**Requirement Type:** NFR Reliability
Description: The application must have an availability rating of at least 99.9%, as measured by monitoring system up time over a period of one month.	
Rationale: Measuring the system up time over a period of one month provides an accurate assessment of the application's reliability and its ability to maintain high availability.	
Fit Criteria: Background analysis by certain periods.	

Requirement ID: 12	**Requirement Type:** NFR Platform
Description: The application shall be developed targeting Android API Level 24 (Android 7.0).	
Rationale: Android API Level 24 ensures that we reach wide variety of users (users using older versions of Android, 7.0 or higher).	
Fit Criteria: Deployment testing.	

Requirement ID: 13	**Requirement Type:** NFR Reliability
Description: The app comprises elements like error handling, fault tolerance, and recovery procedures.	
Rationale: The inclusion of error handling, fault tolerance, and recovery procedures in the app's design aims to ensure that the application can withstand and recover from errors and failures.	
Fit Criteria: Analysis of elements with negative effects in the background.	

Requirement ID: 14	**Requirement Type:** NFR Reliability
Description: The app should be refers to the amount of storage it offers.	
Rationale: It helps in identifying the type and amount of storage hardware required to support the application's storage needs.	
Fit Criteria: Difference between capacity of cloud and current storage.	

Requirement ID: 15	**Requirement Type:** NFR Usability
Description: The application must allow users to customize settings and save them for future use, as measured by user testing conducted with a representative sample of users.	
Rationale: By tailoring the application's settings to their individual preferences, users can have a more personalized experience with the application.	
Fit Criteria: Deployment testing.	

Requirement ID: 16	**Requirement Type:** NFR Usability
Description: The application should produce a sound level appropriate for the intended use.	
Rationale: The application's sound level should be optimized to provide the best user experience for its intended use.	
Fit Criteria: Feedback from customer.	

Requirement ID: 17	**Requirement Type:** NFR Performance
Description: The application's battery usage should be minimized to ensure longer phone usage time.	
Rationale: Application does not consume an excessive amount of battery, which can negatively impact the user's experience and limit their ability to use their phone for other purposes.	
Fit Criteria: Test before releasing application.	

Requirement ID: 18	**Requirement Type:** NFR Reliability
Description: The application should use the number of critical failures observed during testing over a month, the application must have a reliability rating of 99.9%.	
Rationale: This helps ensure that users can use the application with confidence, knowing that their data and tasks are safe and secure.	
Fit Criteria: Implementation of tests with the proper specifications.	

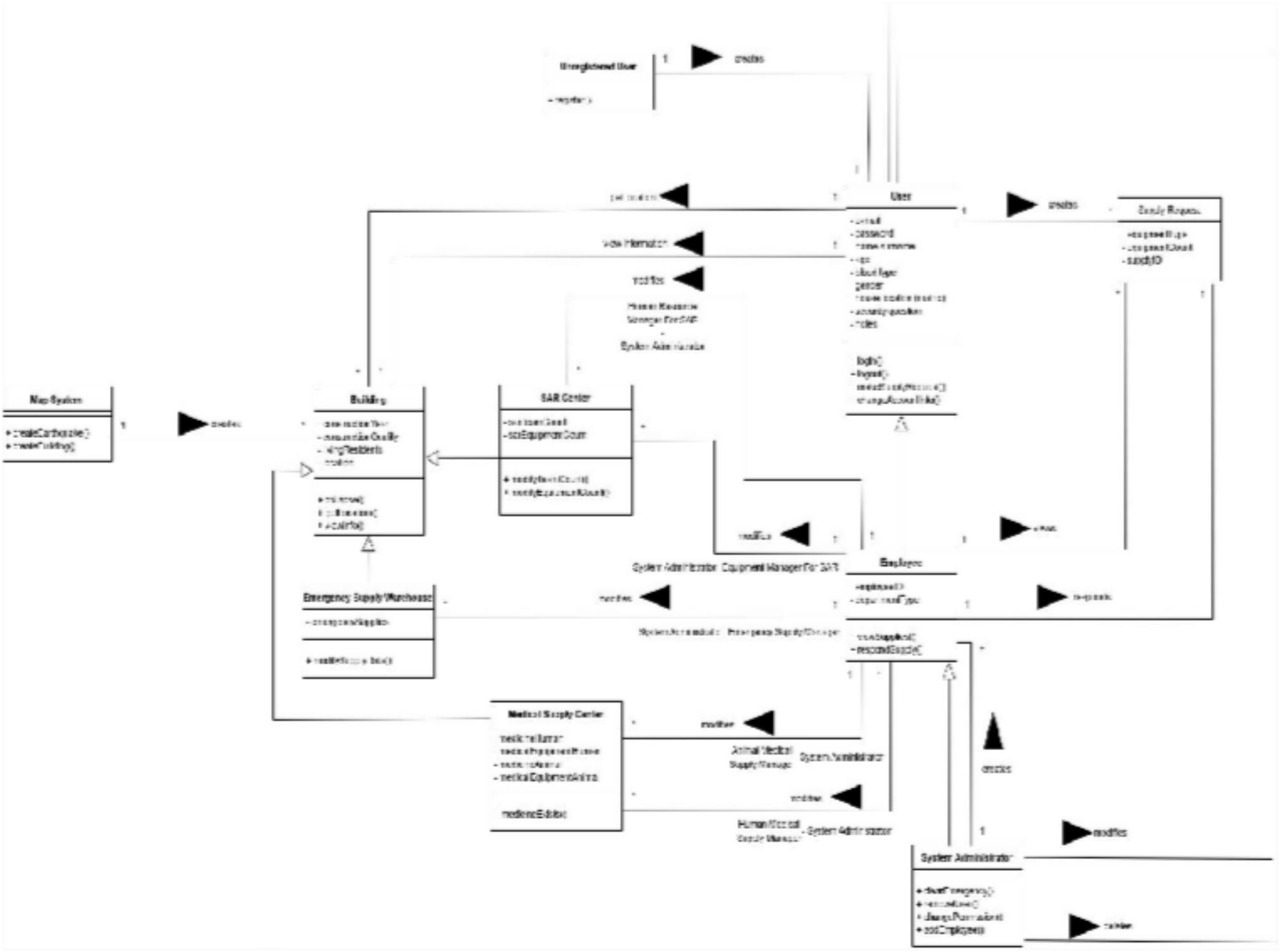
Requirement ID: 19	**Requirement Type:** NFR Reliability
Description: The application must have a Mean Time Between Critical Failures (MTBCF) of at least 30 days, as measured by tracking the time between critical failures over a period of one year.	
Rationale: The application is reliable and minimizes downtime, which is crucial for user satisfaction.	
Fit Criteria: Implementation of tests with the proper specifications.	

Requirement ID: 20	**Requirement Type:** NFR Usability
Description: The application must have a usability rating of at least 80%, as measured by user testing conducted with a representative sample of users.	
Rationale: Achieving a usability rating of at least 80% will ensure that the majority of users find the application intuitive and easy to use, leading to increased user satisfaction and adoption.	
Fit Criteria: Implementation of tests with the proper specifications.	

Requirement ID: 21	**Requirement Type:** NFR Development Tooling
Description: The application shall be developed using Android Studio version 2022.1.1 Patch 2 or higher.	
Rationale: This ensures that all the developers use consistent tooling while developing the application.	
Fit Criteria: Management control.	

4 System Models

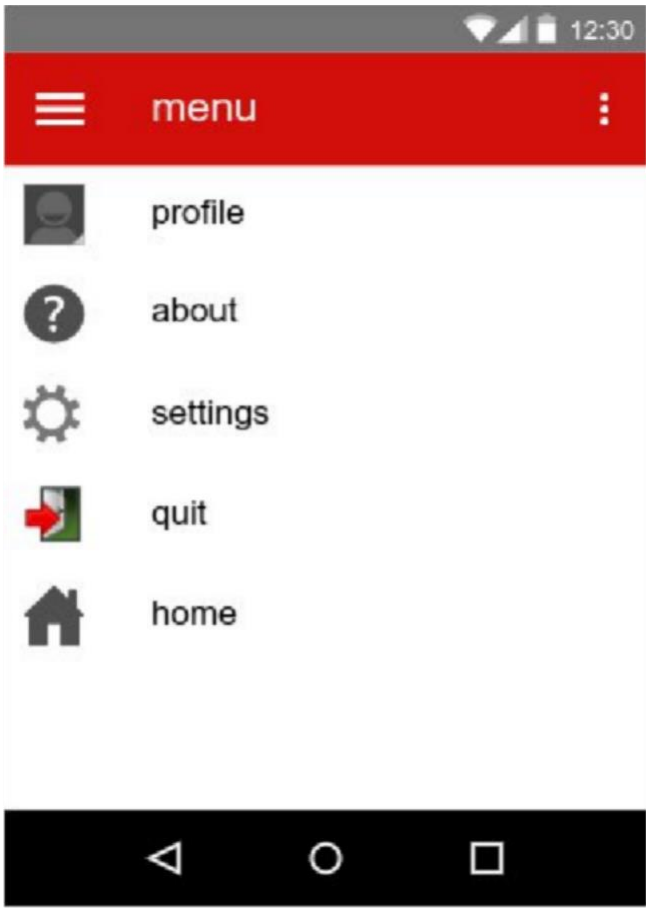
4.1 Object and Class Model


Unregistered User
creates
User
creates
Family Request
view Information
modifies
Map System
creates
Building
SAR Center
Employee
Emergency Supply Warehouse
Medical Supply Center
System Administrator
modifies

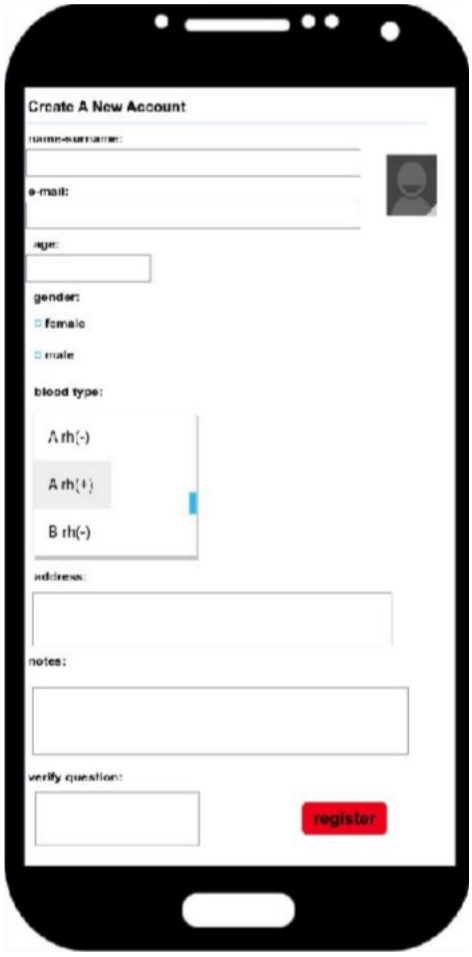
4.2 User Interface – Navigational Paths and Screen Mocks-up

- Login Screen:

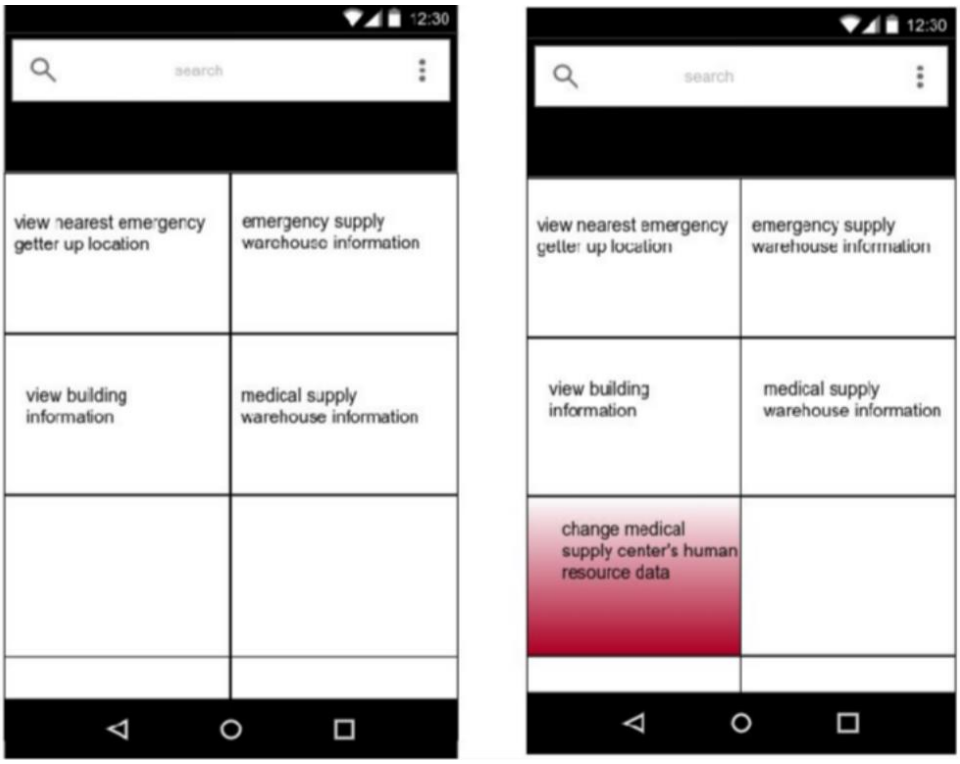
- Hamburger menu:



- Register Screen:



- User and Manager Home Screens:



5 Software Design

5.1 Purpose Of The Document

This comprehensive document serves the purpose of providing detailed information regarding the structure of the Disaster Management software. It covers all aspects, including the frontend (mobile application), database, and the interactions between these components. The document is designed to offer a clear understanding of the software's architecture through the use of relevant diagrams and explanations. By presenting a holistic overview of the system's design and functionality, this document aims to facilitate effective communication and collaboration among stakeholders involved in the development, maintenance, and utilization of the Disaster Management software. This document will also guide us through the software implementation phase. thanks to the diagrams we have already created, it will be easy to code our project.

5.2 Purpose Of The System

The proposed system aims to revolutionize disaster management through an intuitive and accessible mobile application where all management tasks can be performed. Designed for authorized personnel within designated authorities, the system provides access to key information required for effective emergency response. Key users of the system include emergency personnel, stakeholders involved in disaster management and the general public within the authorized scope.

5.2.1 The New System

The system offers users a comprehensive feature set equipped with the following capabilities:

1. Automatic determination and presentation of emergency material locations and quantities: Using advanced algorithms and data analysis, the system automatically determines the optimal locations for emergency supplies and calculates the required quantities. This information is made available to relevant personnel, ensuring that resources are available on time and to those who need them.
2. Emergency equipment requests: Emergency equipment requests: Users located in the emergency zone identified by the system can submit emergency equipment requests through the mobile app. This feature facilitates the efficient allocation of resources to meet the specific needs of the affected areas.
3. Access to emergency supply information: Access to emergency supplies information: The system allows users to view the locations and contents of units where emergency supplies are stored. This feature promotes effective resource management and coordination by providing transparency and awareness of available resources before and after an earthquake.
4. Automated determination and availability of search and rescue resources: Automatic identification and availability of search and rescue resources: Using intelligent algorithms, the system determines the locations and appropriate quantities of search and rescue vehicles and

personnel required. This information is automatically provided to the relevant personnel, speeding up search and rescue operations.

5. Controlled access to search and rescue unit contents: Controlled access to search and rescue unit content: Before an earthquake occurs, the system limits access to content while allowing public access to search and rescue unit locations. Only authorized personnel are authorized to view detailed content. However, after an earthquake, the content of search and rescue units located within the emergency zone becomes publicly accessible. This ensures transparency and effective use of resources.
6. Automatic identification and availability of medical personnel: The system uses intelligence capabilities to identify the locations and quantities of medical personnel required in emergency situations. This information is quickly communicated to the relevant personnel, ensuring efficient distribution and management of health resources.
7. Animal-related services: Similar to human healthcare, the system extends its function to cover animal welfare-related services in emergencies. It automatically determines the actions and resources needed to meet the needs of animals affected by disasters, ensuring a comprehensive response capability.
8. Access to gathering areas and building information query service: Through the system, users can easily find the nearest gathering space according to their registered residence. There is also a building information query service that provides access to basic information about the buildings around them.

The overall objective of the proposed system is to provide comprehensive preparedness, coordination and response capabilities before, during and after emergencies. By leveraging technology and providing key information to authorized stakeholders, the system aims to increase the efficiency and effectiveness of disaster management operations. In conclusion, while we cannot prevent disasters from occurring, we can minimize their impact.

5.3 Structre Of The Document

This software design report is structured to provide a comprehensive understanding of the software architecture of the Disaster Management application. To ensure easy navigation and accessibility, the document starts with a cover page and a well-organized table of contents.

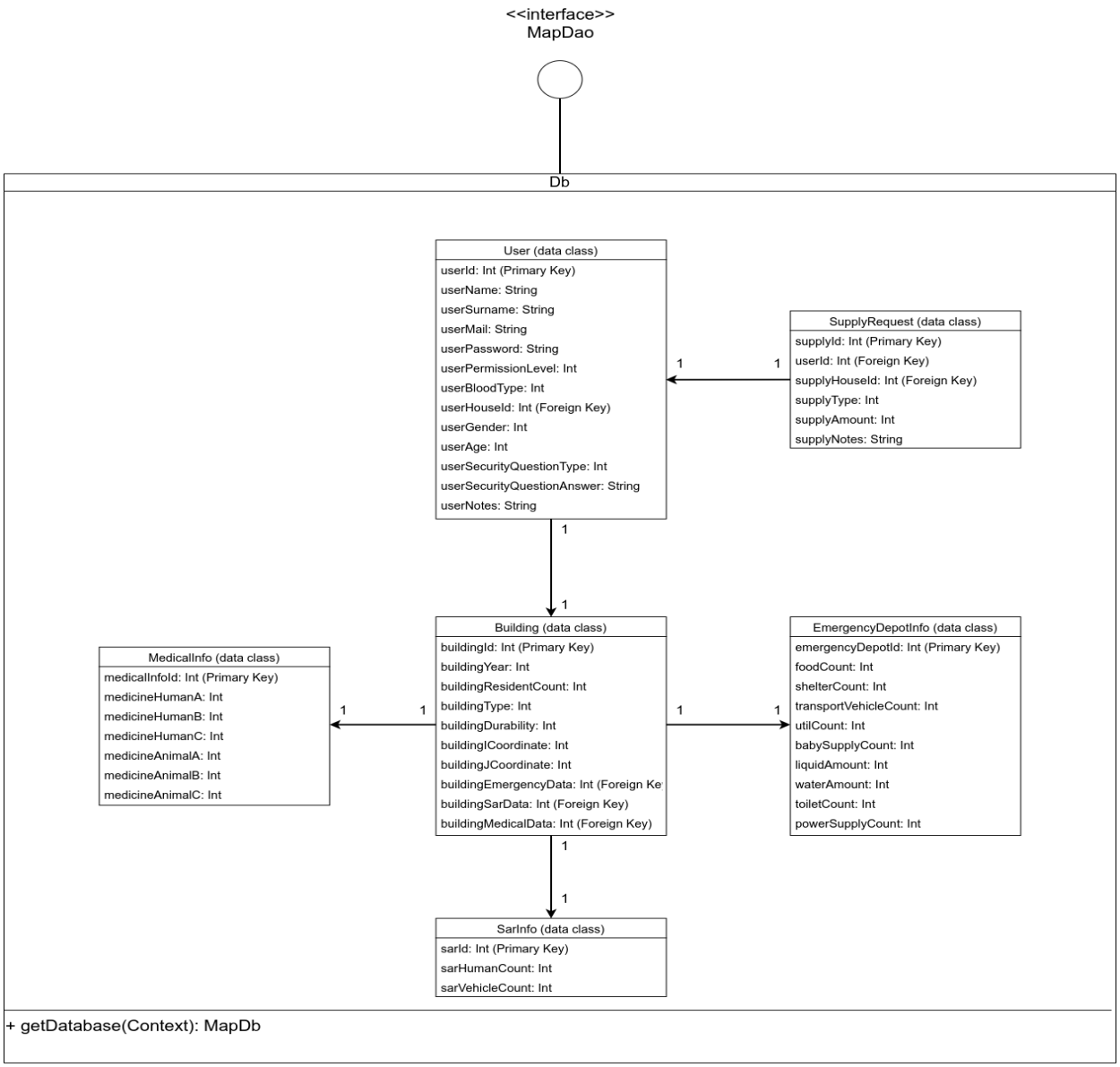
Successive sections of the document are dedicated to presenting relevant diagrams illustrating various aspects of the software architecture. Each diagram is accompanied by detailed descriptions that facilitate a clear understanding of the system structure. These diagrams cover key components such as the mobile application (front-end), the database and the interaction between these elements.

Following the diagram presentations, the document concludes with a glossary and references page. The glossary provides concise definitions of key terms and acronyms used throughout the report, guaranteeing a shared understanding of terms among readers. The references page lists the sources of information consulted during the document preparation process and provides a path for further clarification and research.

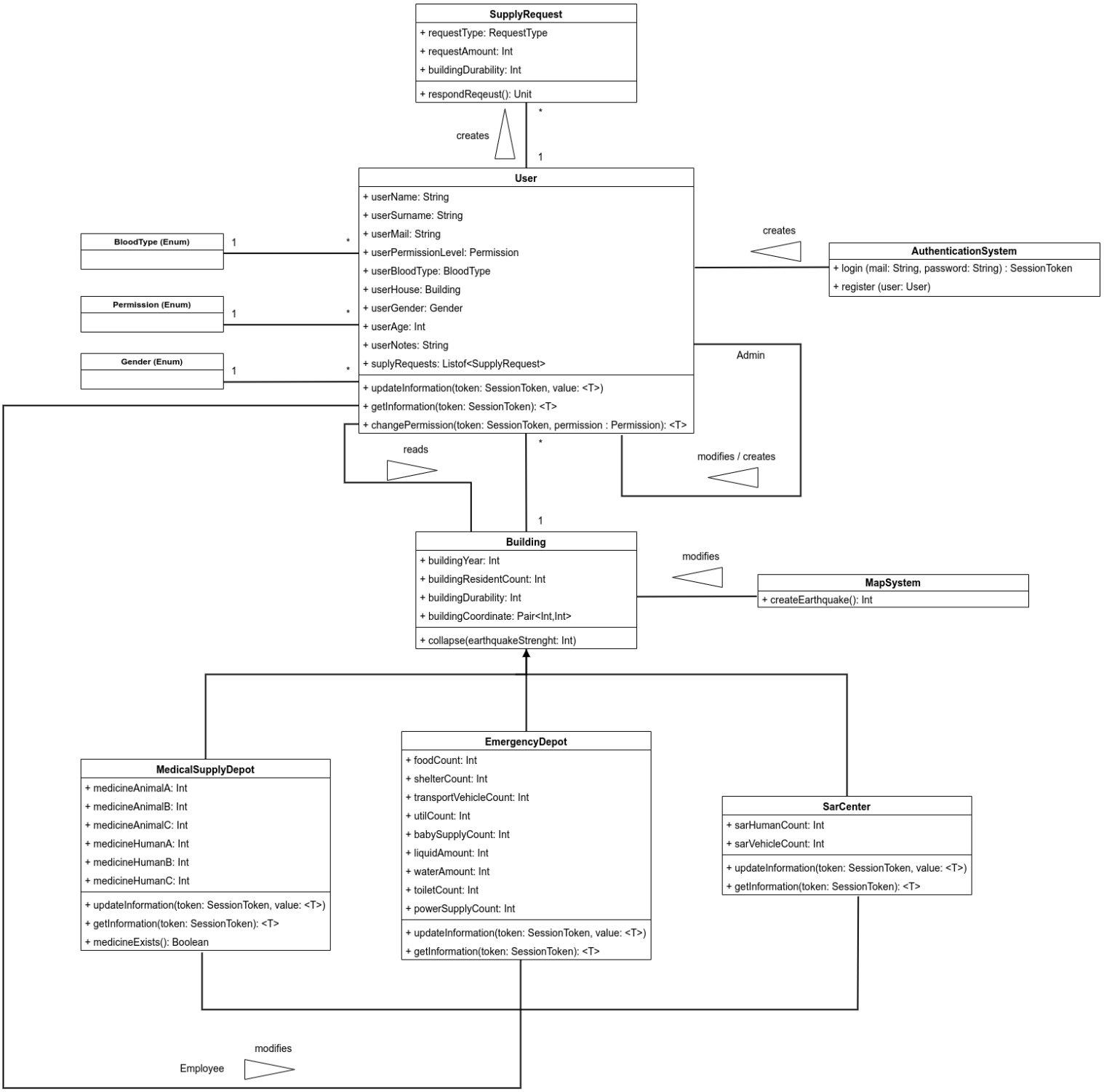
The structured format of this software design report aims to facilitate effective understanding and navigation for stakeholders involved in the development, maintenance, and use of the Disaster Management application. By providing clear diagrams, explanations and reference materials, this document serves as a valuable resource in understanding software architecture and developing effective communication and collaboration among team members.

6 Detailed Design Class Diagram

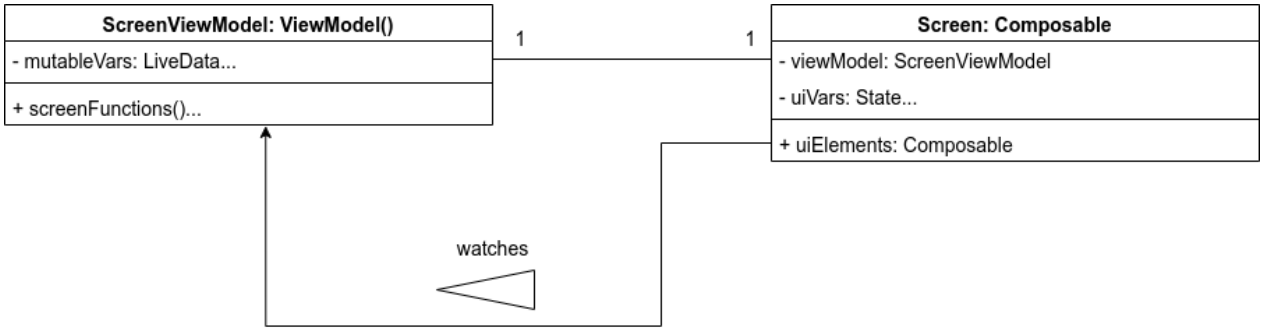
6.1 Database Diagram



6.2 Class Model Diagram



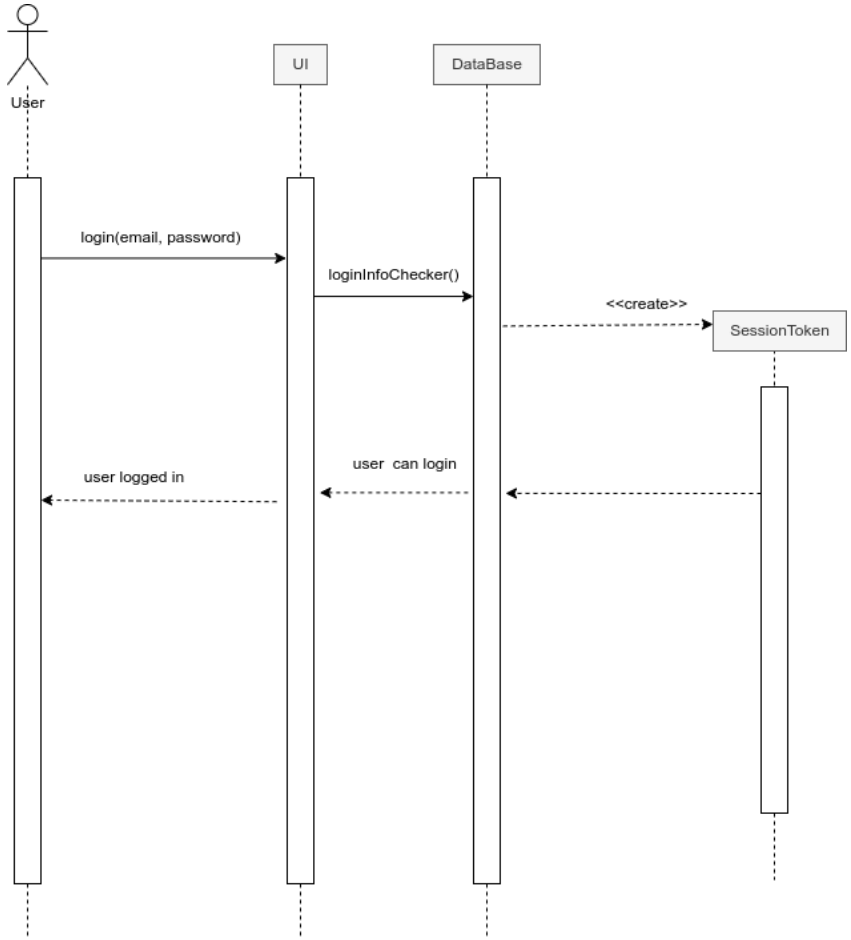
6.3 UI Class Model Diagram



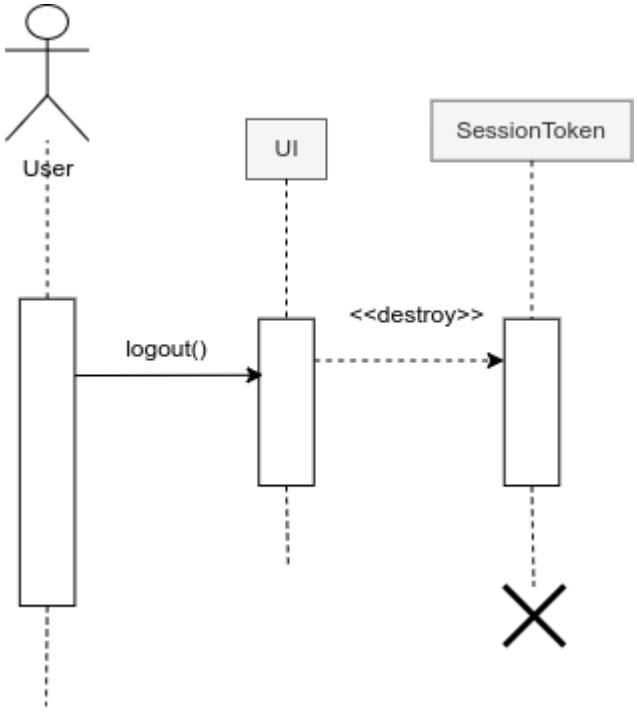
7 Dynamic Models

7.1 Sequence Diagrams

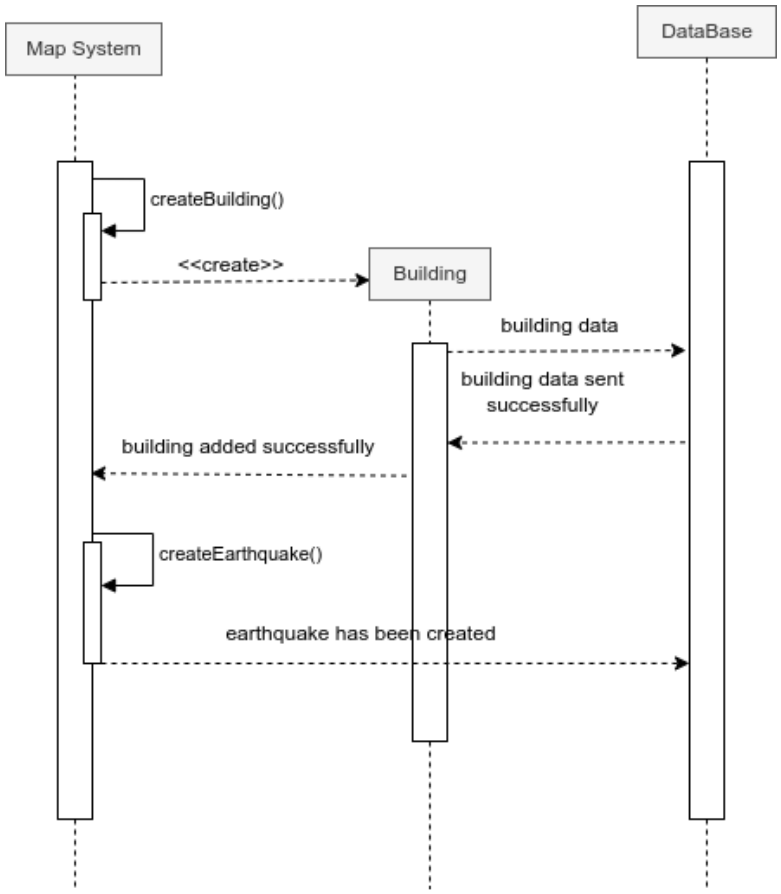
- **Login Sequence**



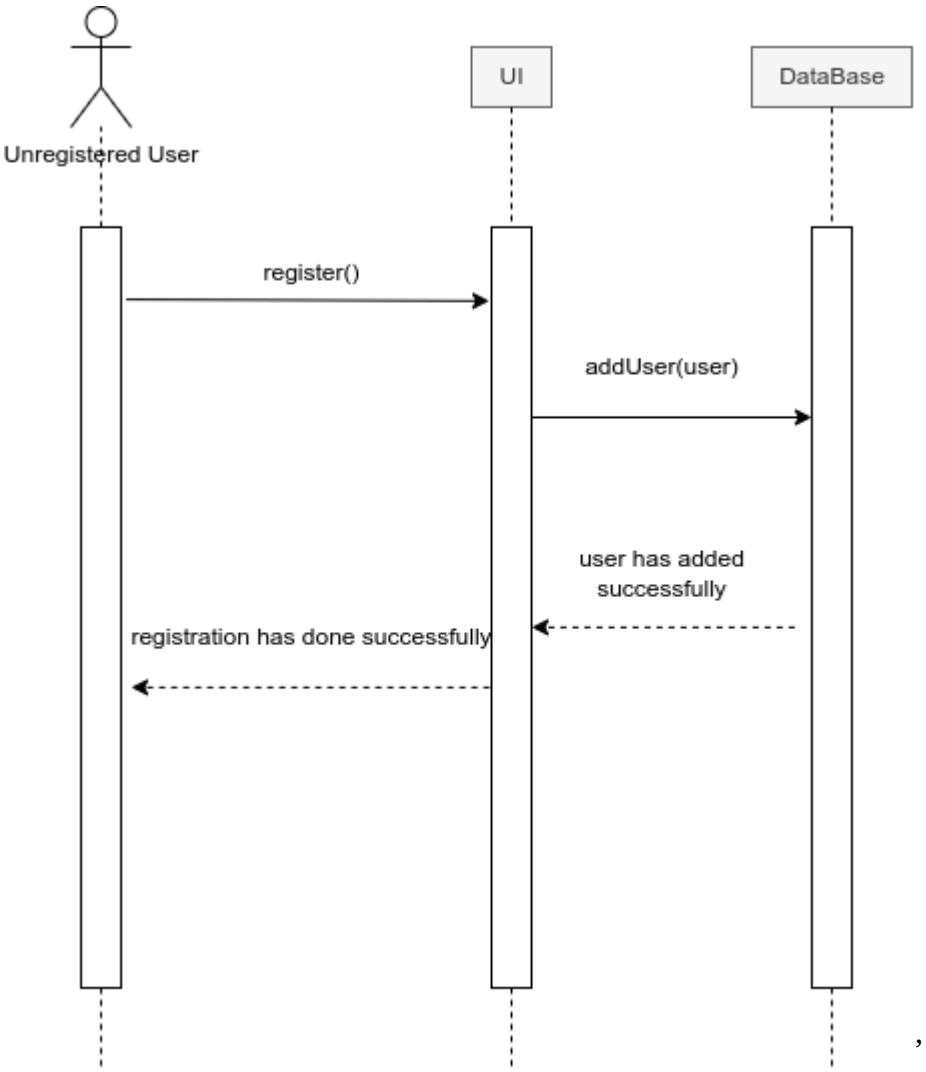
- **Logout Sequence**



- **Map System Sequence**



- **Register Sequence**



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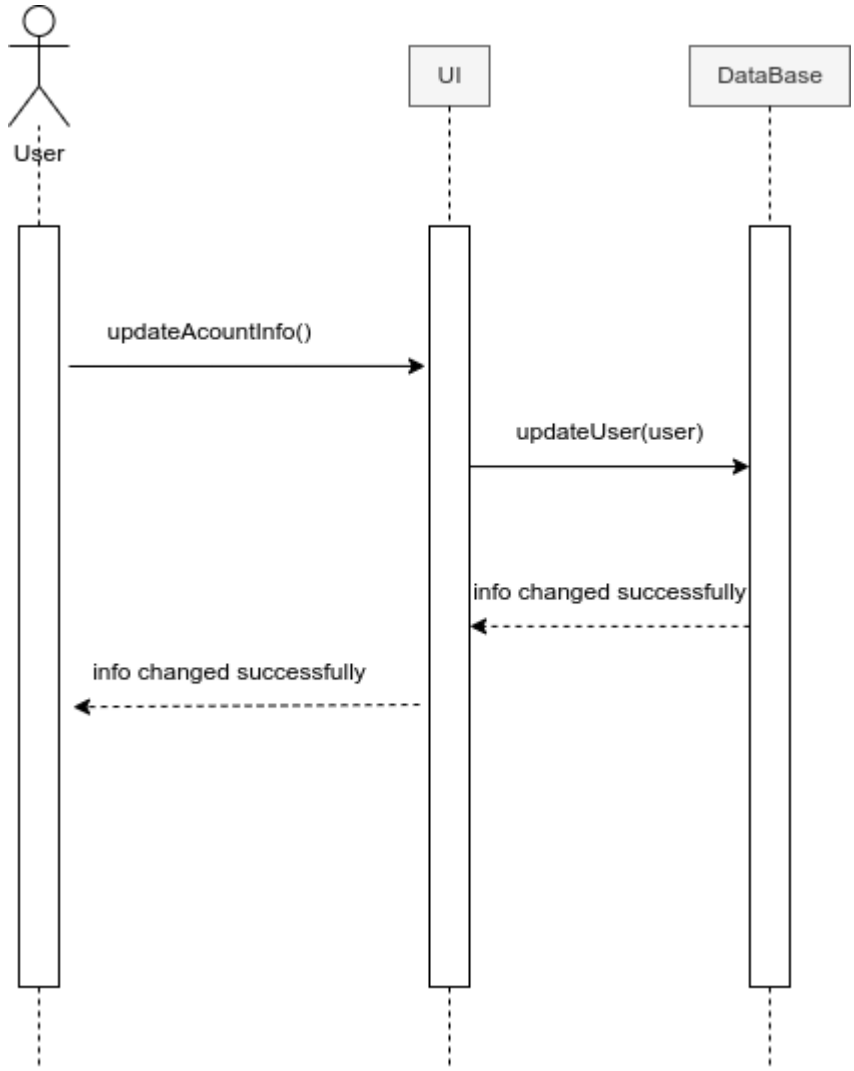
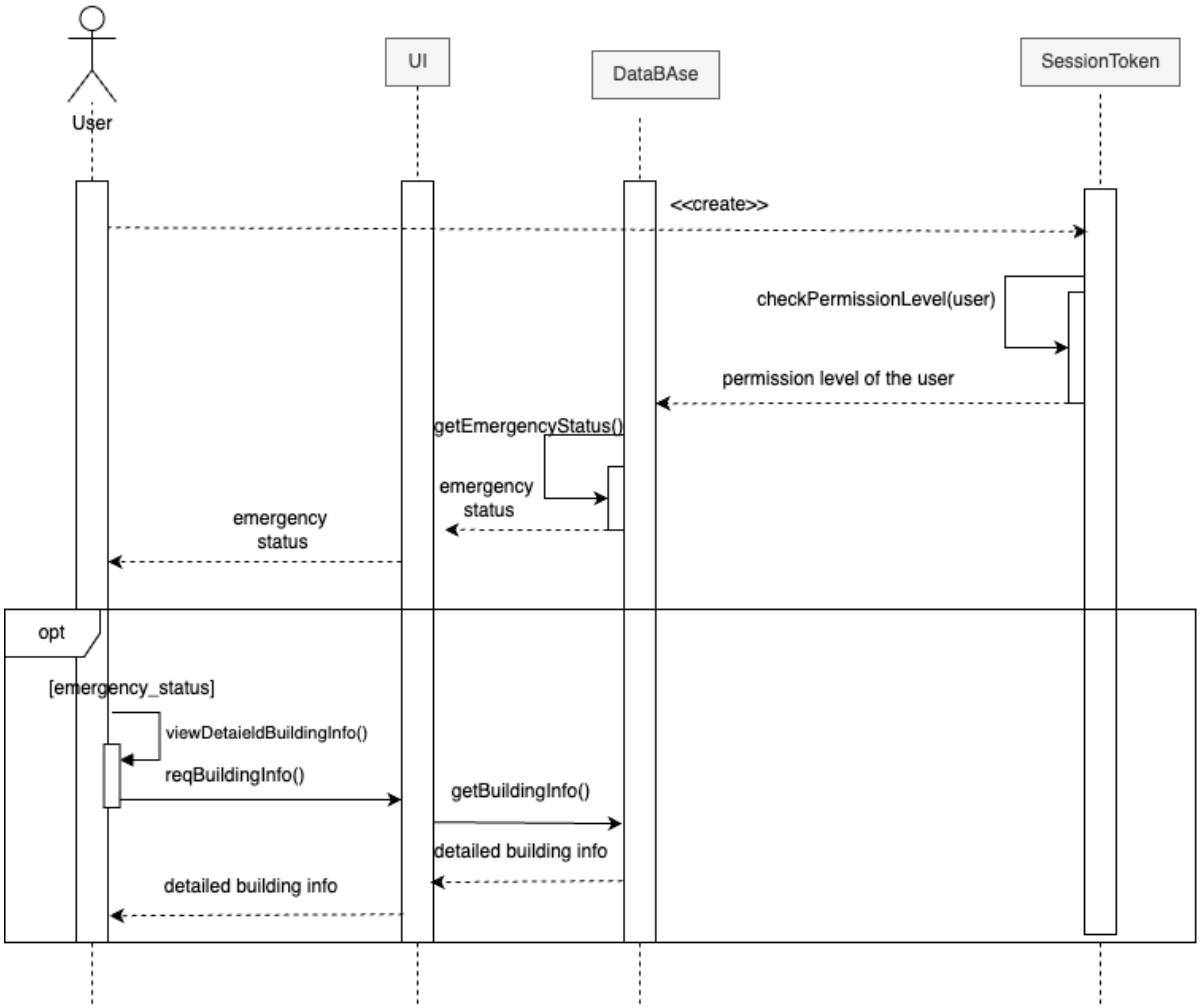
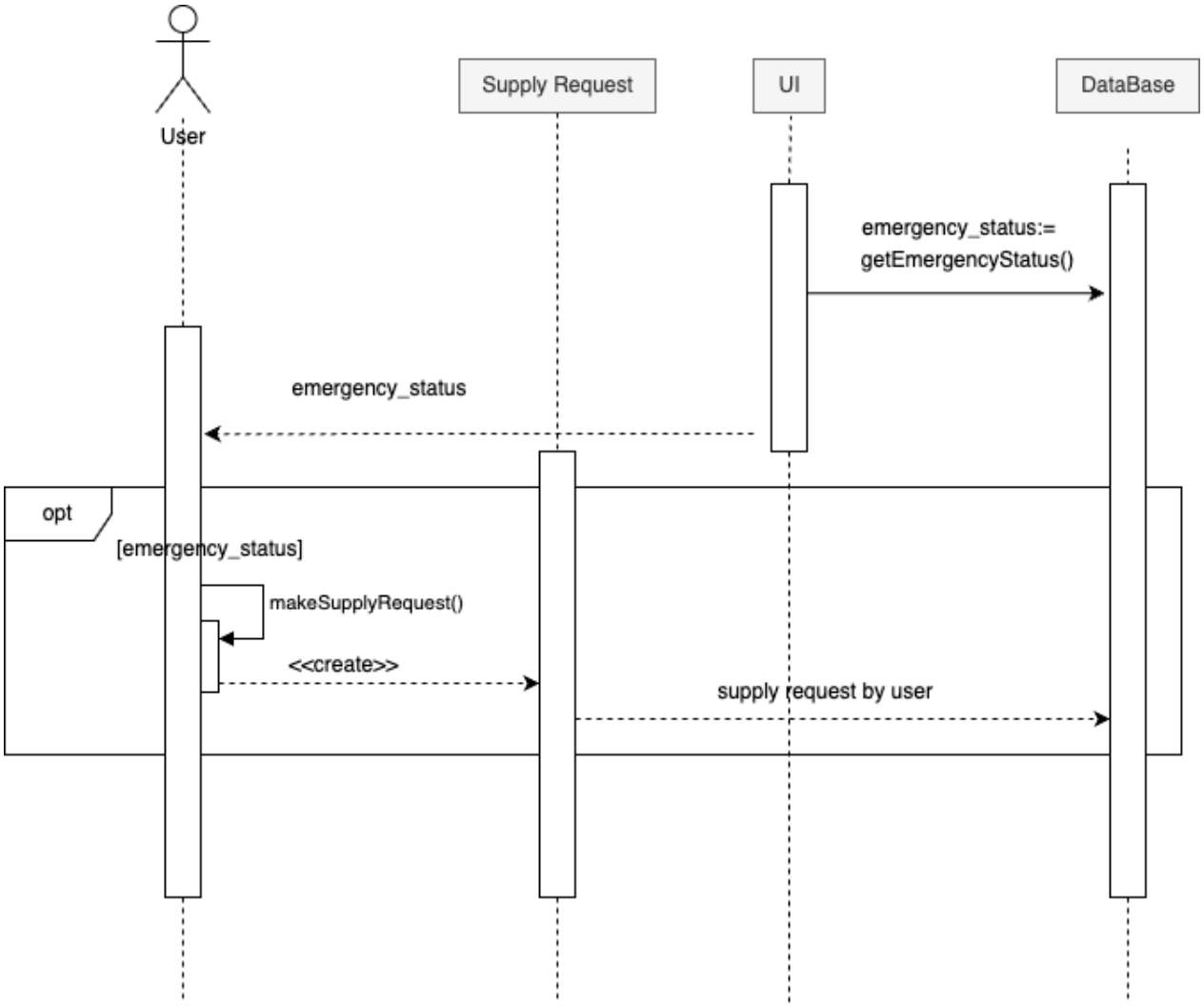
- **Change Account Info Sequence**



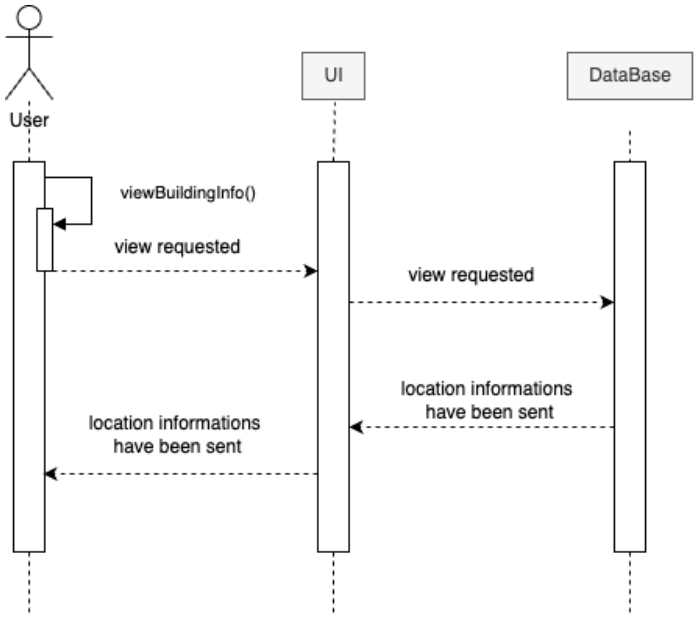
- **View Detailed Building Info Sequence**



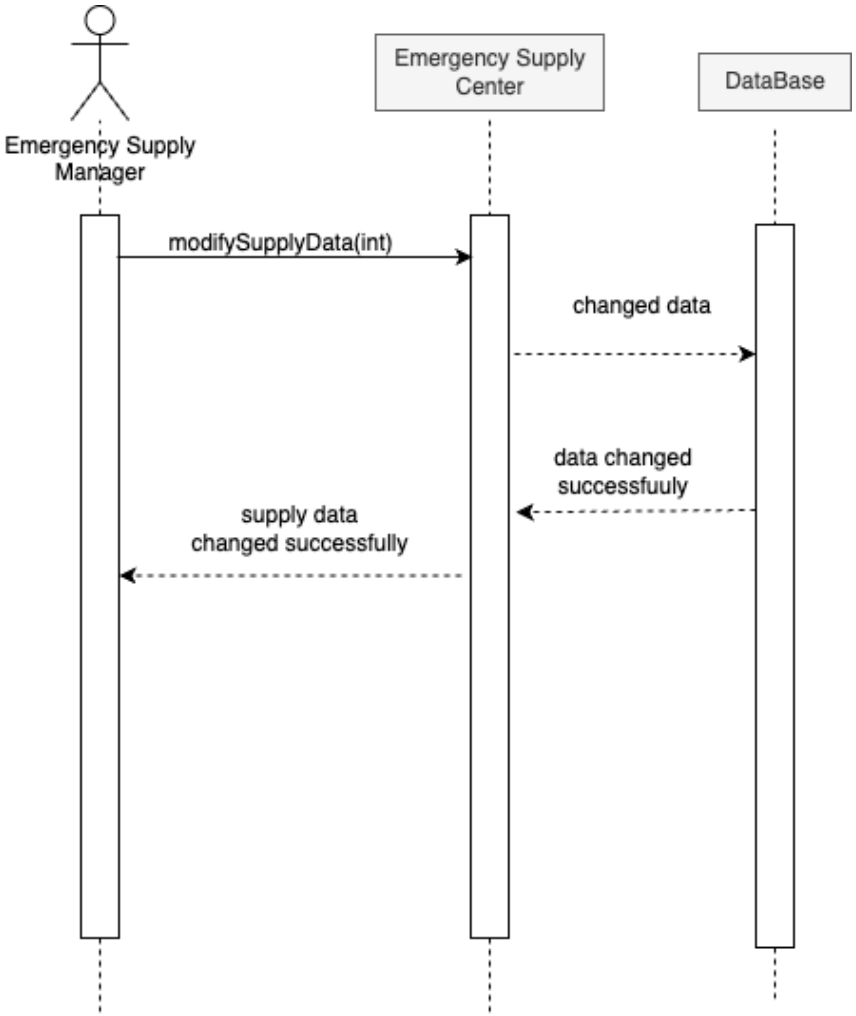
- **Create Supply Request Sequence**



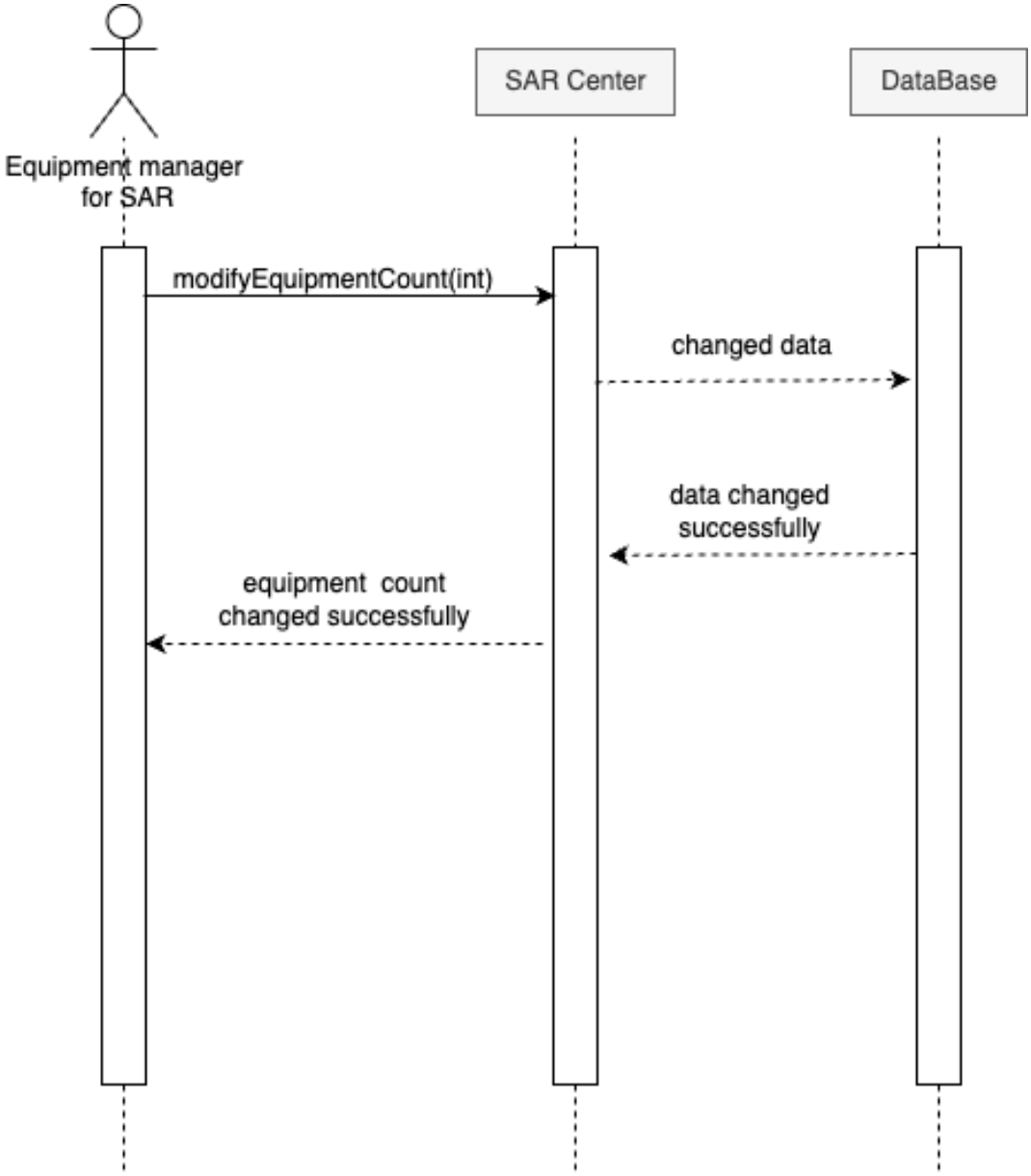
- **View Resident Building Information**



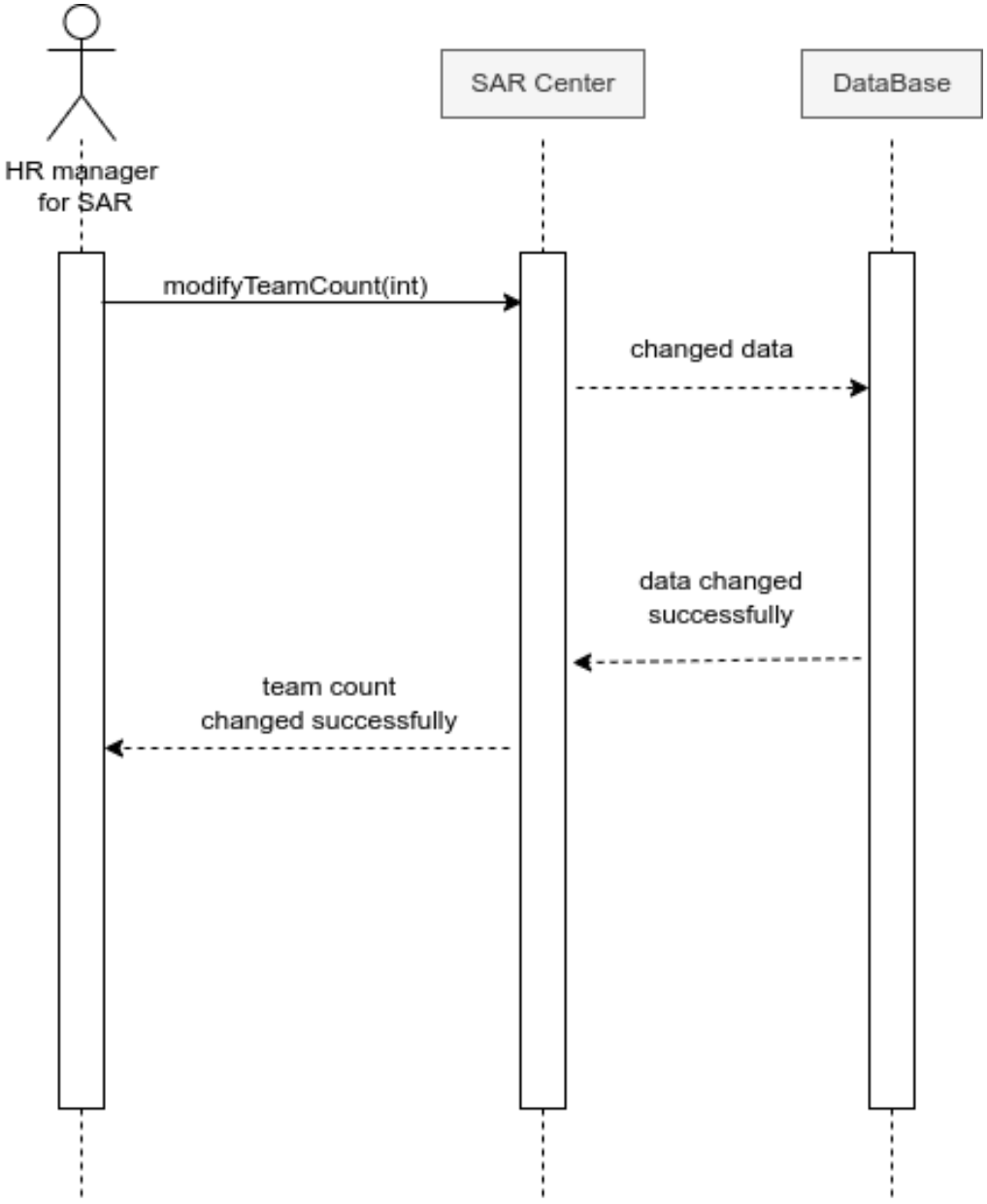
- **Emergency Supply Manager Modify Supply Data Sequence**



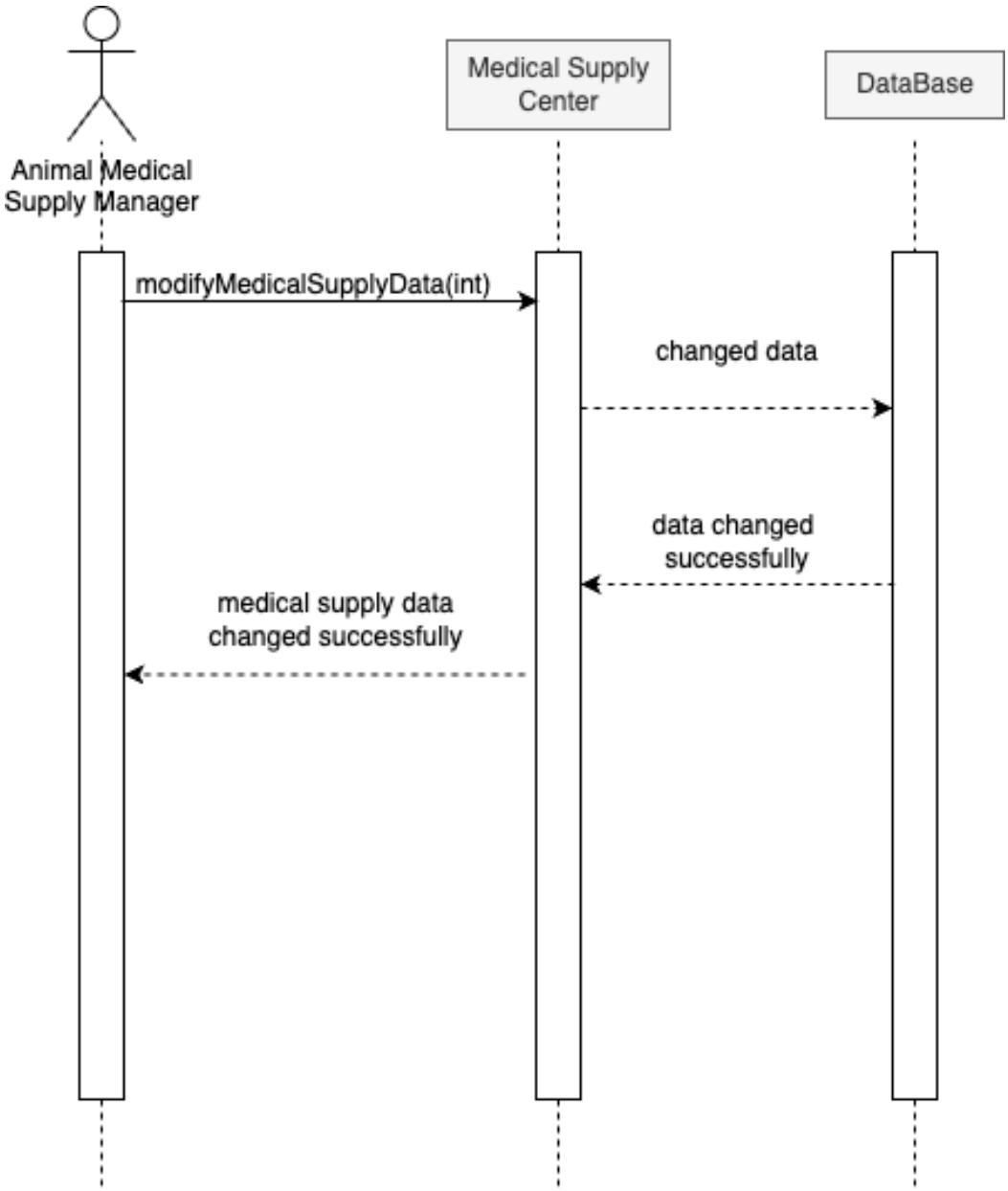
- **Equipment Manager For SAR Modify Equipment Data**



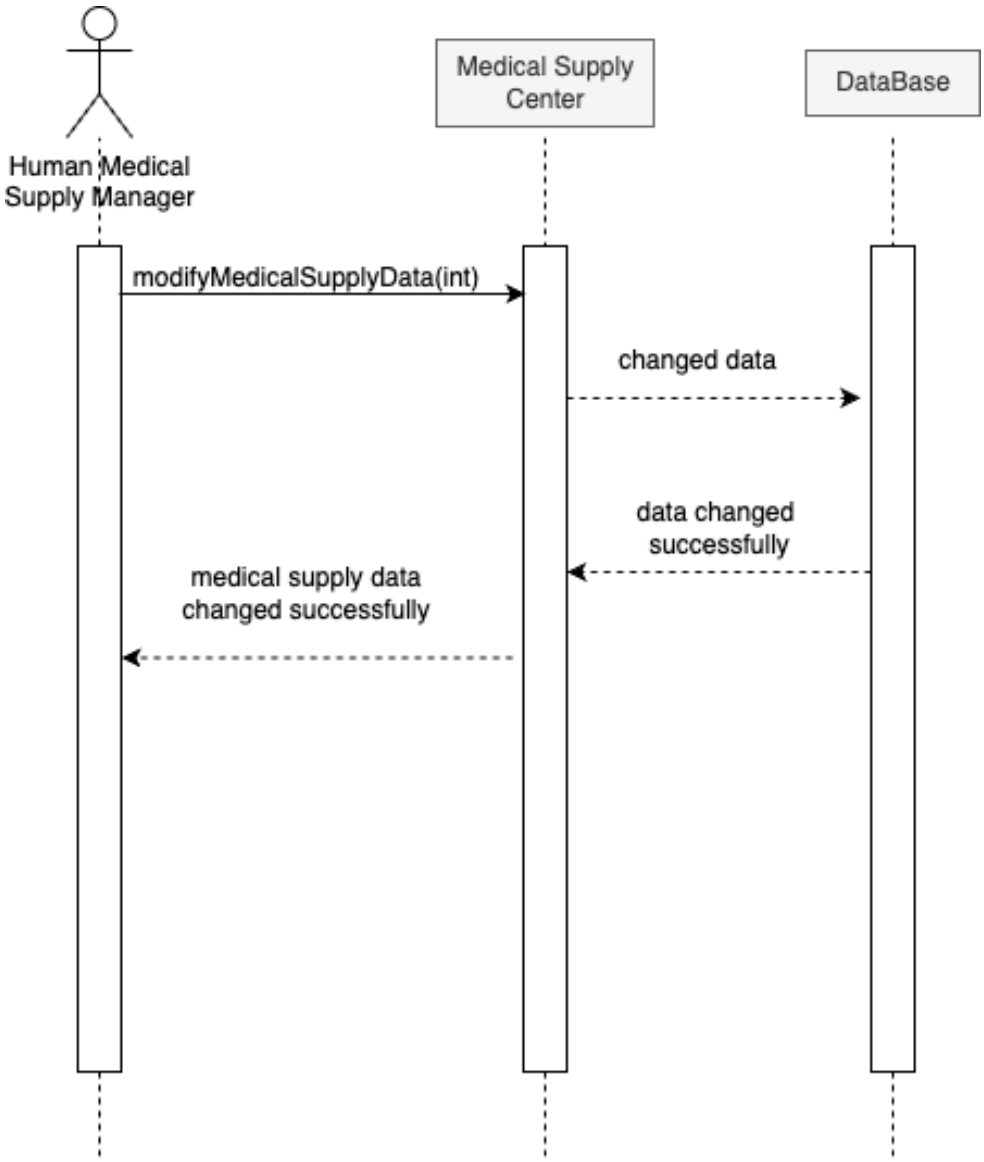
- **HR Manager For SAR Modify Team Data**



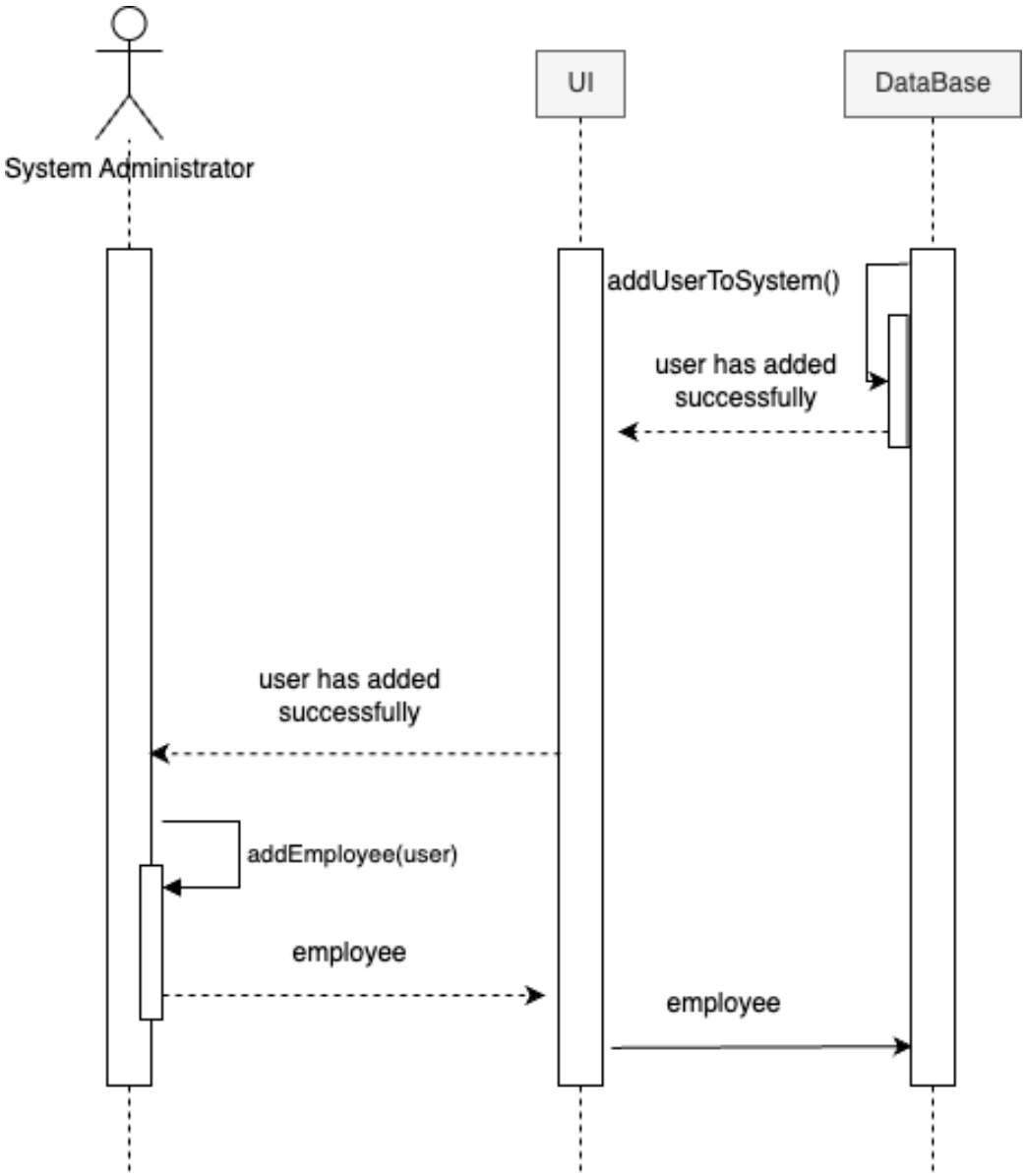
- **Animal Medical Supply Manager Modify Animal Data**



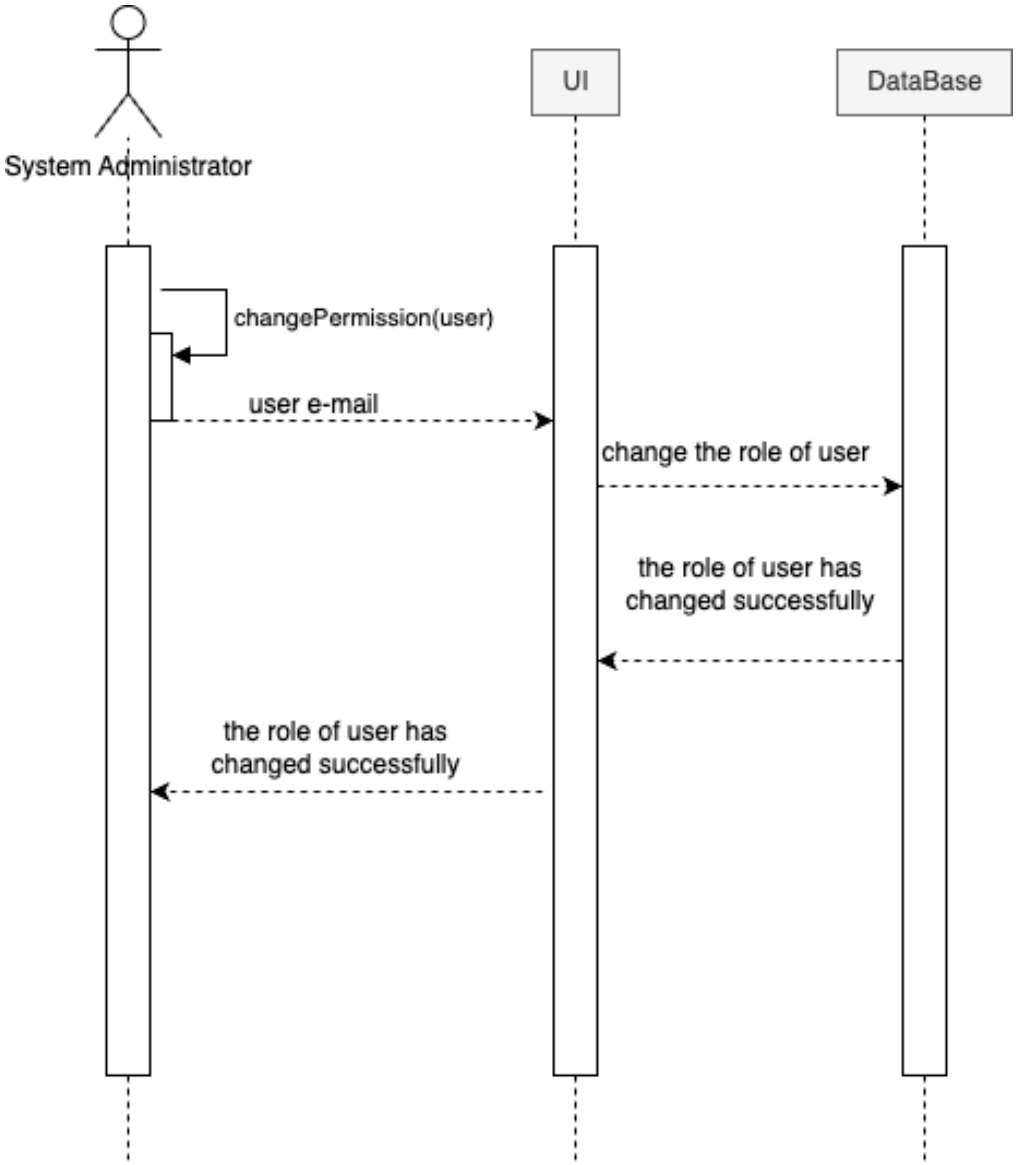
- **Human Medical Supply Manager Modify Human Data**



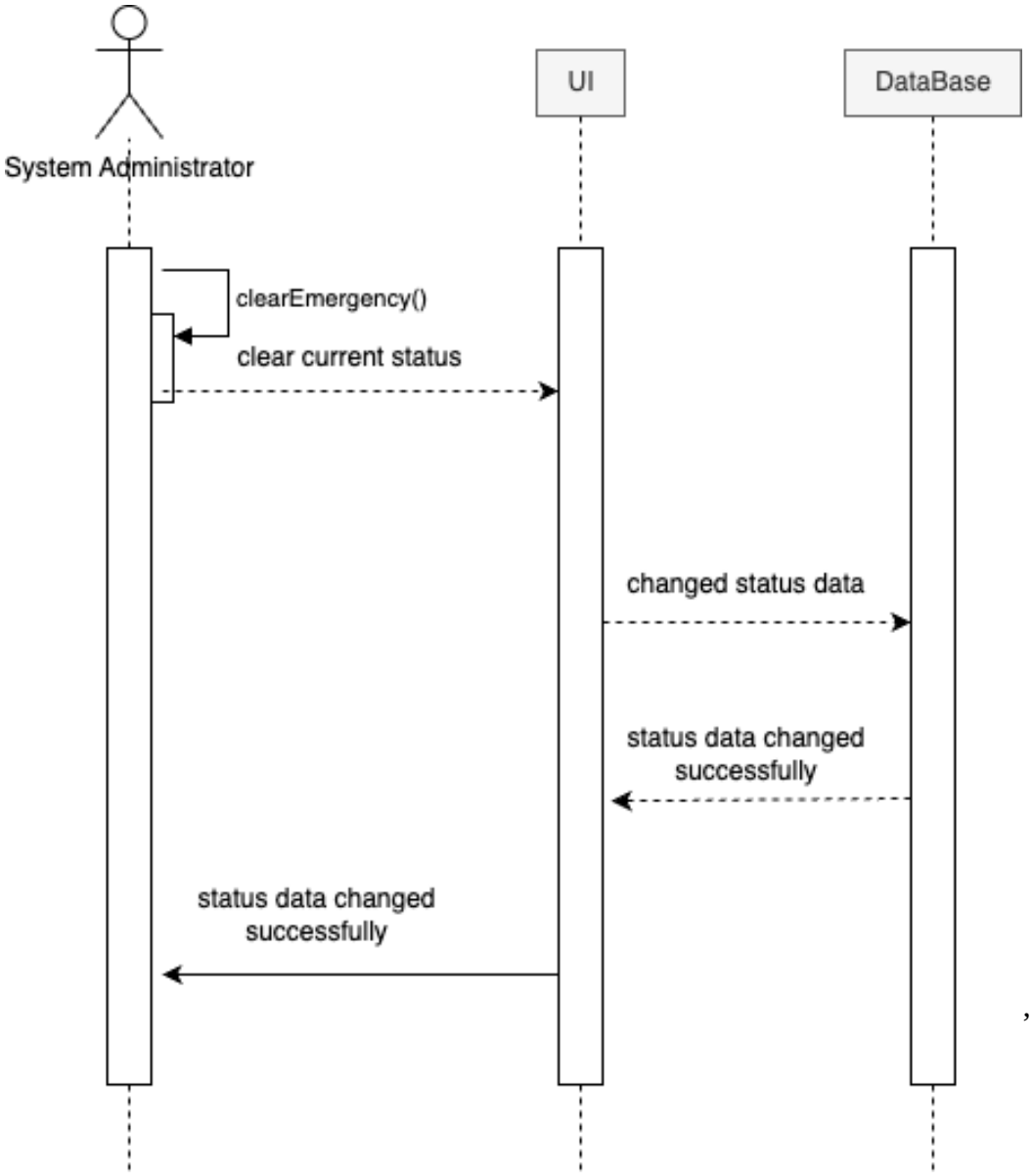
- **System Administrator Add Employee**



- **System Administrator Change User Permission**



- **System Administrator Clear Emergency**



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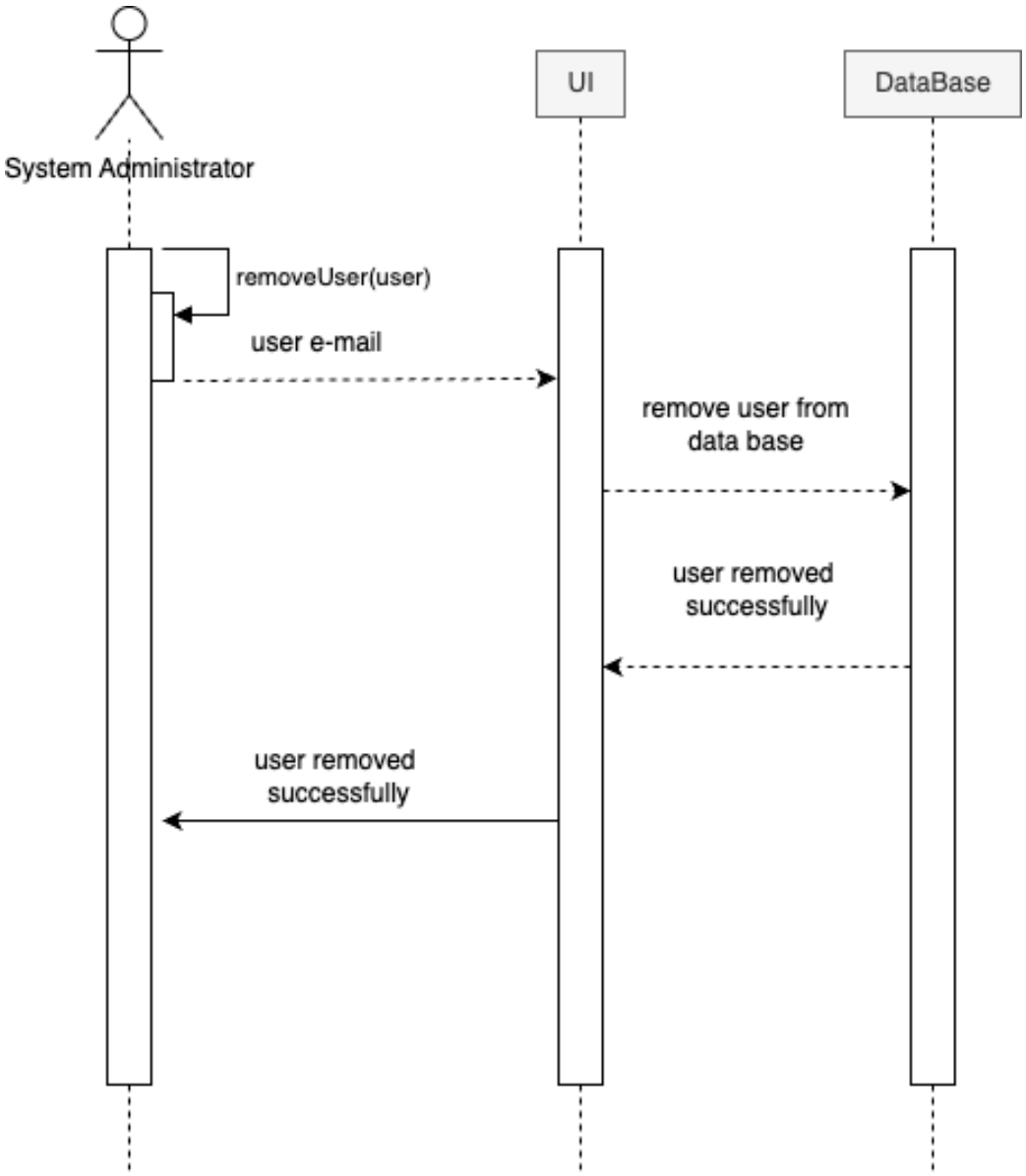
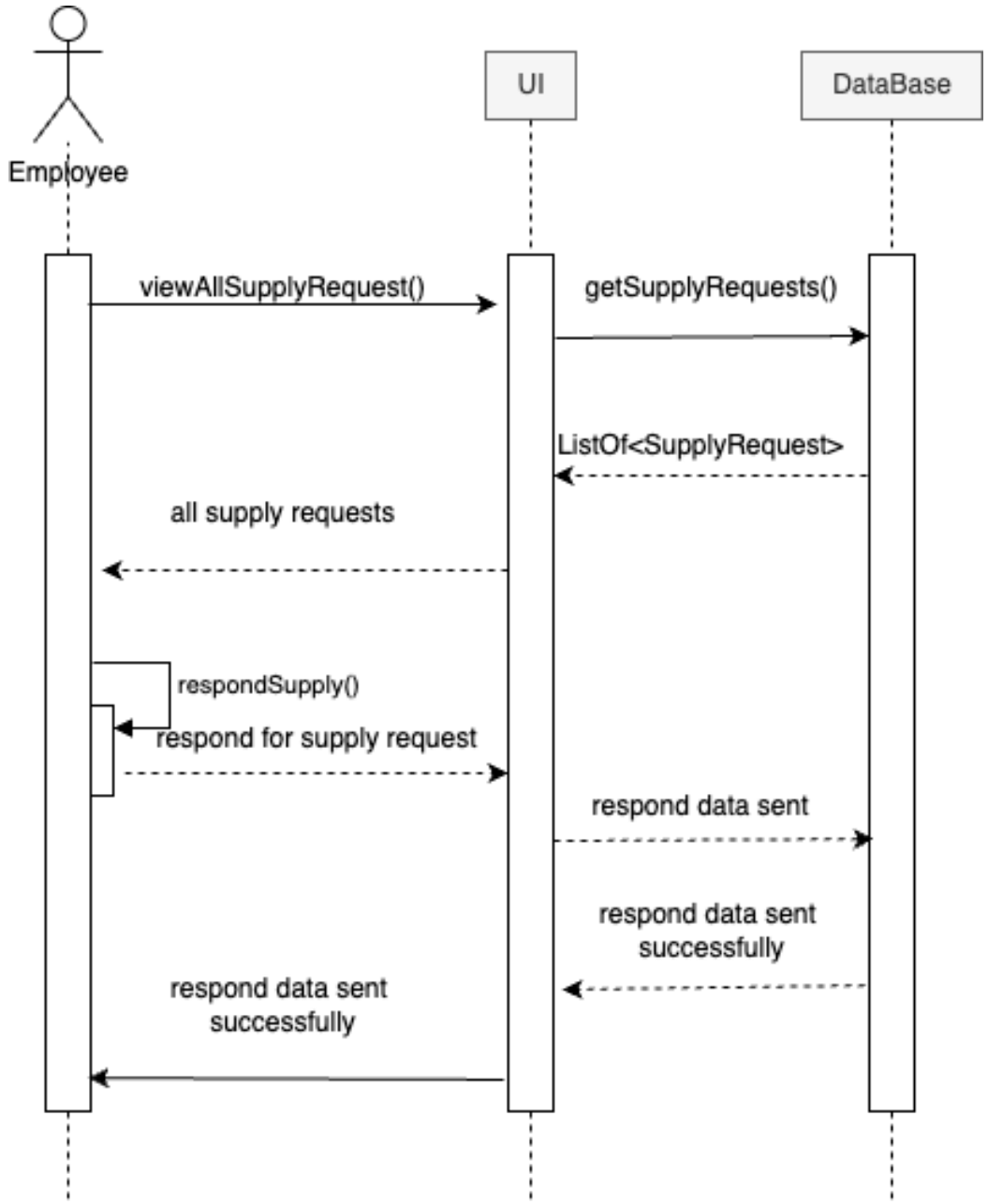
- **System Administrator Remove User**

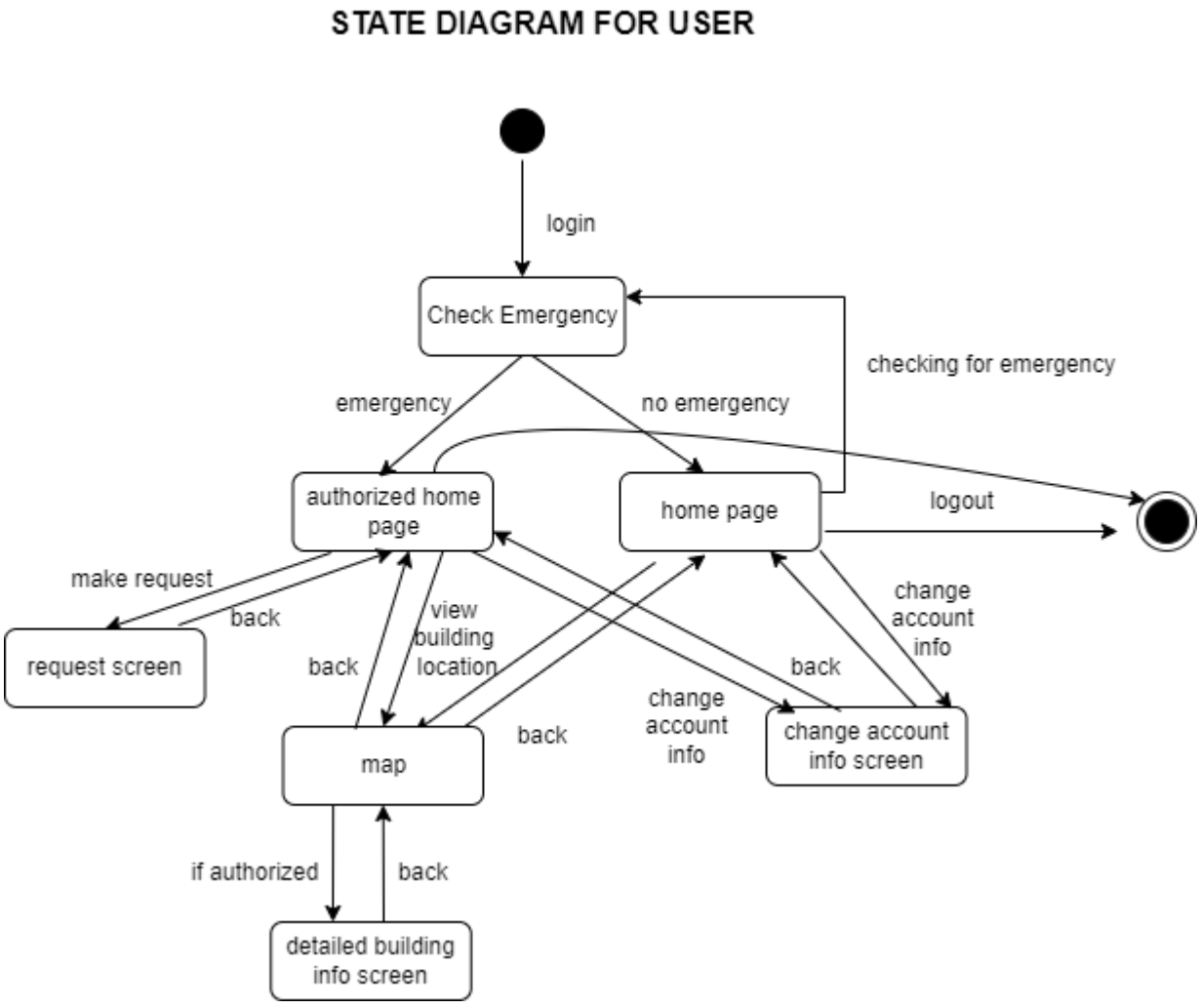


- **Employee View Supply Requests**



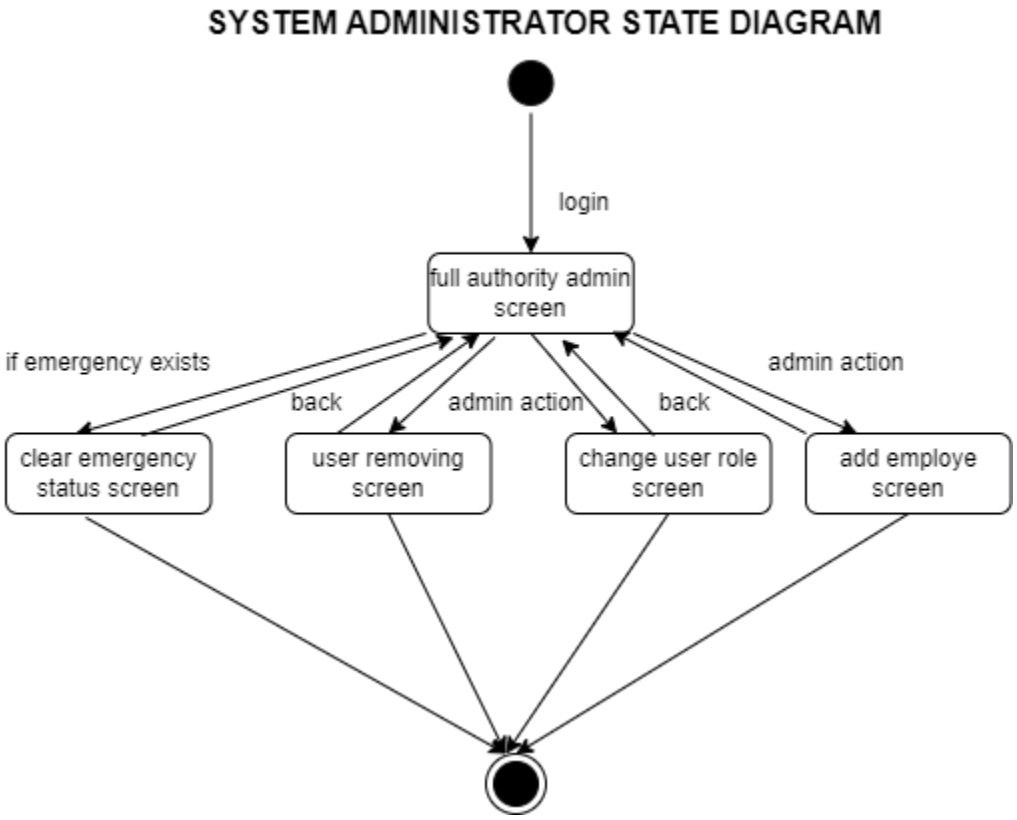
7.2 State Diagrams

- **User State Diagram**



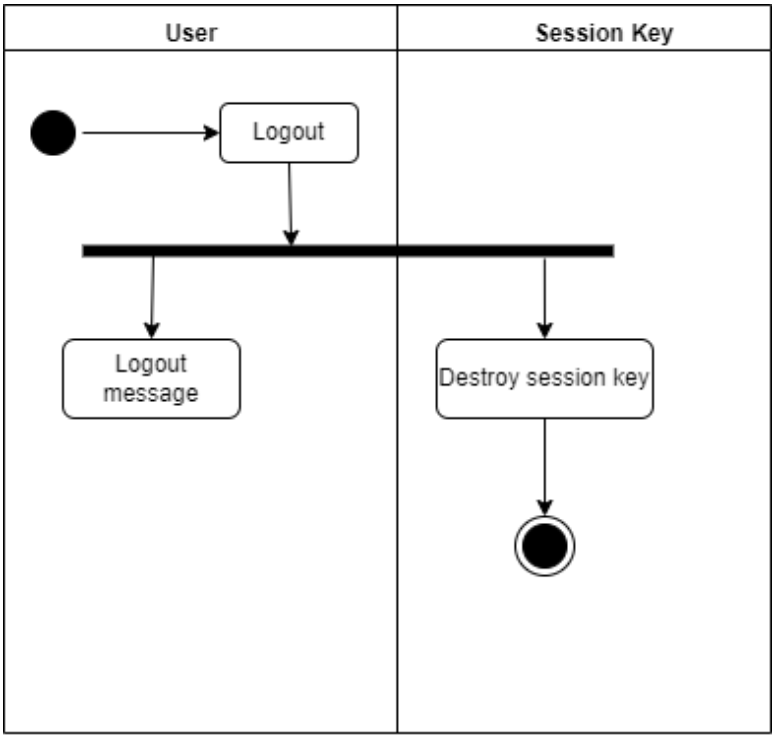
- **Employee State Diagram**

- **System Administrator State Diagram**

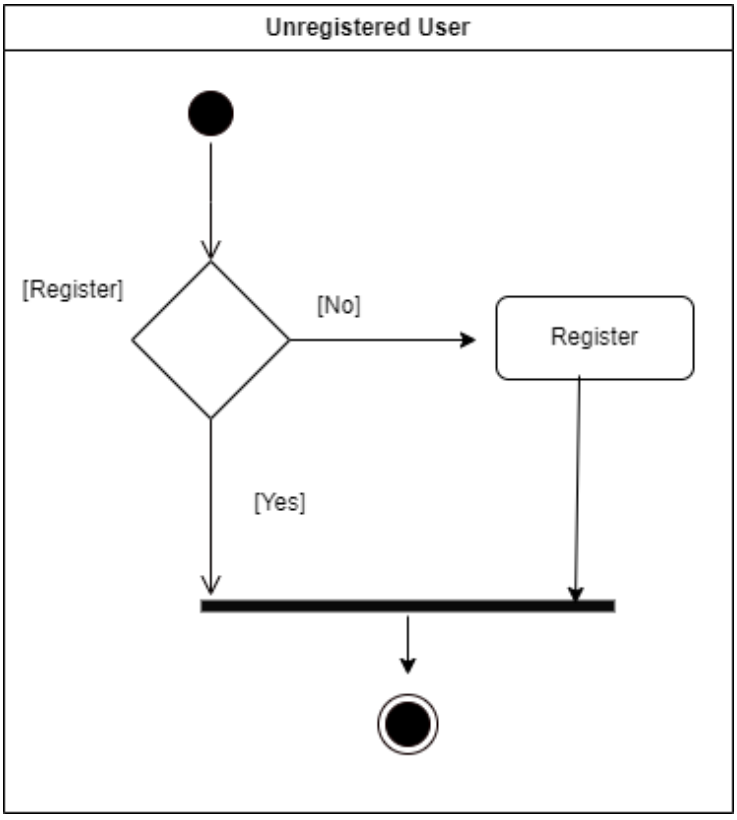


7.3 Activity Diagrams

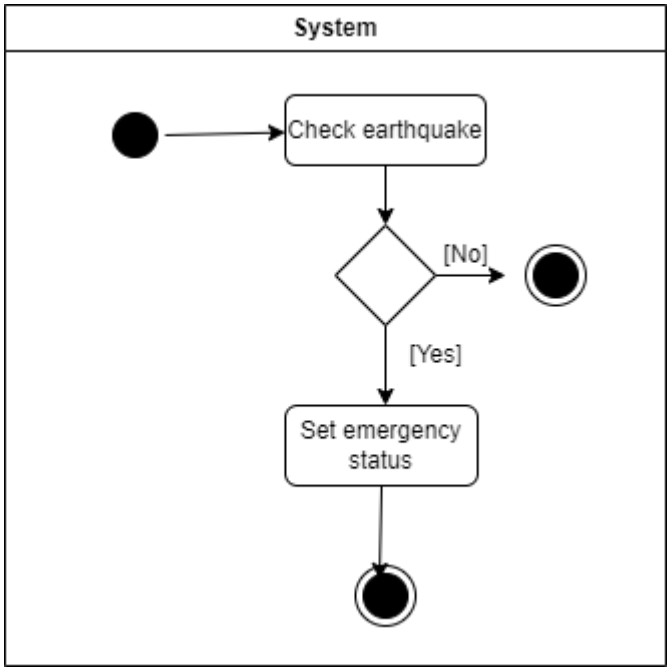
- **Logout Activity Diagram**



- **Unregistered User Activity Diagram**

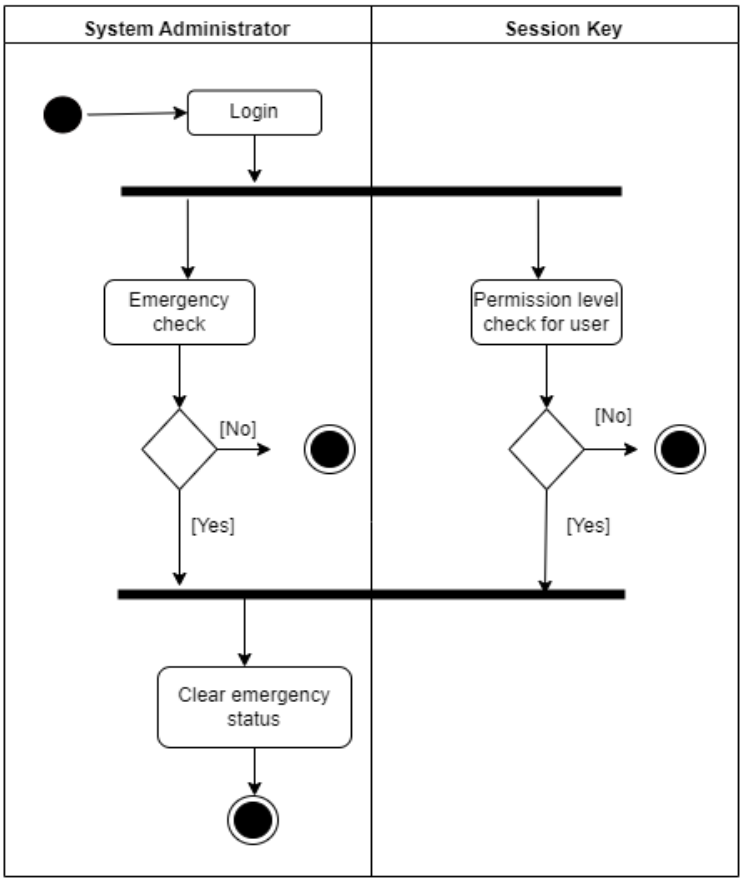


- **Check Emergency Activity Diagram**

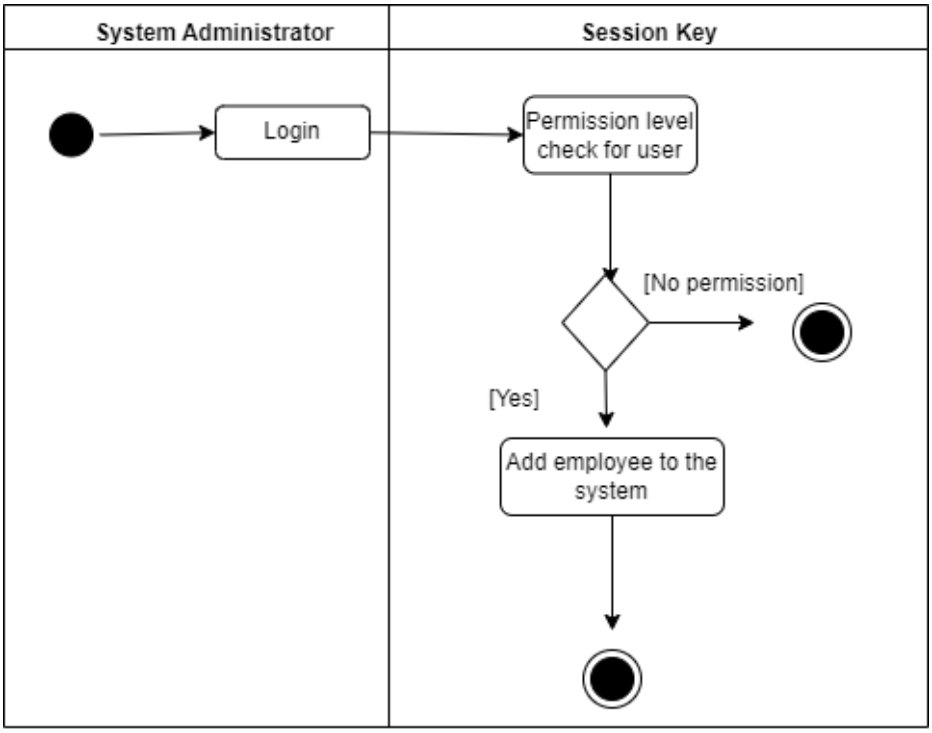


-

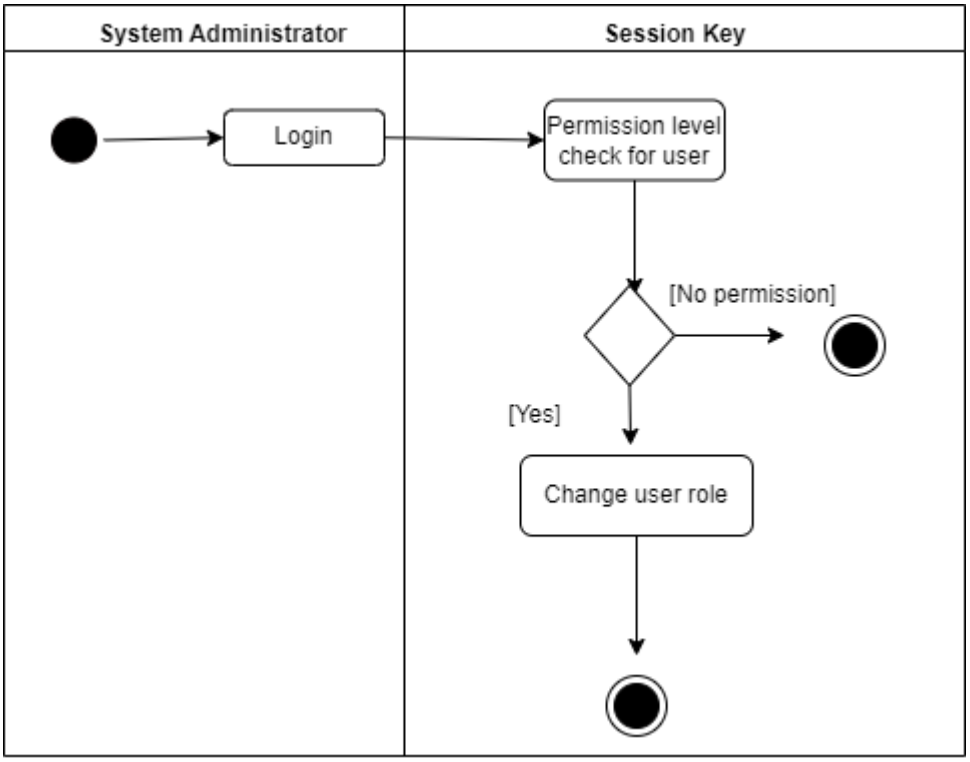
- **Clear Emergency Activity Diagram**



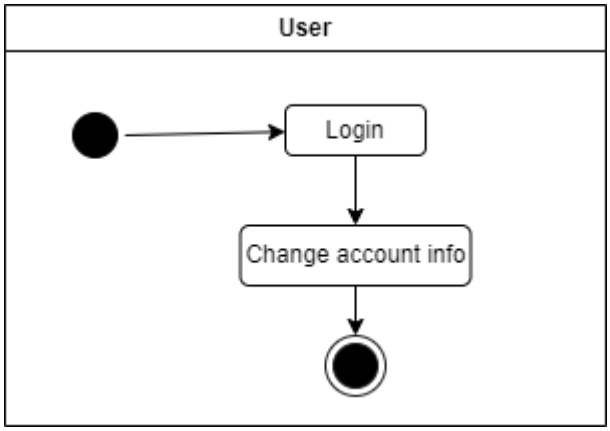
- **Add Employee Activity Diagram**



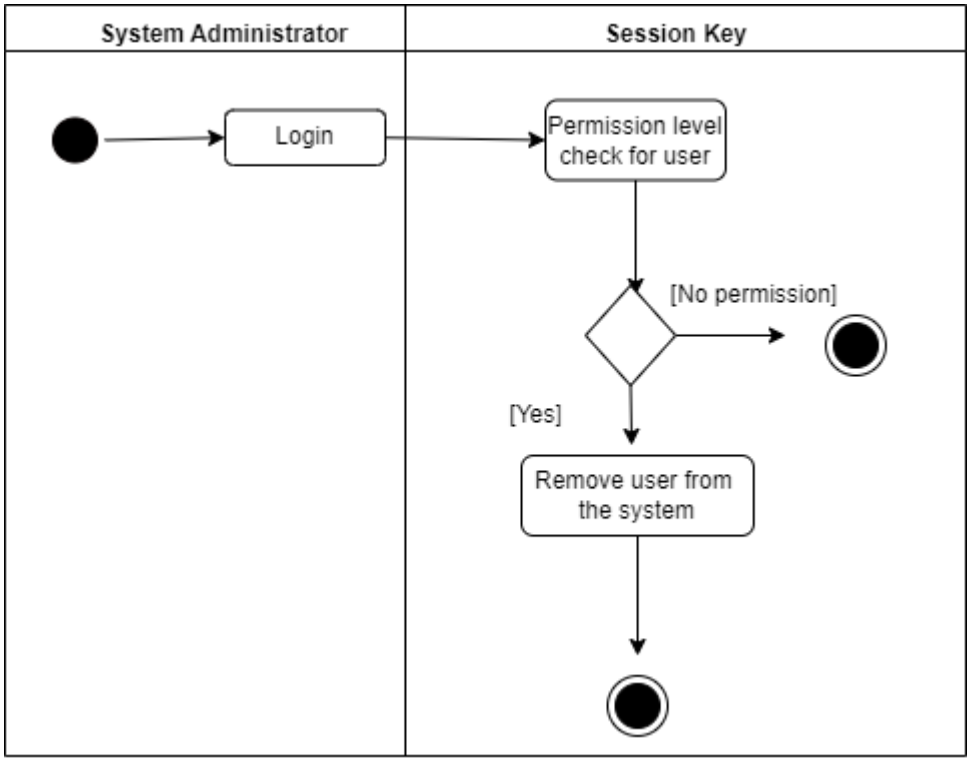
- **Change User Role Activity Diagram**



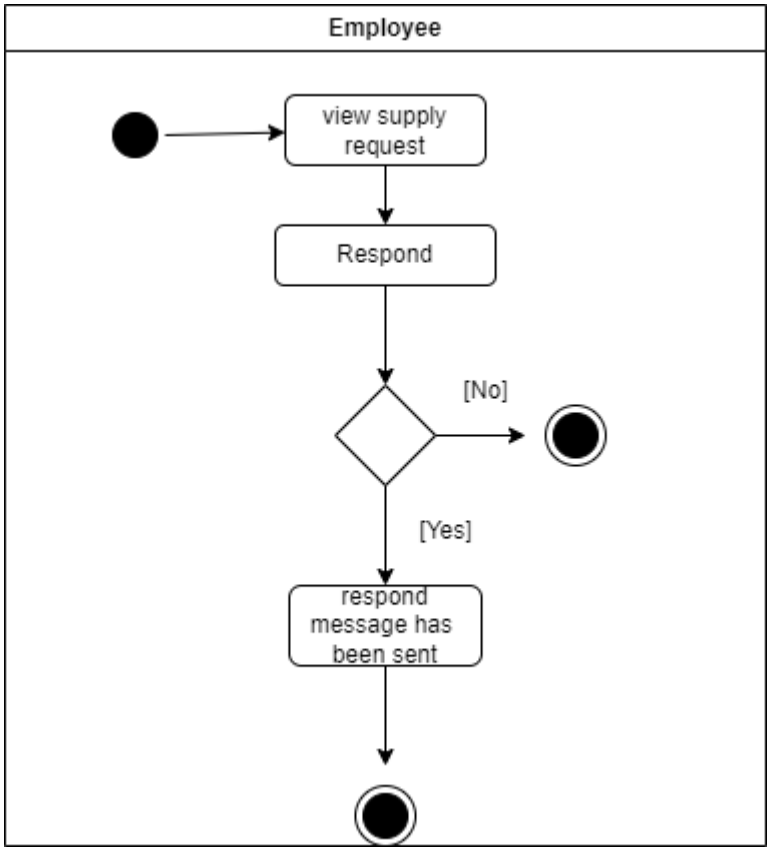
- **Change Account Info Activity Diagram**



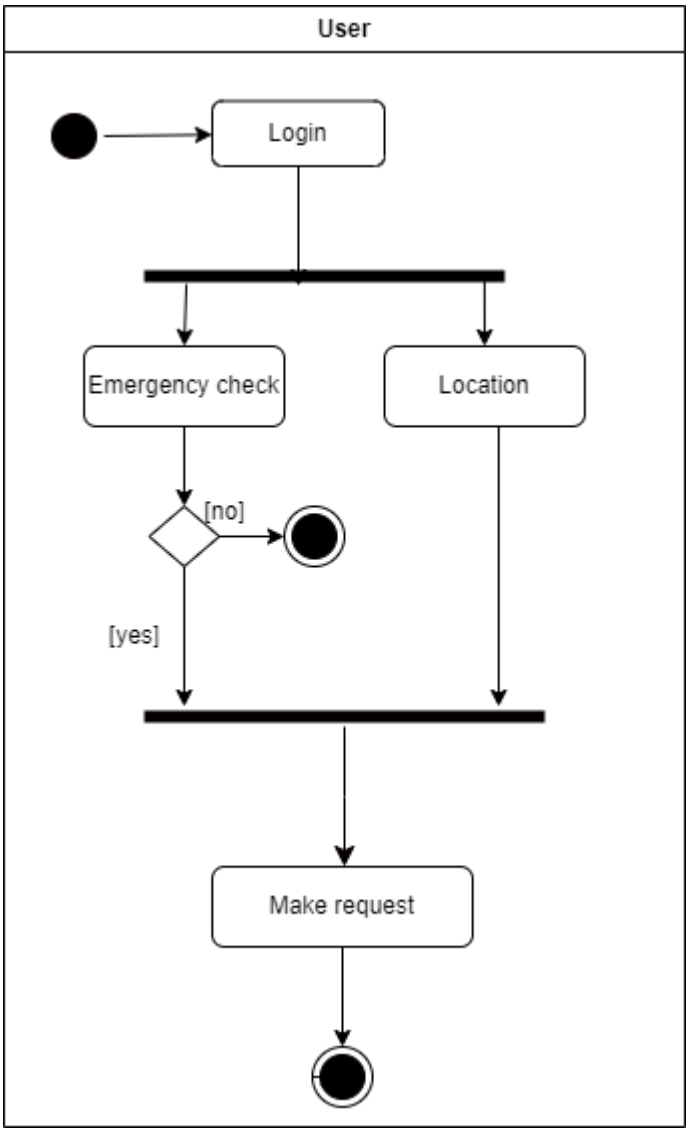
- **Remove User From System Activity Diagram**



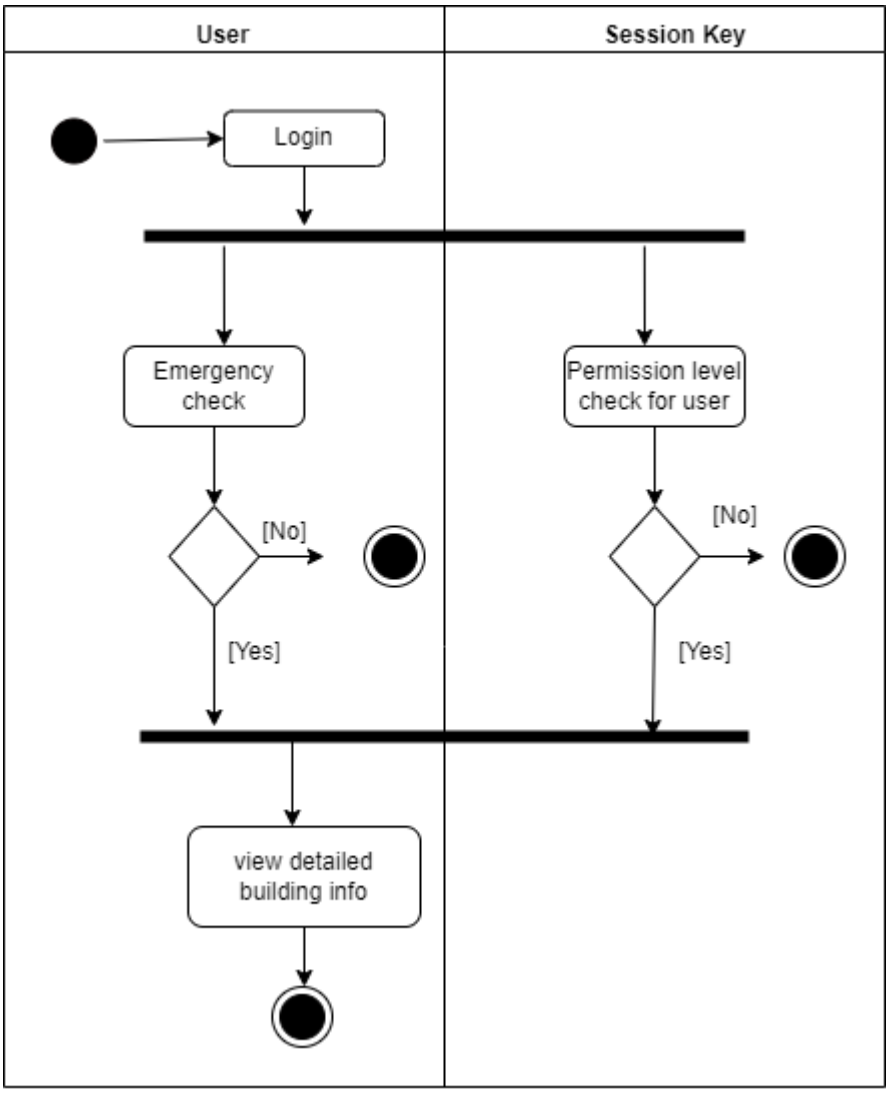
- **View And Respon To Supply Request Activity Diagram**



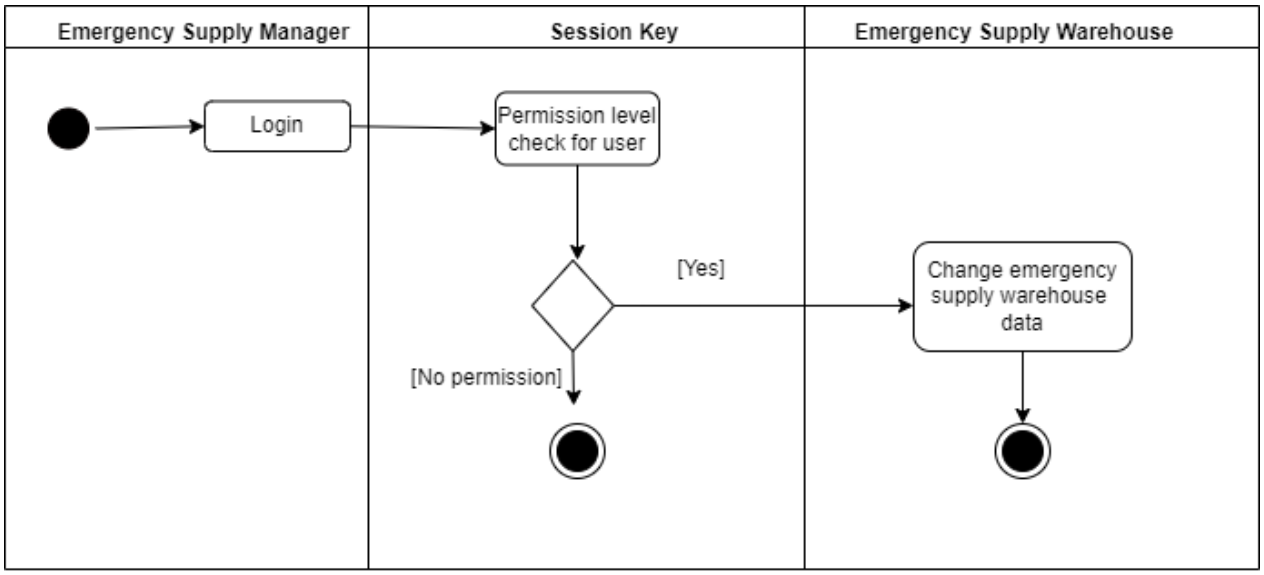
- **Make Supply Request Activity Diagram**



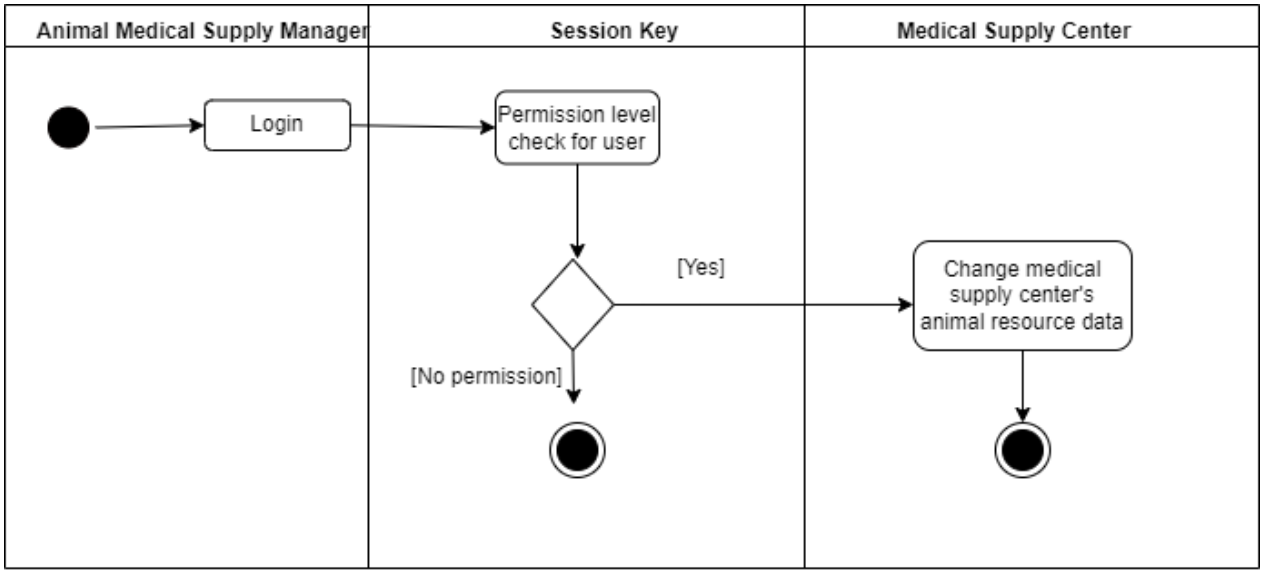
- **View Detailed Building Info Activity Diagram**



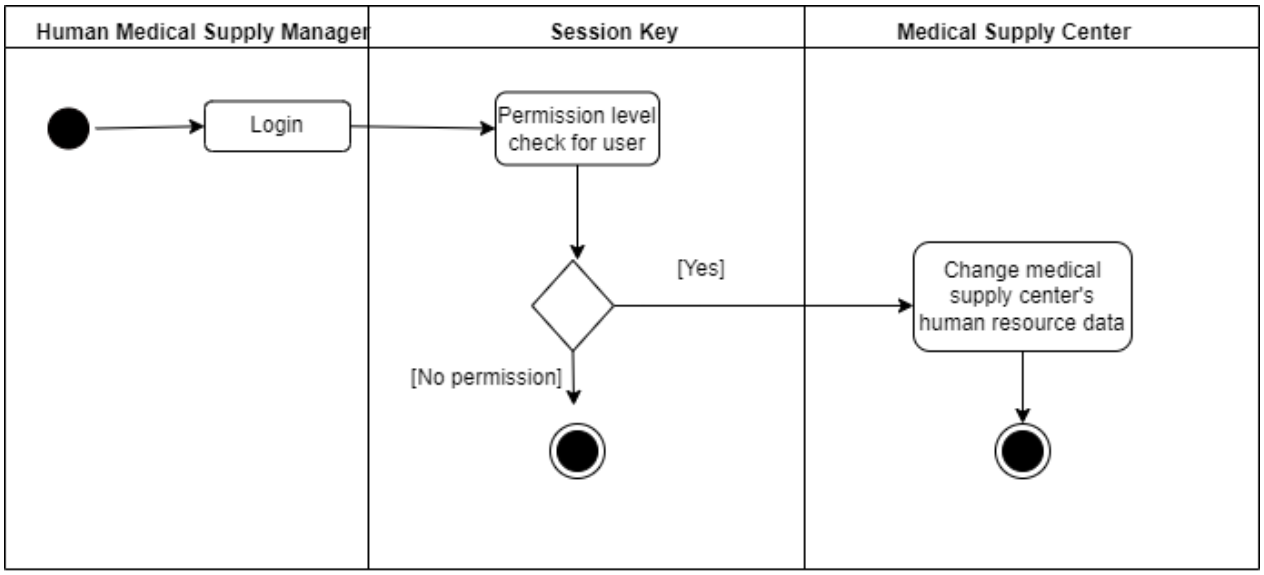
- **Emergency Supply Warehouse Modify Data Activity Diagram**



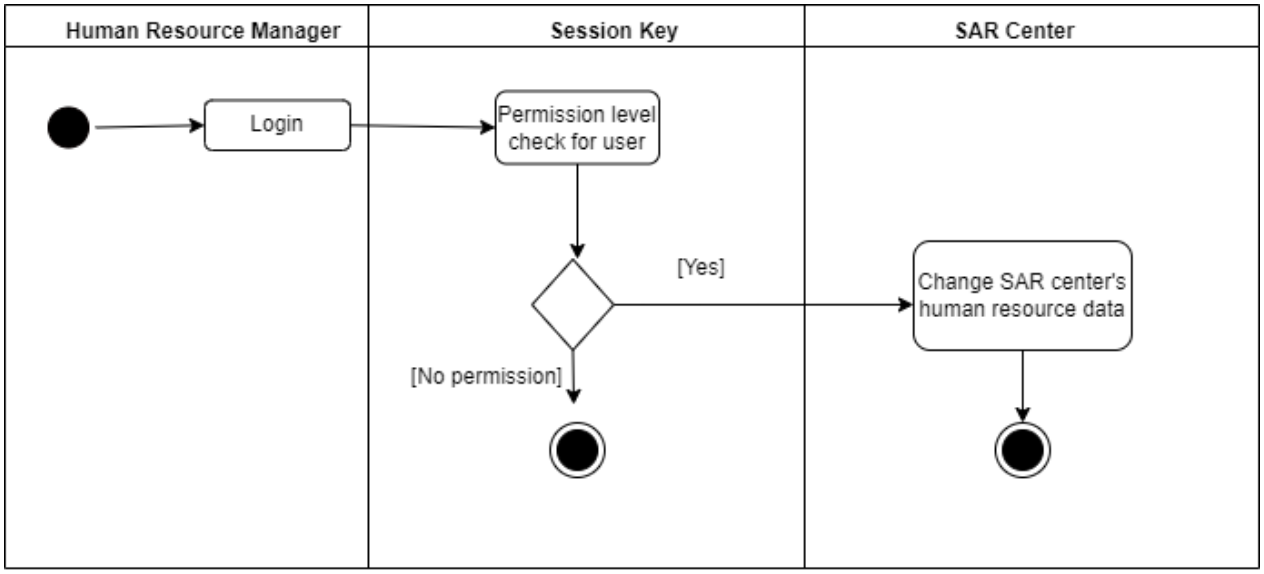
- **Medical Supply Center Modify Animal Data Activity Diagram**



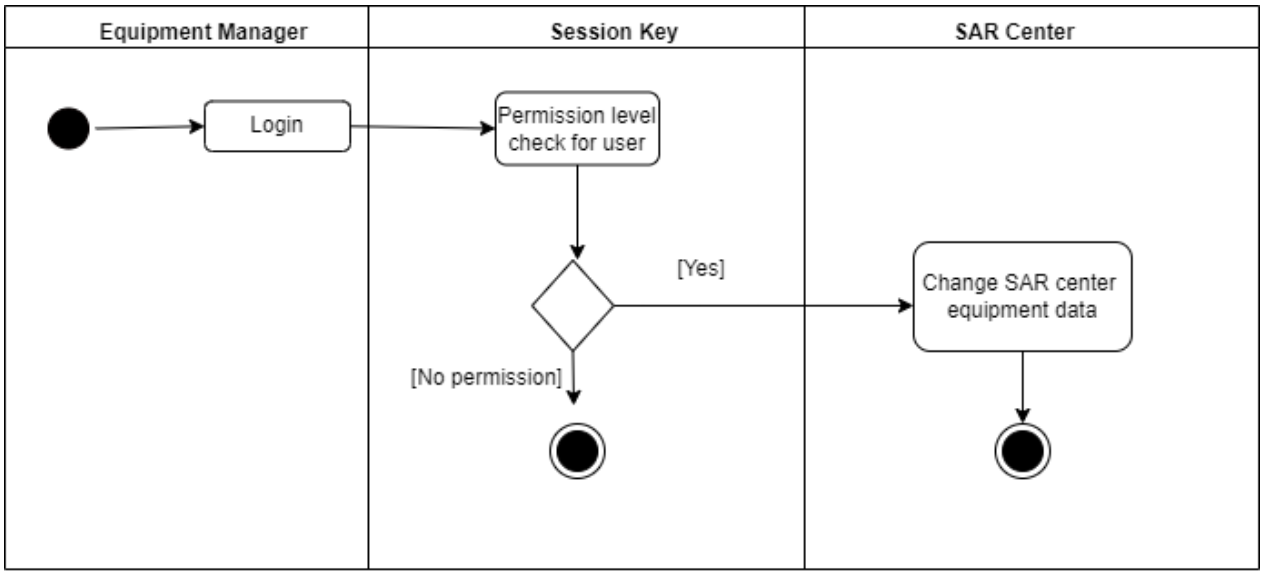
- **Medical Supply Center Modify Human Data Activity Diagram**



- **SAR Center Modify Team Data Activity Diagram**

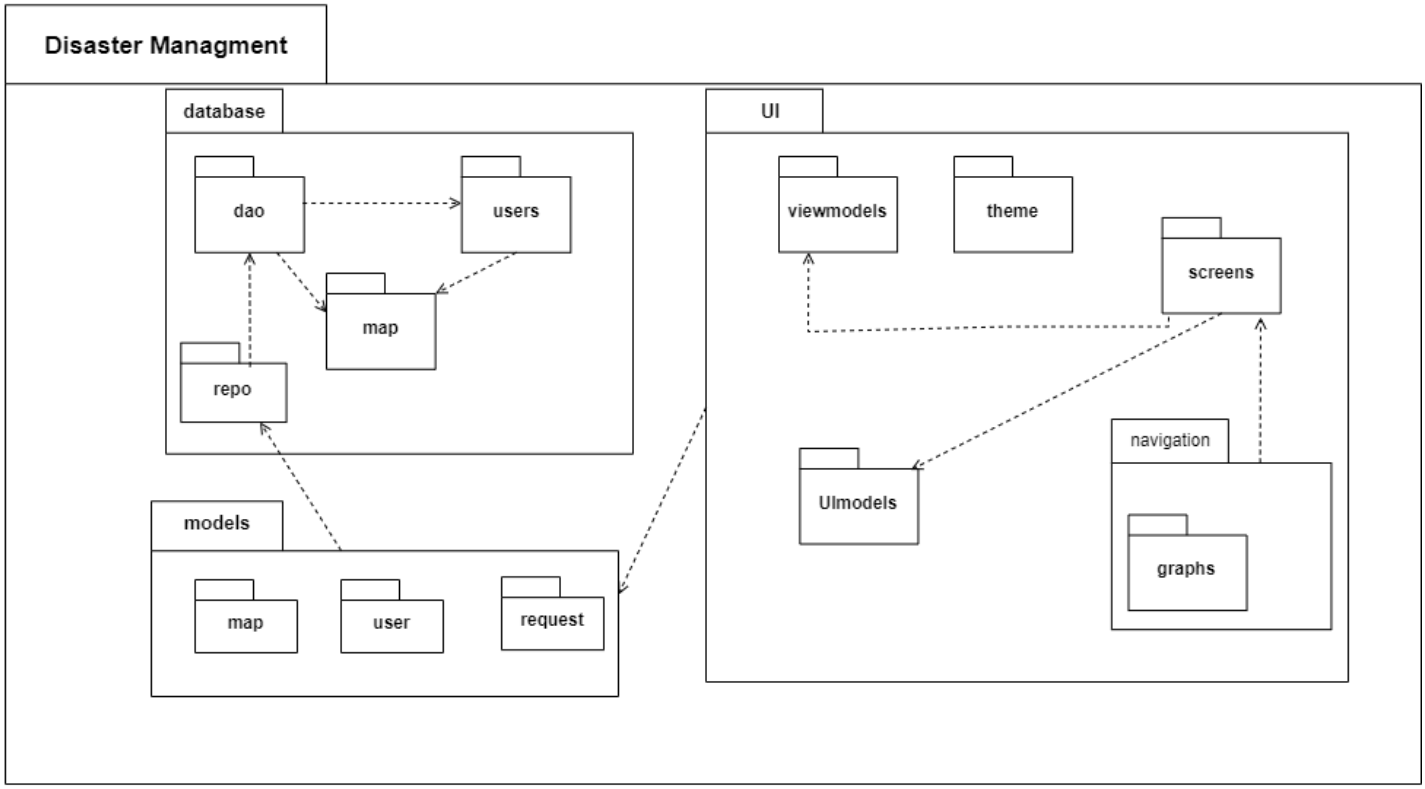


- **SAR Center Modify Vehicle Data Activity Diagram**

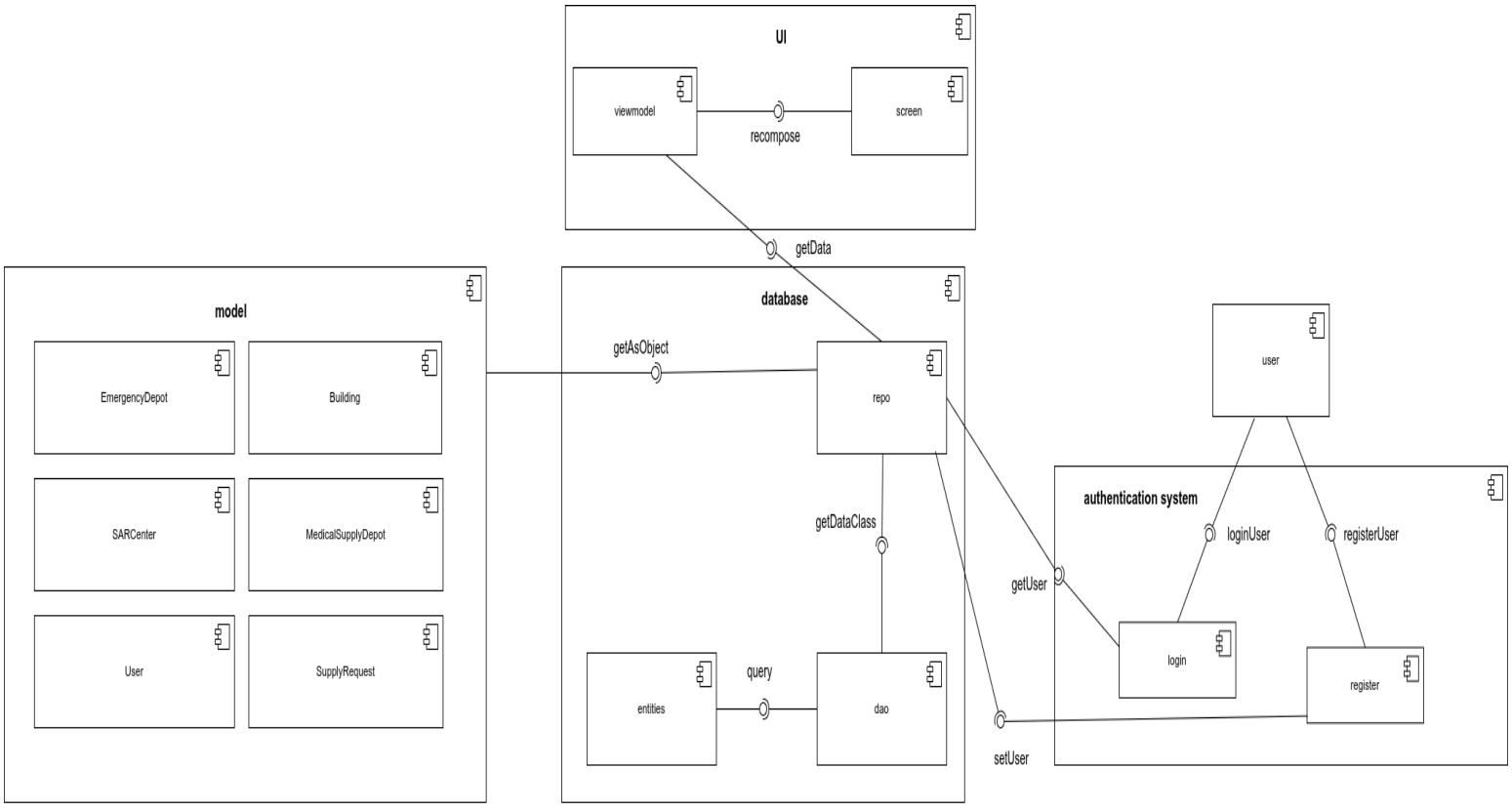


8 Software Architecture

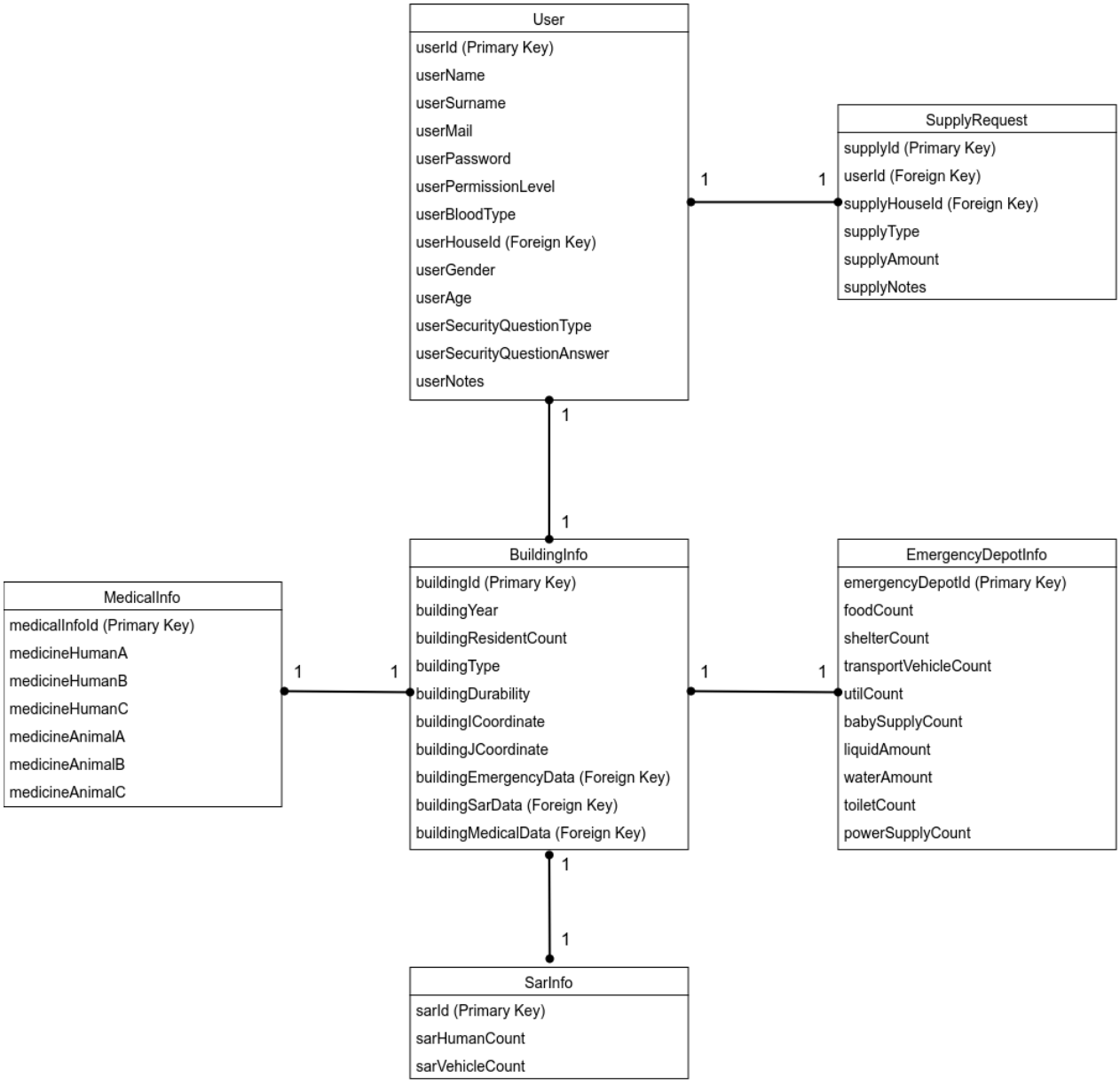
8.1 UML Package Diagram



8.2 UML Component Diagram



9 Entity Relationship Diagram



10 Application Analysis Based on Requirements

As the ISE team, we maintained effective communication with the CSE team from the first day of the project, ensuring smooth completion of the project through mutual information exchange. Throughout the project, we successfully continued with teamwork, both in terms of receiving necessary feedback from the CSE team and providing feedback from our side. We tested and observed that the CSE team fully met the functional and non-functional requirements we provided within the project stages. We would like to extend our respect and gratitude to our esteemed instructors, Eylül Damla Gönül Sezer and Mert Özkaya, for granting us the opportunity to participate in this project, which provided us with such wonderful experiences.

11 Meeting Template (Prototype Software Tool Development)

Date: 26.04.2023

Start Time: 20:30

End Time: 21:25

Overview

-At this meeting, the CSE team informed us about the prototype they built. They talked about the features of the prototype and we (as the ISE Team) conveyed the necessary feedback to them.

Looking Back

-The CSE team easily implemented the interface screens part in the process. Although there were no problems in this process, the hamburger menu design challenged the CSE team. In addition, the time issue forced them to develop the prototype.

-The prototype development process was challenging for the CSE team. Team members learned to use the interface library in this process. However, they think they could do the bottom bar development better.

Pluses and Deltas

-In this process, team members learned by sharing different topics among themselves and brought these components together to develop prototypes. In this way, they both acted as a team and improved their knowledge on the subject.

-The CSE team had a time constraint because of the process schedule. And so they think they can do better than they did a few spots on the prototype to make it to the deadline.

Opportunities for Improvement

-In this process, the CSE team gained practice in developing prototypes and learned how to use the interface library for an application.

Action Plan

-The CSE team will start to code the application program in the next period and write the software design report in parallel.

Closing

-The CSE team made the necessary transfers to us (ISE team) about the prototype development and the next process. We made our comments about the next process, asked our questions and ended the meeting.

12.1 Choosing The Project Topic Meeting

11 March 2023 15.00-17.00

Overview

- ISE and CSE team group members met with each other.
- CSE team presented their potential project ideas to the ISE team.
- The project's basic structre was discussed.

Looking Back

- Earthquake management system was chosen as the project topic to be developed.
- Some use cases of the project was discussed and noted be discussed later.

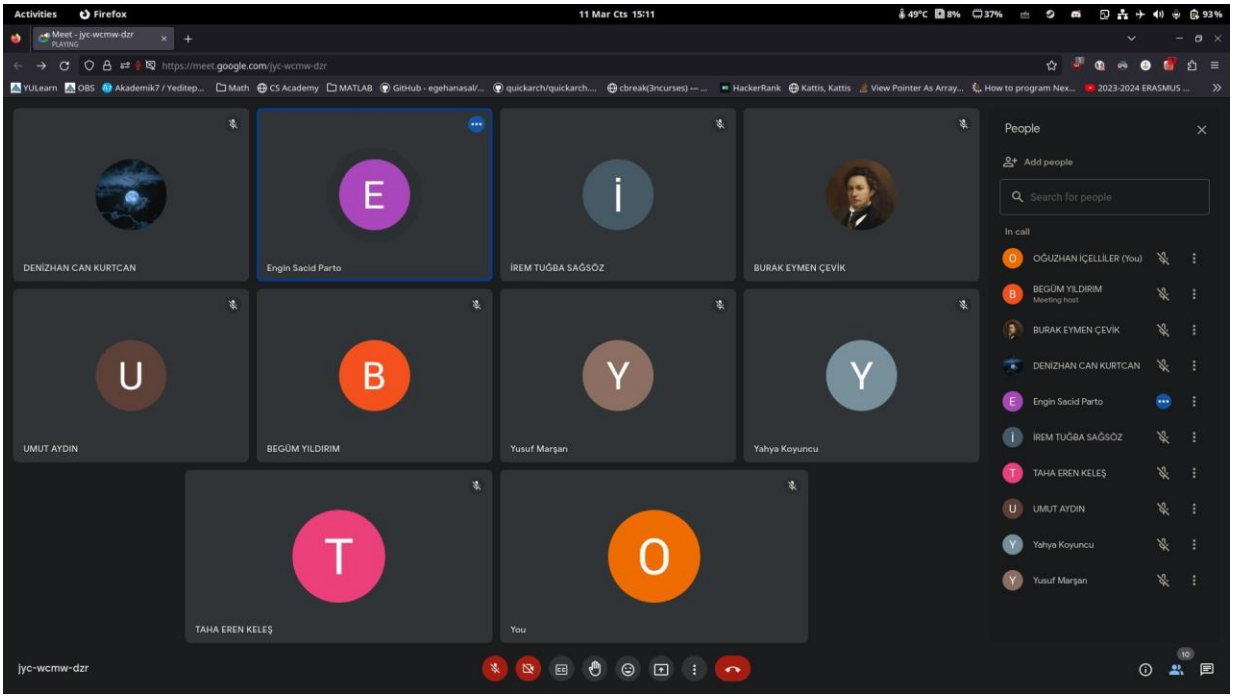
Pluses and Deltas

- There were some disagreements with the use cases of the project that if they should be implemented or left out.
- Chosen project topic was favored by all members of both groups.

Action Plan

- Project's use cases will be discussed and hopefully finalized in the next meeting.
- User's of the project will be discussed in the next meeting because it was made clear that we needed to develop a multi-user project with each user having different use cases.

Meeting Screenshot



12.2 Defining The Use Cases Of The Project Meeting

16 March 2023 21.00-23.00

Overview

12.1 Users of the project were made clear.

12.2 Use cases of the users of the project were discussed and noted down.

Looking Back

12.3 CSE team presented a basic UML graph of the user's of the project to the ISE team.

12.4 Use cases of the project's users were made clear and noted down for the analysis report.

12.5 Some presented use cases were discussed whether they can be implemented in code level, if they required way too complex algorithms to implement they were omitted.

Pluses and Deltas

12.6 Instead of using live data it was decided that we were going to use randomly generateddata since it will be easier to work with, therefore system may not represent a real life situation like we initially planned.

12.7 Some of the use cases that we discussed in the first meeting required a way too complex implementation therefore they were omitted from the project.

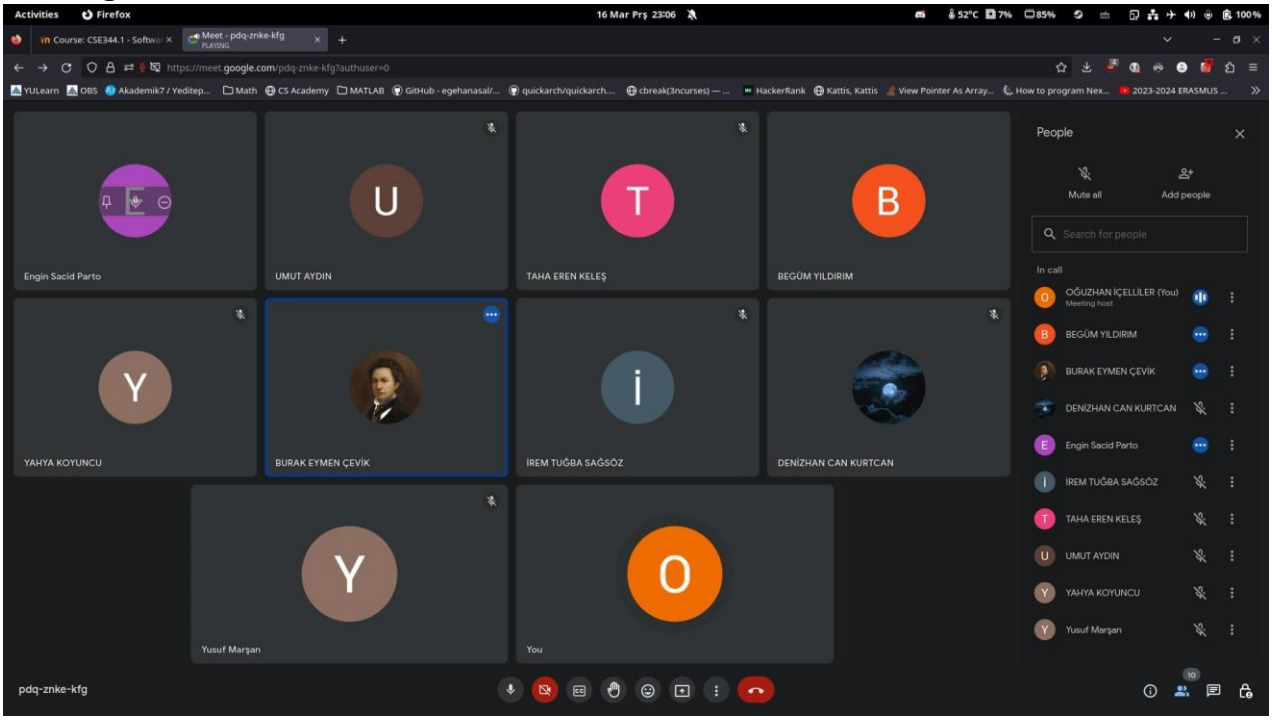
12.8 Project's structre was finally made clear and we started working on the analysis report.

Action Plan

12.9 Project is going to be developed on the Android platform.

12.10 Functional and non-function requirements will be calculated by the ISE team, UML graphs will be done by the CSE team.

Meeting Screenshot



12.3 Use Case Diagram Meeting

26 March 2023 16.00-19.00

Overview

12.4 Use case graph of the Analysis report was drawn.

12.5 ISE team presented the function and non-function requirements.

Looking Back

12.6 ISE team presented the functional and non-fucntion requirements which discussed and finalized in this meeting.

12.7 Use case graph was drawn with the joint effort of all members of both teams.

Pluses and Deltas

12.8 Drawing the use case diagram was relatively hard and took a very long time, even after this meeting there were a lot of changes to the use case diagram until the Analysis Report submission.

12.9 Some non-functional requirements were not up to standards according to the CSE 344 lecture, therefore they were omitted.

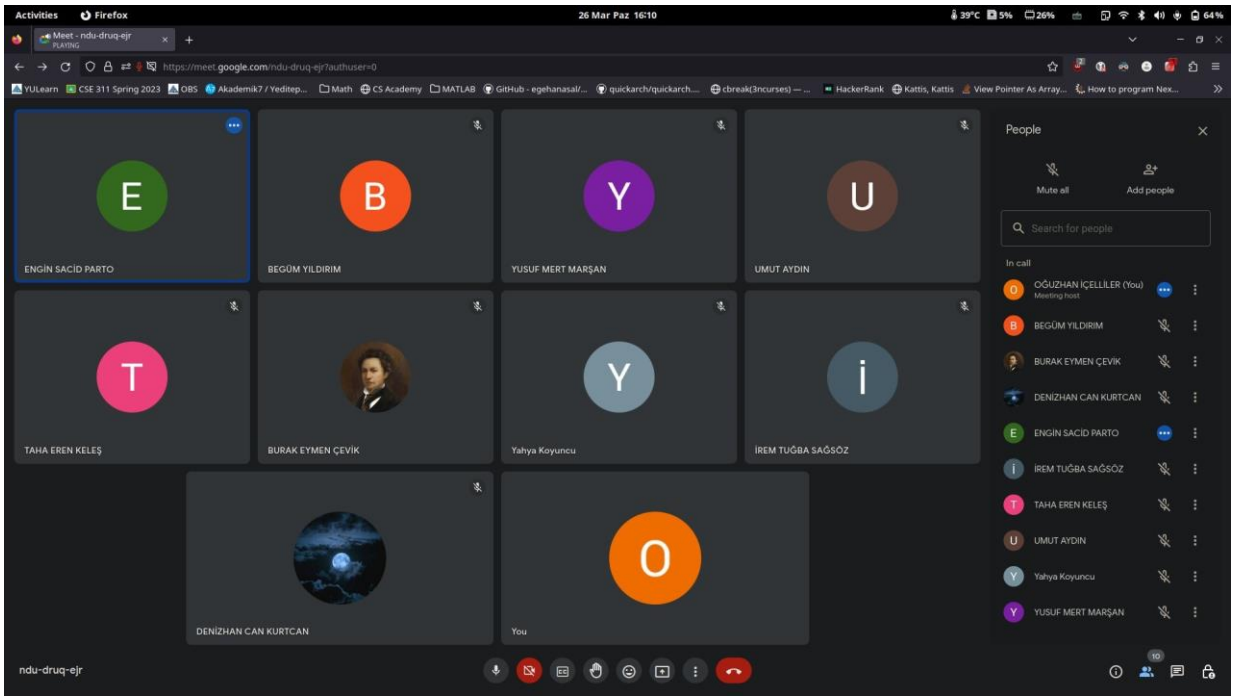
12.3 Non-functional requirements were finalized but they were not in Volere template therefore requiring extra time to reformat.

Action Plan

12.4 Rest of the UML graphs will be created according to the use case diagram.

12.5 ISE team will reformat the non-functional requirements according to the Volere template.

Meeting Screenshot



12.4 Requirements Review Meeting

28 March 2023 20.30-23.00

Overview

12.5 Functional and non-functional requirements of the system were discussed and finalized for the Analysis Report.

12.6 Introduction part of the Analysis Report was written.

Looking Back

12.7 Template of the Analysis Report was creating starting with the introduction part.

12.8 Non-functional requirements were formatted according to the Volere template.

Pluses and Deltas

12.9 By creating of the template of the Analysis Report all information we gathered were written down in a formal format.

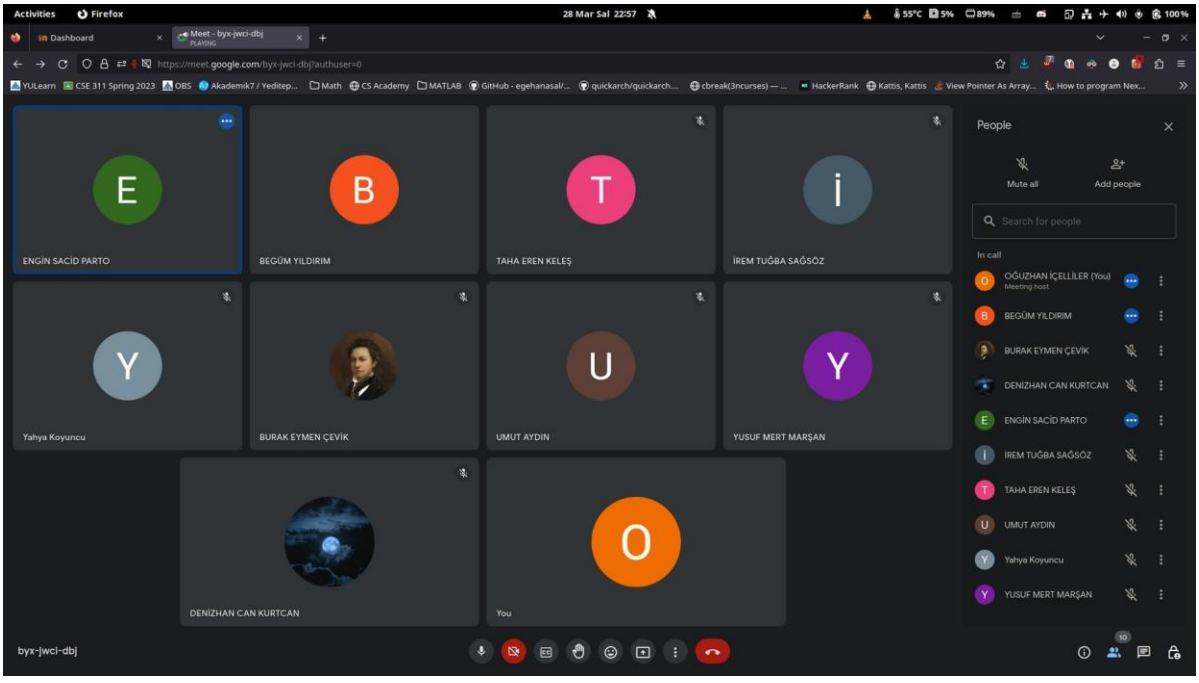
12.10 Functional and non-functional requirements of the system were finished.

Action Plan

12.11 UML graphs will be finalized by the CSE team by 30th of March.

12.12 Analysis report will be completed and uploaded on the 30th of March.

Meeting Screenshot



12.5 Analysis Report Final Meeting

30 March 2023 20.30-23.30

Overview

12.4 Analysis report was finalized and uploaded.

12.5 Next stages of the project were discussed.

Looking Back

12.6 Introduction part was edited again for grammer mistakes.

12.7 References and Glossary; Definitions, Acronyms, and Abbreviations parts was created.

12.8 Use case specifications, use case priority list, class model, UI mockups were added to the report.

Pluses and Deltas

12.9 Analysis report finished on required deadline with no missing parts.

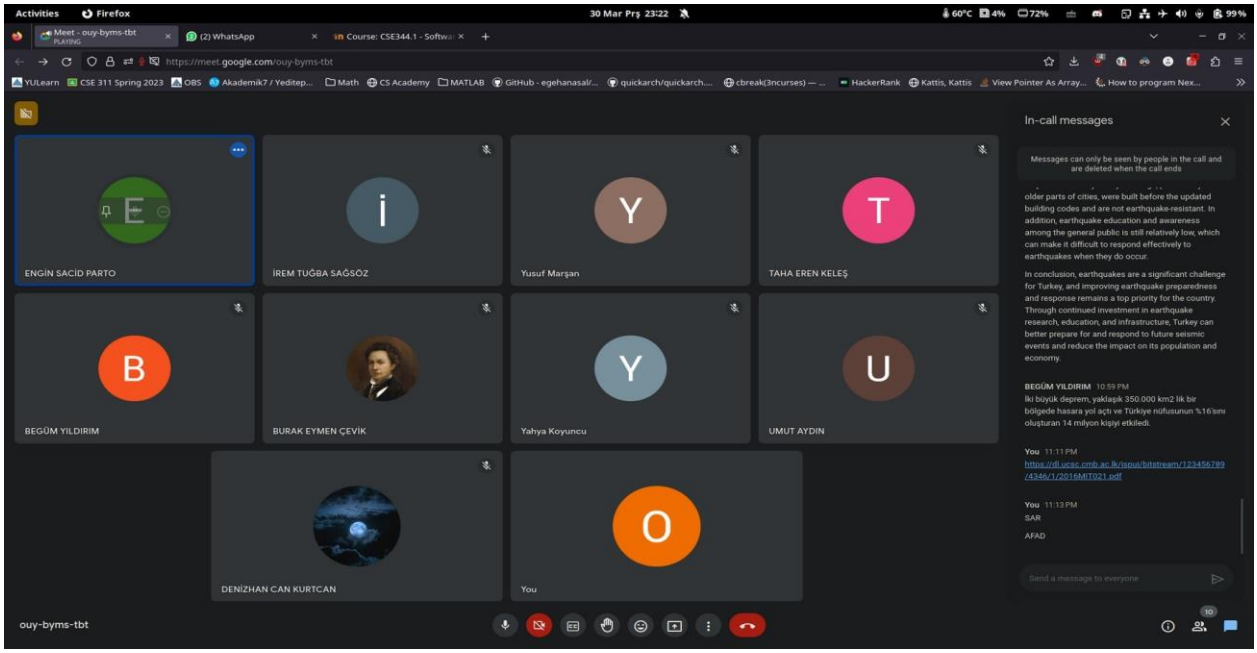
12.10 Formatting between different word processors caused some formatting issues but they were corrected before uploading the report.

Action Plan

12.11 CSE team will study on how to code for the Android platform as they have no experience with it.

12.12 Project prototype will be developed by the CSE team.

Meeting Screenshot



12.6 Project Prototype Presentation Meeting

26 April 2023 20.30-22.00

Overview

12.7 Project prototype was presented to ISE team by CSE team.

12.8 ISE team asked questions about the prototype.

Looking Back

12.9 Projects prototype was presented and future plans for the project was told by the CSE team to the ISE team.

12.10 ISE team filled up a form according to the questions they asked about the project's prototype.

Pluses and Deltas

12.11 ISE team was updated on the current status of the project.

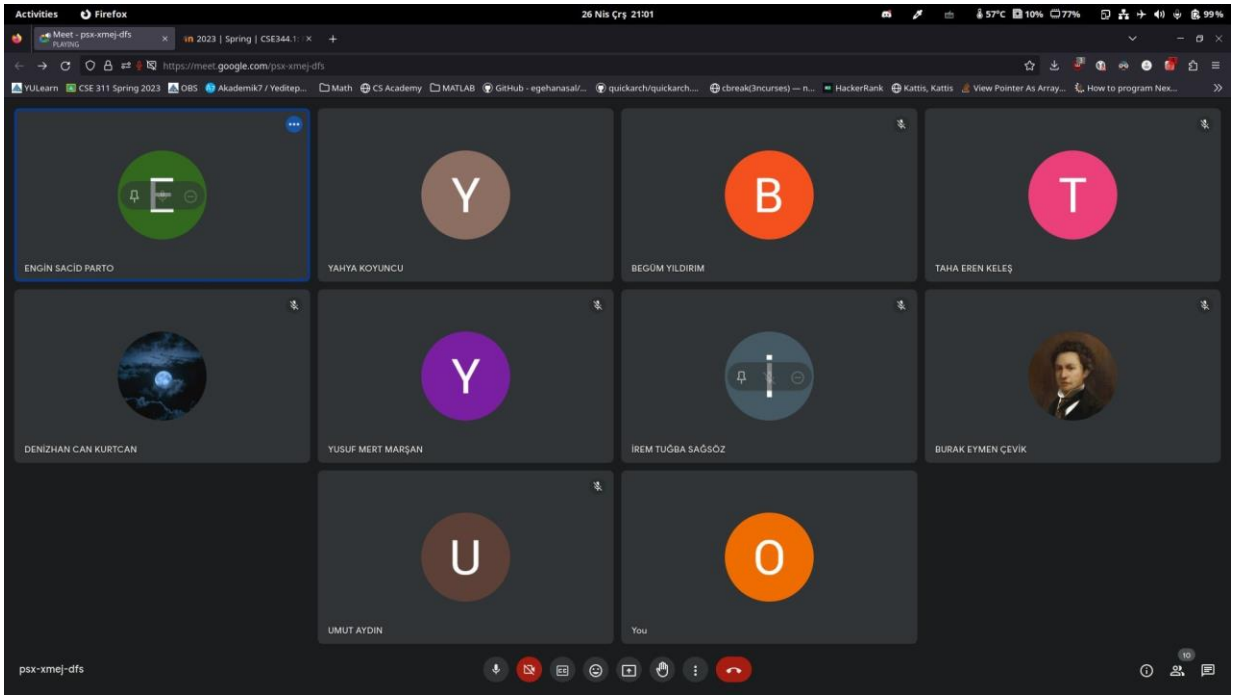
12.12 CSE team was not able to accomplish all goals for the prototype interface.

Action Plan

12.13 Project will be continued to be developed.

12.14 The Software Design Report will be completely done by the CSE team.

Meeting Screenshot



12.7 Project Presentation Meeting

30 May 2023 16.00-17.00

Overview

12.8 Project's final status and the Software Design Report was presented to the ISE team by the CSE team.

12.9 Project's presentation poster was discussed.

Looking Back

12.10 Project's final status was discussed by the both teams.

12.11 It was decided that UI screenshots and architecture graph on the poster will be done by the CSE team and the all text information on the poster will be done by the ISE team.

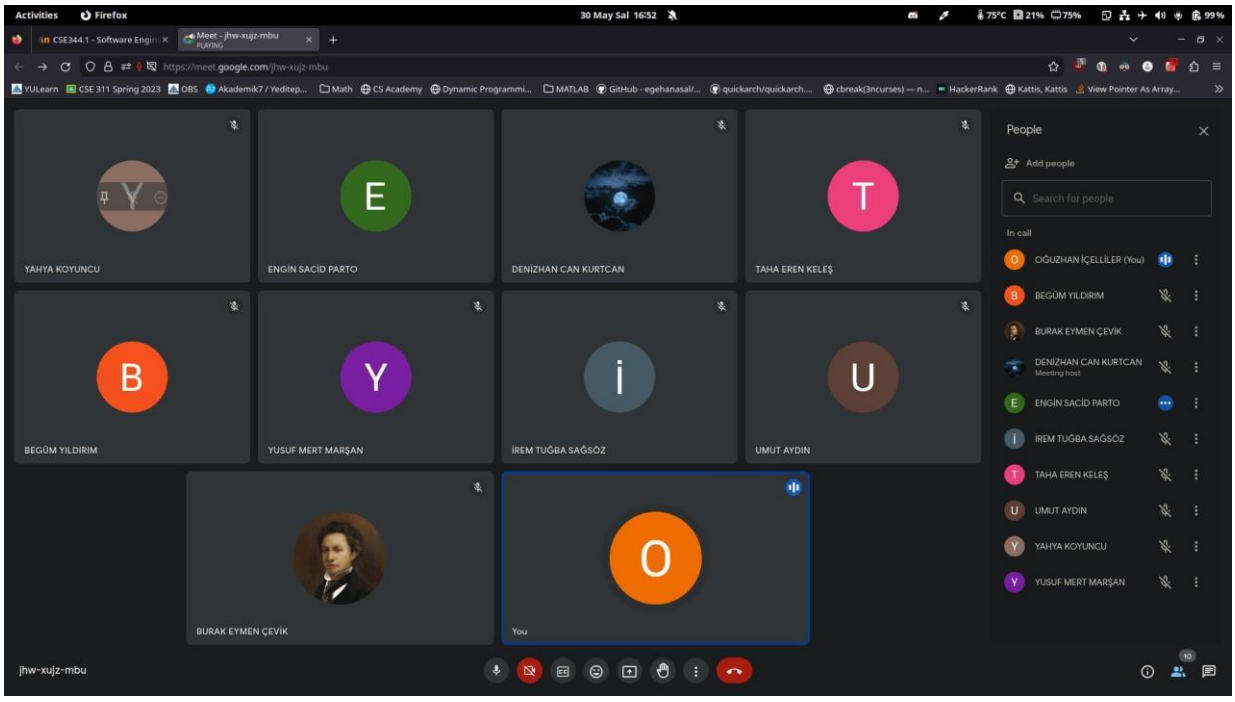
Pluses and Deltas

12.12 Everyone was happy with the final outcome of the project.

Action Plan

12.13 Poster will be ready by the 31st March.

Meeting Screenshot



12.8 Poster Meeting

31 May 2023 21.00-23.00

Overview

12.9 Project's poster was finalized.

12.10 Meeting Report was discussed.

Looking Back

12.11 Project's poster was prepared and it was finalized.

12.12 Meeting Report's structre was discussed.

Pluses and Deltas

12.13 Some formatting issue during the creation of poster was faced.

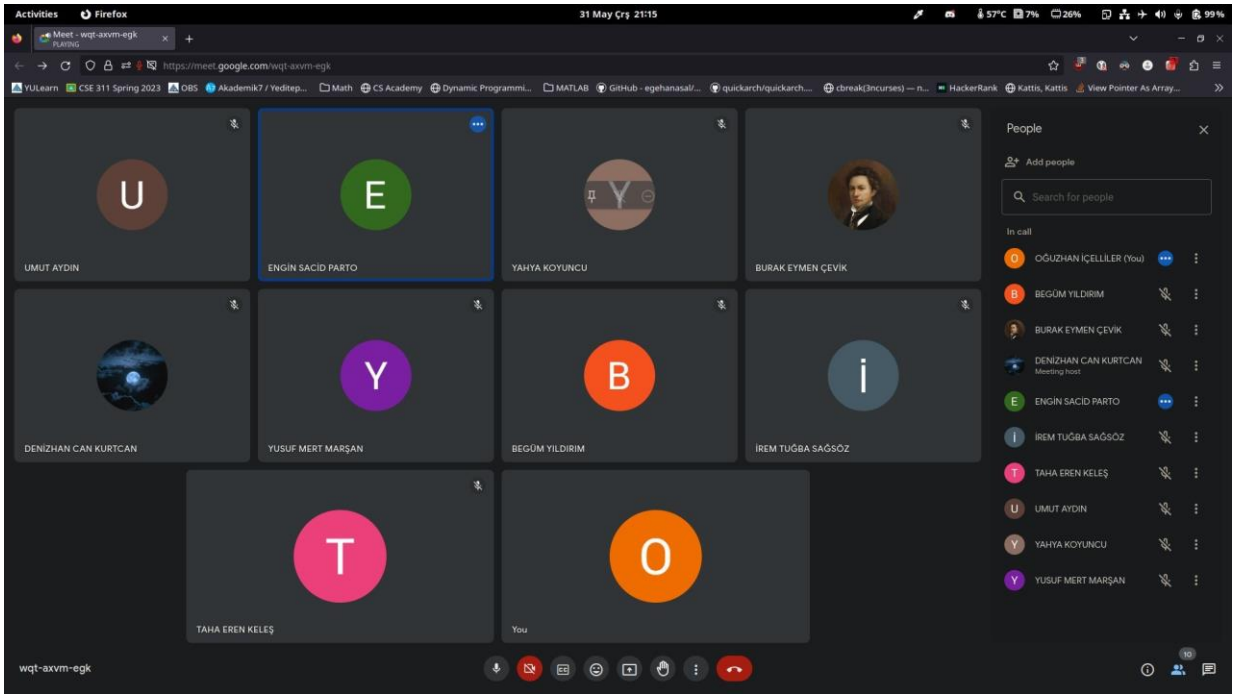
12.14 Project was successfully finished.

Action Plan

12.15 Poster will be printed out before the presentation date.

12.16 Poster will be presented at the specifed date.

Meeting Screenshot



13 DEFINITIONS, ACRONYMS AND ABBREVIATIONS

13.1 AFAD – Afet ve Acil Durum Yönetimi Başkanlığı (Turkish) - Disaster and Emergency Management Presidency

13.2 SAR – Search and Rescue

13.3 API – Application Programming Interface

13.4 NFR – Non Functional Requirement

13.5 FR – Functional Requirement

13.6 MTBCF – Mean Time Between Critical Failures

13.7 HR – Human Resources

14 GLOSSARY & REFERENCES

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