Software Requirements Specification (SRS)

Topic : Health Monitoring System

Team : SmartSpark

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1. Introduction

1. 1. Purpose

The purpose of this SRS document is to clearly define the requirements for the SHM, healthcare management application for the elderly living alone. This document is written so that a wide range of readers, including the project development team and stakeholders, can understand the main functions and purposes of the application and accurately identify the requirements required for implementation and maintenance.

1. 2. Scope

Healthcare management application for the elderly living alone SHM is an IoT-based mobile application that monitors the health status and daily life of the elderly and supports quick response to emergency situations. This application tracks the number of steps, heart rate, whether or not they are going out, medication status, etc., and provides the user's health information to the caregiver.

The key stakeholders of this application are the elderly living alone and their caregivers. Caregivers can check the health status of the elderly through a mobile app and receive notifications based on the elderly’s condition. For example, if the heart rate is abnormally low or the elderly falls, the caregiver is sent real-time notifications, allowing for a quick response. In addition, notification functions are provided regarding the elderly’s medication status or whether they are going out, allowing the caregiver to efficiently manage the elderly’s daily activities.

This application collects data through IoT sensors and requires an internet connection to transmit it to the caregiver in real time. All information can be checked directly on the user's mobile app, and outing status can be tracked as well. The caregiver can check both summary and detailed information on the elderly person's health status, so he or she can manage the elderly person's safety and health more effectively.

1. 3. Definitions, acronyms, and abbreviations

Term	Definition
SHM(Smart health monitoring)	The name of the healthcare management application for the elderly living alone. It supports caregivers in monitoring the elderly's health status and receiving emergency alerts.
Elderly	The primary user of the healthcare management application who is monitored for health and safety. Typically, this refers to elderly individuals living alone who may require health monitoring and emergency assistance.
Caregiver	The user responsible for remotely monitoring the elderly’s health status and responding promptly in case of emergencies.
IoT	Internet of Things. A technology where multiple devices interact by exchanging data over a network. In this project, sensors use IoT to collect and transmit health status data.
JWT	JSON Web Token. An authentication method used to enhance API request security and access control. The token is encrypted, includes an expiration time, and is periodically renewed.
Real-Time Data Streaming	A feature that provides caregivers with updated data on the elderly person’s status every second, covering the last 10 minutes.
Sampled Data	Data older than 10 minutes is sampled at 5-minute intervals and stored in the cache for memory efficiency. This data is permanently stored on the server after 1 hour.
Push Notification	A function that sends real-time alerts to caregivers when the elderly’s health status is abnormal or in case of an emergency.
Infrared Sensor	A sensor installed near the door to detect exits. When an outing is detected, an alert is sent to the caregiver.
Gyroscope Sensor	A sensor that detects tilt and acceleration changes to determine if a fall has occurred.
Heartrate Sensor	A sensor used to monitor the elderly’s heart rate, providing data for detecting abnormal heart conditions or emergencies.
Pedometer Sensor	A sensor used to track the number of steps taken by the elderly, helping caregivers monitor physical activity levels.
Health Monitoring	The function of tracking and analyzing health data such as heart rate, steps, and medication intake to ensure the well-being of the elderly.
Emergency Alert	A system feature that detects critical health abnormalities or accidents (e.g., falls) and promptly notifies the caregiver with relevant information.
Historical Data	Long-term stored data that allows caregivers to view health trends and patterns over daily, weekly, and monthly periods.

1. 4. References

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- **The Role of JWT**

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- **Volatile Data**

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- **SRS Examples1**

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- **SRS Examples2**

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- **SRS Examples3**

  https://www.cse.chalmers.se/~feldt/courses/reqeng/examples/srs_example_2010_group2.pdf
- **SRS explanation**

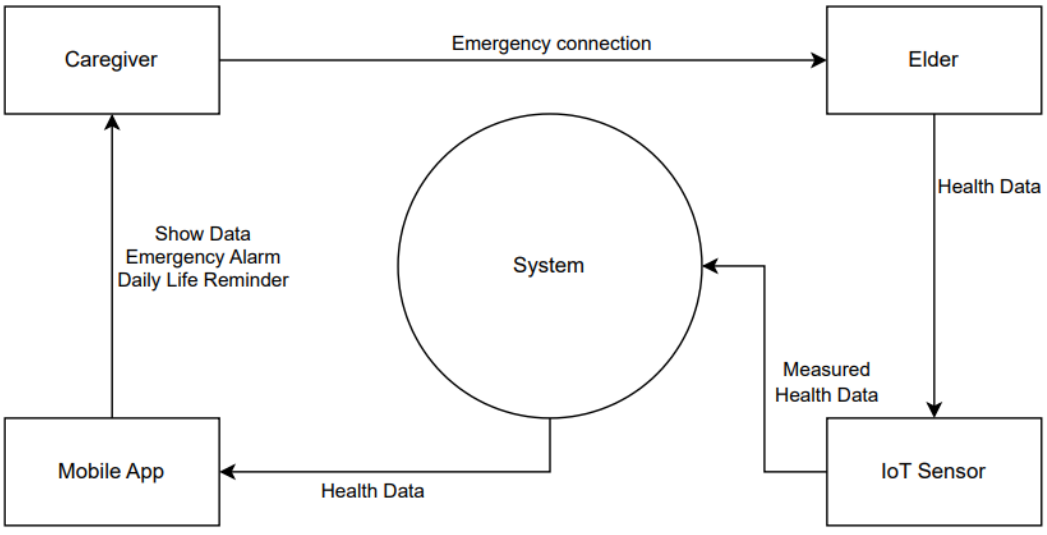
  https://drive.google.com/file/d/1sgXUpiJXCosjBrmogRQx-RIEz14CPf6j/view

2. Overall description

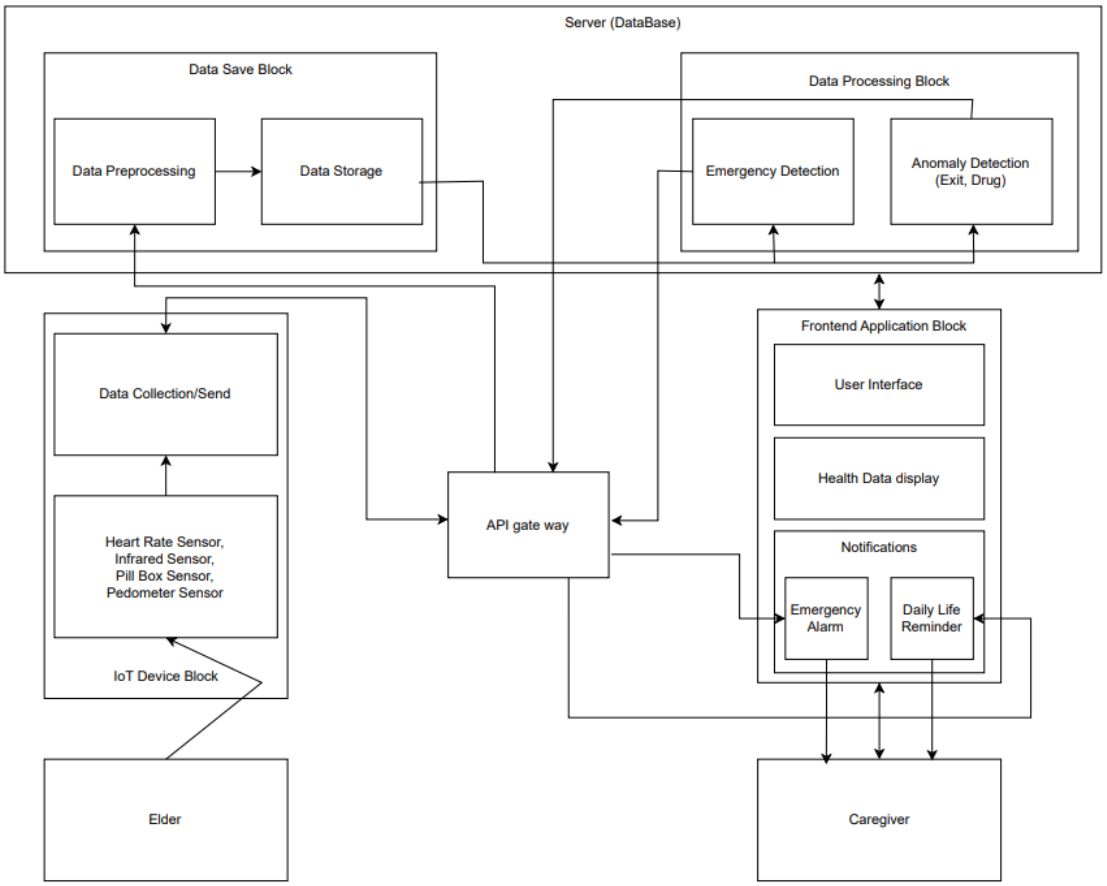
2. 1. Product perspective

2. 1. 0. Diagram of Overall Description

2. 1. 0. 1. Context diagram



2. 1. 0. 2. Block diagram



2. 1. 1. System Interfaces

- This service is designed to operate independently, without integration with external systems. All functions are carried out through communication between the internal server and the client app, with no need for integration with external APIs.

2. 1. 2. User Interfaces

2. 1. 2. 1 Real-Time Data Streaming

- This service is designed to operate independently, without integration with external systems. All functions are carried out through communication between the internal server and the client app, with no need for integration with external APIs.

2. 1. 2. 2. Streaming Data Sampling

- Data older than 10 minutes is sampled at 5-minute intervals and stored in the cache. Less time-sensitive data is recorded in a simplified 5-minute format for memory efficiency and is retained in the cache for up to 1 hour.

2. 1. 2. 3. Historical Data Access

- The sampled data stored in the cache is transmitted to the server after 1 hour and permanently saved in a format that allows the caregiver to view it daily, weekly, or monthly. Historical data is kept in a queryable repository, enabling the caregiver to analyze long-term health trends or identify specific patterns.

2. 1. 2. 4. Deleted Data Segment Indicator

- During transmission of cached data to the server, issues such as network disconnection may prevent successful data transfer, causing the data to be stored locally as a backup. In this case, the data will automatically be sent to the server once the network reconnects. However, if reconnection is delayed for an extended period, local storage capacity may be exceeded, resulting in the deletion of some data.
- In the event of data loss, when the caregiver views historical data, the affected intervals are labeled as "No Data" or "Deleted due to storage limitations." By clicking or tapping on the deleted segments, a popup message appears, explaining that the data was deleted due to network issues, allowing the caregiver to understand the reason for the data loss.

2. 1. 2. 5. Notification System

- The caregiver must be able to immediately assess the elderly person’s health status through notifications in specific situations. If an emergency or abnormality is detected through real-time data analysis, a push notification is sent to the caregiver, enabling a prompt response.

2. 1. 3. Hardware Interfaces

2. 1. 3. 1. Communication Protocol

- Sensor information is transmitted to the server primarily using HTTP. However, HTTPS is employed for all data transmissions to enhance security and protect the transmitted data through encryption, ensuring a secure connection between the client app and the server.

2. 1. 3. 2. Local Data Storage and Automatic Transmission

- In the event of a network disconnection, the IoT device or smartphone app needs to temporarily store data locally. Once the network is reconnected, the data should be automatically transmitted to the server to prevent loss.

2. 1. 4. Software Interfaces

2. 1. 4. 1. API Authentication and Authorization

- All API requests must be authorized using a JSON Web Token (JWT). This token should be encrypted and have an expiration period, requiring periodic renewal. This approach strengthens user authentication and data access control.

2. 1. 4. 2. Sensor Error Detection and Notification

- The system must detect any sensor malfunctions and provide functionality to send error messages to the server or client app. This allows for real-time issue awareness and enables prompt response and handling.

2. 1. 5. Communication Interfaces

2. 1. 5. 1. Encrypted Data Transmission

- All data transmissions must use HTTPS to ensure secure, encrypted communication. HTTPS should be applied to all data exchanges between the server and client app to protect the data from man-in-the-middle attacks.

2. 1. 5. 2. Sensor Data Transmission

- When transmitting data from sensors to the server, HTTPS should be used to ensure secure, encrypted handling. In the event of a network disconnection, data is stored locally and automatically transmitted to the server once the network reconnects, providing a reliable data transfer mechanism.

2. 1. 6. Memory Constraints

2. 1. 6. 1. Store Real-Time Data

- The caregiver can view all data from the past 10 minutes in real time. This data is used for real-time monitoring purposes and is retained for a 10-minute period.

2. 1. 6. 2. Handling Sampling Data Cache

- Data older than 10 minutes is sampled at 5-minute intervals using representative values (e.g., averages) and stored in the cache. This data is retained in the cache for up to 1 hour and is periodically updated to optimize memory usage.

2. 1. 6. 3. Long-Term Stored Data

- The 5-minute interval sampled data stored in the cache is transmitted to the server after 1 hour and recorded in permanent storage. This data on the server allows the caregiver to access and analyze historical data, with filtering options for daily, weekly, and monthly views.

2. 1. 7. Operations

2. 1. 7. 1. Sensor Inspection and Replacement

- IoT sensors undergo regular maintenance every 3 months and are replaced annually to maintain performance and accuracy.

2. 1. 7. 2. Data Backup

- Weekly automatic backups are performed to allow the caregiver to access historical data. Backup files are securely managed, and older backup files are either transferred to an external location or deleted to optimize storage space.

2. 1. 7. 3. Regular System Checks

- To enhance system stability and security, regular system checks are conducted monthly. During these checks, server and communication statuses are verified, and, if necessary, the latest security patches are applied.

2. 1. 8. Site Adaptation Requirements

2. 1. 8. 1. Indoor Sensor Placement

- Since the primary environment is indoors, sensors are installed in key locations within the living space. Heart rate and pedometer sensors are placed in areas where the user frequently stays, while the exit detection sensor is installed near the entrance to ensure more accurate monitoring.

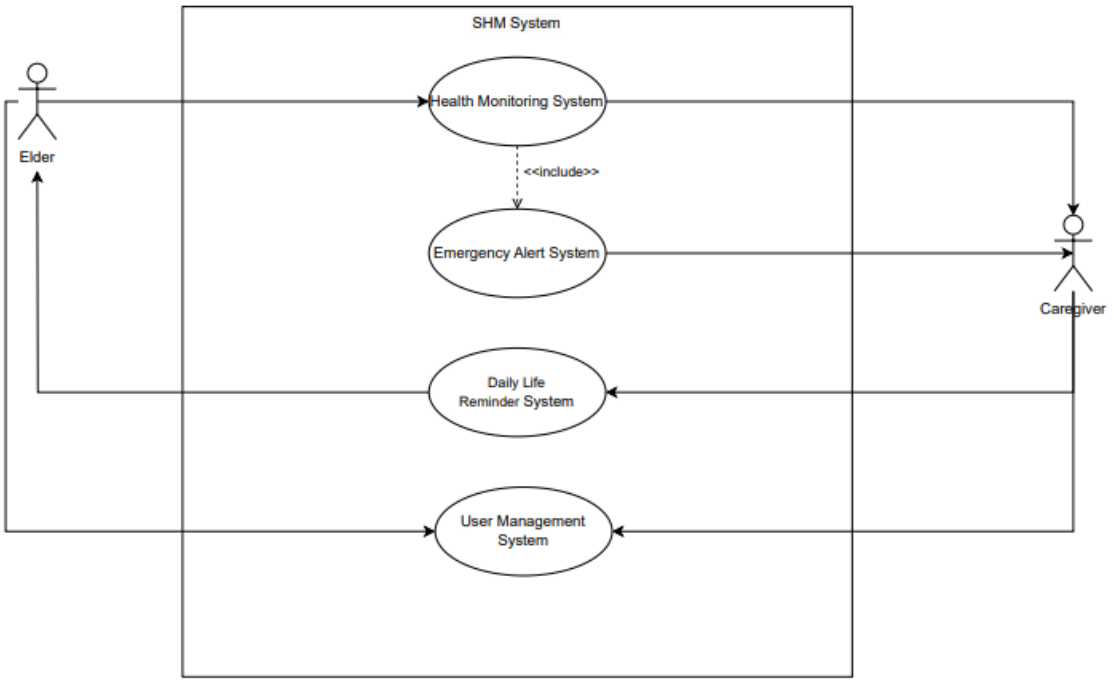
2. 1. 8. 2. Processing Based on Signal Strength and Network Connectivity

- Sensors are installed in areas with a strong Wi-Fi signal to ensure stable data transmission. In areas with weaker signals, signal boosters are used to enhance communication reliability.

2. 1. 8. 3. Power Supply Management

- The battery status of IoT devices should be checked periodically to ensure continuous monitoring. To allow for automatic system recovery in the event of a power outage, consider installing backup batteries or an uninterruptible power supply.

2. 2. Product functions



The mobile application allows the caregiver to monitor the health status of the elderly. The elderly's health information is measured by IoT sensors, stored on the server, and organized and displayed in the app. In addition, statistics are provided based on the stored data. The health information is displayed in a list view, and statistics and detailed information can be checked by clicking.

The server and system detect emergency situations based on the measured health information, immediately send a notification to the caregiver, and induce appropriate response. In addition, when a situation occurs where medication is not taken or the elderly are going out, a notification about this situation is sent to the caregiver so that appropriate response can be made.

In this process, the system restricts the caregivers to receive the elderly's information only from registered caregiver-elderly pairs, preventing sensitive personal information from being leaked.

2. 3. User characteristics

The users of this system are elderly people living alone and their caregivers who monitor their health and safety. The user characteristics are as follows:

2. 3. 1. Characteristics of elderly

- Elderly people often suffer from adult diseases due to their advanced age, so continuous health monitoring is necessary. It is necessary to periodically measure the amount of

exercise through heart rate and number of steps, and take immediate action if abnormalities occur.

- Older people are likely to be less familiar with smartphones and apps. Therefore, the interface should be simple and intuitive for them to use, and buttons and fonts should be large for many people with poor eyesight.
- Elderly people with poor health tend to forget to take their medications because they have to take many medications. Therefore, a system is needed to prevent medication from being missed.
- Because it is difficult for elderly people living alone to respond to emergencies on their own, a notification should be sent to their caregivers in the event of an emergency to help them respond.
- If a senior living alone does not return home until too late, there may be an accident. To find out, a system that sends out/return notifications to the caregiver is needed.
- Because older adults may dislike anything complicated or inconvenient, installing health monitoring sensors should be simple enough for older adults to do.

2. 3. 2. Characteristics of caregiver

- Caregivers need to remotely monitor the health and safety of elderly people living separately and be notified quickly in the event of an emergency so they can call the elderly person or report to 119. A real-time push notification system is required for this purpose.
- Because the health information that seniors need to manage can be so varied, it should be summarized and presented in an easy-to-read format. It is also important to check overall health trends, so data history should be available to identify trends.
- Caregivers should be able to adjust alarm conditions and frequencies based on the health characteristics or lifestyle of the elderly person. For example, if the patient needs to take medication three times a day, the medication failure detection should occur three times a day.

2. 4. Constraints

2. 4. 1. Hardware limitations

- A variety of sensors are required, each with different data formats and transmission methods, requiring additional hardware or protocol support to integrate them.

2. 4. 2. Interfaces to other applications

- The communication protocol must be provided as a RESTful API to support integration with other applications so that data collected from sensors can be efficiently integrated and transmitted.

2. 4. 3. Reliability requirements

- Since older people are not accustomed to operating apps, the system must be highly reliable. In particular, it must be designed to minimize the possibility of errors and to respond quickly when they occur.

2. 4. 4. Criticality of the application

- Internet connectivity is essential for critical functions such as emergency notifications to function smoothly. This is a critical constraint of the system, as the functions may not function properly if the Internet is disconnected.

2. 4. 5. Safety and security considerations

- Personal outing and health information is considered sensitive information, and security measures must be put in place to protect privacy. Strong security measures are needed to prevent data leakage.

3. Specific requirements

3. 1. External interface requirements

3. 1. 1. User Interfaces

3. 1. 1. 1. Real-time Data Display

- The caregiver can view real-time heart rate and step count data collected over the past 10 minutes, updated on a per-second basis.

3. 1. 1. 2. Historical Data Access

- The caregiver can access past data with daily, weekly, and monthly filtering options. If certain data segments were deleted due to local storage limitations, these intervals will be marked with **"No Data"** or **"Deleted due to storage limitations"**. Clicking on these segments will display a popup explaining the reason for deletion.

3. 1. 1. 3. Notification Feature

- The caregiver receives push notifications when the network reconnects or when an emergency situation is detected. All notifications include a timestamp, allowing the caregiver to track when each notification was triggered.

3. 1. 1. 4. Data Loss Segment Display

- When accessing historical data, segments where data was deleted due to local storage limitations are clearly marked. These segments display as **"No Data"** or **"Deleted due to storage limitations"**. Clicking or tapping on these segments reveals a popup explaining that the data was deleted due to network-related issues.

3. 1. 2. Hardware Interfaces

3. 1. 2. 1. Infrared Sensor (Exit Detection)

- Infrared sensors are used for detecting exits. The infrared sensor is installed near the door to detect exit activity, using the HTTP protocol to send data to the server. The data is encrypted and transmitted through HTTPS.

3. 1. 2. 2. Heart Rate and Step Count Sensors (Using Smartphone Sensors)

- Heart rate and step count are monitored through built-in smartphone sensors. The data collected through these sensors is cached and transmitted to the server, requiring the smartphone hardware to meet minimum processing specifications.

3. 1. 2. 3. Data Buffering and Local Storage

- When network connectivity is lost, each sensor temporarily stores data locally with timestamps, then sequentially transmits this data to the server upon reconnection.

3. 1. 2. 4. Storage Management

- If local storage capacity is reached, older data is deleted or compressed, with essential data given priority for retention.

3. 1. 3. Software Interfaces

3. 1. 3. 1. Operating System

- The system primarily supports the Android operating system. Integration with the smartphone's sensor functions is required for collecting and processing heart rate and step count data.

3. 1. 3. 2. API Authentication and Access Control

- All API requests are processed using JSON Web Token (JWT) authentication. The token is encrypted and has an expiration date, with automatic renewal to maintain security.

3. 1. 3. 3. Sensor Error Detection and Notifications

- Sensors periodically check their status. If an error occurs, the system automatically sends an alert and logs an error message.

3. 1. 4. Communications Interfaces

3. 1. 4. 1. Network Connection and Encryption

- All data transmissions use HTTPS for secure encryption, protecting server and client communication from man-in-the-middle attacks.

3. 1. 4. 2. Data Transmission Intervals

Data is transmitted at the following intervals:

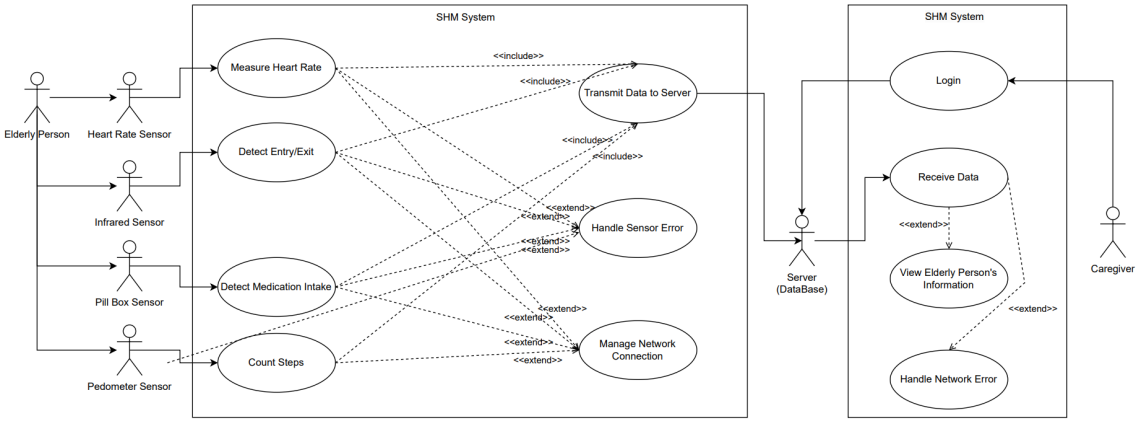
- **Real-time Streaming**: Data from the last 10 minutes is updated on a per-second basis and transmitted in real-time.
- **Sampled Transmission**: Data after 10 minutes is sampled every 5 minutes and stored in the cache, then transmitted to the server when network connectivity is available.
- **Hourly Transmission**: Sampled data stored in the cache is sent to the server after 1 hour for long-term storage.

3. 1. 4. 3. Reconnection Management

- If the network connection is lost, data is temporarily stored locally and then automatically transmitted to the server when the network is restored. **Reconnection attempts are made every 5 minutes, up to 3 times**, with an acknowledgment (ACK) from the server to prevent duplicate transmissions.

3. 2. Functional requirements

3. 2. 1. Send and receive data for health monitoring information system



3. 2. 1. 1. Introduction/Purpose of feature

- Health information such as the elderly's heart rate, going out, taking medicine, and walking rate is measured and transmitted to the server so that caregivers can monitor their health.

3. 2. 1. 2. Stimulus/Response sequence

- Sensors measure data from the elderly
- The system receives data from the sensors, stores it, and sends it to the caregiver.

3. 2. 1. 3. Associated functional requirements

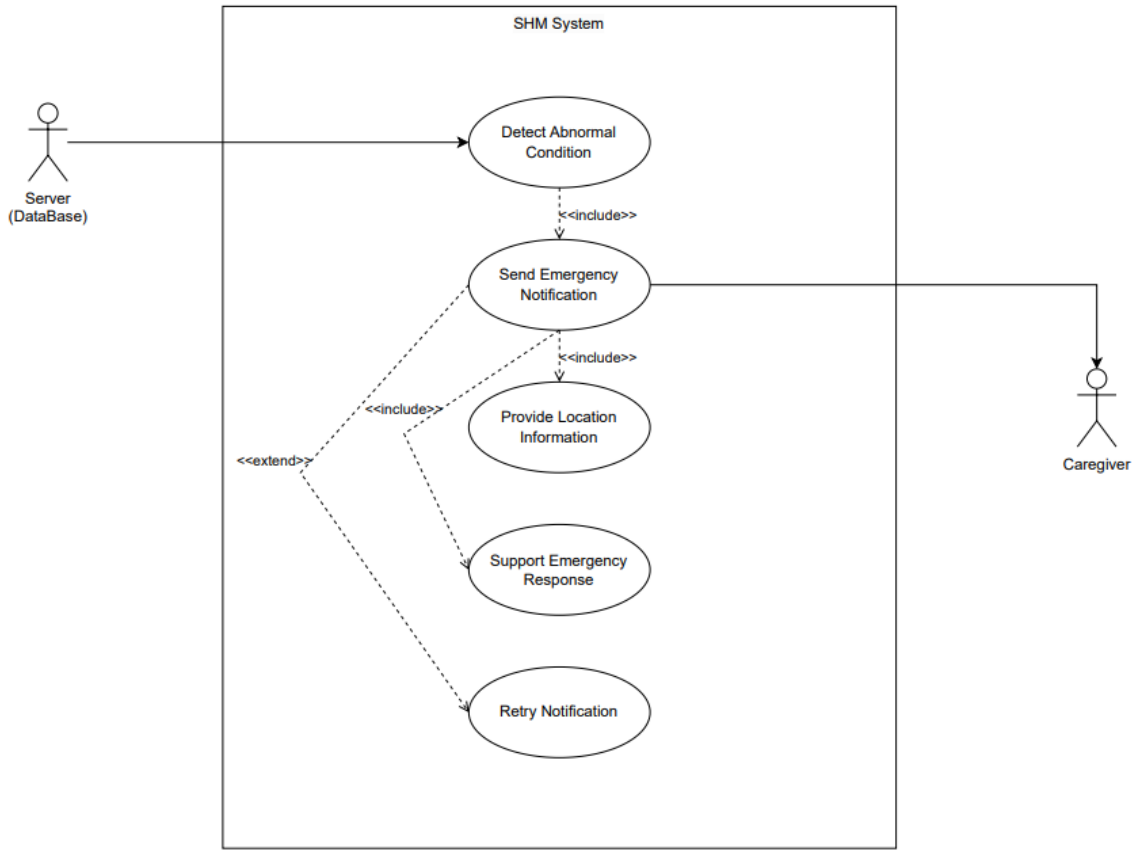
3. 2. 1. 3. 1. Measuring Monitoring Information

Name	Measuring Monitoring Information
Summary	Measure and record the health information of the elderly, whether they are out or not, and whether they are taking medicine
Actor	Sensor, Elder
Precondition	Sensors must be operating normally and connected to the network.
Description	1a. Heart rate sensors measure the elderly's heart rate at regular intervals. 1b. Infrared sensors determine whether the elderly are going out or not. 1c. The medicine container sensor is used to determine whether the medicine is taken by opening/closing the medicine container. 1d. The pedometer sensor measures the number of steps. 2. Transmit the measured data to the server.
Alternatives	1. Attempt to reactivate the sensor after sending an error message in case of a sensor error. 2. If the sensor is disconnected from the network, it stores the data locally and transmits the data when connected to the network.
Postcondition	The measured elderly information is recorded in the server DB.

3. 2. 1. 3. 2. Receiving monitoring information (heart rate, pedometer, medication, and going out)

Name	Receiving monitoring information (heart rate, pedometer, medication, and going out)
Summary	Monitor the elderly's health status and going out in real time.
Actor	System, Caregiver
Precondition	The caregiver must be logged in, and the elderly must be registered. The caregiver's device must be connected to the network. The sensors should be in normal operation.
Description	1. The caregiver logs in and enters the elderly Information tab. 2. The app takes information about the elderly from the server in real time and displays it on the screen.
Alternatives	2a. Attempt to re-operate in case of network failure
Postcondition	The caregiver can check the elderly's condition in real time.

3. 2. 2. Emergency alert system



3. 2. 2. 1. Introduction/Purpose of feature

- In the event of an emergency for the elderly, an emergency notification is sent to the caregiver for quick response

3. 2. 2. 2. Stimulus/Response sequence

- The system detects an abnormal health condition
- The system sends emergency notifications to the caregiver, including abnormal health conditions.

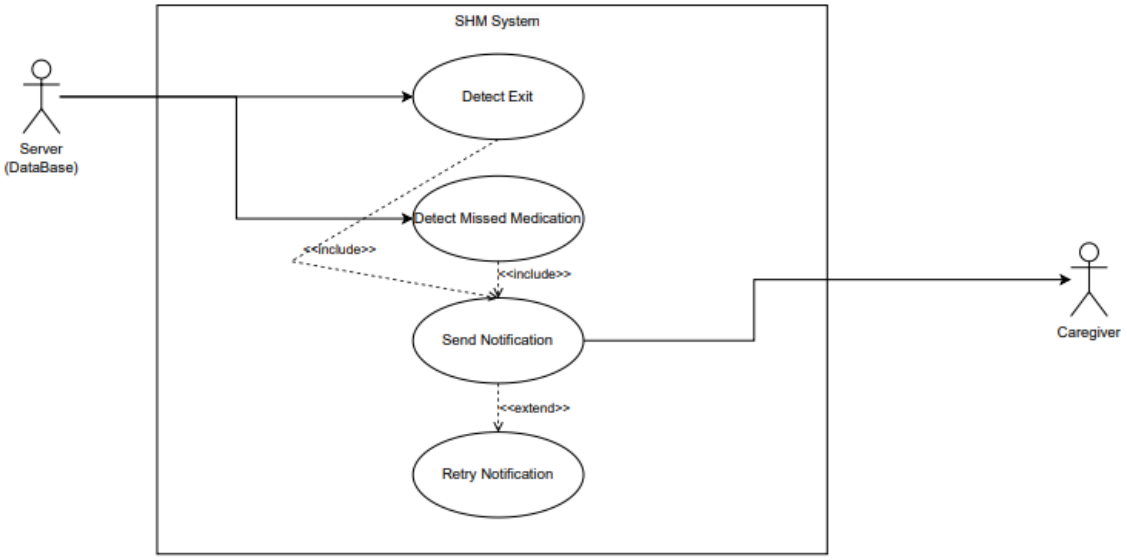
3. 2. 2. 3. Associated functional requirements

3. 2. 2. 3. 1. Receiving emergency notification

Name	Receiving emergency notification
Summary	In the event of an emergency (heart attack, etc.) to the elderly, a notification is sent to the caregiver.
Actor	System, Caregiver
Precondition	The caregiver must be logged in, and the elderly must be registered. The connected sensor operates normally and must be connected to the network. Abnormal conditions shall be detected in the system.

Description	1. An abnormal condition is detected in the system. 2. Upon detection of this, a push notification is sent to caregivers connected to the elderly, including the current elderly's and health status. 3. When you click the push notification, information of health status appears, and the elderly or 119 phone/message button is displayed to help you cope with emergency situations.
Alternatives	2a. Attempt to retransmit in case of a notification transmission error
Postcondition	Caregivers can check the elderly's emergency situation through notification, and help them cope with emergency situations.

3. 2. 3. Daily life reminder system



3. 2. 3. 1. Introduction/Purpose of feature

- It helps the elderly to make their daily lives comfortable. Forward notification of going out to the caregiver and send notification to the caregiver when not taking the medicine.

3. 2. 3. 2. Stimulus/Response sequence

- It detects when the system goes out or hasn't taken medication
- Send notification of going out/not taking medicine to the caregiver, and induce the elderly to call.

3. 2. 3. 3. Associated functional requirements

3. 2. 3. 3. 1. Notification of going out

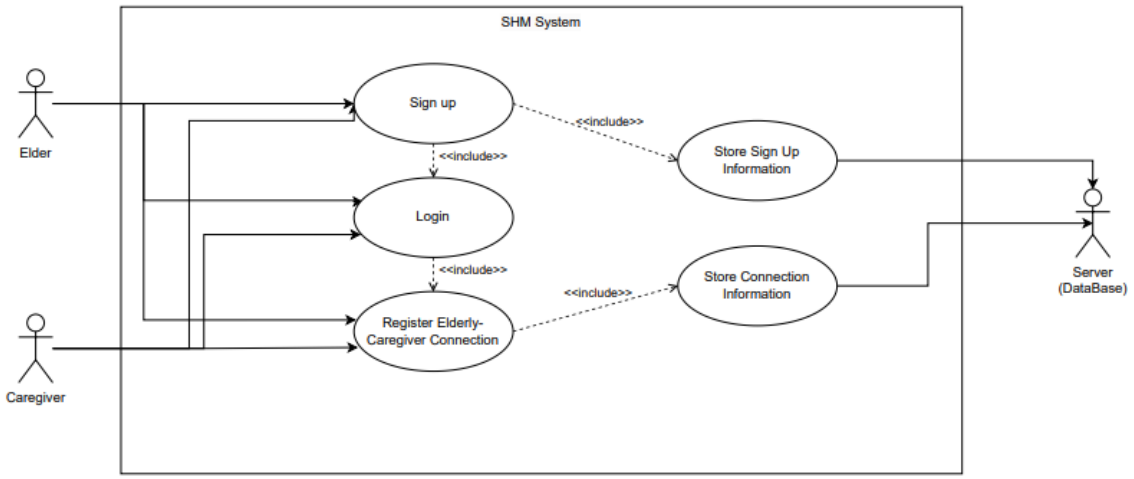
Name	Notification of going out
Summary	When an elderly person leaves the house, a push notification is sent to the caregiver.

Actor	System
Precondition	Infrared sensors should be operating normally, and elderly outings should be detected. The caregiver must be logged in, and the elderly must be registered.
Description	1. The elderly's outing is detected by the system and information is delivered to the server. 2. Send out push notifications to caregivers connected to the elderly
Alternatives	2a. Attempt to retransmit in case of a notification transmission error 2b. Do not send notifications when there is no connected caregiver. The caregiver can check the elderly's outing through notification.
Postcondition	The caregiver can check the elderly's outing through notification.

3. 2. 3. 3. 2. Notification of not taking medicine

Name	Notification of not taking medicine
Summary	If elderly haven't taken the drug even after the time of taking it, send a notification to caregiver.
Actor	System
Precondition	The time of medication should be set in the system. The caregiver must be logged in, and the elderly must be registered. The pill box sensor should operate normally and be connected to the network.
Description	1. When the medication time has passed, the system checks for a history of medication. 2. If there is no history of medication, a push notification is sent to caregiver connected to the elderly 3. When you click on the push notification, information on medication notification pops up, and a phone button is displayed to the elderly to induce exchanges.
Alternatives	2a. Attempt to retransmit in case of a notification transmission error
Postcondition	The caregiver can check the elderly's use of the medicine.

3. 2. 4. User management system



3. 2. 4. 1. Introduction/Purpose of feature

- It manages the accounts of people who use this system and stores senior and caregiver connection information to help caregivers easily monitor and manage senior health information.

3. 2. 4. 2. Stimulus/Response sequence

- Caregiver/elderly performs membership registration, login, and registration of caregiver-elderly connection.
- The system creates and manages accounts and stores caregiver-elderly connections to grant health access.

3. 2. 4. 3. Associated functional requirements

Name	Registration of Caregiver-Elderly Connection
Summary	Allow caregivers to connect and manage the elderly to the system.
Actor	Caregiver
Precondition	The caregiver must be logged in to the system. The elderly's ID code must be issued.
Description	1. The caregiver enters the User tab. 2. Enter the ID code in the Caregiver-Elderly connection box and press the Add button. 3. The server checks whether there is an elderly person who corresponds to the ID code and then connects with the caregiver, and information on the connection between the caregiver and the elderly is recorded in the system. 4. Empower the caregiver to receive information about the elderly from the server.
Alternatives	2a. Error messages can be printed and retried in case of input information error. 4a. When granting permission, print an error message and retry when an error occurs.

Postcondition	The connection information between the elderly and the caregiver is stored in the server DB, and the caregiver can receive the elderly's information.

3. 3. Non-functional Requirements

3. 3. 1. Performance

3. 3. 1. 1. Emergency Alert Function

- The emergency alert function must send a notification within 1 minute when an emergency situation is detected, with an accuracy of over 95% to minimize false alerts.

3. 3. 1. 2. Data Freshness

- The information available to the caregiver must reflect the latest data within 1 minute to ensure timely decision-making.

3. 3. 2. Reliability

3. 3. 2. 1. System Availability

- The application shall maintain an uptime of 95%, allowing for an average of 18.25 days(=365.25 * 0.05) of downtime per year.

3. 3. 2. 2. Critical Functionality

- Application failure occurs when any of the following critical functions are not operational:
  - Security access to the system
  - Database search capabilities
  - Adding, updating, or deleting records in the database

3. 3. 2. 3. Disaster Recovery

- The system should include automated processes to recover from failures within 1 hour.

3. 3. 3. Availability

3. 3. 3. 1. Uptime Requirement

- The application shall have an uptime of 95%, ensuring that the service is consistently available to users.

3. 3. 3. 2. Downtime Notifications

- In the event of downtime, users must be notified in advance, and procedures should be in place to minimize the impact during scheduled maintenance.

3. 3. 4. Capacity

3. 3. 4. 1 Data Storage Capacity

- The system shall support a minimum capacity of 50 GB for data storage.

3. 3. 4. 2. Concurrent Users

- The system shall be able to handle over 100 concurrent users without performance degradation.

3. 3. 5. Privacy

3. 3. 5. 1. Personal Information Protection

- The system shall comply with the Personal Information Protection Act to ensure the privacy of individuals' data.

3. 3. 5. 2. Data Retention Policy

- Personal identifiable information shall be retained only for the minimum necessary duration, with policies in place for secure deletion when no longer needed.

3. 3. 6. Security

3. 3. 6. 1. Data Encryption

- All data transmissions must utilize HTTPS to ensure secure, encrypted communication, protecting user data from unauthorized access and man-in-the-middle attacks.

3. 3. 6. 2. Access Control

- The system shall implement robust authentication and authorization mechanisms to restrict access to sensitive data.

3. 3. 7. Scalability

3. 3. 7. 1. System Scalability

- The system must be designed to handle an increasing number of users and data volumes without performance degradation, ensuring seamless scalability.

3. 3. 8. Usability

3. 3. 8. 1. User Experience

- The user interface must be intuitive and easy to use, with user feedback incorporated into design improvements for enhanced usability.

3. 3. 9. Maintainability

3. 3. 9. 1. Logging and Monitoring

- The system shall have logging and monitoring capabilities to track performance and quickly diagnose issues, facilitating ongoing maintenance and support.

4. Appendixes

4. 1. Data Tables

4. 1. 1. Elderly User Information

Name	Type	Required / Optional
Full Name	Text	Yes
email	Text	Yes
phone	Text	Yes
Gender	Select	Yes
Elderly ID	Integer	Yes
Caregiver Id	Integer	-

4. 1. 2. Caregiver User Information

Name	Type	Required / Optional
Full Name	Text	Yes
email	Text	Yes
phone	Text	Yes
Gender	Select	Yes
Caregiver ID	Integer	Yes
Elderly 1	Integer	-
Elderly 2	Integer	-
Elderly 3	Integer	-
Elderly 4	Integer	-

4. 1. 3. Elderly Blood Pressure Information

Name	Type	Required / Optional
Elderly ID	Integer	Yes
Time	DateTime	Yes
Blood Pressure	Integer	Yes

4. 1. 4. Elderly Heart Rate Information

Name	Type	Required / Optional
Elderly ID	Integer	Yes
Time	DateTime	Yes
Heart Rate	Integer	Yes

4. 1. 5. Elderly Medicine Time Information

Name	Type	Required / Optional
Elderly ID	Integer	Yes
Time	DateTime	Yes
Open	bool	Yes

4. 1. 6. Elderly Outdoor Information

Name	Type	Required / Optional
Elderly ID	Integer	Yes
Time	DateTime	Yes
Outdoor	bool	Yes

4. 1. 7. Elderly Walking Information

Name	Type	Required / Optional
Elderly ID	Integer	Yes
Day	DateTime	Yes
Walked	Integer	Yes

4. 1. 8. Sensor Information

Name	Type	Required / Optional
Elderly ID	Integer	Yes
Sensor ID	Integer	Yes
Sensor name	Text	Yes
Sensor type	Select	Yes

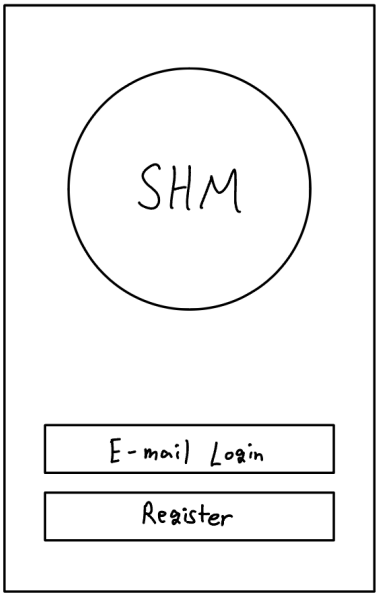
4. 1. 9. Sensor Raw data

Name	Type	Required / Optional
Elderly ID	Integer	Yes
Sensor ID	Integer	Yes
Time	DateTime	Yes

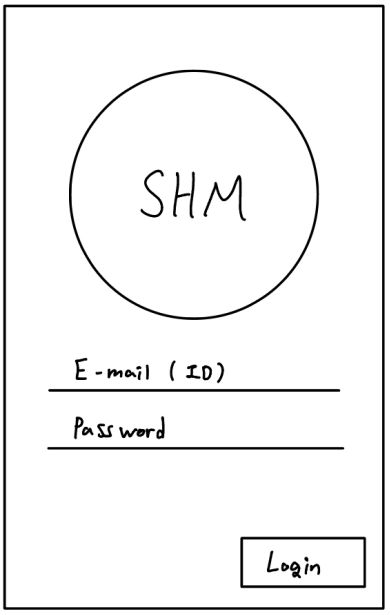
Value	Integer	Yes

4. 2. User Interface Sketch

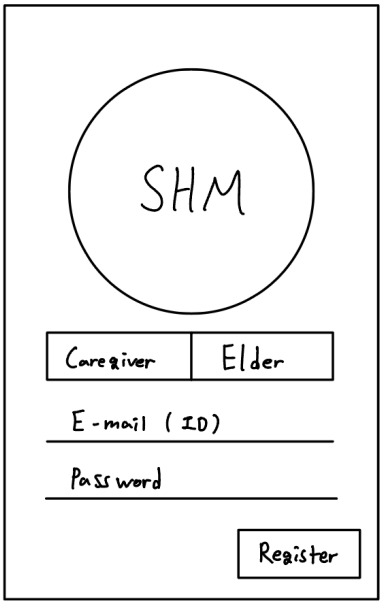
4. 2. 1. Welcome Screen



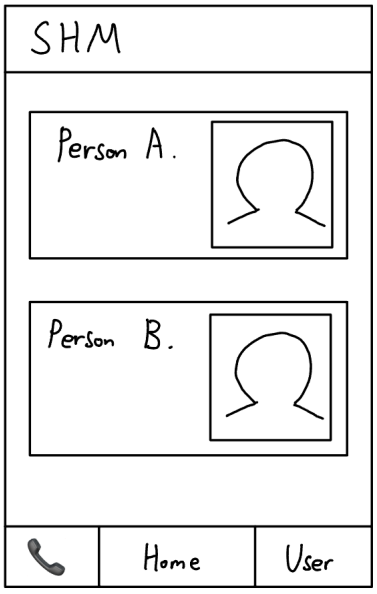
4. 2. 2. Login Screen



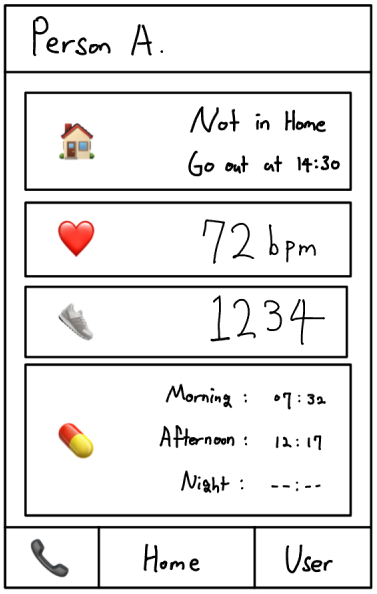
4. 2. 3. Sign-Up Screen



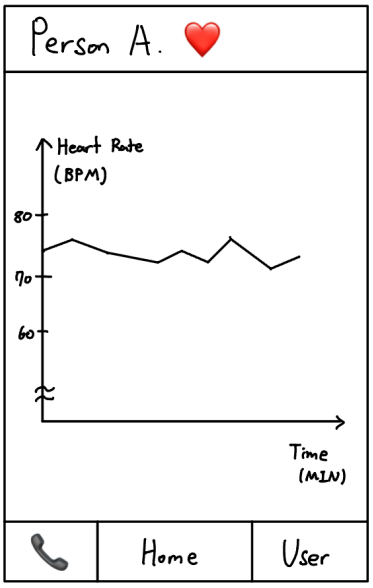
4. 2. 4. Home Screen



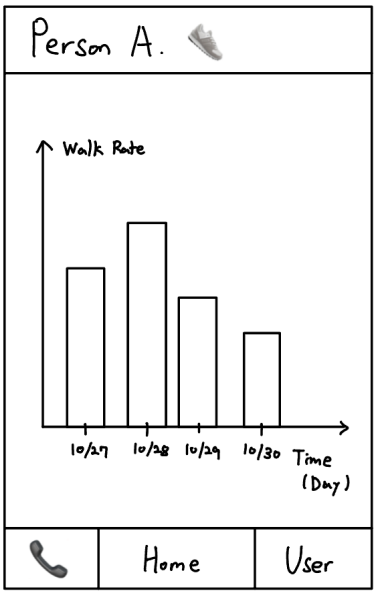
4. 2. 5. Elderly Health Monitoring Screen



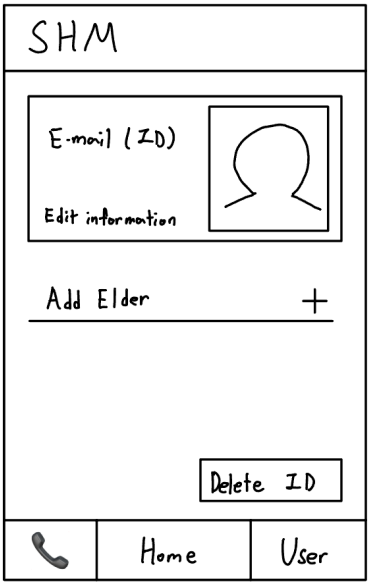
4. 2. 6. Heart Rate Statistics Screen



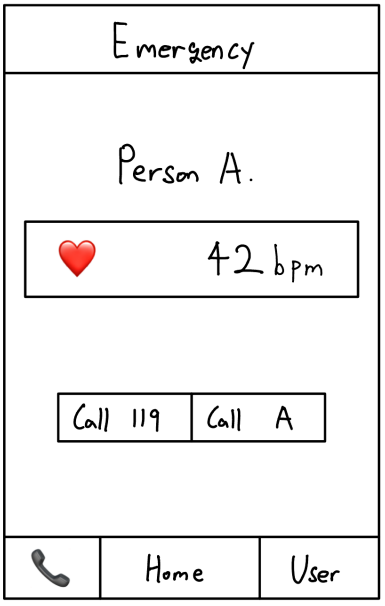
4. 2. 7. Step Count Statistics Screen



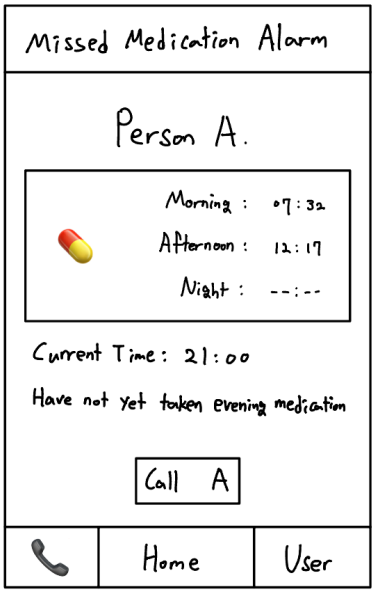
4. 2. 8. User Tab Screen



4. 2. 9. Emergency Alert Screen



4. 2. 10. Missed Medication Alert Screen



4. 2. 11. Exit Alert Screen


Exit Alarm
Person A.
Not in Home
Go out at 14:30
Home
User