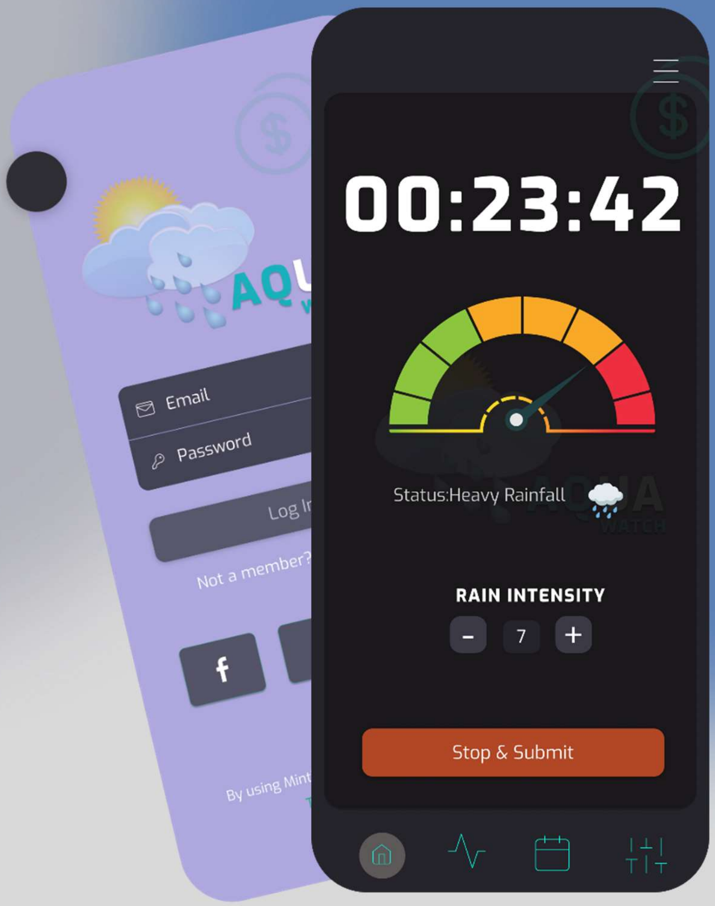

AQUA WATCH

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1 Introduction

1.1 Background:

Sri Lanka experiences diverse weather conditions throughout the year. The current system to forecast weather has not been able to provide the predictions accurately. This situation has resulted in a need for a system to predict rainfall by collecting rainfall data across the island. This document outlines the requirements to develop a system for collecting rainfall data from individuals throughout the country.

1.2 Project Description and Importance:

"AquaWatch" is a solidly built software solution designed to collect and manage rainfall data through individuals throughout the country. This application will provide a user-friendly environment ensuring the accuracy and reliability of rainfall data. AquaWatch will record rainfall data along with GPS location and this data will be sent to a database which will be ultimately used to improve the current weather prediction models.

Therefore, this system will be helpful in the agricultural field, disaster management, improving safety, and many more.

2 System Requirements Analysis

2.1 Considering the average amount of data that will be received per day (10,000 user inputs per day) and the approximate maximum amount of data received per instance (5 user inputs per instance), the number of servers should be calculated.

2.2 The system should contain a sufficient amount of hardware to efficiently manage the process.

2.3 Real-time data transmission is important between the user and the database.

2.4 Should maintain a secure data transmission to ensure the safety of user information.

2.5 Potential expansion of data inflow is a possible scenario.

2.6 With the increase in data reception, it is possible to decrease the efficiency of the system.

3 System Requirements Specification

3.1 Data Storage: One server should be sufficient to store the data received.

3.2 Hardware Specification of the Server:

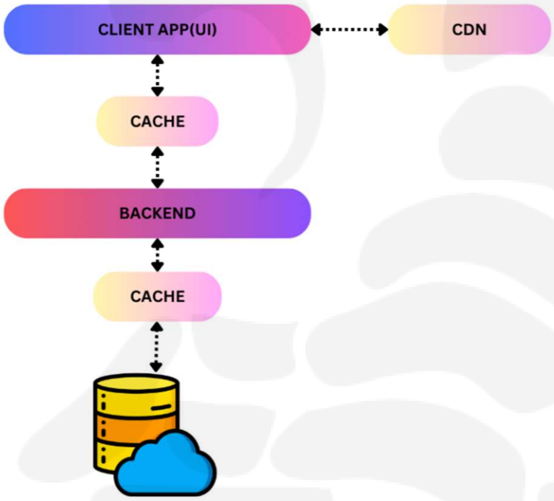
- 2 Cores
- 4GB Memory
- 2TB SATA
- 4TB Transfer

3.3 Data Transmission: High-speed and reliable internet connectivity should be needed.

3.4 Security: Use TCP, SSL, and TLS for secure data transmission.

3.5 Scalability: Server infrastructure should be designed such that the potential increase of data received can be accommodated to the database.

3.6 Performance: Cache memory should be added at the appropriate places to improve the efficiency of the system. The system should be designed such that further addition of cache memory is possible.



4 Software Requirements Analysis

4.1 It is necessary to validate the data inflow and increase the data integrity. Protection of user information is important and unauthorized logins should be prevented.

4.2 After logging in, the user should be able to input data easily.
There should be an option for users to clear their login data.

4.3 The user should be able to input data accurately according to the observations.
There should be a method to tally the location data with rainfall data.

4.4 There should be a method to remind the user to submit data to increase accuracy.

4.5 If there is a delay in the application the collected data may be inaccurate, and also the user may become bored.

4.6 Security of user data and other data should be ensured.

4.7 There should be a method to reduce the inaccuracy of data due to user errors.

4.8 The application should be easy to navigate, simple, and understandable to the user.

5 Software Requirements Specifications (SRS)

5.1 Functional Requirements

5.1.1 User Registration and Authentication: Users should be able to register by providing basic information without any complexities. The method of authentication should be secured to prevent unauthorized logins and maintain the security of data.

5.1.2 Login, Logout, and Dashboard: Users should be directed to the dashboard once they are logged in. Users should be able to log out and clean login data for additional security.

5.1.3 Collecting data:

5.1.3.1 *Recording data:*

Users should be able to categorize the intensity of rain (Heavy rain, Upper high intensity, Lower high intensity, Higher low intensity, Upper low intensity, and Light rain) using a well-defined scale.

Recording the starting time and ending time should be easy to implement.

5.1.3.2 *Location data:*

The system should be able to access the live location of the user using GPS to verify the validity of data.

5.1.4 Notification Access:

The system should be allowed to send notifications to the user.

5.2 Non-Functional Requirements

5.2.1 Efficiency: Dashboard and other content should be loaded within 1 second.

5.2.2 Security: Password hashing and data encryption can be used to protect user data and collected data.

5.2.3 Reliability: If the user forgets to submit data after the rain stops, the system should be able to notify the user.

Before the submission, the user must confirm the validity of the data. If the user confirms that he/she was unable to submit data at the correct time, data should be automatically discarded.

The collected data will be verified by comparing it with data received by other users (if available) in the same region during that period.

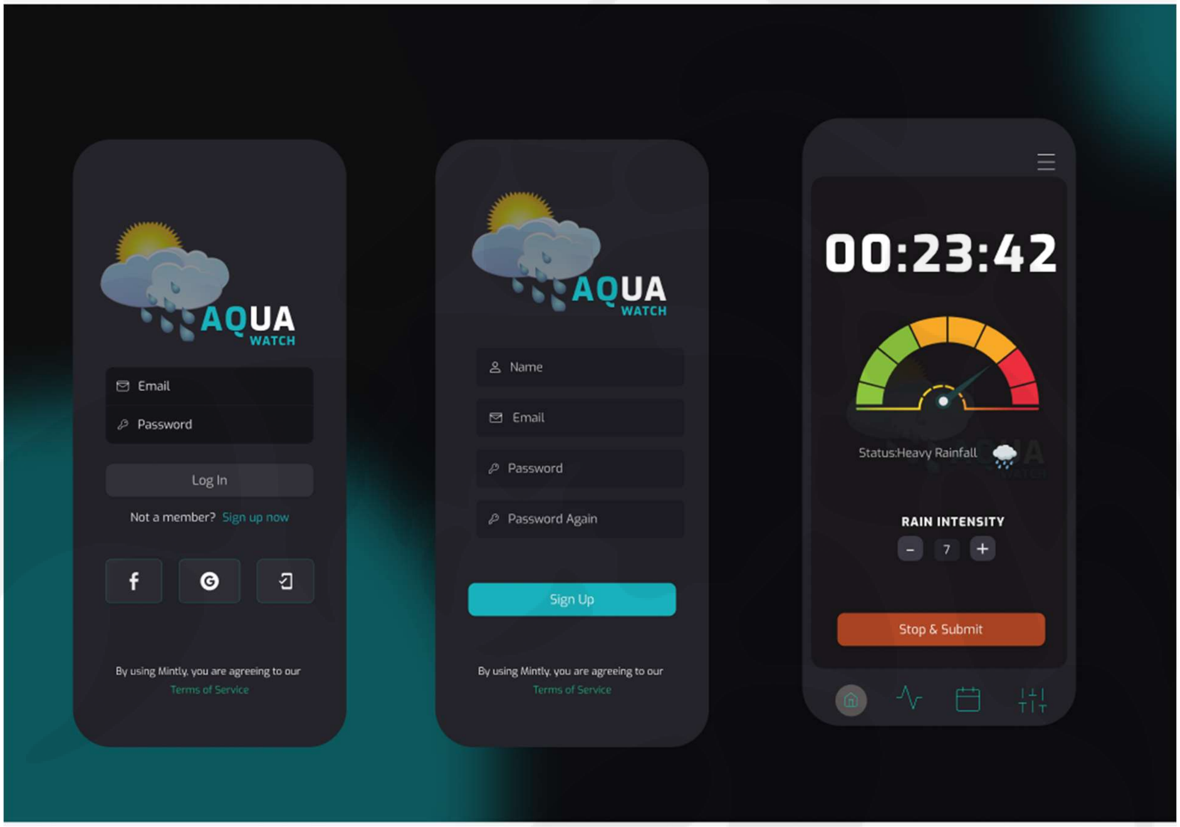
5.2.4 Usability: A user-friendly interface should be designed and the user should be able to use three languages; Sinhala, Tamil, and English.

6 User-Interface

6.1 User Registration: The user will be able to register using an email, mobile number, or a given social media account (Facebook, Google).

6.2 Login Screen: The user will be directed to the dashboard after logging in.

6.3 Dashboard: The dashboard will contain the button to start the recording of rainfall data. Users will be able to select the status of the rain using a scale of 1-8 which will be simultaneously displayed graphically using a meter and an image relevant to the status. The user will be able to adjust the status of the rain using the scale if needed (The user will be able to change his input when the amount of rain changes). The time of rain will be displayed at the top of the screen.



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00:23:42

Status:Heavy Rainfall

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