Group Project 2

Group 25

01

Introduction

WE ARE UNDER ATTACK?

Water is indeed essential for all life on earth. But with busy schedules, most of us forget and not focus on drinking water very much.

People tend to use plastic water bottles that can be used only once which leads to the pollution of the environment

Diseases related to contamination of drinking-water constitute a major burden on human health

OUR TEAM

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Group Members :

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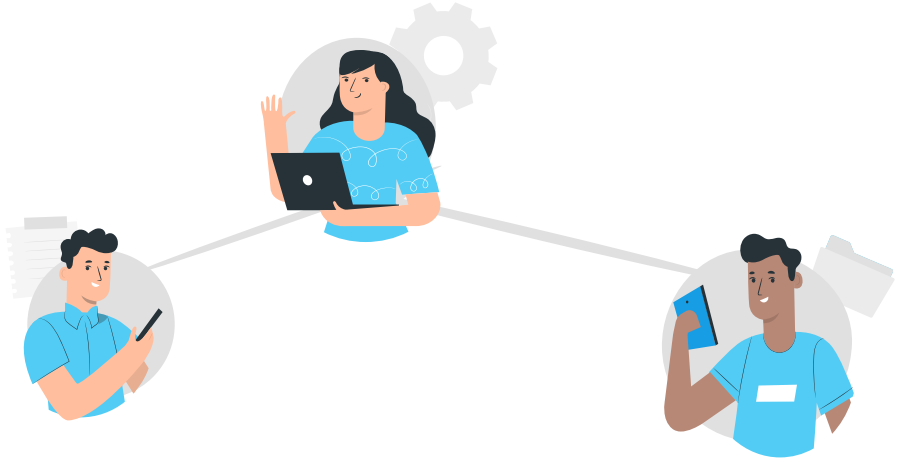


OUR SOLUTION

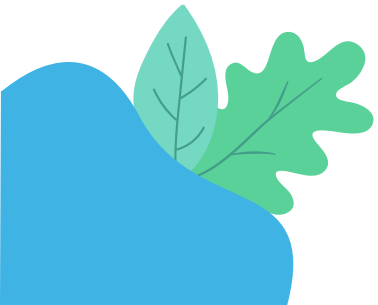
'AQUA is a project of creating a smart water bottle alone with a user friendly mobile application..

OUR GOAL

To create a healthy lifestyle avoiding diseases in busy schedules by drinking sufficient amounts of water daily

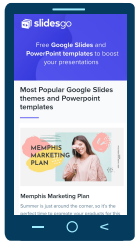
OBJECTIVES

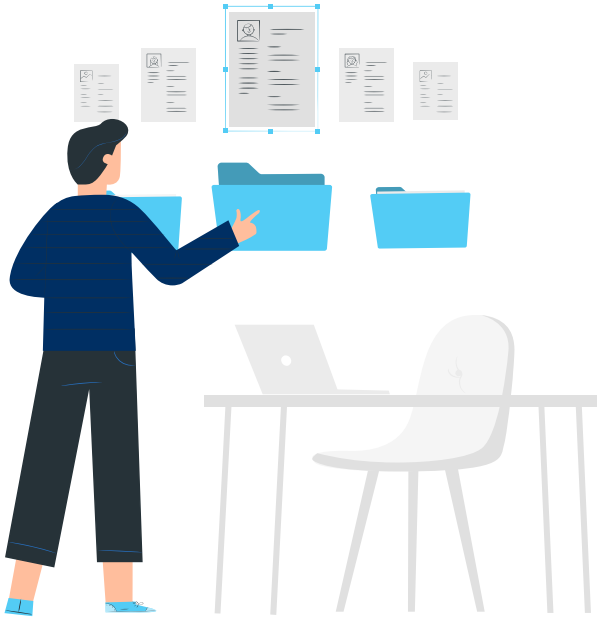
- Ensure that the users drink sufficient amount of water daily
- Support users to drink water in their busy schedules by giving reminders
- Reduce the diseases from water giving the quality information
- Motivate users to drink water by creating a social network among the users



DELIVERABLES

- ➔ Water bottle (IoT device)
- ➔ Mobile application
- ➔ Admin dashboard





PROPOSED FEATURES

Smart Water Bottle

- ➔ Measure the current water level
- ➔ Check the quality of the water with
  - pH value
  - Fluoride percentage
  - Mineral concentration
  - Heavy metals percentage
- ➔ Turn on/off the calculation switch

Mobile Application

- Customize the amount of water which should drink by the user according to the collected data
- Replace the raw water usage amount by the beverages' if the user selects one from the given beverage list
- Track the users' drinking history
- Organize competitions among users in order to encourage
- Send reminders to drink water to the user

02

Project Scope

InScope

- ➔ Make an IoT device connected to a water bottle in order to track the water usage
- ➔ Check the quality of the water with
  - pH value
  - Fluoride percentage
  - Mineral concentration
  - Heavy metals percentage
- ➔ Calculate the amount of water which should drinks by the user according to collected data of the user type
- ➔ Create an app to collect the user data and customize it
- ➔ Remind to drink water to the user daily

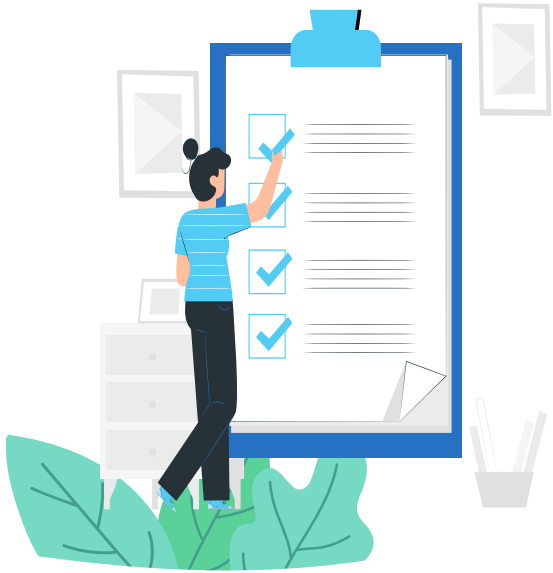
InScope

- Organize seasonal competitions among users
- Add user ranking and rating system for the users
- Switch off the calculation
- Calculate the raw water usage amount by replacing the beverages' if the user selects one from the given beverage list
- Create an admin dashboard to manage users

Out Scope

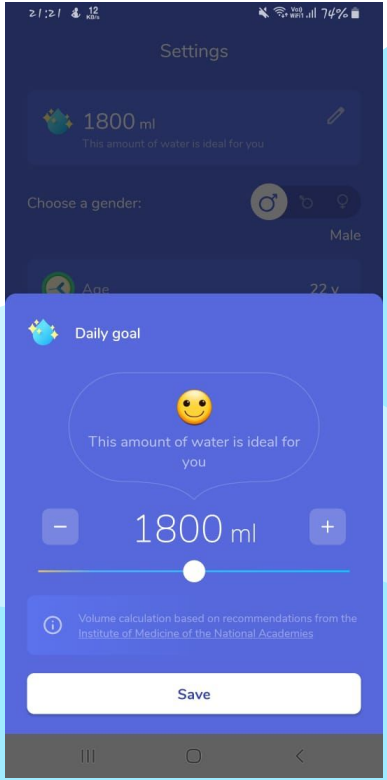
- ➔ We do not handle any payments in our system

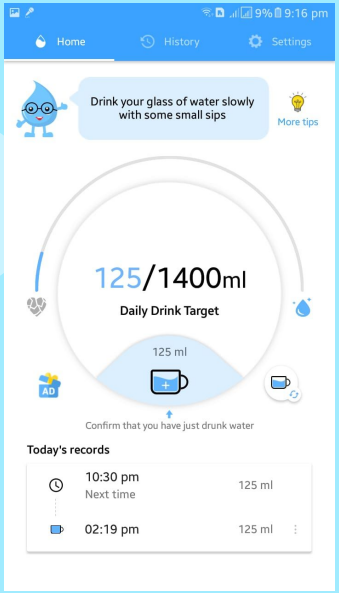
- ➔ We don’t get the water percentage of the food that user eat for the calculation of daily water usage



HOW WE DIFFER FROM OTHER SIMILAR APPS ??

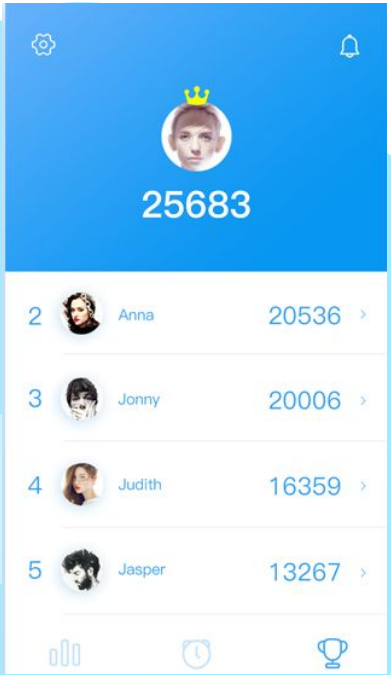
- We introduce a smart water bottle which is healthy, safe and would be able to track the water levels of a user
- System will automatically calculated how much water user should drink.
- We send reminders to the users if they are not using the sufficient amount of water
- We also shows the purification level of the water and suggest the filled water is healthy to use or not





- Organize competitions among users creating a social network

- Providing rating, ranking systems and reward users with badges to motivate users to build up their health



02

Functional Requirements

STAKEHOLDERS OF THE SYSTEM

Admin

Customer

System

Primary Use Case diagram

Metana primary eka damu eke actors la 3 innwa system,user,admin

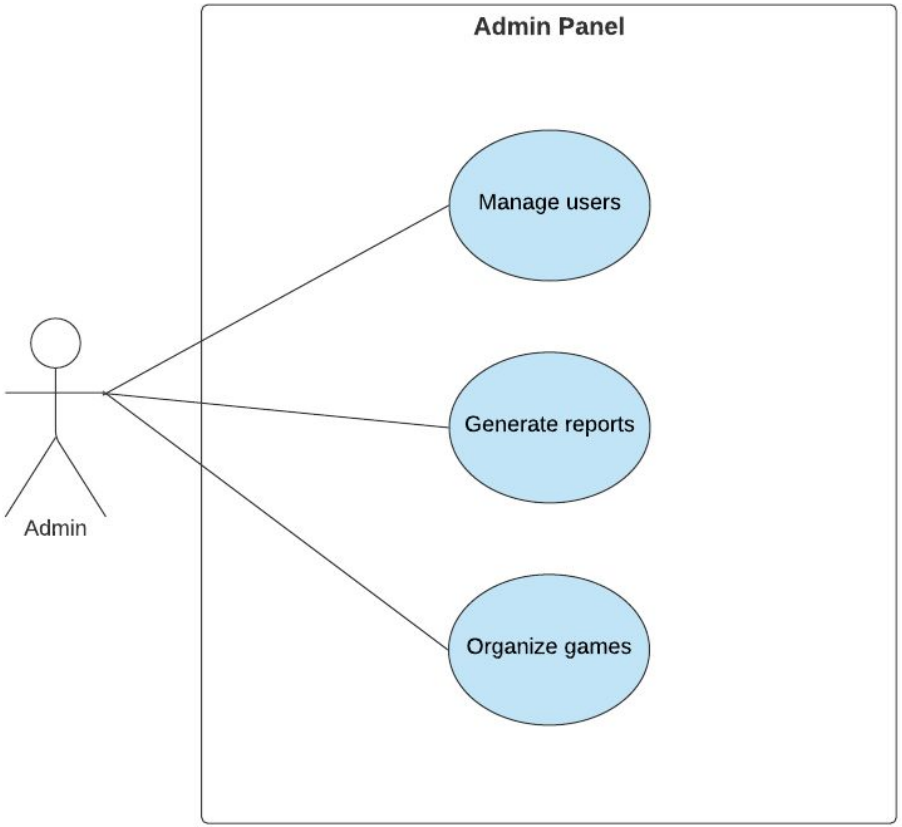
CUSTOMER


Registration
Authentication
<<include>>
Login
<<extend>>
Show error message
View daily water requirements
Check the water level of the bottle
Check the quality of the drinking water
View the drinking history
Add additional used beverages
Form groups with other users
<<include>>
Send requests to the others
Compete with users
<<extend>>
View their ranking on leader board
View Profile
<<extend>>
Edit profile
Customer

System Use case

- Calculated daily water requirement of the each user according to the pre entered data
- Make reminder schedule for user according to the pre entered data
- Read sensor values and show that detailed for the user
- Award badges for users
- Tawa matak wena ewa tinawanm danna me tika use case eke adenna ona

Admin


Admin Panel
Manage users
Generate reports
Organize games
Admin

03

Quality Attributes

1. **Availability**
    - Available in 24/7 without any error
    - Backup servers
2. **Usability**
    - Use familiar icons to the enhance the understandability of the interfaces
3. **Modifiability**
    - Keep components that are related together
    - Enhance the readability of the code by adding comments
4. **Security**
    - Use encryption methods when saving passwords
5. **Scalability**
    - Using sharding (Horizontal scaling)

05

Technologies To Be Used

Database

mongoDB

Backend Server

node.js express

IOT Device

ARDUINO

Admin Panel

Mobile App

Flutter

Justification for the proposed technologies

Mongodb

- With the time the system is supposed to grow with increasing the number of the users and the more they involve the more data is collected. That means our database will become larger. Therefore database should be scalable.
- Also, our data has no fixed structure.
- Monog has huge community spot as well as huge resources to learn.

NodeJs with Express Js

- The use of Node Js will enhance the performance of the system and its responsiveness due to the non-blocking mechanism. IoT device is constantly working with dynamically changing data. This means that we need a framework which can handle real-time applications(using socket.io) and heavy data flows.

- Express Js is the most popular framework in node js. Also, it has a huge community as well as a lot of learning resources.

- Also node js has alot library which is spot IoT devices.

  Example: -Johnny-Five,Ceylon.js etc.

Flutter

- Flutter is a free and open-source Google mobile UI framework that provides a fast and expressive way for developers to build native apps on both IOS and Android by using reusable widgets.

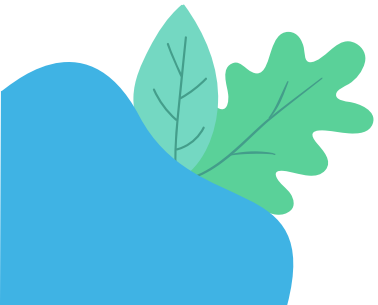
Angular

- Since we got only six months to complete the project we are using angular which is familiar for all of us.

- And also Angular is based on javascript so it is easy to use Angular because both frontend and backend are based on the same language.

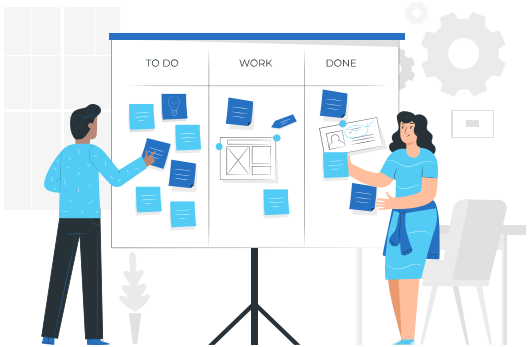
Arduino

- ➔ It less expensive.
- ➔ We can use arduino on any platform because arduino is cross-platform
- ➔ Arduino is easy to learn because there are many resources
- ➔ And also there is a huge community spot for arduino



06

Feasibility Study



TECHNICAL FEASIBILITY

- The team has adequate knowledge about some of the technologies that we are suppose to use.

- New technologies can be learned during the development process. So the team is technically capable of converting the idea to a workable system.

OPERATIONAL FEASIBILITY

- Every user can easily interact with the system. First of all they need to buy the smart water bottle. After that they need to install the app for the features. For the use of the app, they need an Internet connection and an accessible device along with some basic knowledge on using a mobile app.

- Major feature of our system is it can be updated easily and also new features can be added to the system easily with less effort.

ECONOMICAL FEASIBILITY

- Since all the software we are going to use throughout the development process is open source, we only have to spend money on making the IOT device. That amount can be divided among team members, as we have 6 members we can manage that cost and therefore this project is economically feasible.

LEGAL FEASIBILITY

- Privacy of the users

  The private information of users such as weight, sleeping time are not available to other users. Only the username and some data relevant to the leaderboard available to the user's friends.

- Handling user data

  The interest of the user within the system is confidential and will not be sold or used for advertising purposes.

SCHEDULE FEASIBILITY

- The team consists of 6 members and we have divided the workload among all members equally.
- Here we use waterfall methodology for the development of the project and we have already completed the problem definition and requirement analysis. So that we will be able to finish the project within the required time period.

Number of working hours for week = 9

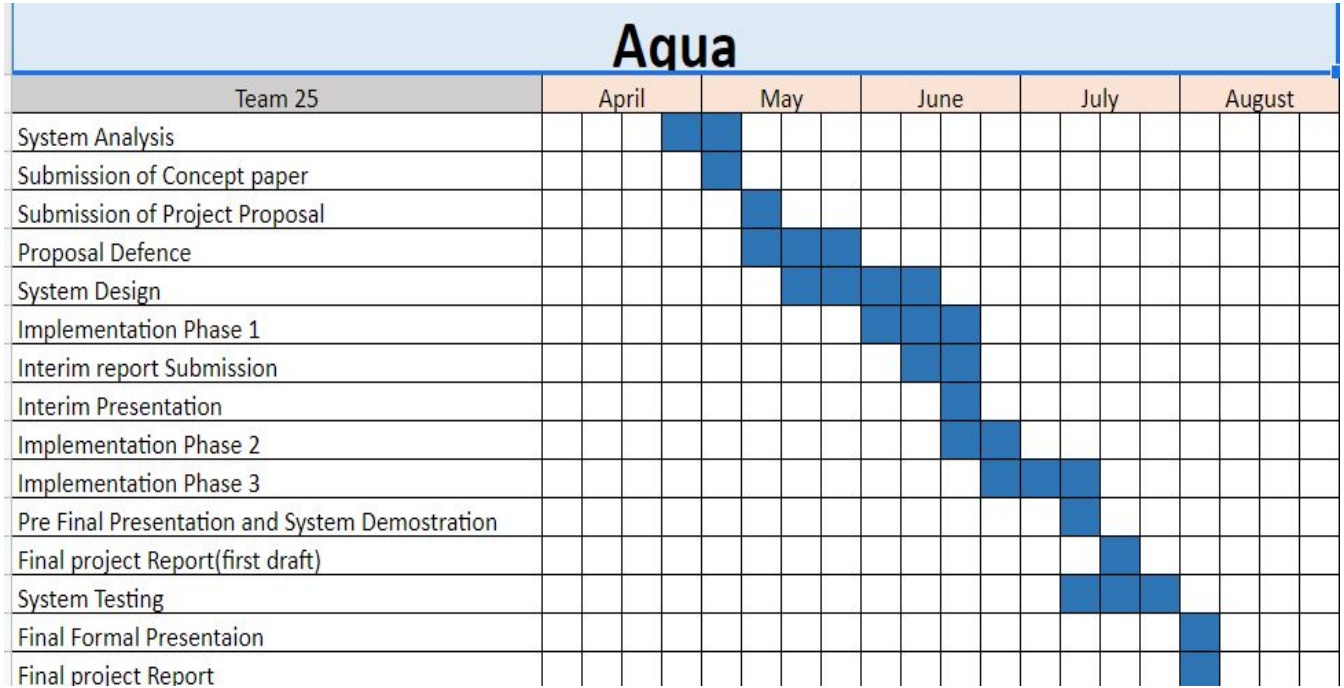
Number of members = 6

Man hours per week = 9 * 6 = 54

Estimated number of total weeks = 12

Estimated number of total man hours = 54*12 = 648

Gantt Chart


Aqua
Team 25
April
May
June
July
August
System Analysis
Submission of Concept paper
Submission of Project Proposal
Proposal Defence
System Design
Implementation Phase 1
Interim report Submission
Interim Presentation
Implementation Phase 2
Implementation Phase 3
Pre Final Presentation and System Demostration
Final project Report(first draft)
System Testing
Final Formal Presentaion
Final project Report

Thank You !!

Any questions?