Deliverable E

Group 16

10/24/24

Abstract

This document will compile the chosen concepts along with feedback from the first client meeting to plan a detailed design and outline a plan and schedule. The schedule will include prototyping dates and estimated time until completion, along with the group member responsible. Additionally, the significant risks and appropriate contingency plans will be noted. Finally, the budget spending will be allocated and required equipment be recorded for both prototyping and the final product.

Table of Contents

1. Introduction

2. Summary of Concept

The concept is a network aware application that fulfils the role of creating zones of restriction and alerting the administration about any violations. Currently, this application is conceptualized to see use in construction zones, alerting workers of dangers using location API and notifications to alert them. Additionally, a possible direction is making use of bandwidth API to throttle the bandwidth depending on the restricted zone, an example being high security office spaces or government buildings. Furthermore, adding some features such as pinging frequency depending on the distance to the restricted zone may be required for avoiding server overload.

2.1. Sketch of User Interface:

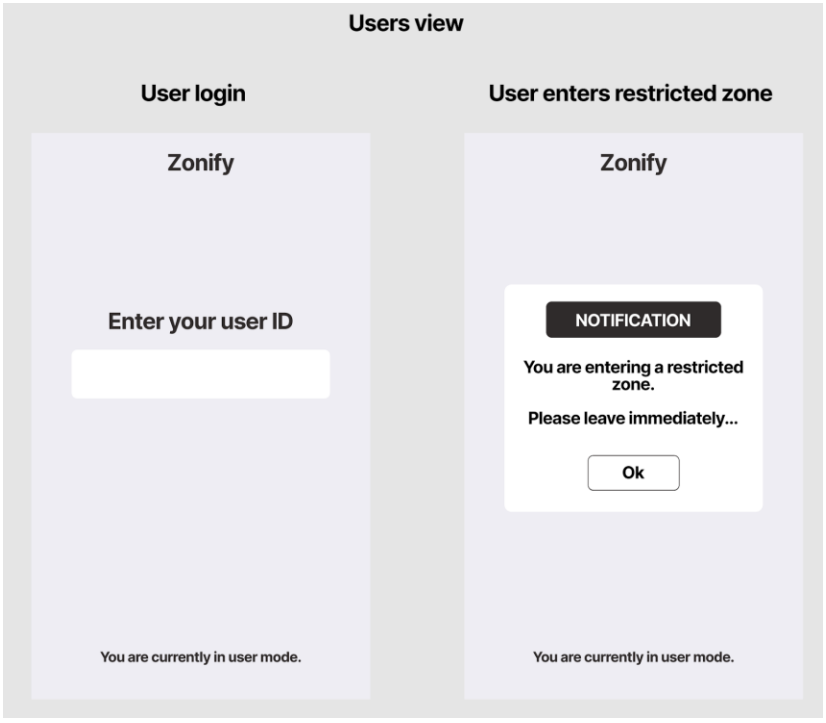

Fig. 1. Sketch of user interface for our preferred solution in the point of view of the user. The interface is very basic and has minimal capabilities, which enhances the overall functionality and simplicity of the application.

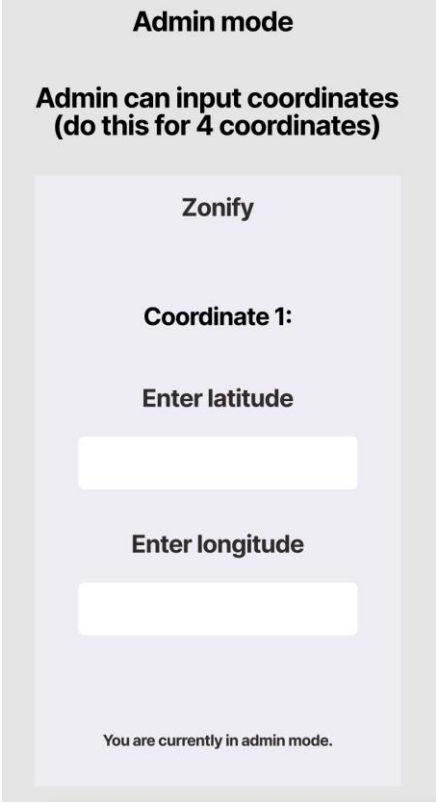

Fig. 2. Sketch of user interface in point of view of the administrator. The administrator can set coordinates of restricted zones and possibly assign clearance to restricted zones for certain individuals. The interface is simple and logical, which makes the process of setting restricted zones easy for the administrator.

2.2. Flow Chart

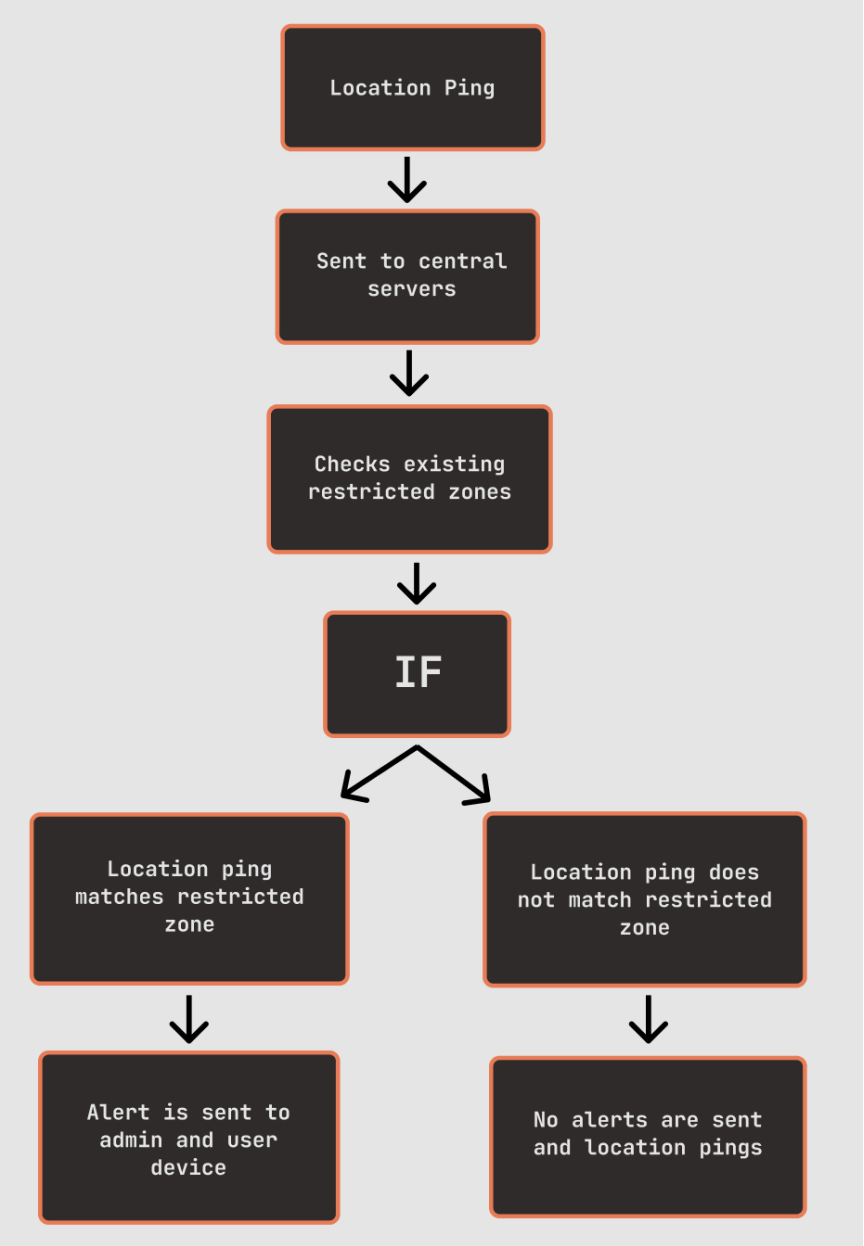

Fig. 3. Sketch of flow chart showing the way the application will check if the user/device is in the restricted zone or not. If location ping does not match, no alerts are sent and the location pings to the central servers again, which restarts the cycle.

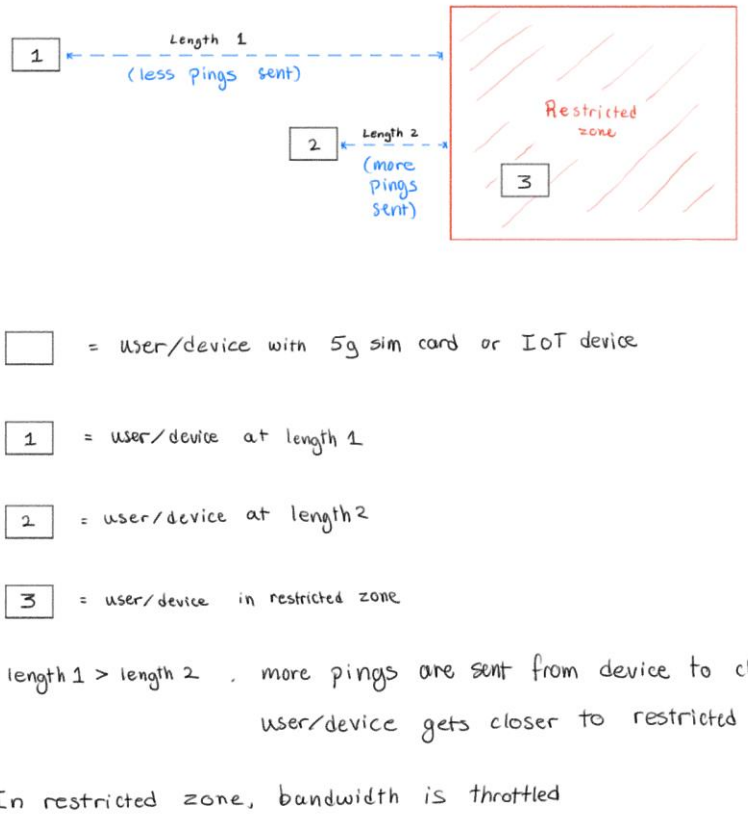
1
Length 1
(less pings sent)
2
Length 2
(more pings sent)
Restricted zone
3
= user/device with 5g sim card or IoT device
1 = user/device at length 1
2 = user/device at length 2
3 = user/device in restricted zone
* length 1 > length 2 , more pings are sent from device to cloud as user/device gets closer to restricted zone
In restricted zone, bandwidth is throttled

Fig. 4. Sketch

3. Plan and Schedule

3.1 Tasks and duration

Thursday October 24th

Goals:

- Look at and begin to understand Shabodi sandbox - Team
- Define and break up Idea One into actionable steps – Team

Task Break Down

Prototype Location API Code (Team Member in Charge: Tariq)

Helping Team Members: Taryn and William

Tasks:

- Code location pinging API
- Code different pining frequencies based off of distance away from restricted zone

PROJECT DEADLINE: Friday November 1st

Prototype Bandwidth API Code (Team Member in Charge: Dennis)

Helping Team Members: Taryn and Tariq- 2nd Week of Development

Tasks:

- Code bandwidth choking process

PROJECT DEADLINE: Friday November 8th

Application Design and Coding (Team Member in Charge: Racheal)

Helping Team Member: William- 2nd Week of Development

Tasks:

- Design user interphase
- Create application code

PROJECT DEADLINE: Friday November 8th

Combination of Code and Testing Process (Team Member in Charge: Taryn)

Helping Team Members: William, Dennis, Racheal, and Tariq

Tasks:

- Combine coding pieces
- Test how bits of code work together

PROJECT DEADLINE: Tuesday November 19th

Presentation for Design Day (Team Member in Charge: Taryn)

Helping Team Members: William, Dennis, Racheal, and Tariq

Tasks:

- Table Design
- Showcase materials (poster)
- Final Prep

PROJECT DEADLINE: Tuesday November 26th

3.2 Risks and Contingency

Prototype Location API Code

Risks:

- Code Failure (with an ability to find the error)
- Data loss
- Shabodi Sandbox does not work

Contingency Plan:

- Divert all other team members time and resources to this portion of the project as it is the most vital for our project
- Use all available resources to try and figure out and fix problem
- Implement data backup with USB hard drives to prevent loss of information
- If the shabodi sandbox does not work, we will start coding the base code (while marking the areas we need add Shabodi's API information) in the Python app we all have used in a previous lab
- If all else fails, we will scape our initial code and start from scratch in order to try and solve any issues we may have created that we were unable to solve

Prototype Bandwidth Code

Risks:

- Inability to code bandwidth choking prototype with a successful outcome
- Data Loss
- Shabodi's Sandbox does not work

Contingency Plan:

- If the shabodi sandbox does not work, we will start coding the base code (while marking the areas we need add Shabodi's API information) in the Python app we all have used in a previous lab
- Implement data backup with USB hard drives to prevent loss of information
- If we cannot code a bandwidth choking protocol then we will not use this specific API for our project as it was not one of shabodi's priorities, instead we will focus on the testing and ironing out of any issues with the location API and our zone restriction program.

Application Design and Coding

Risks:

- Cannot create an app that appropriately combines our pieces of code
- Data Loss

Contingency Plan:

- Implement data backup with USB hard drives to prevent loss of information
- If we cannot create an app that combines our pieces of code into a working app then we will instead focus on the outward design of the app that we can present rather than spending time working on the app code itself.

Combination of Code and Testing Process

Risks:

- Insufficient Testing Time
- Data Loss

Contingency Plan:

- Implement data backup with USB hard drives to prevent loss of information
- Use automated testing tools to ensure through and consistent testing (ex. ai)

Presentation for Design Day

Risks:

- We have nothing that is working to present

Contingency Plan:

- We will present our design process, the choices we made and why we made those choices. We will talk about the errors in our design and project that limited our ability to create a successful product.

4. Required Equipment

4.1 Cost Breakdown

Item	Cost	Reason
Claude.AI Premium Subscription – 1 month	$20.00	Will act as a starting point for coding and is a great tool to find bugs in code and make coding suggestions. Claude will be sited anytime we present any coding
Printing Costs	$3.50	Will need to print different items for our Design Day presentation
Poster Board	$1.50	To present materials for Design Day
Coding Libraries	$0	Will give us a starting point and ideas for any coding that we will do