Lab 2 - Care Corner Prototype Requirements

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Version 1

1 Introduction

1.1 Purpose

- Care Corner

- A tool to use to combat potentially unsafe situations

- Aid in the fight to increase the reporting rate of assaults through resources and reporting section

- Inform the public on their personal responsibility in the fight against sexual assault

- Women of any age

- Parents who want to learn how to talk to their children about sexual assault

- Men of any age who want to learn their responsibility in the fight against sexual assault

- Anyone who feels that they need an extra layer of safety with them

- Will provide a sense of security and safety to the user

- Will tell the user tips depending on what activity they say they are doing

- Will not guarantee that following the tips will always prevent an assault from happening

- Will provide resources on how to report an assault

- Will give the user safety features to use when the user feels that they are in an unsafe situation

- Will not report the assault for the user

- Will not alert the authorities

- Will not tell user if they have been assaulted

- Will not be the sole resource that user should use if they are assaulted, only a starting point to point the user to other places

- Will not guarantee to prevent sexual assault from happening

1.2 Scope

- Provide safety features for responding to potentially unsafe situations

- Aid in the fight against sexual assault

- Assist victims of assault through determining how to find resources and report the crime

- Prototype will only be developed for Android devices

- Armed mode will be fully functional except for:

  - MMS messages will be preset, not customizable

  - Location will automatically be sent to all of user's in-app contacts

- Panic Button will be fully functional except the removal of the dial out to pre-set contacts

- Fake Phone Call will be fully functional except for the key phrase that the user can say to activate the panic button

- The mombot will be partially functional, using talk-to-text conversions and smaller responses

- The journal will be fully functional except the encryption of the journal has been eliminated

- The educational resources will be partially functional as there will be a limited number of resources available in the prototype

- The resources will be unfiltered online resources only

- The depression/ptsd counselor option has been eliminated in the prototype

1.3 Definitions, Acronyms, and Abbreviations

Agile: Set of frameworks and practices where solutions evolve through collaboration between self-organizing cross-functional teams

Amazon Web Services (AWS): Cloud computing platform provided by Amazon

Android: Mobile operating system primarily developed by Google

API (Application Programming Interface): A set of functions that allow one program to access data and interact with an external program

Client-server: Computer system where a central server provides data to a number of networked workstations

Cloud Based Database Server: Virtual infrastructure that performs application and information-processing storage

Data Retention: Storage of an organization's data for compliance or business reasons

Database: Structured data held in a computer

File Server: Controls access to separately stored files

Geofencing: Using GPS to create a virtual geographic boundary

GitHub: Web-based collaboration platform for software developers

GPS (Global Positioning System): Provides users with positioning and navigation information.

Gradle: Build automation tool for multi-language software development

GUI (Graphical User Interface): The set of interactive visual components in software to improve the user experience.

HTML (Hypertext Markup Language): Standard markup language for documents designed to be displayed in a web browser

iOS: Mobile operating system developed by Apple

JavaScript: Object-oriented computer programming language commonly used to create interactive effects within web browsers

Jsoup: Open source Java library used mainly for extracting data from HTML

Kotlin: Object-oriented programming language initially designed for Android and Java Virtual Machine (JVM)

Linux: Unix-like, open source operating system for computers, servers, mainframes, etc.

MySQL: A freely available open source relational database management system that uses structured query language (SQL)

PHP (Hypertext Preprocessor): General-purpose scripting language suited to web development

RSS Feed (Really Simple Syndication Feed): Set of instructions on the computer server of a Web site. The feed tells the reader when new material has been published on the Web site

Scrum: A process framework used to manage product development and other knowledge work

Stakeholder (direct): Those involved in the company's day-to-day activities

Stakeholder (indirect): Those more interested in the result of the production

Twilio: A developer platform for communications

UI / UX (User Interface/ User Experience): The graphical layout of an application which includes components such as buttons, navigations bars, etc.

Web Scraping: Extracts and scrapes data from websites

Web Server: A computer that runs websites

Windows: Series of operating systems developed by Microsoft

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1.5 Overview

This document provides the hardware and software specifications for the Care Corner app prototype.

2 General Description

2.1 Prototype Architecture Description

2.1.1 Architecture Introduction

2.1.2 Mobile Client

    2.1.2.1 Hardware

        2.1.2.1.1 Android Compatible Mobile

    2.1.2.2 Software

        2.1.2.2.1 Android Studio

        2.1.2.2.2 Java SDK 11

2.1.3 Corner Care API

    2.1.3.1 Infrastructure

        2.1.3.1.1 AWS API Gateway

2.1.3.1.2 AWS Lambda

2.1.3.1.3 AWS Aurora

    2.1.3.1.3.1 MySql

2.1.3.1.4 AWS Cloudfront

2.1.3.1.5 AWS S3

2.1.3.2 Software

    2.1.3.2.1 Localstack

        2.1.3.2.1.1 Localstack Api Gateway

        2.1.3.2.1.2 Localstack Lambda

        2.1.3.2.1.3 Localstack S3

        2.1.3.2.1.4 Localstack Aurora

    2.1.3.2.2 Serverless Framework

        2.1.3.2.2.1 Node.js

        2.1.3.2.2.2 Java SDK 11

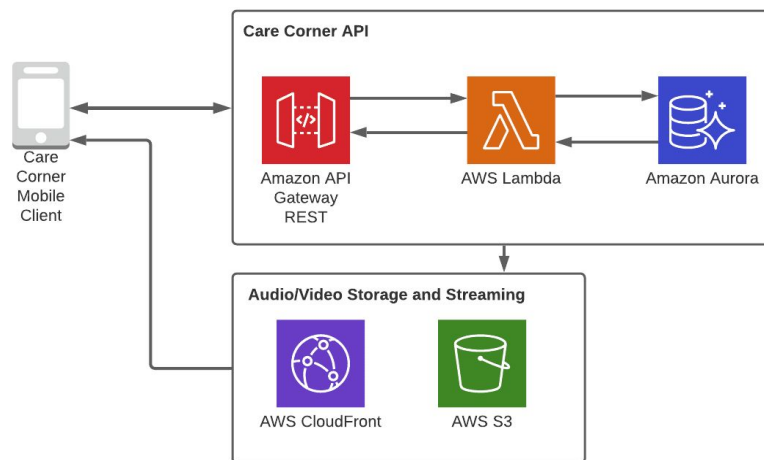   2.1.3.2.2.3 Maven

        2.1.3.2.2.4 Serverless Localstack plugin

2.1.3.3 Third-Party Services

2.1.3.3.1 Twilio

2.1.3.3.2 Google Maps / Open Street Maps

2.1.3.4 Architecture Diagram

2.2 Prototype Functional Description

Care Corner will include:

- Safe Walk(Armed Mode): Provides the tools to notify contacts of their journey, share location and destination, and quickly activate the Panic Button.
- Panic Button: Provides the tools to quickly send an alert to preselected contacts with a message and location as well as begin recording audio and video with location and time recorded. This function can be accessed on its own or accessed from the Safe Walk or Fake Phone call function.

- Fake Phone Call: Provides the tools to schedule what appears to be a phone call from a customizable contact at a scheduled time from immediate to hours later. When the call is taken the audio and video are recorded.

- Mombot: Provides mom-like advice when the user shares their plans.

- Journal: Provides the capability to keep an in app diary.

- Education: Provides the user with relevant trusted blogs, national hotlines, and official documents.

- Geofenced Resources: Provides the user with helpful resources near them,

- Websites: Provides the user with government sites and trusted non-profits as resources.

- Reporting Assistance: Provides the user with websites and information on the reporting process so that they have a better understanding of what to expect.

General			
Cross-Platform Support	Fully Functional	Partially Functional	Prototype will only be developed on Android
Authentication			
User account creation	Fully Functional	Partially Functional	Account creation will omit surveys and school data
User Credential Authentication	Fully Functional	Partially Functional	Credentials will not be encrypted when stored in the Database
Password Recovery	Fully Functional	Eliminated	
File Server			
Audio/Video/GPS data stored	Fully Functional	Fully Functional	
Database			
User/Contacts	Fully Functional	Fully Functional	
Incident/Audio/Video/Journey	Fully Functional	Fully Functional	
School/Resources	Fully Functional	Partially Functional	These DBs will be funtional, but only test data will be present
Mombot Advice	Fully Functional	Partially Functional	This DB will be functional, but only minimal test data will be present

Functional Element	RWP	Prototype	
Safe Walk (armed) mode			
Notify contacts via MMS	Fully Functional	Fully Functional	
Customize MMS messaging	Fully Functional	Eliminated	MMS messages will be preset
Send location/destination to contacts	Fully Functional	Fully Functional	
Audio Recording & Storage on Server	Fully Functional	Fully Functional	
Video Recording & Storage on Server	Fully Functional	Fully Functional	
GPS data Recording & Storage on Server	Fully Functional	Fully Functional	
If Location/Destiantion is sent	Fully Functional	Eliminated	Location will automatically be sent to all of user's in-app contacts
Panic Button			
Send location	Fully Functional	Fully Functional	
Send pre-set message	Fully Functional	Fully Functional	
Start recording audio	Fully Functional	Fully Functional	
Start recording video	Fully Functional	Fully Functional	
Dial out to pre-set contacts	Fully Functional	Eliminated	
Timestamp location and time of panic	Fully Functional	Fully Functional	
Fake Phone call			
Start recording audio	Fully Functional	Fully Functional	
Start recording video	Fully Functional	Fully Functional	
Activate Panic	Fully Functional	Fully Functional	
User can say key phrase to activate panic button	Fully Functional	Eliminated	
Include fake voice	Fully Functional	Fully Functional	

Mombot			
Write plans and recieve advice in reponse	Fully Functional	Partially Functional	The responses will be a small sample size
Verbalize plans and recieve verbalized advice in repons	Fully Functional	Partially Functional	Talk-to-text will convert input. Response will be in text form, not verbalized.
Journal			
Can record in/ view Journal	Fully Functional	Partially Functional	
Journal will be encrypted	Fully Functional	Eliminated	
Educational Readings			*Webscraping will not be implemented
Govt/Official documents (just main sites like RAINN)	Fully Functional	Partially Functional	Minimal resources for testing will be available
Trusted blogs	Fully Functional	Partially Functional	Minimal resources for testing will be available
National hotlines	Fully Functional	Partially Functional	Minimal resources for testing will be available
Geofenced Resources			Unfiltered geofenced resources will be returned from external API
Shelters	Fully Functional	Partially Functional	Unfiltered online resources only
Non-Profits	Fully Functional	Partially Functional	Unfiltered online resources only
Counselors	Fully Functional	Partially Functional	Unfiltered online resources only
Campus Police	Fully Functional	Partially Functional	Unfiltered online resources only
Websites			
Govt Official Sites	Fully Functional	Partially Functional	Minimal resources for testing will be available
Trusted non-profits/ other	Fully Functional	Partially Functional	Minimal resources for testing will be available

2.3 External Interfaces

2.3.1 Hardware Interfaces

    2.3.1.1 Android Mobile Devices

2.3.2 Software Interfaces

    2.3.2.1 Software interfaces include interfaces to standard or customized databases, graphics tools or libraries, or special purpose software packages (such as vendor-supplied control software for some device)

2.3.3 User Interfaces

    2.3.3.1 Touch-screen Android Device

    2.3.3.2 Audio Output via Built-in Speakers

    2.3.3.3 Microphone for Speech Recognition

2.3.4 Communications Protocols and Interfaces - Gustin

    2.3.4.1 Network Protocols

2.3.4.1.1 HTTP/1.1

2.3.4.1.2 SSL/TLS 1.2

2.3.4.2 API Protocol

2.3.4.2.1 REST

2.3.4.3 HTTP Headers

2.3.4.3.1 Content-Type: application/json

2.3.4.3.2 x-api-key: *{api-key}*

3 Product Requirements

3.1.Functional Requirements

3.1.1 User Authentication

3.1.1.1 The proper credentials must be input in order to access the app.

3.1.2 Panic Button

3.1.2.1 The app shall send the user's location to their in-app contacts when they use the
panic button.

3.1.2.2 The app shall send a pre-set message to the user's in-app contacts when the panic
button is used.

3.1.2.3 The app shall start video & audio recording when the panic button is activated.

3.1.2.3 The app shall timestamps and stave the location and the time when the panic button is activated.

3.1.3 Armed Safe Walk

3.1.3.1 The app shall notify and provide the user's location to all in-app contacts when Armed Safe Walk is activated.

3.1.3.2 The app shall disclose the user's destination when notifying in-app contacts when Armed Safe Walk is activated.

3.1.3.3 The app shall begin recording the user's location when Armed Safe Walk is activated.

3.1.3.4 The app shall begin recording video when Armed Safe Walk is activated.

3.1.3.5 The app shall begin recording audio when Armed Safe Walk is activated.

3.1.4 Armed Safe Walk

3.1.4.1 The app shall collect wha name and phone number is displayed when a fake phone call is received.

3.1.4.2 The app shall give the appearance of a phone call when the answer button is pressed.

3.1.4.3 The app shall activate the microphone and record the audio of the fake phone call.

3.1.4.4 The app shall Activate the camera and record the video of the fake phone call.

3.1.4.5 The app shall activate the panic feature when the contact picture is pressed.

3.1.4.6 The app shall have multiple fake conversations to choose from that will output from the user's receiver or connected earpiece.

3.1.5 Journal

3.1.5.1 The app shall password protect the Journal.

3.1.5.2 The app shall allow users to create, read, update, and delete entries.

3.1.6 Mombot

3.1.6.1 The app shall convert speech to text when receiving the user's input.

3.1.6.2 The app shall parse for the text in the request and return information based on keywords.

3.1.7 Reporting Assistance

3.1.7.1 The app shall provide a questionnaire to properly record details on any incident.

3.1.8 Resources

3.1.8.1 The app shall provide a listing of resources, relating to assault, in the forms of websites, phone numbers, and local non-profits.

3.2. Performance Requirements

3.2.1 Application Performance

    3.2.1.1 The app shall be written efficiently enough open within five seconds

3.3. Assumptions and Constraints

3.3.1 The app requires internet access to store and retrieve data and files from the cloud servers and database.

3.3.2 The app requires Android KitKat(4.4) OS or Higher.

3.3.2 The app requires the user's device to have a functioning microphone.

3.3.2 The app requires the user's device to have a functioning rear facing camera.

3.4. Non-Functional Requirements

3.4.1 Security

    3.4.1.1 Passwords

        3.4.1.1.1 Protection on account and journal

        3.4.1.1.2 Password complexity requirements

3.4.1.2 Encryption

    3.4.1.2.1 Field-level

        3.4.1.2.1.1 Argon2

    3.4.1.2.2 Data in Transit

        3.4.1.2.2.1 SSL/TLS/HTTPS

    3.4.1.2.3 Data at Rest

        3.4.1.3.3.1 AWS KMS

            3.4.1.3.3.1.1 Aurora

            3.4.1.3.3.1.2 S3

3.4.1.3 API

    3.4.1.3.1 API Keys

3.4.2 Maintainability

3.4.2.1 Allow easy update and maintenance of system servers

3.4.2.2 Support updated internet security protocols and information security guidelines.

3.4.2.3 Verify websites and phone numbers stay up-to-date

3.4.3 Reliability

3.4.3.1 Fault tolerance

    3.4.3.1.1 AWS Serverless

    3.4.3.1.2 Five nines: 99.999%

    3.4.3.1.3 Multi-region

3.4.3.2 Database backups