# Lab 1 - Care Corner Description

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# 1 Introduction

Across the world, women live with a constant fear that they will be attacked at some point in their life. This fear is illustrated through walking in parking garages with keys in-between knuckles, always traveling in groups when possible, and making sure to never wear or say anything that might give someone else the wrong implications. This fear is rightly justified because one in three women are a victim of rape or attempted rape(*What is Sexual Abuse?*, n.d.). There are three immediate issues surrounding the topic of sexual assault.

The first problem is feeling unsafe in normally safe situations, or not having a way out of a potentially unsafe situation. Growing up, women are taught to have a plan of defense and escape in case they are in an uncomfortable situation or assaulted. Seven out of ten women say that their phone is always prepared when they are walking alone(*Mental Health America*, n.d.). Having a phone "prepared" could mean having a text already ready to be sent in case something happens, calling a friend during the walk so there is someone who would immediately know if something were to happen, or sharing location with their closest friends. This is the reality that, unfortunately, the vast majority of women have to live with daily.

The next problem involves the process of the assault victim finding appropriate help for their situation. Studies show that one in three women are a victim of rape or attempted rape, but only one-fifth of those cases are ever reported(*What is Sexual Abuse?*, n.d.). There is a huge disconnect between an assault happening and the victim actually reporting the crime. Many victims are left confused after an assault on how to and the right way to report the crime. Reasons for not reporting include fear of judgement, confusion about what happened, fear of not being believed, lack of evidence, and not knowing who or how to tell(*The US System Didn't Protect these Women,* n.d.).

The last problem surrounds the overall knowledge about sexual assault. Across communities, sexual assault is recognized as a major problem. The actions that individuals can personally do to combat sexual assault, however, can always be learned and improved. Men, for example, can learn what to watch out for when they are at a bar with their female friends. Women can learn about tricks that predators may try to use on them and ways to get out of those situations. Parents can learn how to talk to their children about the topic of sexual assault.

Care Corner is a mobile application that will provide safety features for responding to potentially unsafe situations, aid in the fight against sexual assault, and assist victims in determining how to find resources and report the crime.

## 2 Product Description

The goals of Care Corner can be summarized into the following three words: Safety, Resources, and Education. In terms of safety, Care Corner aims to give another security option to women in the form of features readily available on their phone. These features can be used in uncomfortable situations to possibly prevent an assault from occurring, preparation before going out for the night, or finding resources.

The second objective of Care Corner is resources. A key feature of Care Corner is to provide direct access to resources for reporting and dealing with instances of sexual assault. This feature is created with the intent of improving the current low reporting rate of all sexual assaults being one-fifth. Since the user will, ideally, already have the application downloaded on their phone for the safety features, the user will already be aware of the resources section in case they need to use it. This gives the user a confidential way to get the help they need.

The last important objective of Care Corner is to aid in the fight against sexual assault through education. As more individuals learn about predators, how to spot when someone needs

help, etc., society as a whole will benefit by raising awareness and understanding about every the role that every individual has in the fight against sexual assault.

### 2.1 Key Product Features and Capabilities

Care Corner aids in the fight against sexual assault through providing safety features for responding to potentially unsafe situations through the use of a panic button and fake phone call. The panic button is a clickable button on the application that, once triggered, will activate panic mode. Panic mode sends an alert and shares the location to the user's preset contacts, begins recording audio and video, and time-stamps when the button is pressed. This feature will give the user a sense of relief for their safety, as if something were to happen, all they have to do is click a button and a pre-set message will already alert the people that the user wants to alert. Additionally, recording audio and video will help the user build confidence in their evidence to lead to reporting the crime.

The fake phone call feature is a pre-recorded "phone call" that the user will appear to receive on their phone. This can be used to walk with to create another person that might scare off an attacker, or it could be a fake emergency to get out of an uncomfortable situation. For example, if a woman is stuck on a date with someone that is making her uncomfortable, she can press the fake phone call button, and the feature will work to appear as if she is receiving a normal phone call that she has to answer. Once she answers the call, it will be a recording on the other end making up some fake emergency that will cause her to have to leave the situation. Additionally, a key phrase can be pre-programmed by the user that, once said, activates panic mode.

Another feature of Care Corner is to provide a directly accessible, interactive tool to help educate its users on their responsibility in the fight against sexual assault. Mombot is the feature

for this goal, it is an Alexa-type of bot that will communicate with the user. The user will be able to tell Mombot their plans for the night, and in return, get advice from the bot about things to look out for, and a checklist of what to do before leaving. For example, if someone tells Mombot that they are going to a bar with friends, Mombot may tell them to never accept a drink from someone where they didn't watch it get poured. The general checklist that comes up on the screen may involve information such as sharing location with at least one person before leaving for the night, or creating a plan with friends of where they will meet up later in the night.

Care Corner also provides directly accessible information such as resources, journals, and reporting features. The resources section contains location-based help including hotlines, help-sites, police stations, hospitals, and more. Additionally, general knowledge from official trusted websites will be given. Users will be provided a private, secured journal to talk about their road to recovery. This will give the user a safe, protected space to talk about what they are going through. Finally, the reporting section of the feature will include education on the different ways that there are to report, the results of reporting at different places, and how to begin the reporting process.

There are two user groups in Care Corner, registered users and guests. Registered users have access to all of the features described above, while guests only have access to the resources and education sections. If the user chooses to create their free account, then they will have access to all the features. By creating an account, the application will be able to save their old journal entries, have a record of the audio and video recordings, and will save the user's pre-set contacts.

### 2.2 Major Components (Hardware/Software)

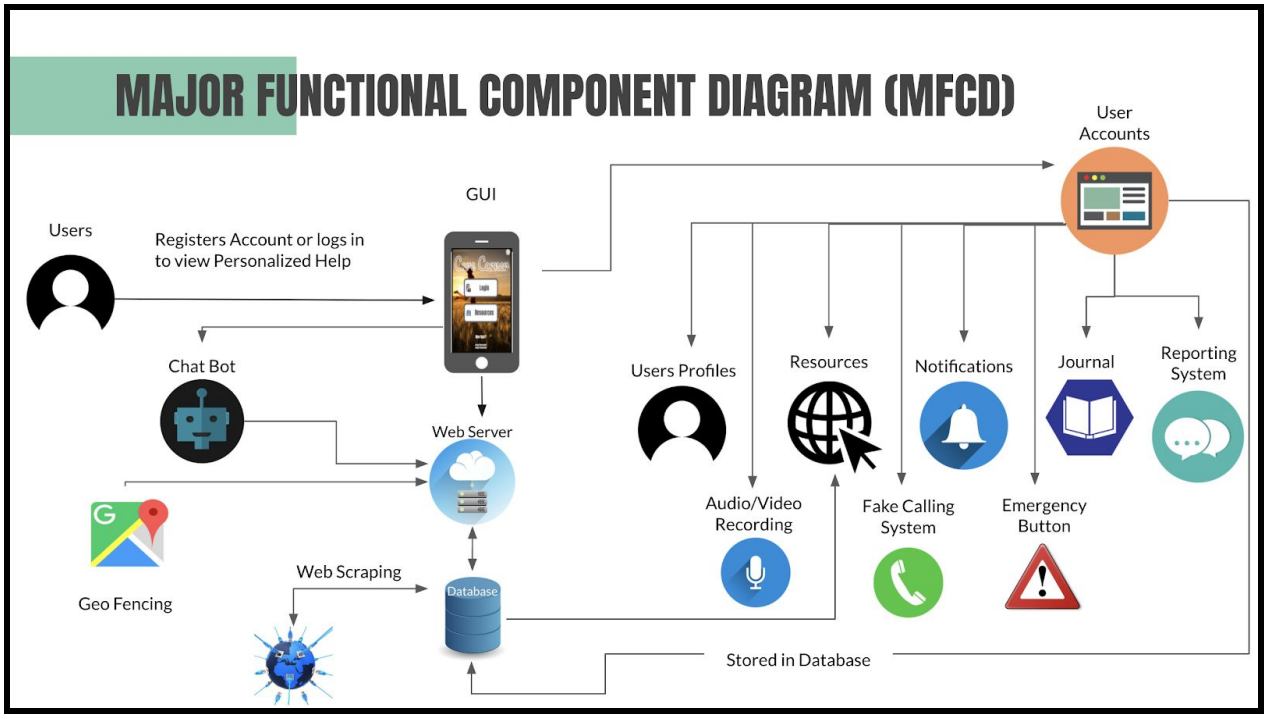
Care Corner is configured for a mobile environment through the use of the following hardware and software requirements. For software, the language is Java, and the IDE and UI/UX

is Android Studio. The database is MySQL, and the build manager is Gradle. Version control is through GitLab, project management is through Jira, and the testing framework is JUnit. The web programming utilized in Care Corner is HTML, CSS, JS, and PHP. The operating systems that are used are Windows, Linux, Android, and iOS.

The hardware requirements are a web server, database server, file server, and an android smartphone. All of the hardware requirements will utilize AWS. AWS S3 is the cloud server for the web, AWS RDS is the database server, and AWS FSx is the file server. The Major Functional Component Diagram, Figure 1, shows that once a user logs into their account, they get access to their profiles, resources, notifications, journal, reporting system, audio and video recording, fake calling system, and the panic button. The mombot utilizes a chat bot and resources utilize geofencing and web scraping. These are all connected to the web server.

**Figure 1**

*Care Corner Major Functional Component Diagram*



# 3 Identification of Case Study

This product is being developed for women of any age. Although the application can be used by groups who are not women, they will be the main group using the product at its deployment and will provide feedback on the application. The group will use the application before they go out one night. They will utilize the mombot feature to explain where they are going, and follow the checklist to receive the tips and useful information. While they are out for the night, they can pull up the application anytime they feel like they might be in an unsafe or uncomfortable situation. If they want to get out of a potentially unsafe conversation, for example, they can press the fake call button and use that as a means to leave the situation.

For future deployment, the design of Care Corner is applicable to anyone who feels like they need more protection in a situation. For example, members of the LGBTQ+ community may also find our application to be useful to them to make them feel safer in similar situations through using some of the safety features. Future deployments of the application will add additional resources and education that tailors to these particular situations. Care Corner is also useful for the loved ones of the main users of the application so they can have a place that the user feels safe reaching out to them.

# 4 Care Corner Product Prototype Description

The prototype of Care Corner will partially implement the features described in the real world product enough to show a functional system and proof of concept.

## 4.1 Prototype Architecture (Hardware/Software)

The prototype will be developed and deployed using the same hardware and software as the real world product. For software, the language is Java, and the IDE and UI/UX is Android Studio. The database is MySQL, and the build manager is Gradle. Version control is through

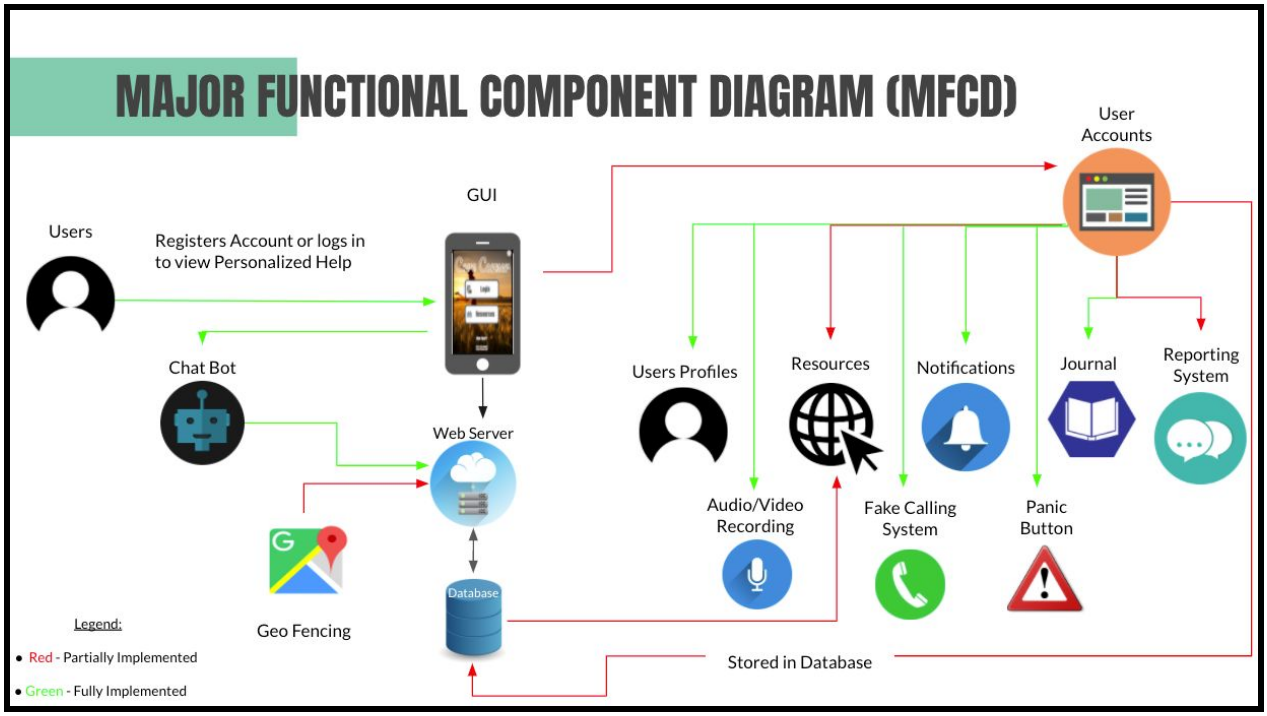
GitLab, project management is through Jira, and the testing framework is JUnit. The web programming utilized in Care Corner is HTML, CSS, JS, and PHP. The operating systems that are used are Windows, Linux, Android, and iOS.

The hardware requirements are a web server, database server, file server, and an android smartphone. All of the hardware requirements will utilize AWS. AWS S3 is the cloud server for the web, AWS RDS is our database server, and the file server is AWS FSx.

Figure 2, the Prototype Major Functional Component Diagram, illustrates what will change from the real-world MFCD to the prototype. Due to development environment limitations, the user accounts, resources, reporting system, geo fencing, and database will all be partially implemented.

**Figure 2**

*Care Corner Prototype Major Functional Component Diagram*



## 4.2 Prototype Features and Capabilities

Care Corner's prototype will partially implement all the features in the real world product. As described in Table 1, the prototype will only be available on Android devices. The databases will work properly, but they will be pre-loaded with test data for demonstration purposes only. A preset MMS message will be sent when pressing the panic button instead of a personalized one. The key phase that the user can say to activate the panic button will be eliminated. In the mombot, the responses will be in text form, but the user will still be able to talk to the mombot through speech. The resources will be an unfiltered list of online resources only. The website resources will be minimal for testing purposes.

**Table 1**

*Care Corner RWP vs Prototype Features*

| 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 | |
| **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 |

| | | | |
|---|---|---|---|
| **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 |

## 4.3 Prototype Development Challenges

The main development challenge will be collaborating as a team. Although the team is using Scrum and Trello to organize our product, this will be the first time utilizing these tools for the majority of the team. Learning how to properly and efficiently collaborate on these tools will be a challenge.

Another challenge for the prototype development is the inexperience of the development team. For the majority of the team, this prototype is the first mobile application they have created, so there will be a lot to learn for every team member when it comes to utilizing APIs, AWS, and Twilio.

Another challenge for the creation of the prototype development is that the development team only consists of one woman, so there will only be one person who truly understands the need for the creation of the application and the lived experience that the problem details.

The final challenge for the prototype development will be learning how to synchronize the way the team codes into a working product. Being able to understand everyone's code will be a skill that every member of the team will actively have to participate in.

# 5 Glossary

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

**AWS (Amazon Web Services)**: 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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