

Care Corner

Feel like you should: Safe

CS-410 Copper Team
Fall 2020

MEET TEAM COPPER

Casey Carpenter



Webmaster & UI Designer

Olayinka "Yinka" Adegun



Back-end Developer

Kyle Grissom



Full-Stack Developer

Thorrell Turner



Team Lead / DB Admin

Ernest "Dale" Webb



Full-Stack Developer

Tremain Young



Back-end Dev / Tester

CONTENTS

01

**BACKGROUND
& PROBLEM**

02

**THE
SOLUTION**

03

**DESIGN-
WBS**

04

**RISKS &
MARKET**

What do you think about before you go out?

“My phone needs to be fully charged...oh and an escape plan. I didn't have an easy escape one time and it was one of the worst decisions I've ever made.”

[26]

“What's my plan if I'm attacked?”

“Check the backseat before getting in the car”

[26]

“I never go out by myself if it's past 9:00 PM.”

[26]

“Avoid wooded areas, even in the daytime”

[21]

“Park in well-lit areas”

[21]

61% of women regularly take steps to avoid being sexually assaulted [20]

7 out of 10 women say they always have their phone prepared when walking alone [20]



Kaitlin Curtice
@KaitlinCurtice

Women:

RT if you've ever walked through a parking lot with your keys between your fingers or pretended to talk on the phone because you felt unsafe.

9:43 AM · Sep 27, 2018 · Twitter for iPhone

66.7K Retweets 2.7K Quote Tweets 79.7K Likes

[21]

BACKGROUND

“A lot of people who call the national hotline, **the first question** they ask is, ‘**Was I Raped?**’”^[22]

- President of RAINN



“**I had no idea** police would get involved and care, or **anybody else would care.**”
-Roia Atmar, survivor^[23]



Only **1/5** of rapes and attempted rapes are reported^[17]

Reasons for not reporting include:

- **Afraid of judgement**
- **Confusion** on what happened
- Afraid of not being believed
- **Lack of evidence**
- **Not knowing who/how to tell**^[22]

THE PROBLEM

Too often, women feel unsafe in situations when they are alone and live with a constant fear of being attacked. If an attack does happen, confusion about what to do following the attack is likely to follow.

PROBLEM CHARACTERISTICS

In the moment of an attack, the victim's resources are limited to calling 911.

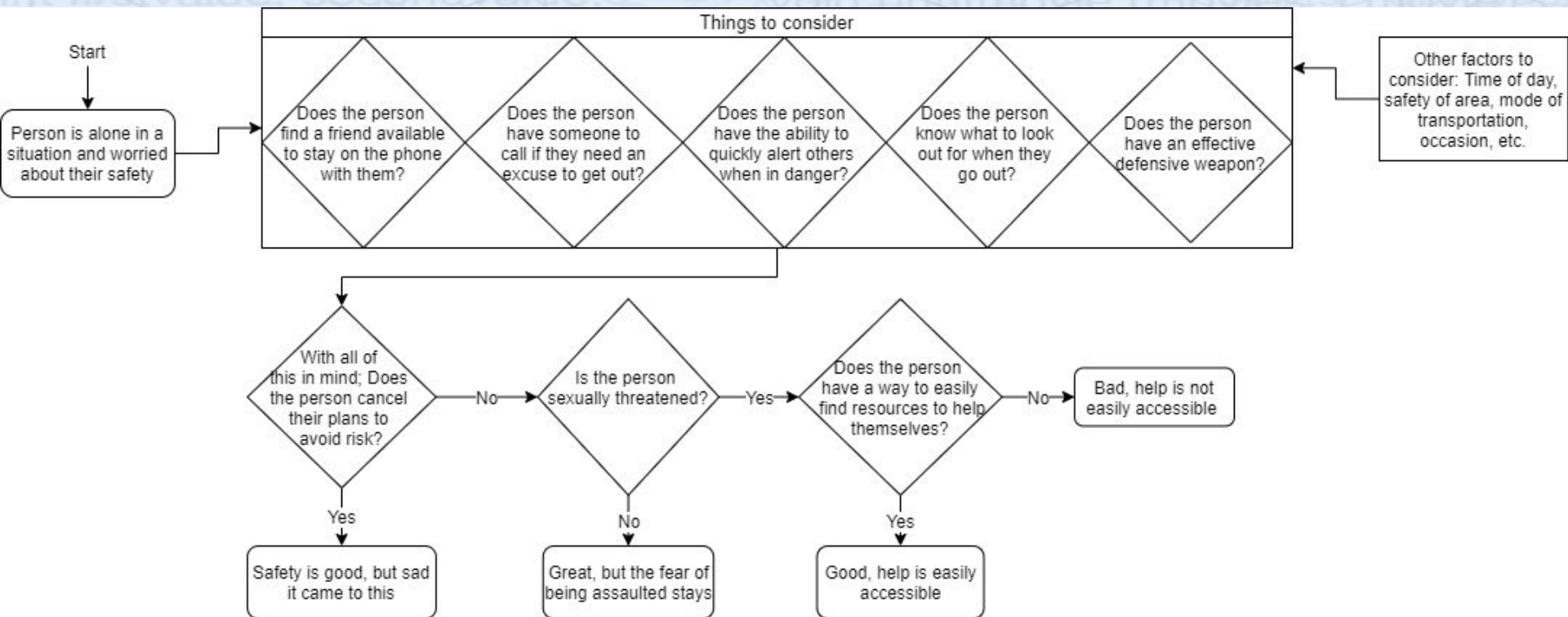


Many victims are confused about how to and what the right way to report is.^[22]

People are not aware of the actions they could take to aid in the fight against sexual assault.^[23]



CURRENT PROCESS FLOW



USER ROLES AND STAKEHOLDERS



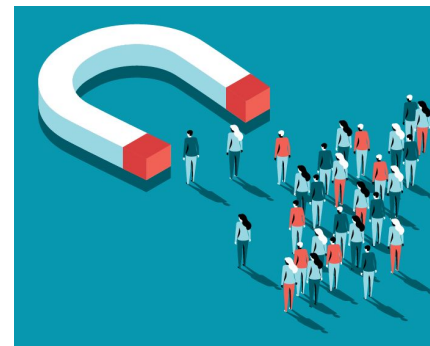
DIRECT STAKEHOLDERS

- ❖ Sexual assault victims
- ❖ Family and loved ones



INDIRECT STAKEHOLDERS

- ❖ Health organizations
- ❖ Authorities

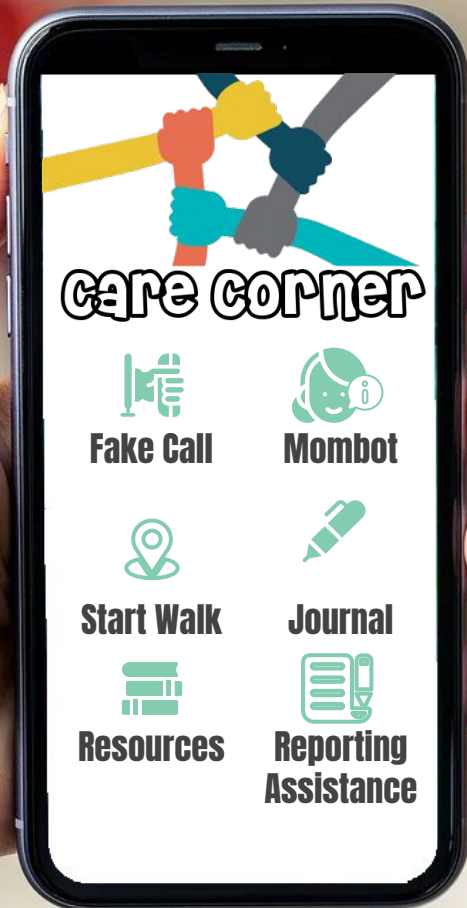


CUSTOMERS

- ❖ Users

THE SOLUTION

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 of assault in determining how to find resources and report the crime.



SOLUTION CHARACTERISTICS



Panic Button

When the Panic Button is triggered it will send an alert to your trusted contacts as well as begin recording video and audio.

Mombot

Mombot will analyze your words for keywords and return helpful feedback with relevant information to be cautious of.



Fake Phone Call

User will receive a fake phone call to 'chat' with while walking alone or an fake emergency to get out of an uncomfortable situation.

SOLUTION CHARACTERISTICS



Journal

Users are provided a private Journal to assist in their recovery

Resources

Provides current hotlines, help sites, and other resources to help users.

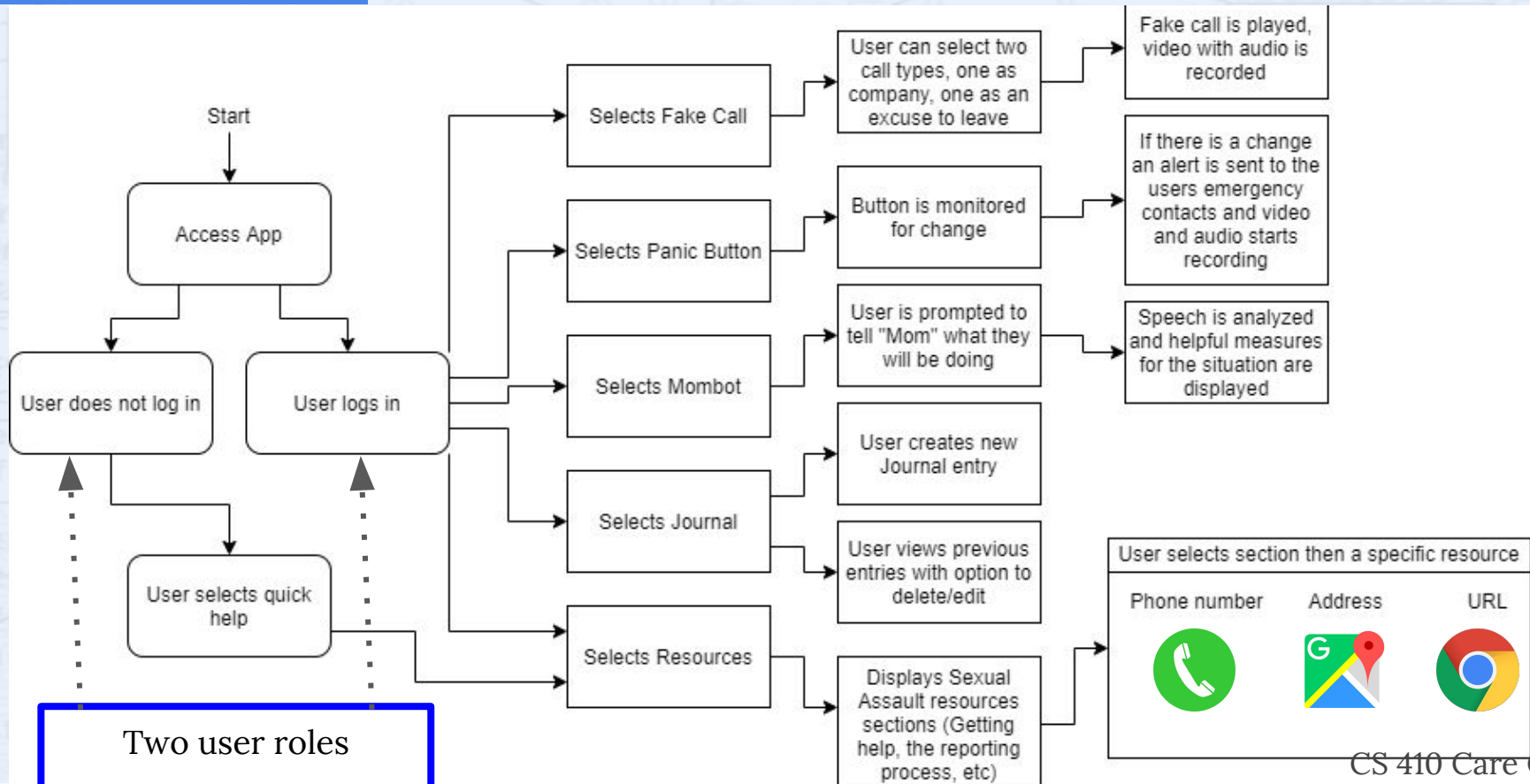


Education on Reporting

Users will be able to learn how to report a crime that happened to them and the different ways there are to report.

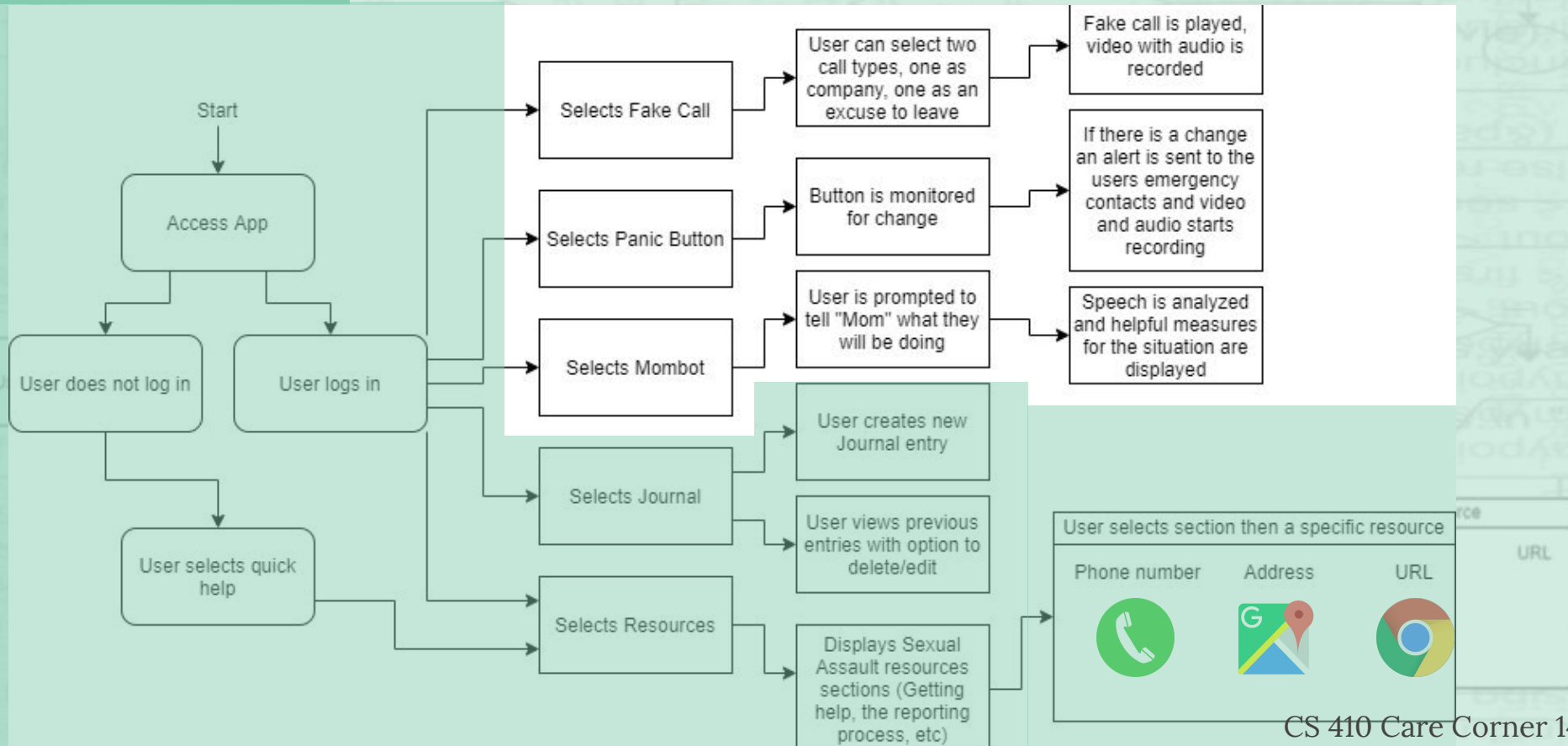


THE SOLUTION FLOW

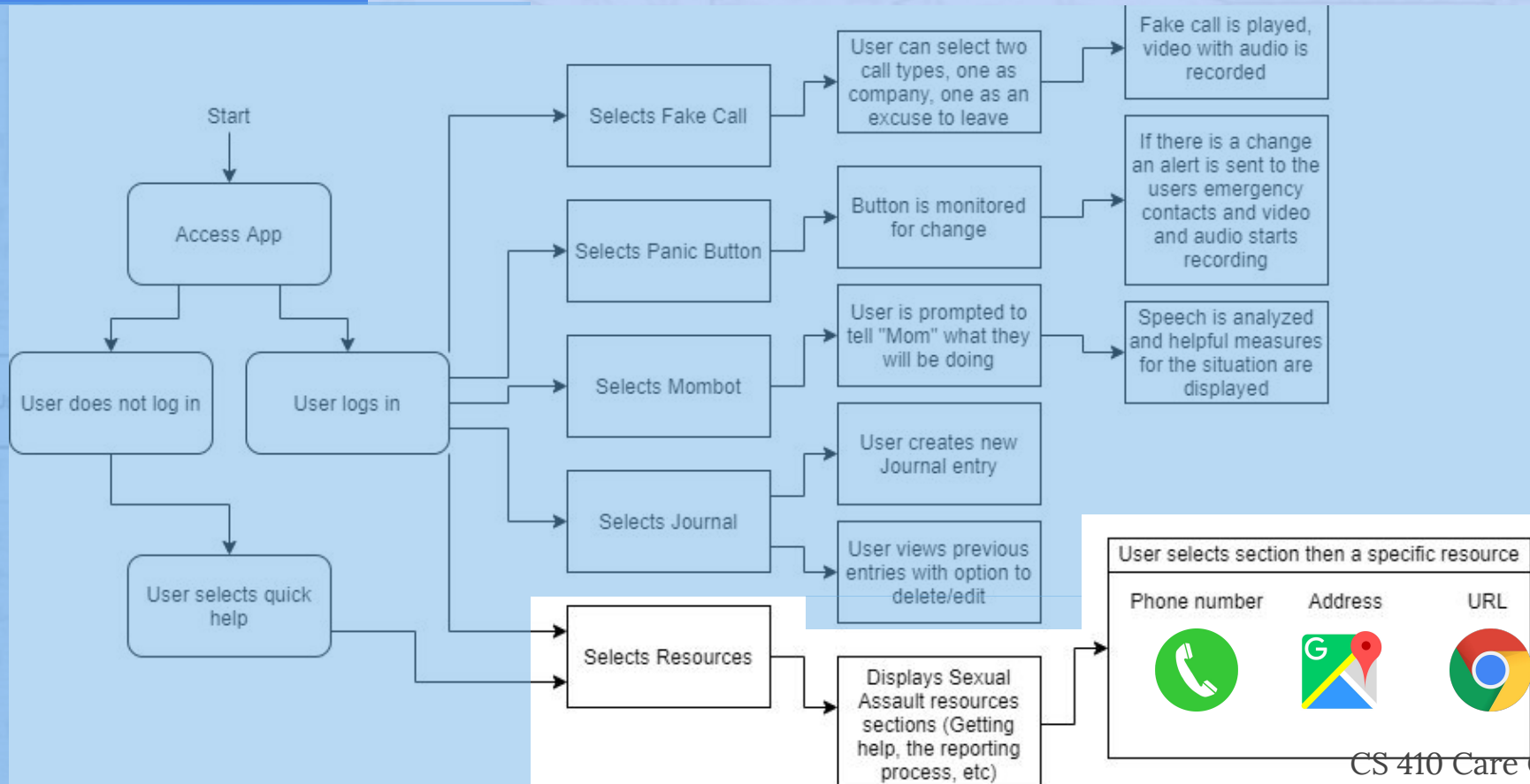


Two user roles

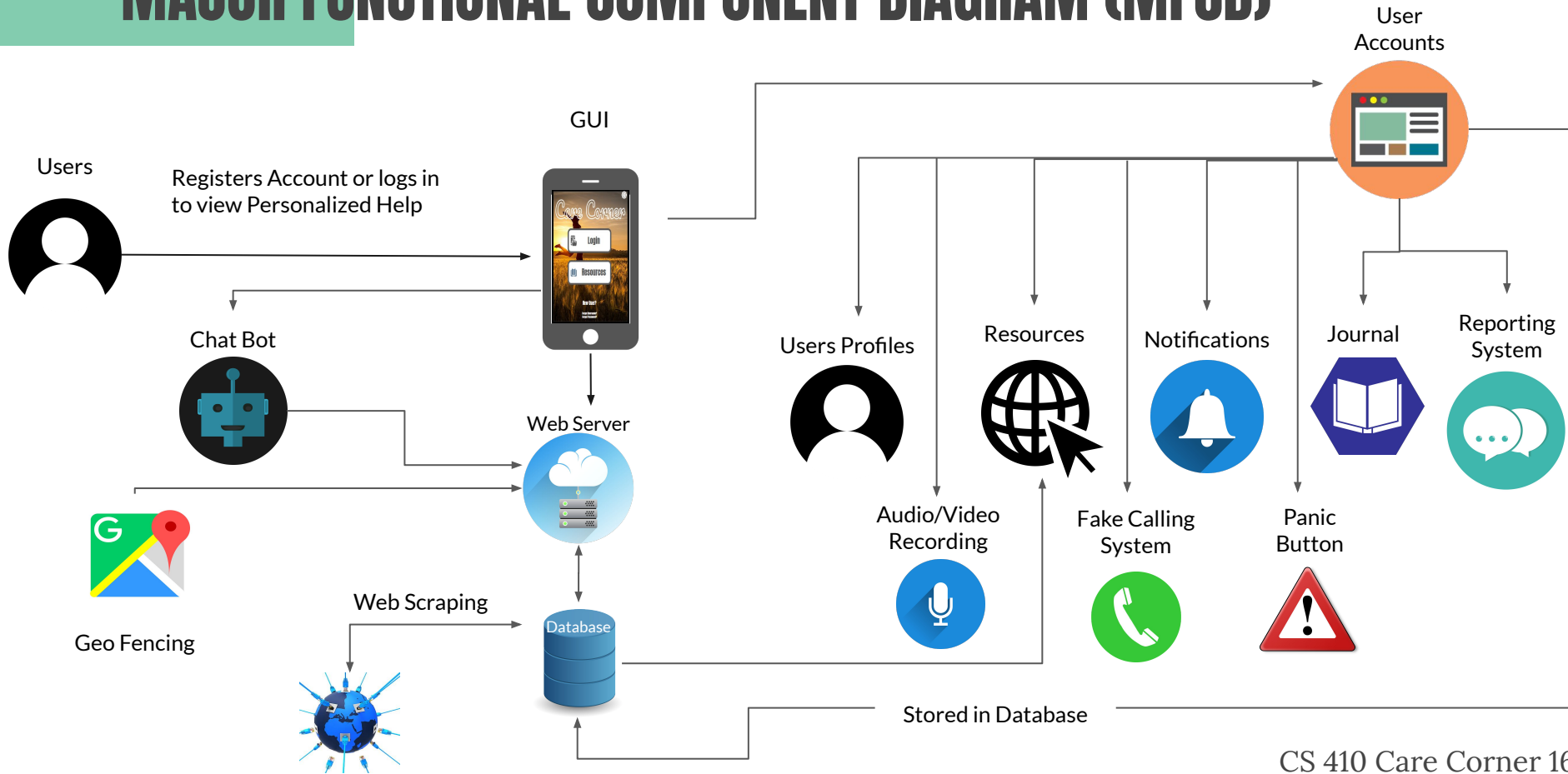
THE SOLUTION FLOW: Prevention



THE SOLUTION FLOW: Education



MAJOR FUNCTIONAL COMPONENT DIAGRAM (MFCD)



WORK BREAKDOWN STRUCTURE



Care Corner

UI/UX

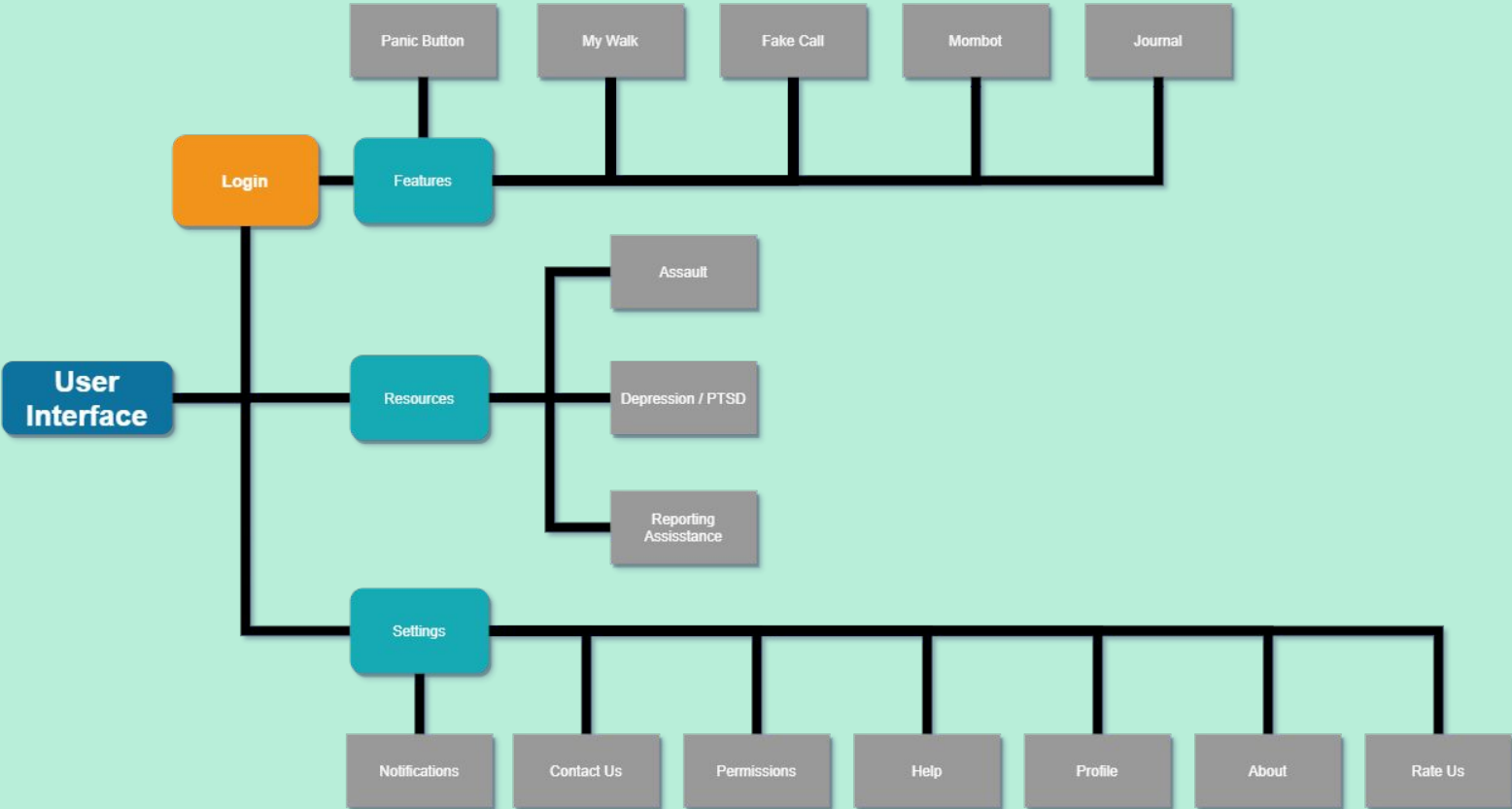
Algorithms

Database

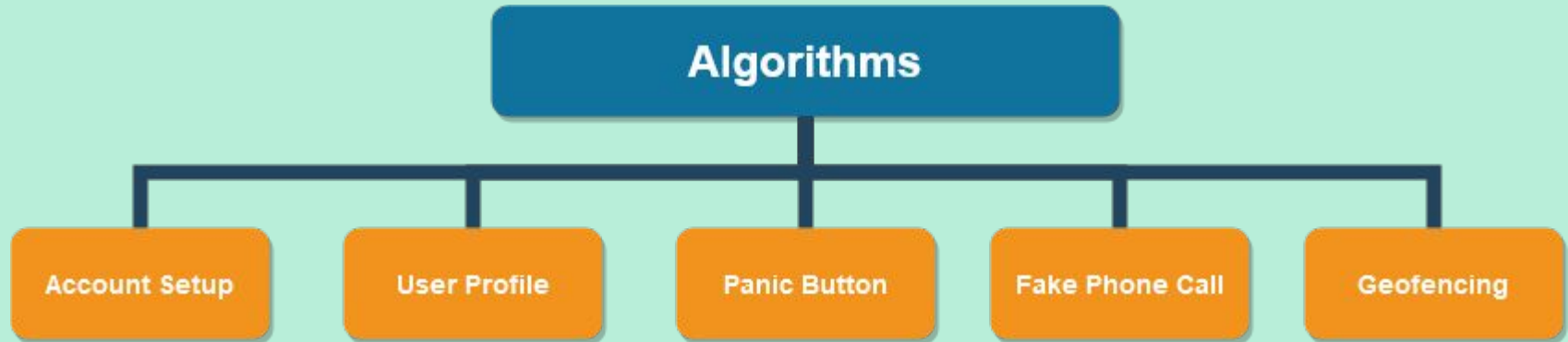
External
Interfaces/API

Testing

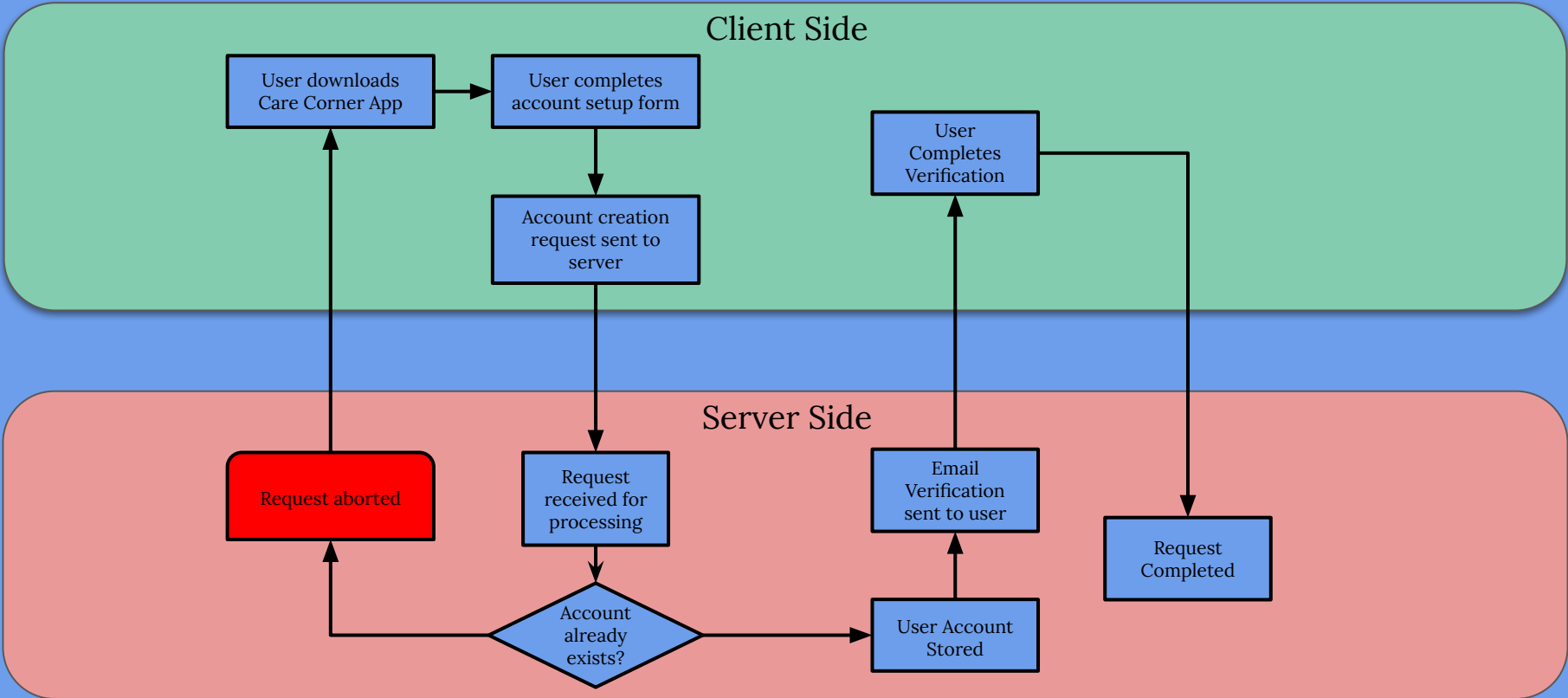
WORK BREAKDOWN STRUCTURE - USER INTERFACE



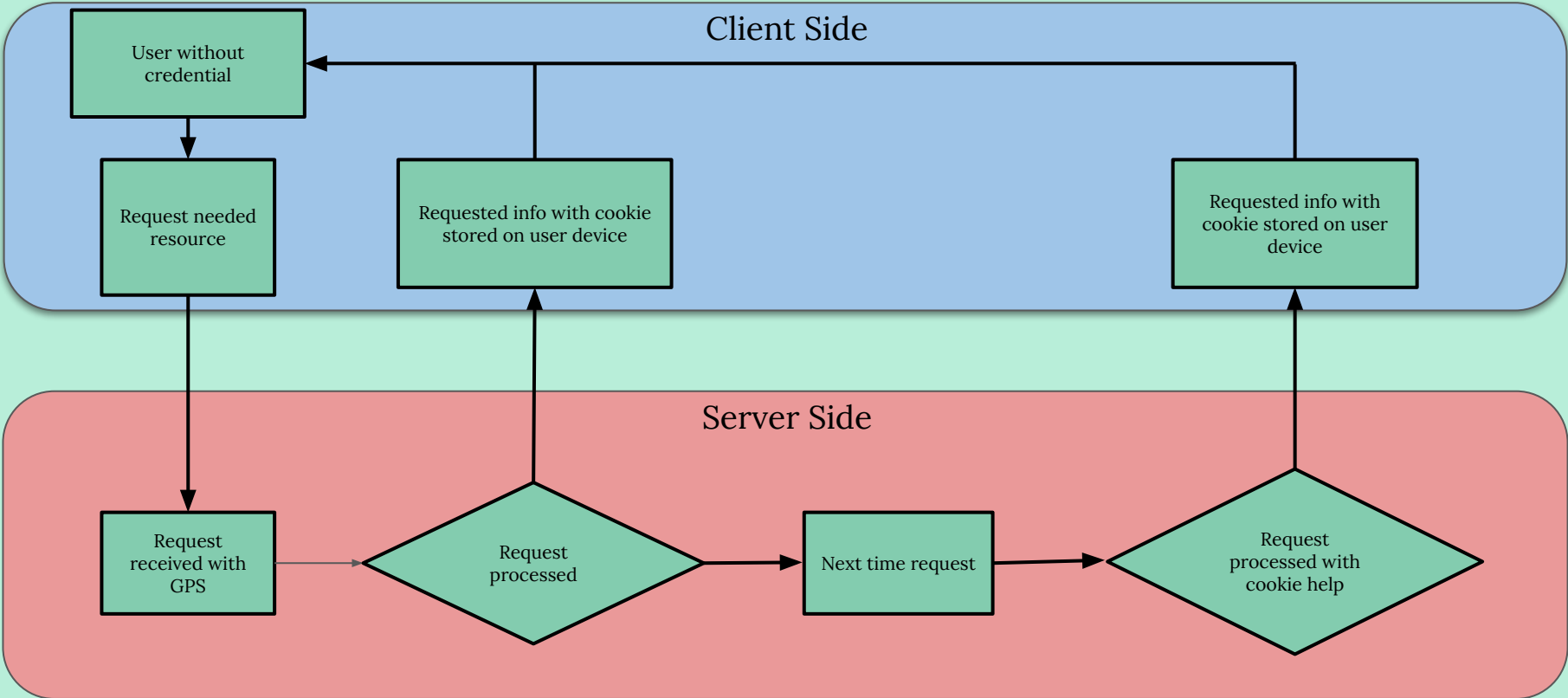
WORK BREAKDOWN STRUCTURE - ALGORITHMS



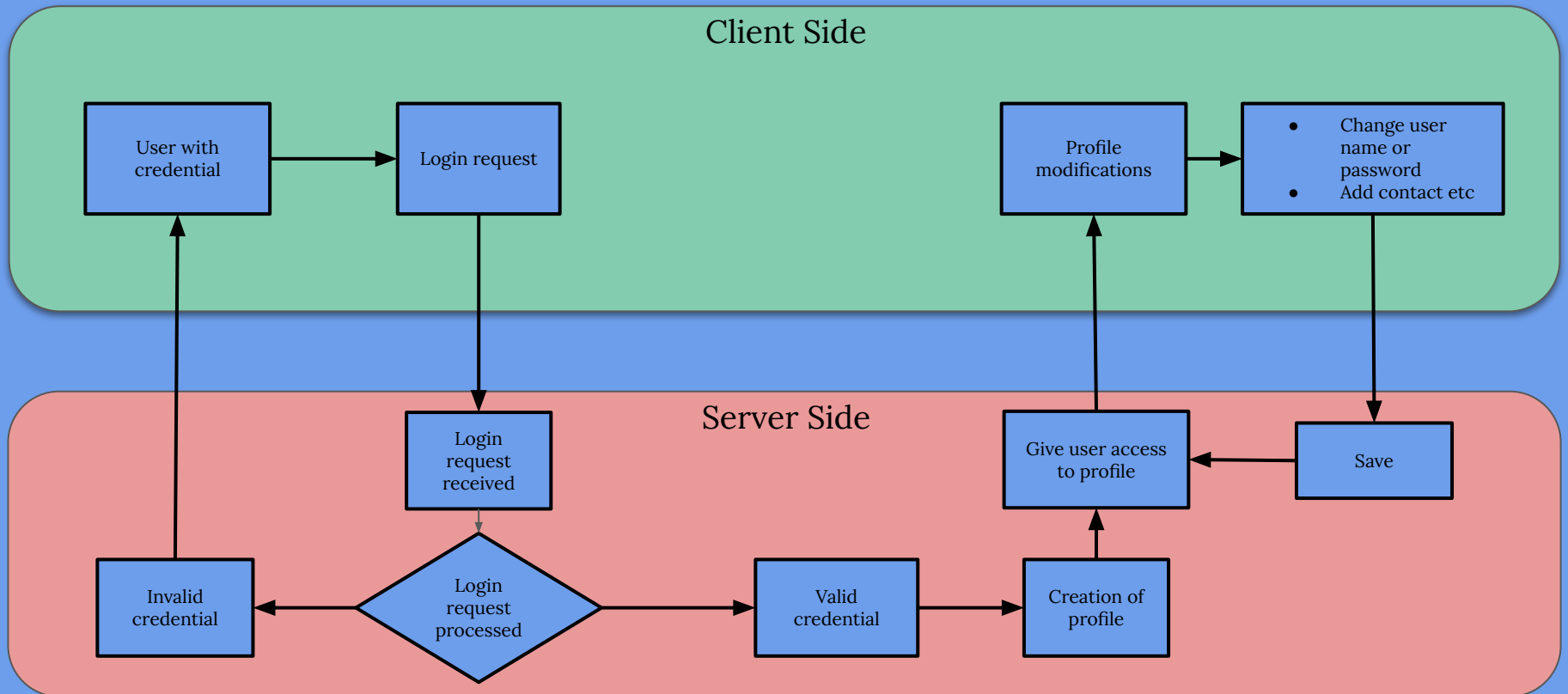
ALGORITHMS - ACCOUNT SETUP



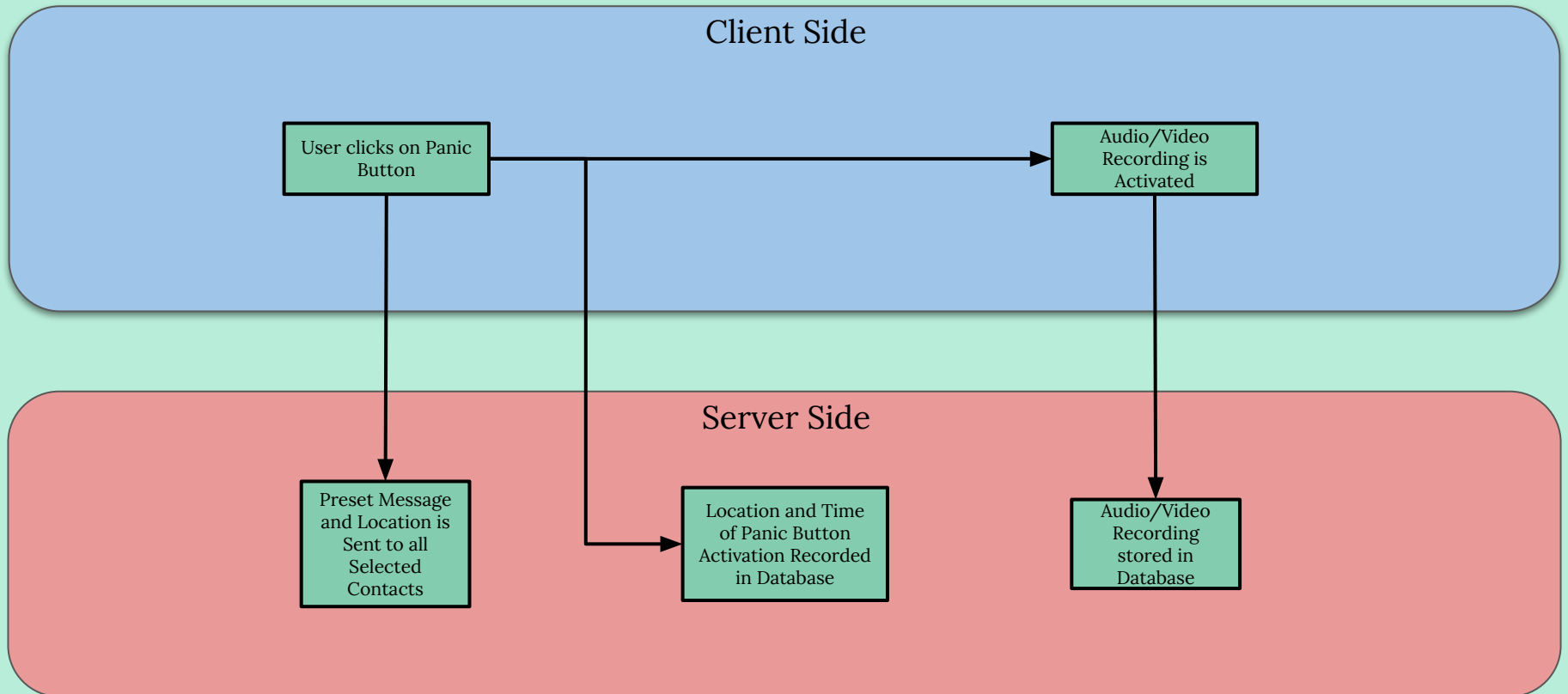
ALGORITHMS - USER PROFILE



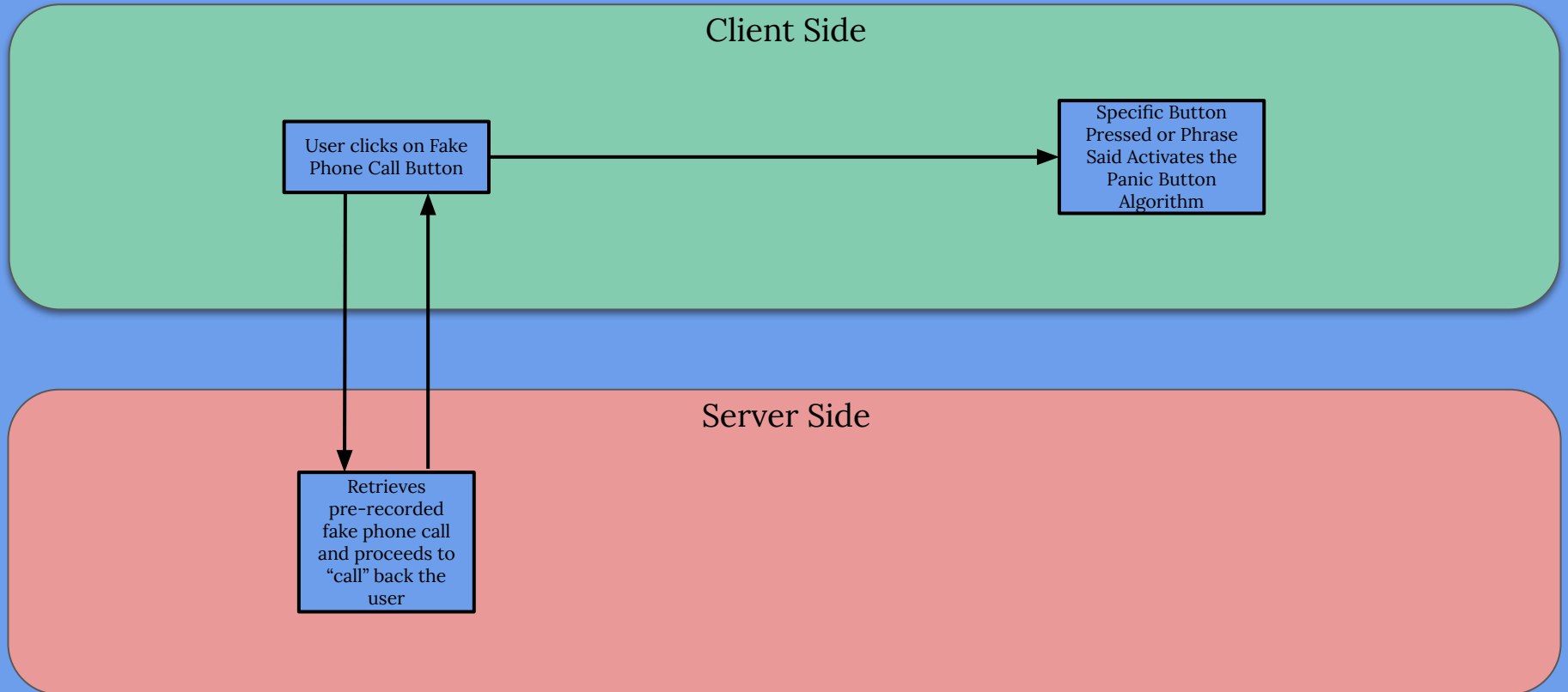
ALGORITHMS - USER PROFILE



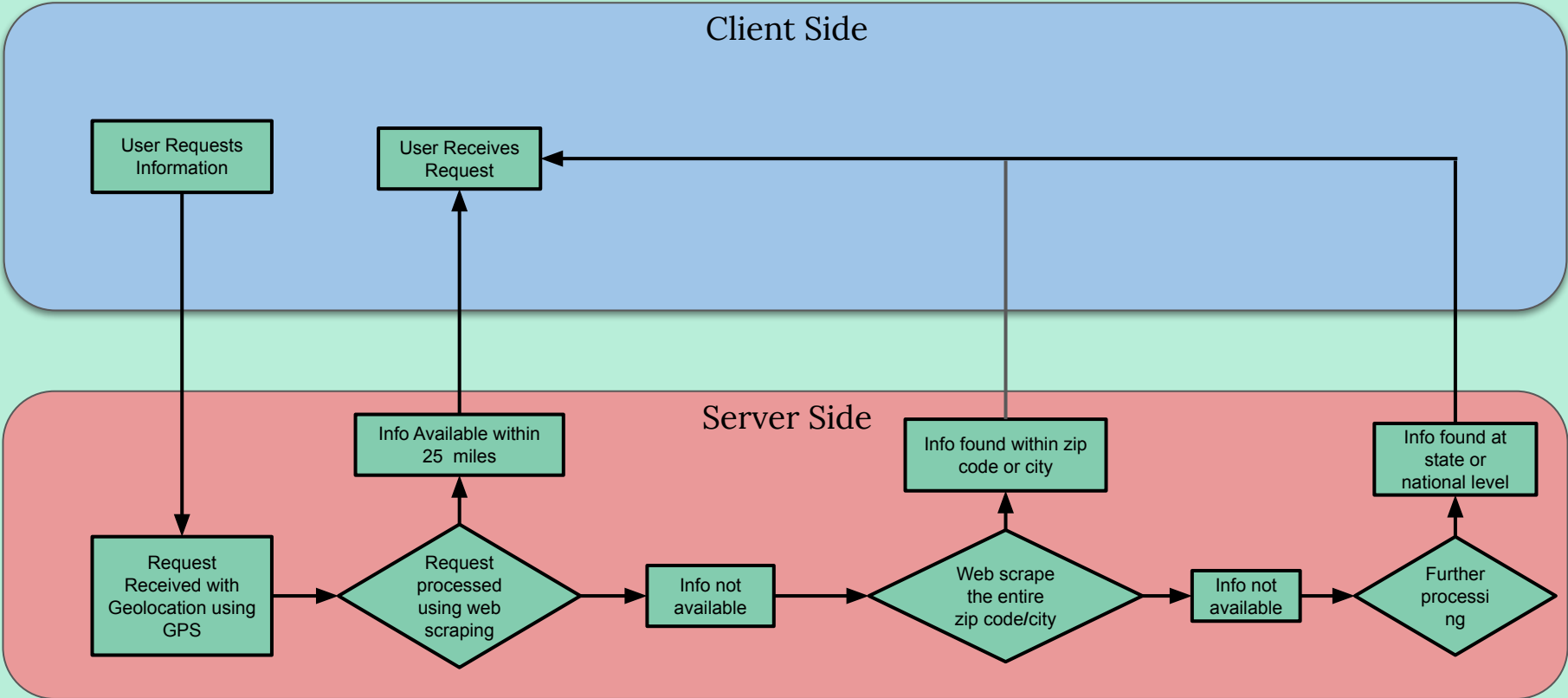
ALGORITHMS - PANIC BUTTON



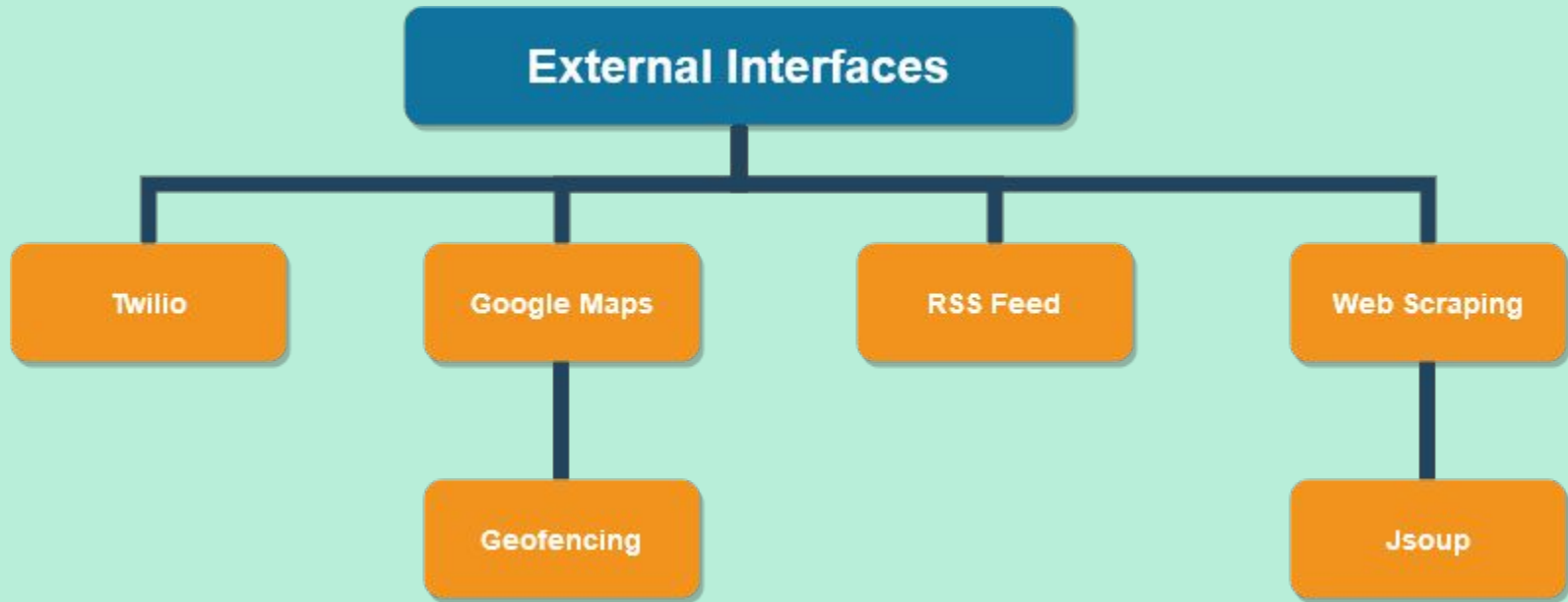
ALGORITHMS - FAKE PHONE CALL



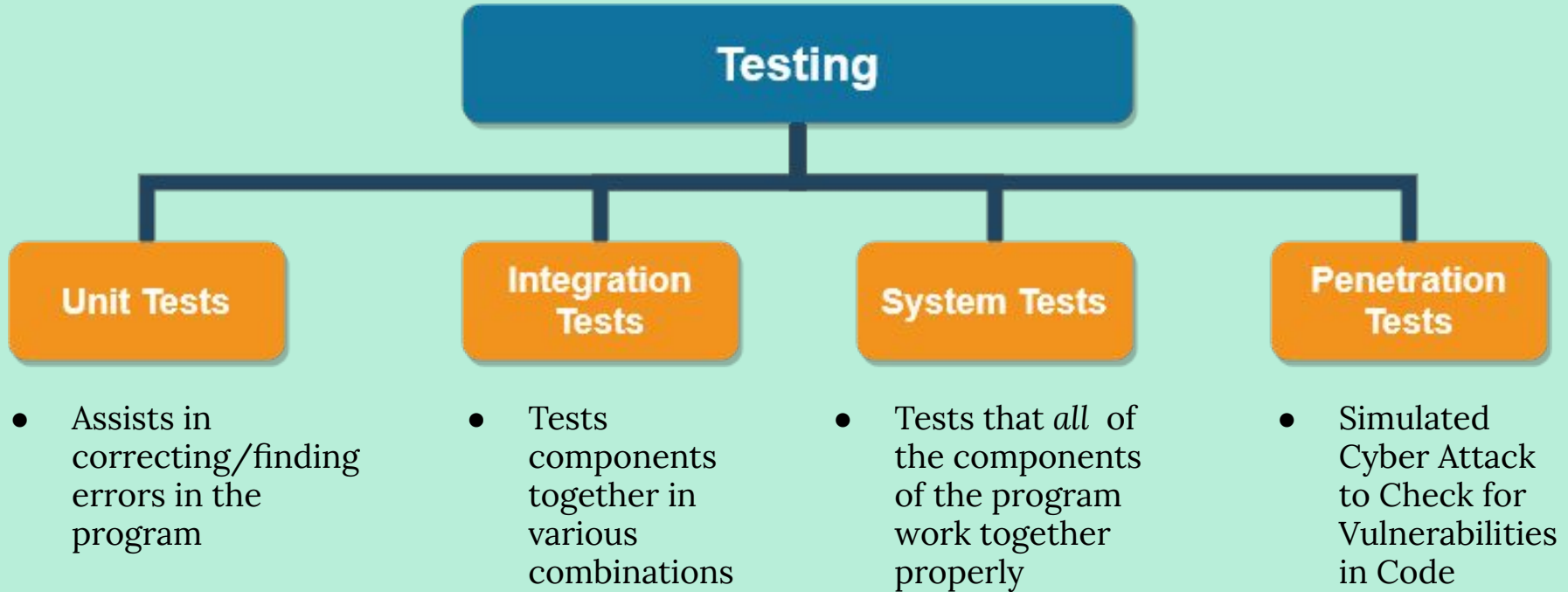
ALGORITHMS - GEO FENCING



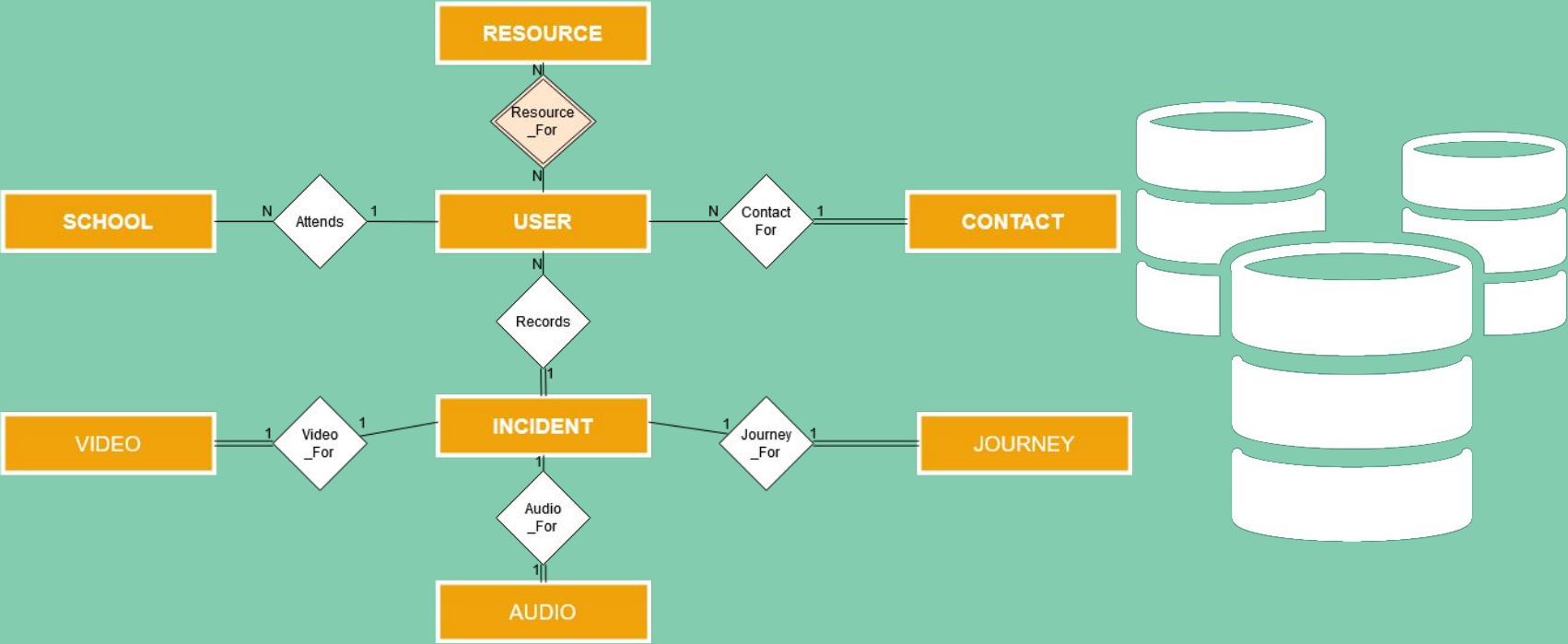
WORK BREAKDOWN STRUCTURE - EXTERNAL INTERFACES/API



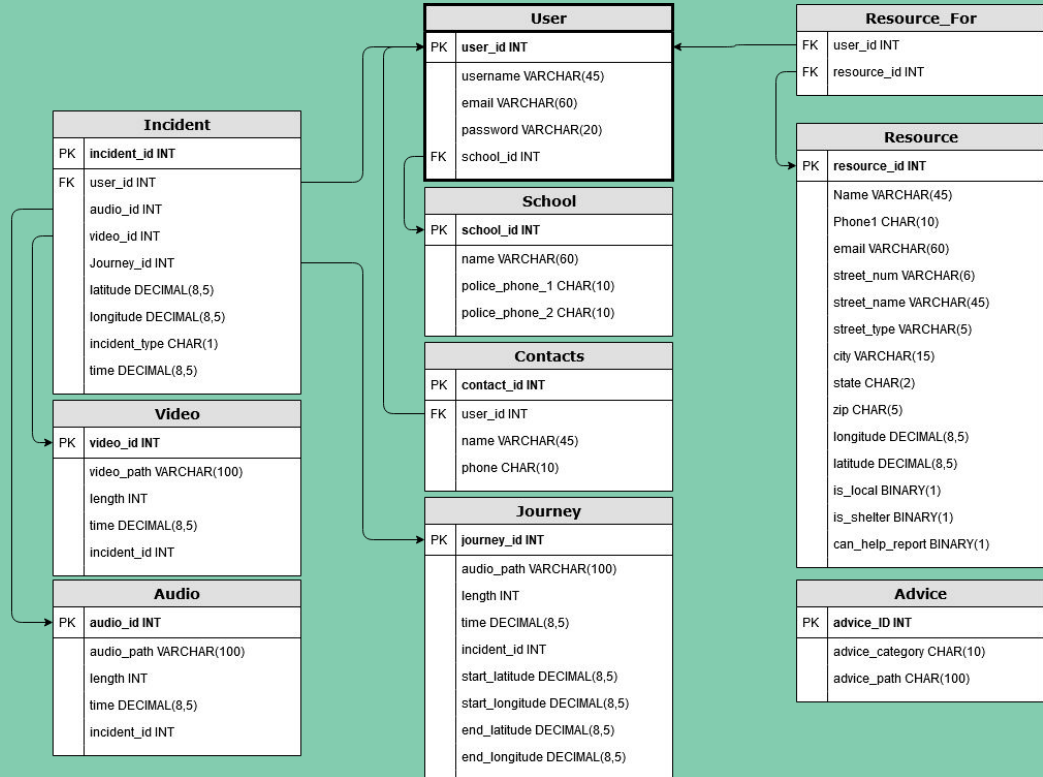
WORK BREAKDOWN STRUCTURE - TESTING



DATABASE ENTITY RELATIONSHIP DIAGRAM



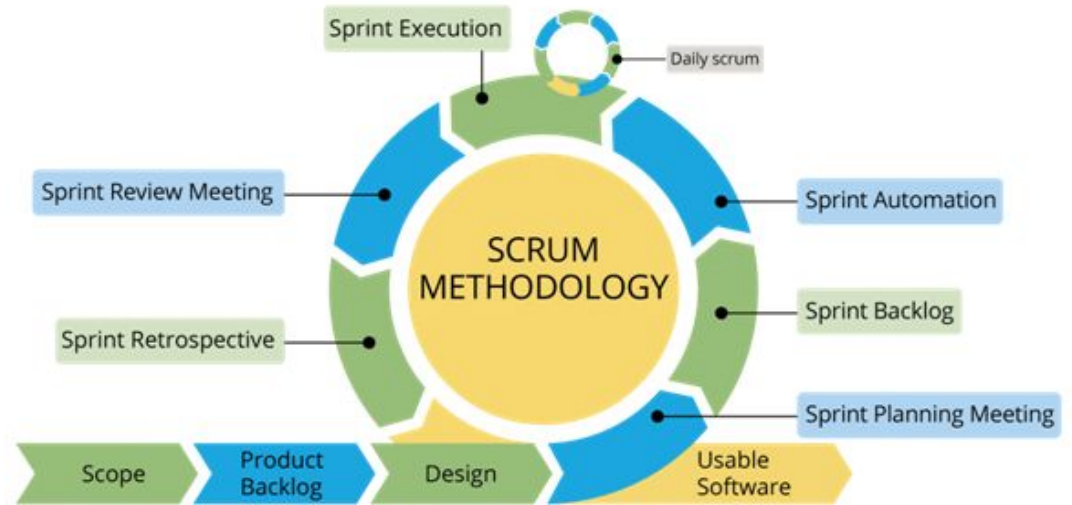
DATABASE SCHEMA



DEVELOPMENT MODEL - AGILE (Scrum)

Three Pillars:

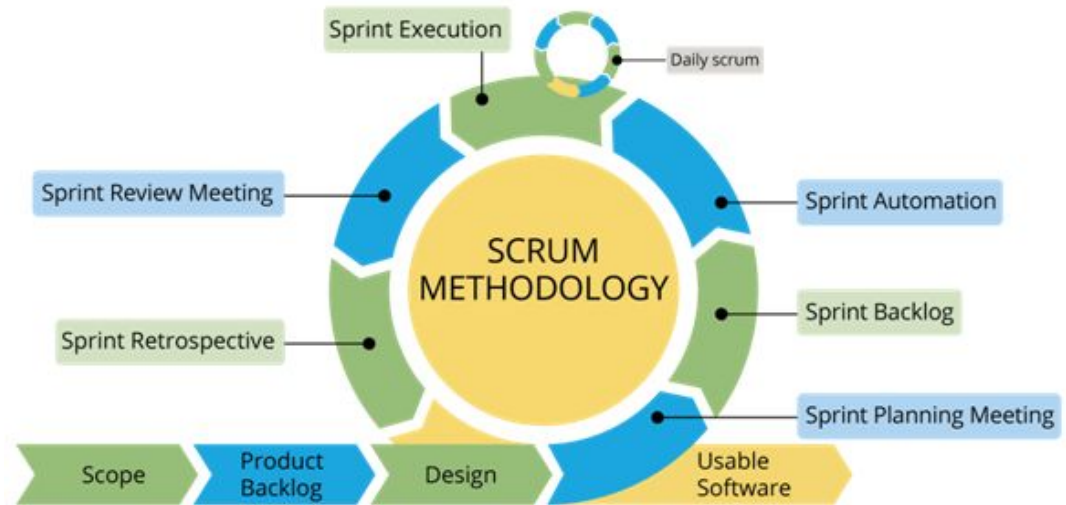
- **Transparency** - Team members must work in an environment where everyone is aware of the issues other team members are having.
- **Inspection** - Frequent inspections on how the process is working. This includes the Daily Scrum meeting and the Sprint Review Meeting.
- **Adaptation** - Team members must constantly investigate areas of the process that do not make sense and revise them.



DEVELOPMENT MODEL - AGILE (Scrum)

Practices

- **Project Management** - Jira
- **Stand-up / Daily Scrum** - 2-3 times a week
- **Sprints** - 2 weeks long
 - **Sprint Planning** - Decide which backlog items will be included in the sprint and determine how to successfully deliver the item
 - **Backlog Refinement** - Inspect backlog to ensure backlogs are appropriate and properly prioritized
 - **Sprint Review** - Gather feedback and deliver a product, or demo.
 - **Retrospective** - An opportunity for the team to self-assess and improve



DEVELOPMENT TOOLS

Software Requirements:

Components	Android	iOS
Language	Java	Kotlin
IDE	Android Studio	
UI/UX	Android Studio	
Database	MySQL	
Build Manager	Gradle	
Version Control	GitLab	
Project Management	Jira	
Testing Framework	JUnit	

Hardware Requirements:

- Web Server (AWS -S3)
- Database Server (AWS - RDS)
- File Server (AWS - FSx)
- Android/iOS Smartphone

DATA MANAGEMENT

Name	Purpose
MySQL	Add, access, and manage database content.
Amazon Web Services	Run web(S3) and file servers(FSx), store data, and manage backups for recovery.
Amazon Relational Database Service (RDS)	Works with MySQL and AWS, handles backups and monitoring.
Twilio	Communication between phones, location, message, etc.
Data Retention	Incident data can be erased by user. DB will store them up to 7 years



Amazon RDS



CUSTOMER RISK

Risks

- **C1 - Location Not Enabled:** Customer prefers not to enable their location data
- **C2 - User Runs out of Battery:** User's battery dies while on a Journey.
- **C3 - Location used by Attacker:** A potential assailant could use GPS location to assault user
- **C4 - User Doesn't Like the Mombot:** User refuses to, or doesn't like, using the Mombot

		Impact				
		Negligible	Minor	Major	Hazardous	Catastrophic
Likelihood	Frequent					
	Probable		C2			
	Occasional	C4				
	Remote		C1			
	Improbable			C3		

Mitigation

- **C1** - User can still share that they're travelling, without sharing GPS and can manually search through resources
- **C2** - App will provide battery warnings prior to arming.
- **C3** - Users location is encrypted, and only shared with a user's selected individuals.
- **C4** - Provide search and filter options in the resources menu for user to manually search for information

TECHNICAL RISK

Risks

- **T1 - Resource Website Unavailable:** Care Corner uses a resource that has gone down
- **T2 - External Dependency Unavailable:** A 3rd party API/Service Care Corner uses goes down
- **T3 - Database Failure:** Care Corner's database becomes unavailable
- **T4 - Location Data Unavailable:** GPS/Location Data is not available to use in a query
- **T5 - No Internet:** Customer Loses internet Access

		Impact				
		Negligible	Minor	Major	Hazardous	Catastrophic
Likelihood	Frequent					
	Probable					
	Occasional			T2, T3, T5		
	Remote					
	Improbable		T1, T4			

Mitigation

- **T1** - Store crucial data from sites in our database so it is still available to the user
- **T2** - Try to limit external dependencies by gathering relevant data and storing it in our database for users to access
- **T3** - Relevant data will be stored on the user device in order to run with app with limited functionality. Other data relevant to the user will also be stored on their device, including: previously queried resources and journal entries
- **T4** - Users can manually submit their location to use in query
- **T5** - Previously located resources will be stored on the phone. User can still record their trips with audio/video/GPS journey

SECURITY RISK

Risks

- **S1 - Database Attacked:** Database could be wiped in a cyber-attack
- **S2 - Database Injection Attack:** Database information is maliciously edited in cyber-attack. For instance a SQL Injection (25)
- **S3 - User Forgets Password:** User cannot login due to forgotten password
- **S4 - Data Exposure:** User's data could be exposed during transmission or while stored on their device

		Impact				
		Negligible	Minor	Major	Hazardous	Catastrophic
Likelihood	Frequent					
	Probable		S3			
	Occasional					
	Remote		S4		S1, S2	
	Improbable					

Mitigation

- **S1** - Access to the database will be limited/controlled. Database will be monitored and regularly backed up
- **S2** - Database queries will be written with properly-formatted prepared statements so attackers cannot change the intent of the query (19)
- **S3** - Follow proper protocol, likely send email to stored account for reset.
- **S4** - Minimal sensitive info will be requested of user. All transmitted data, and private data stored on device, will be encrypted

WHAT CARE CORNER WILL NOT DO

- **This application will not alert the authorities**
- **This application will not guarantee to stop an attack, instead serving as a deterrent.**
- **This is not a social network platform**

FOCUS GROUP

We conducted a small focus group to test out the idea of our product. We asked eleven women, aged 18-30, of all different backgrounds and careers

“Would you download and actively used this app?”

100% said YES

“What are the features that attract you to use the app?”





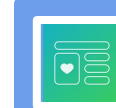
















- 11/11 said they would use the panic button and fake phone call when they worry for their safety
- Everyone was in agreement that the reporting section would be incredibly informational and help increase rates of reporting



“Other comments or specific things you want to see in this app?”

- “Multiple fake phone calls that would be able to fit different scenarios”
- “Break down the reporting section into different ways to report”(i.e. Law Enforcement, Medical Professionals, Campus/Workplace)
- User needs to be able to choose who & how many people get sent an alert using the panic button

MARKET ASSESSMENT

	Care Corner	bSafe	JDoe	Circle of 6	Aspire News
					
Panic Button to instantly notify those you trust when you need help.					
Fake phone calls to excuse yourself from uncomfortable situations					
Automatically connects students to their local Campus Police					
Record a journey with Audio, Video, and/or GPS location					
Interactive system to provide best practices when planning a Journey					
Access to education and resources at a local and national level					
Snapshots to record time & location for accurate reporting of an incident.					
Prompted Reporting Assistance to discover necessary details commonly requested by law enforcement.					

CONCLUSION

- The rapidity of the event of sexual assault necessitates preparedness to forestall against being a victim. Having an app like **Care Corner** can put a user ahead of perpetrators
- Being a victim of sexual assault can be very traumatic but **Care Corner** can make the road to recovery an easier one by providing a quick, simple, and secure navigation to:
 - Hotlines
 - Local help
 - Journal
 - Reporting
 - Personalized profile



STORIES-USERS

As I user, I want to:

Armed Safe Walk

- Notify selected members of my circle of my walk, so that I feel more secure.
- Have the option of personalizing my message when notifying others of my walk, so that it is not just the generic message.
- Have the option to disclose my location when notifying others of my walk, so that I feel more secure.
- Have the option to disclose my destination when notifying others of my walk, so that I feel more secure.
- Be able to instantly begin recording video on my walk, so that I would have evidence if something were to happen.
- Be able to instantly begin recording audio on my walk, so that I would have evidence if something were to happen.
- Be able to instantly begin recording my location on my walk, so that I would have evidence if something were to happen.

Panic Button

- Have quick access to a panic button to call for help, so that I can press it quickly if I feel unsafe.
- Send my location to my selected contacts when I use the panic button, so that they are notified of my location.
- Send a pre-set message to my selected contacts when I use the panic button, so that they are notified that I am in an unsafe situation.
- Start video & audio recording when I activate the panic button, so that I can use it later on if needed.
- Have my location and time of panic button activation timestamped, so that I can use it later if needed.

STORIES-USERS

As I user, I want to:

Fake Phone Call

- Pre-program what name I would like to appear to “call” me so that it appears as a regular phone call
- Click to “answer” the phone call, so that it appears as a regular phone call
- Activate the microphone and record the audio of my fake phone call so that I can use it later if needed.
- Activate the camera and record the video of my fake phone call so that I can use it later as evidence if needed.
- Say a certain phrase to activate the panic button feature so that I can alert someone if I am attacked.
- Press a button to also be able to activate the panic button feature so that I can alert someone if I am attacked.
- Have multiple fake conversations to choose from so that I can use the feature for different situations.

Resources & Education

- Read professional blogs, so that I can educate myself on sexual assault
- Be given the phone number of the national sexual assault hotline, so that I can call them if I need to
- Be given the phone number of the national suicide prevention hotline, so that I can call them if I need to
- Find shelters based on my location, so that I can get directions to one if I need to
- Find nonprofits based on my location, so that I can get directions to one if I need to
- Find counselors based on my location, so that I can get directions to one if I need to
- Find campus police if I am on a college campus, so that I can get directions to one if I need to
- Find police stations based on my location, so that I can get directions to one if I need to
- Visit official government websites, so that I can see their positions on sexual assault
- Visit trusted nonprofit websites, so that I can see what services they provide for my need.
- The location based help to change as my location changes, so that I can use the app no matter where I am located.

STORIES-USERS

As I user, I want to:

Mombot & Reporting

- Get helpful tips so that I can help protect myself when I go out.
- Get information for reporting sexual assault to multiple reporting agencies so that I know how & where to report my crime.
- Have speech-to-text recognition so that I don't have to use my hands.
- Learn the difference between how to report to different types of places, so that I am transparent in who/where I will be reporting
- Speak into the app to tell them where I am going and have the app redirect me to tips for that location, so that I can get tips relevant to the location I am going to.
- Have the mombot run through a checklist of things to do before I go out, so that way I don't forget to do the safety precautions.

Journal & Depression/PTSD

- Reach out to a counselor in a time of crisis so that I can get immediate help.
- Have a private journal so that I can work through my thoughts in a safe place.
- Have a private journal that is password protected so that I can ensure that my privacy is protected.
- Have resources available for dealing with PTSD and depression so that I can use them if I need to.
- Share selected journal entries with selected contacts so that I can communicate my thoughts in a less direct way.

STORIES-GUEST

As I guest, I want to:

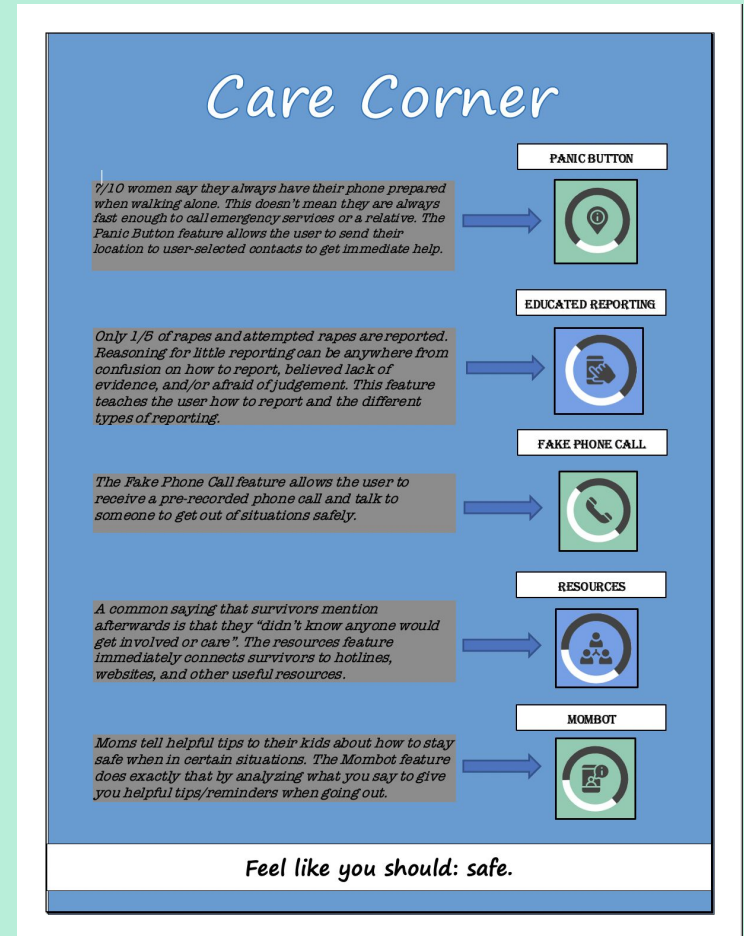
Resources & Education

- Access the resources section without logging in, so that I can find resources near me quick without having to make an account.
- Access the reporting section without logging in, so that I can learn how to report to the agency that I may decide to report to.

SUPPLEMENTAL MATERIAL

View our supplemental material in more detail on our website:

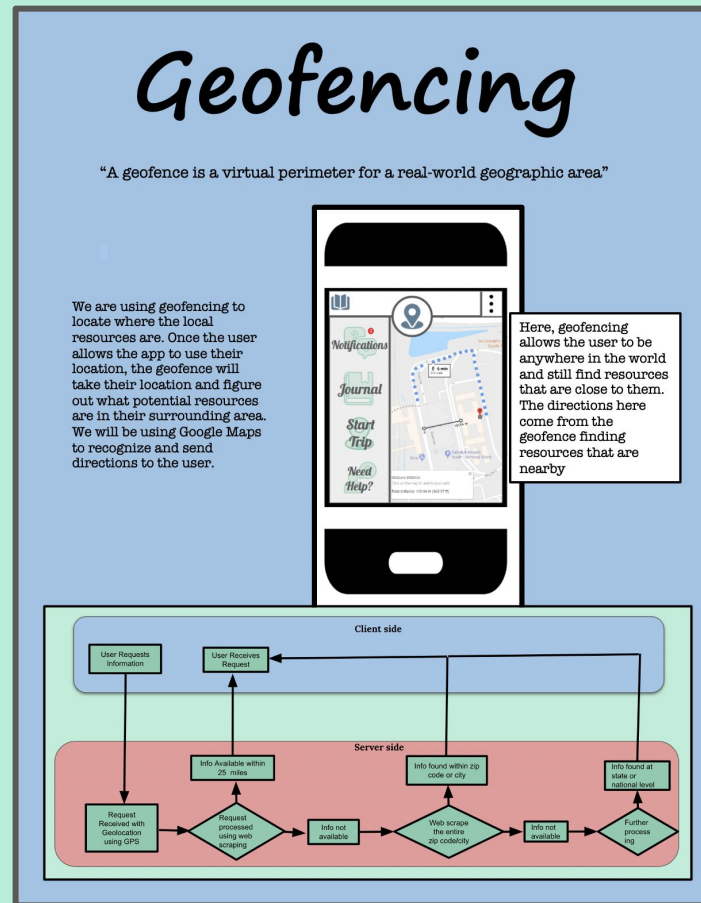
<https://www.cs.odu.edu/~410copper/presentations.html>



SUPPLEMENTAL MATERIAL

View our supplemental material in more detail on our website:


<https://www.cs.odu.edu/~410copper/presentations.html>



SUPPLEMENTAL MATERIAL

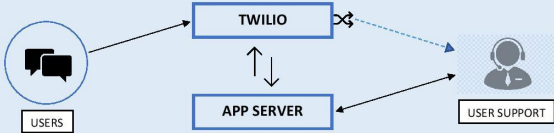
View our supplemental material in more detail on our website:

<https://www.cs.odu.edu/~410copper/presentations.html>



What exactly is Twilio?

Twilio is a developer platform for communications. Its programmable APIs are used to build practically any digital experience, using capabilities like SMS, voice, video, etc.



We are utilizing Twilio's messaging API to send and receive SMS messages globally. Using its intelligent sending features, we'll be able to ensure that messages reliably reach our end users.

1-800-YOURBIZ

1) EACH TIME A CALLER RINGS, SEND TEXT OFFERING CHANNEL PIVOT

2) CUSTOMER CAN HANG UP AND CONTINUE BY SMS. MESSAGES GO TO AGENT UI ROUTED BY TASKROUTER

Thank you for listening to our presentation!

QUESTIONS?

RESOURCES

“About 211.” 211.Org, www.211.org/pages/about. (1)

“List of Hotlines.” Please Live, Davo Productions, 15 Jan. 2020, www.pleaselive.org/hotlines/. (2)

Amin. “Step by Step Guide on Scraping Data from a Website and Saving It to a Database.” How PC Rules My Life, 13 Dec. 2017, howpcrules.com/step-by-step-guide-on-scraping-data-from-a-website-and-saving-it-to-a-database/. (3)

Miles, Stephanie. “5 On-Demand Apps for Emergency Services.” Street Fight, 1 Apr. 2016, streetfightmag.com/2016/04/01/5-on-demand-apps-for-emergency-services/. (4)

Self-Care for Friends and Family. (n.d.). Retrieved September 27, 2020, from <https://www.rainn.org/articles/self-care-friends-and-family>. (5)

Staff, Psyche Central. “Common Hotline Phone Numbers.” Psych Central, 6 Mar. 2019, psychcentral.com/lib/common-hotline-phone-numbers/. (6)

RESOURCES

- Tips for Talking with Survivors of Sexual Assault. (n.d.). Retrieved September 27, 2020, from <https://www.rainn.org/articles/tips-talking-survivors-sexual-assault>. (7)
- Questions & Answers on Sponsorship(2019). Alcoholics Anonymous World Services, Inc. https://www.aa.org/assets/en_US/p-15_Q&AonSpon.pdf. (8)
- Jain, A. (2019, April 09). Database Hacking & Its Prevention. Retrieved October 07, 2020, from <https://thecybersecurityplace.com/database-hacking-its-prevention/> (9)
- “Suicide Statistics and Facts.” SAVE, save.org/about-suicide/suicide-facts/. (10)
- “Preventing Suicide [Violence Prevention]Injury Center|CDC.” Centers for Disease Control and Prevention, Centers for Disease Control and Prevention, 21 Apr. 2020, www.cdc.gov/violenceprevention/suicide/fastfact.html. (11)
- “The Relationship Between Mental Health Care Access and Suicide.” RAND Corporation, www.rand.org/research/gun-policy/analysis/essays/mental-health-access-and-suicide.html.) (12)

RESOURCES

“Addiction Statistics - Facts on Drug and Alcohol Use.” Addiction Center, 18 Sept. 2020,
www.addictioncenter.com/addiction/addiction-statistics/. (13)

Duration of Suicidal Crises.” Means Matter, 7 Mar. 2017,
www.hsph.harvard.edu/means-matter/means-matter/duration/. (14)

Renninson, Callie. “Rape and Sexual Assault: Reporting to Police and Medical Attention.” Bureau
of Justice Statistics (15)

“Why Don't They Tell?” Nctsn.org. (16)

What Is Sexual Abuse?” Hope Alliance, www.hopealliancetx.org/sexual-assault-statistics/. (17)

50 Obstacles to Leaving.” The Hotline,
www.thehotline.org/resources/50-obstacles-to-leaving/. (18)

RESOURCES

“Find Support.” Aspergillosis Patients and Carers, 29 May 2020, aspergillosis.org/find-support/. (19)

“Support Groups.” MHA Screening - Mental Health America, screening.mhanational.org/content/support-groups. (20)

Basler AG. “Sales and Support: Basler.” Basler AG, 7 Oct. 2020, www.baslerweb.com/en/sales-support/. (21)

“The US System Didn't Protect These Women - so Now They're Taking a Stand for Others.” *Amnesty International*, www.amnesty.org/en/latest/news/2019/10/gun-violence-report/.(22)

Davey, Melissa. “Domestic Violence: Five Women Tell Their Stories of Leaving - the Most Dangerous Time.” *The Guardian*, Guardian News and Media, www.theguardian.com/society/ng-interactive/2015/jun/02/domestic-violence-five-women-tell-their-stories-of-leaving-the-most-dangerous-time.(23)

“How Long Does It Take for an Addiction to Develop?” *Drug Rehab*, www.drugrehab.com/addiction/how-long-does-it-take-to-develop/.(24)

RESOURCES

“SQL Injection Prevention.” OWASP, Open Web Application Security Project, cheatsheetseries.owasp.org/cheatsheets/SQL_Injection_Prevention_Cheat_Sheet.html (25)

Movil, Noticiero. “News.” Noticiero Movil, 22 Oct. 2016, noticieromovil.com/what-women-worry-about-when-theyre-out-at-night/(26).

“Parenting, Baby Names, Celebrities, and Royal News.” CafeMomcom, cafemom.com/lifestyle/215107-things-women-do-to-protect-themselves/255361-katz_then_compares_the_reaction_and_responses_from_the_men_in_the_room_to_the_women_and_unsurprisingly_they_are_drastically_different (27)

Dewan, Shaila. “Why Women Can Take Years to Come Forward With Sexual Assault Allegations.” The New York Times, The New York Times, 18 Sept. 2018, www.nytimes.com/2018/09/18/us/kavanaugh-christine-blasey-ford.html.(28)

“SCRUM Methodology.” Zaynab's Blog, Zaynabzahra, 7 Oct. 2017, zaynabzahrablog.wordpress.com/2017/10/07/scrum-methodology/. (29)