Lab 2 Section 3 – Product Requirements

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CS411W

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Section 3 Draft

Table of Contents

List of Figures

List of Tables

3 Specific Requirements

3.1 Functional Requirements

3.1.1 User Authentication (O: Yinka M: Grissom)

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

3.1.1.1 The applicationlication shall require account creation prior to authentication

3.1.1.2 The application shall require the user's first and last name

3.1.1.3 The application shall require the user to create a unique username between 2 and 20 characters in length

3.1.1.4 The application shall require the user to create a unique password 8-20 characters in length, containing at least one uppercase letter, one lowercase letter, one digit, one special character.

3.1.1.5 The application shall require the user to enter a valid email that may be used for recovery in the event of a forgotten username or password

3.1.1.6 The application shall store user credentials in the Care Corner system

3.1.1.7 The application shall provide the capability to require the user to authenticate after account creation.

3.1.2 Panic Button (O: Turner)

User’s who have created and logged into their account shall have access to the panic button. Access to this feature should be located from the user’s home screen, from the Fake Phone Call screen and from the Armed Safe Walk screen. Upon activation of the Panic Button, the application must:

1. Record the time of the activation.
2. Start recording audio.
3. Activate the phone's GPS location.

3.1.2.1 Incident Creation (O: Turner)

Upon deactivation of the Panic Button feature, the user must be prompted to input whether the scenario that caused them to activate the Panic Button was an incident that needs to be recorded, or if the scenario can be disregarded. If the user inputs that this scenario’s details should be recorded, then a new incident must be added to Care Corner’s cloud database. This incident creation must include the following information to be stored as part of it:

1. The user’s ID must be stored in the database.
2. The time that the Panic Button was activated must be stored in the database.
3. The time that the Panic Button was deactivated must be stored in the database.

4. The GPS data from the duration of the Panic Button’s activation must be stored on the server.
5. The address of the GPS data on the servers must be stored in the database.
6. The audio recording from the duration of the Panic Button’s activation must be stored on the server.
7. The address of the audio recording on the servers must be stored in the database.

3.1.2.2 GPS Location (O: Turner)

The application shall activate the user’s GPS location from the time the Panic Button feature is activated until it is deactivated. The user’s location shall be:

1. Shared with the user’s in-app contacts upon activation.
2. Tracked from the time the Panic Button is activated until the Panic Button is deactivated.
3. Stored locally on the user's phone until the user’s input whether the scenario that caused them to activate the Panic Button was an incident (3.1.2.1) or not.
4. Stored remotely in Care Corner’s cloud database if user inputs that the scenario that caused them to activate the Panic Button was an incident (3.1.2.1).

3.1.2.3 SMS messaging (O: Turner)

The application shall send a pre-set sms message to the user's in-app contacts when the Panic Button feature is activated. The SMS message must include:

1. .The User's name
2. The reason for the SMS message
3. The User's location
4. The exact time the Panic Button was activated.

3.1.2.4 Audio Recording (O: Turner)

The application shall start audio recording from the time the Panic Button is activated until the time that it is deactivated. This recording must be:

1. Stored locally on the user's phone until the user's input whether the scenario that caused them to activate the Panic Button was an incident (3.1.2.1) or not.
2. Stored remotely in Care Corner's cloud database if user inputs that the scenario that caused them to activate the Panic Button was an incident (3.1.2.1).

3.1.3 Armed Safe Walk (O: Prudner)

The Armed Safe Walk functional area provides monitoring of a user's walk and notifies contacts about the progress of the planned path. The following functional requirements shall be provided.

Upon activating Armed Safe Walk, the application must:

1. Request the user’s destination and estimated time of arrival:
    a. Display a prompt to capture the user’s destination address.
    b. Display a prompt to capture the user’s estimated time of arrival (ETA)
2. Send the destination and ETA to the Care Corner API.
3. Record the user’s destination and ETA in the database.
4. Track the user’s location throughout the walk.
5. Notify the user’s contacts of the status of the walk.
6. Record audio and video of the walk.
7. Provide access to the Panic Button during an Armed Walk.

3.1.3.1 GPS

The application shall begin recording the user’s location when Armed Safe Walk is activated.

1. The location must be captured using the Android GPS API.
2. The application must ask permission to capture the user’s location.
3. The application must allow the user to select the following location options:
    a. “While using the app”: Option to enable sharing the user’s permission anytime the application is used.
    b. “Only this time”: Option to provide location sharing one time.
    c. “Deny”: Option to deny sharing user’s location.
4. When the user permits sharing location:
    a. The application must send a location message to the Care Corner API.
    b. The API must record in the database the start of an Armed Walk for the

user, recording the location and timestamp.

5. When the user denies sharing the location, the application must cancel the Armed Walk functionality.

3.1.3.2 Notifications

The application shall notify and provide the user's location to all in-app contacts when Armed Safe Walk is activated, periodically throughout the walk, and upon arrival.

1. The application must send a location message to the Care Corner API.
2. The API must read the list of the user's contacts from the database.
3. The API must send a SMS to each contact in the list that contains.
4. The API must use Twilio to send a SMS message with:
    a. The user's name (potentially anonymized)
    b. The current location of the user
    c. A current timestamp of the user
    d. The estimated time of the user's arrival
5. The API must send a SMS message every 3 minutes with the state of the walk.
6. When the user arrives at the destination, the API must send a SMS message:
    a. The user's name (potentially anonymized)
    b.The current location of the user
    c. A current timestamp of the user
    d. A note that the user reached their destination
    e. The time of the user's arrival at their destination

3.1.3.3 Audio/Video Recording

The application shall begin recording audio/video when Armed Safe Walk is activated.

1. The audio/video must be captured using the Android Media Recorder.
2. The application must ask permission the first time to record audio/video.
3. The application must remember the user's permission choice.
4. The application must begin recording audio/video.
5. The application must store the audio/video to a local file store.
6. When the user reaches their Armed Walk destination:
    a. The application must ask the user to back up the audio/video.
    b. When the user confirms they want to backup their audio/video:
        1. The application must stream the audio/video to the API.
        2. The API must store the audio/video in a AWS S3 bucket.
        3. The API must record the timestamp, file location, and name of the audio/video.

3.1.4 Fake Phone Call (O: Webb)

The Fake Phone Call feature provides a way to get away safely from awkward or potentially dangerous situations by simulating a phone call for the user to have an excuse to leave. The following functional requirements shall be provided. Upon activating the Fake Phone Call, the application must:

3.1.4.1 The application shall collect what name is displayed when a Fake Phone Call is received.

3.1.4.2 The application shall collect what phone number is displayed when a Fake Phone Call is received.

3.1.4.3 The application shall simulate a phone call when the answer button is pressed.

3.1.4.4 The application shall activate the microphone and record the audio of the Fake Phone Call.

3.1.4.5 The application shall activate the camera and record the video of the Fake Phone Call before the fake call starts.

3.1.4.6 The application shall activate the panic feature when the end call button is held down for a set amount of time.

3.1.4.7 The application shall have multiple fake conversations to choose from that will output from the user's receiver.

3.1.5 Journal (O: Carpenter)

The journal functions shall provide the user a private place to put their thoughts into words. The following functional capabilities shall be provided.

3.1.5.1 The application shall keep the Journal password protected.

The application shall provide the capability to allow the user to:

3.1.5.2 Create new entries.

3.1.5.3 Edit existing entries.

3.1.5.4 Delete existing entries.

3.1.5.5 View a list of previously created journal entries.

3.1.5.6 Save new entries to the journal homepage.

3.1.5.7 Save existing entries to the journal homepage.

3.1.5.8 Return to the main menu from the journal homepage.

3.1.6 Mombot (O: Grissom)

The Mombot functions shall provide the user with helpful advice in response to the user's plans or activities. The following functional requirements shall be provided.

3.1.6.1 The application shall receive text input from the user.

3.1.6.2 The application shall be speech to text compatible.

3.1.6.3 The application shall identify keywords from the input to return the related advice.

3.1.6.4 The application shall provide the user with a suggested checklist of things to go over before the user goes out.

3.1.7 Reporting Assistance (O: Carpenter)

The reporting assistance functions shall provide the user with information on the different ways to report the assault. The following functional requirements shall be provided.

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

3.1.7.2 The application shall provide basic information about how the user can go about reporting the assault.

3.1.8 Resources (O: Grissom)

The resources function shall provide the user with trusted resources related to assault. Trusted resources will be government sources or non-profits. The following functional requirements shall be provided.

3.1.8.1 The application shall provide a listing of resources relating to assault in the form of trusted blogs.

3.1.8.2 The application shall provide a listing of resources relating to assault in the form of national hotlines.

3.1.8.3 The application shall provide a listing of resources relating to assault in the form of government sources.

3.1.8.4 The application shall provide the capability to find shelters based on user location.

3.1.8.5 The application shall provide the capability to find counselors based on user location.

3.1.8.6 The application shall provide these features without requiring login.

3.2.Performance Requirements

3.2.1 Application Performance

3.2.1.1 The application shall be written efficiently enough to land the user on the home screen of the application within 5 seconds of opening it. (O: Turner M: Grissom)

3.3.Assumptions and Constraints

3.3.1 The application requires internet access to store and retrieve data and files from the cloud servers and database. (O: Carpenter) If this constraint turns out to be false, it would affect the requirements by limiting the functionality of the application. Data will be stored locally on the user's device so previously located resources can still be accessed and the user can still record their trips with audio and video.

3.3.2 The application requires Android KitKat(4.4) OS or Higher. (Yinka M: Grissom)

3.3.3 The application requires access to a functioning microphone on the user's device. (O: Grissom) If this constraint turns out to be false, it would affect the requirements by limiting the functionality of the application. Audio will no longer be recorded and stored.

3.3.4 The application requires the user's device to have a functioning rear facing camera. (O: Webb)

3.4.Non-Functional Requirements

3.4.1 Security

3.4.1.1 Passwords (O: Prudner)

Passwords must be used to secure protected areas of the application.

A PIN must be used to access the journal area of the application.

3.4.1.1.1 Protection of account

The application must require a password to access an account.

When accessing an account, an authentication form will be presented for the usr to enter a password.

The application must prompt for password when a user is logging in or a session has timed out.

3.4.1.1.2 Protection of journal

The application must require a personal identification number (PIN) when accessing the journal.

When accessing the journal, a form must prompt the user to enter a valid PIN.

3.4.1.1.2 Password complexity requirements

Passwords must follow OWASP guidance for complexity:

1. A password must be a minimum of 8 characters.
2. A password must be a maximum of 64 characters.
3. The application must allow usage of all characters for passwords.

3.4.1.2 API (O: Turner M: Grissom)

The applications APIs will be managed through AWS API Gateway. The application's APIs will be RESTful and conform to the REST architectural style.

3.4.1.2.1 API Keys (O: Turner M: Grissom)

The API gateway must be designed to require the appropriate API keys be included for any API request passed to the server.

3.4.2 Maintainability (O: Carpenter)

Care Corner has a low-maintenance procedure to keep updated through allowing an easy update and maintenance of system servers. Additionally, Care Corner follows internet security protocols and information security guidelines. Maintenance procedures also include verifying that websites and phone numbers stay up-to-date. These maintenance procedures are conducted semiannually.

3.4.3 Reliability (O: Yinka M: Grissom)

3.4.3.1 Fault tolerance

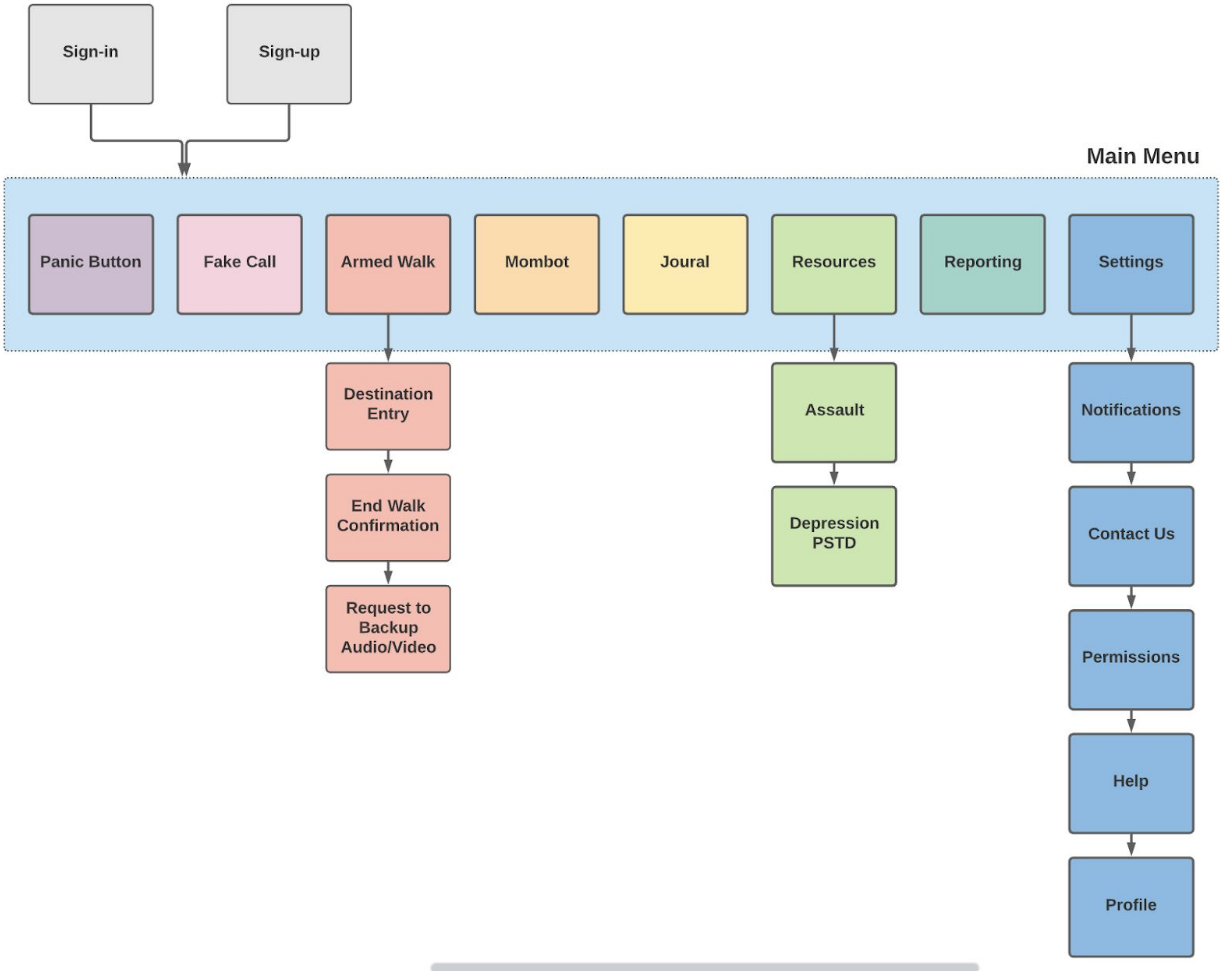
3.4.3.1.1 AWS Serverless

3.4.3.1.2 Five nines: 99.999%

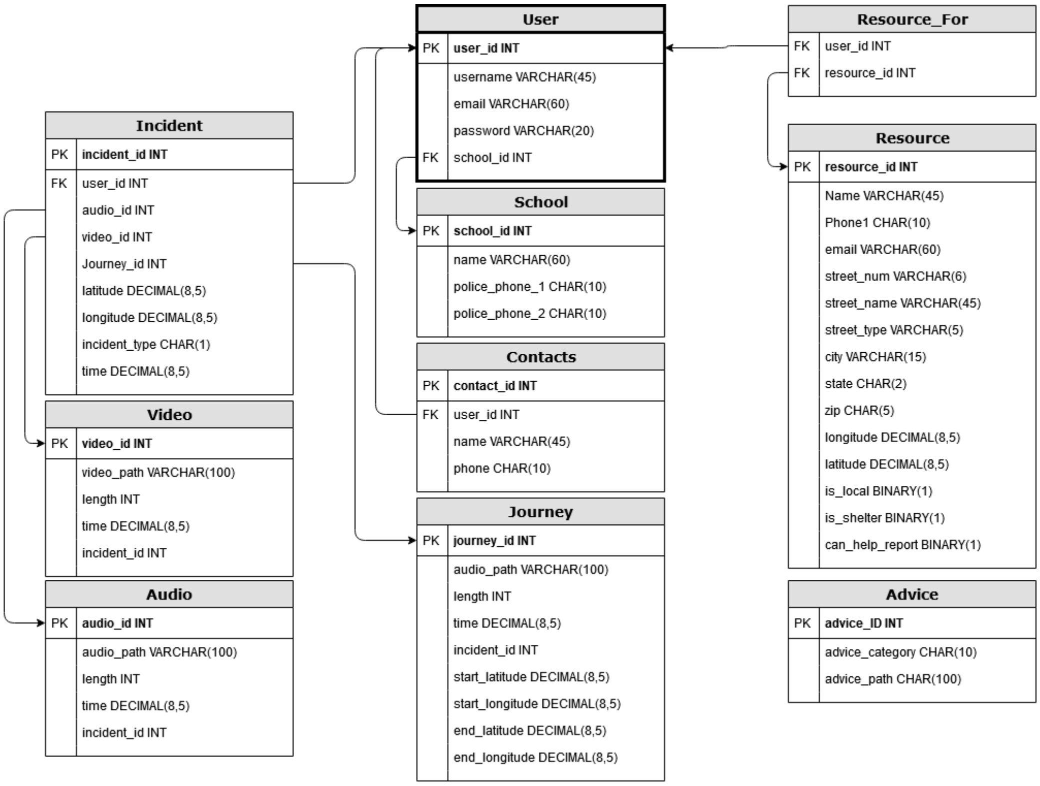
3.4.3.1.3 Multi-region

3.4.3.2 Database backups

Appendix A - Site Map



Appendix B - Entity Relationship Diagram



	User
PK	**user_id INT**
	username VARCHAR(45)
	email VARCHAR(60)
	password VARCHAR(20)
FK	school_id INT

	Resource_For
FK	user_id INT
FK	resource_id INT

	Incident
PK	**incident_id INT**
FK	user_id INT
	audio_id INT
	video_id INT
	Journey_id INT
	latitude DECIMAL(8,5)
	longitude DECIMAL(8,5)
	incident_type CHAR(1)
	time DECIMAL(8,5)

	School
PK	**school_id INT**
	name VARCHAR(60)
	police_phone_1 CHAR(10)
	police_phone_2 CHAR(10)

	Resource
PK	**resource_id INT**
	Name VARCHAR(45)
	Phone1 CHAR(10)
	email VARCHAR(60)
	street_num VARCHAR(6)
	street_name VARCHAR(45)
	street_type VARCHAR(5)
	city VARCHAR(15)
	state CHAR(2)
	zip CHAR(5)
	longitude DECIMAL(8,5)
	latitude DECIMAL(8,5)
	is_local BINARY(1)
	is_shelter BINARY(1)
	can_help_report BINARY(1)

	Contacts
PK	**contact_id INT**
FK	user_id INT
	name VARCHAR(45)
	phone CHAR(10)

	Video
PK	**video_id INT**
	video_path VARCHAR(100)
	length INT
	time DECIMAL(8,5)
	incident_id INT

	Journey
PK	**journey_id INT**
	audio_path VARCHAR(100)
	length INT
	time DECIMAL(8,5)
	incident_id INT
	start_latitude DECIMAL(8,5)
	start_longitude DECIMAL(8,5)
	end_latitude DECIMAL(8,5)
	end_longitude DECIMAL(8,5)

	Audio
PK	**audio_id INT**
	audio_path VARCHAR(100)
	length INT
	time DECIMAL(8,5)
	incident_id INT

	Advice
PK	**advice_ID INT**
	advice_category CHAR(10)
	advice_path CHAR(100)