Common Sense

Android Application

Design Document

v2.0

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High Level Design

The purpose of this application is to promote Common Sense, a persistent antimicrobial solution. Users will be required to create a login so that their name, address, location, etc. may be stored. The app will contain features that potential users of Common Sense may be interested in. Access to important health information in the form of news from the CDC and FDA will help keep users up to date and safe. It will also allow users to view their local weather and what effects it could have on their health. The app can be used to find where the product is sold and where it has been used to treat a location. A store is available to users would prefer to order the product through the application. The user will also be able to change their settings in the profile page. The app will also have a widget that the user can add to their phone's home screen which will display news articles.

Problem solving approaches

So far, there haven't been too many problems that were difficult to solve. The only one that really stands out is that we had a lot of ideas for what we could put into this app and had to narrow it down so that the app didn't become to cumbersome for a user to interact with and because we're limited on development time.

Another problem we had was how the store would be handled. Originally the idea was to make the store in the app and to handle everything there, however, the company that we're developing this app for already has a store website. After talking with the company, it was decided that we would simplify the app by linking the store to the website, rather than have an in-app store. With this simplification, we would then devote more time into accomplishing some of the stretch goals that the company would like to see implemented.

Goals for Midterm Presentation

For the midterm presentation, we are hoping to have most of our app functional. Users will be able to login with their Google account and have their information stored on our database. They will then be able to view the weather, the news, and a map of areas that sell or are treated with Common Sense. Users will also be able to access the store and modify their profile on the app. The app will pull information from the database for user logins, the news articles, and the locations of Common Sense use.

Division of Labor

Darron Herbert will be working on integrating the weather functionality into the app. This includes getting location info from the user, getting weather information for that location from a third party API, and displaying this information to the user.

Dominic Nolt will mainly be working on connecting the android app to the database using php code. This would include functionalities such as login, register, forgot password, storing additional user information (e.g. address and zip code), and a persistent user login so that when the user closes and reopens the app, they won't have to re-login every time.

Tyler Robinson will be developing and maintaining the MySQL database. This involves the creation, structuring, and connecting of tables and views. He will also be assisting Dominic with the PHP code and configuration of the web server. Tyler also developed a standalone Java program for managing locations in the database.

Jason Renna will be working on figuring out how to get a reference to the map being created to not return null. The result of the map not returning null will allow the camera view to be changed according to user input that is going to be geocoded to return a longitude and latitude. The geocoding will then be implemented and function skeletons will be set up for later integration with the database.

Dylan shapiro will be working on figuring out how to web mine health related new articles and formating the webdata that was scraped for use in the news tab. The news tab would include title of the article and maybe small description and or the subject of the article with a link to the actual article. Dylan will be using python programming language to do all the web mining and will save the data web mined everyday into the database for the user to load in the app. Dylan will also be creating the widget to display the news articles.

Joe Hammer will be implementing the Profile Page so that users may access and change their settings and preferences. The Profile Page will contain an entity that allows users to get an estimate for the amount of product and cost associated with it to have their home or workplace treated. After the Profile Page is complete, Joe will assist other team members and work on stretch goals.

Nick Scaramuzzi will be helping with the storing of web crawled data into the MySQL database. Additionally the information pulled from the web must be re-formatted for the application. This operation will be important since we would like users to be up to date on all major health news. Everyday the data will updated to the database and every day the same data will be reformatted for the application. Along with that others when needed.

Screens

When the app is opened the user will be asked to login. First-time users will create an account using their Google Account. Once they have logged in they will be on the News screen which features up to date news from the CDC and FDC. The other screens of the app include the Weather, Map, Store, and Profile.

The Weather is obtained using OpenWeatherMap's API. This allows us to determine the weather based on a user's location and obtain a variety of information related to it. This information is also used to determine different health risks related to the current weather conditions.

The News for the app will be obtained with a web crawler developed in Python. This crawler will search various news sources such as the FDA and CDC daily and it will store those articles on the database. When the user opens the news, the articles will be displayed to them.

The Map is obtained using Google Maps' API. This will show users where they can purchase Common Sense as well as what locations have been treated by the product in the area around the user's location.

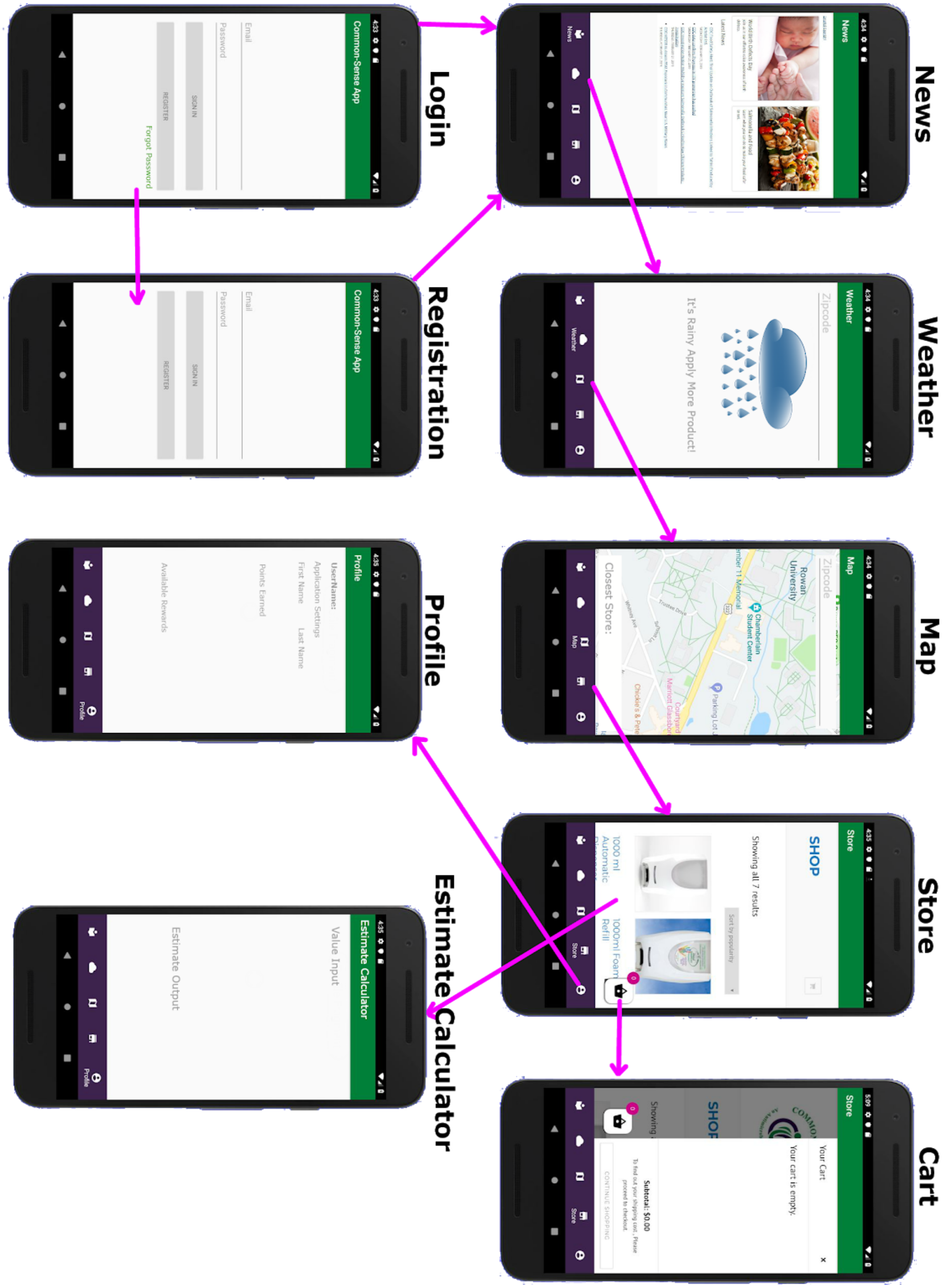
The Store will allow users to access the website's store where they can view and purchase the products.

The Profile will contain all the user's settings and details which they can access and change. It will also contain a button that brings the user to the Estimate Treatment Cost.

Screen Navigation

We designed the app to be easy to navigate. The app opens with the login screen, once the user has logged in they are brought to the News screen. On every screen, the bottom part of the app shows an array of screen choices: News, Weather, Map, Store, and Profile. Tapping on the bottom navigation will transfer the user to the corresponding screen.

Flow Diagram



Technology Stack

The front end for the app is being developed in Android Studio using Java. The user interface uses XML for its layout and design. Since the app is only being developed for Android, we're using a combination of emulated hardware and Android devices for testing the software.

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The Map is obtained using Google Maps' API. This will show users where they can purchase Common Sense as well as what locations have been treated by the product.

The backend for the application is using a database developed in MySQL and being linked to the app using PHP code.

The location manager is written in Java and uses JCraft JSch library to establish an SSH connection to the remote server and JDBC to connect to the MySQL database.

Backend Information

The backend of this app consists of PHP code that will communicate with a remote MySQL database hosted on an AWS. This backend will be responsible for querying the data for user information, news and weather updates pulled from the relevant web crawlers, and the locations of areas related to Common Sense Hand Sanitizer. The results of these queries will then be processed and presented to the user through the front end application. A web crawler will search for health related news articles from sources such as the CDC and FDA, which will be supplied to the user. The backend will also be responsible for taking user entered information, such as names, email addresses, and physical addresses, and storing them in the MySQL database appropriately.

Authentication and Security

When users create an account with us by using their Google Account, we create an accountID for them. As developers, we know that privacy is an important ethic to maintain with our users so we only take their details that the app's features will use. The details that we will store in our database include the user's first and last name, their accountID, their ZIP Code, and the amount of points they have earned. The user's password will also be stored in the database as a hash value, so their password will be kept private and protected, without the actual information being stored in the database. The user will also be prompted to allow/deny access to various functions, such as allowing the app the pinpoint the user's current location so the map screen can be more precise and helpful to the user.

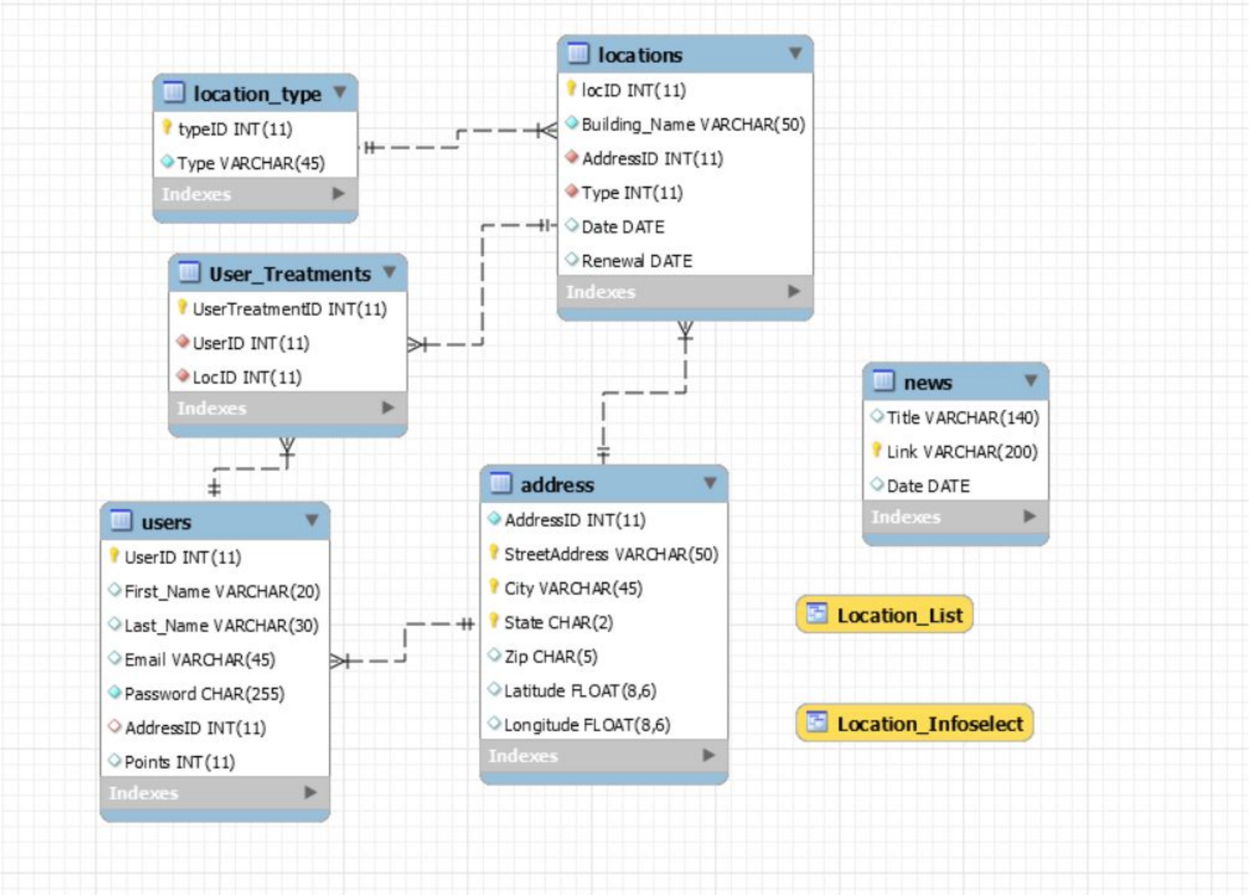
Input and Output

In this app, there aren't too many input/output opportunities. The user must create an account, and once all the information is filled out, and will be taken back to the login screen. Once the user inputs their correct login information, they will be taken to the news screen where they can begin looking at the various sections of the app. The user may also input their address in the profile settings screen if they want to use their location to gather the weather/map data.

In the profile screen, there will be a button that takes you to the room estimate calculator. Since the company we're working with provides room cleaning services, this calculator can be used to provide the user with an estimate of how much it will cost to clean a room of the inputted dimensions, as well as, possibly, an estimate of how long the process will take.

In the map screen, there will be an text input for the user to provide an address. The address will output a longitude and latitude from geolocation. The longitude and latitude will then be used as input to retrieve sales and treated locations from the database to set as map markers.

Database Schema



Endpoints

The endpoints are labeled in the form of REQUEST TYPE /endpoint/url/. Inputs to an endpoint are denoted by brackets.

POST /common_sense_register.php/{first_name}/{last_name}/{email}/{password}

Creates a new profile using the user inputted information. Returns the new profile.

POST /common_sense_login.php/{email}/{password}

Returns UserID if email and password match information in the database, otherwise returns false.

POST /common_sense_forgot_password.php/{email}

Sends a reset code to the user inputted email. returns the randomly generated reset code.

POST /common_sense_update_profile.php

Updates a profile using the information within the JSON. Returns the updated profile information.

POST /common_sense_update_news.php

Returns news article information including headline, summary, date, and link in the form of JSON.

POST /common_sense_update_weather.php/{zip_code}

returns basic weather information taken from the location nearest the user's location in the form of JSON.

POST /common_sense_update_map.php/{address}

returns addresses of places that sell common sense sanitizer or have been treated with common sense sanitizer near the user's inputted address in the form of JSON.