C868 – Software Capstone Project Summary

Task 2 – Section C

Capstone Proposal Project Name: Up To You

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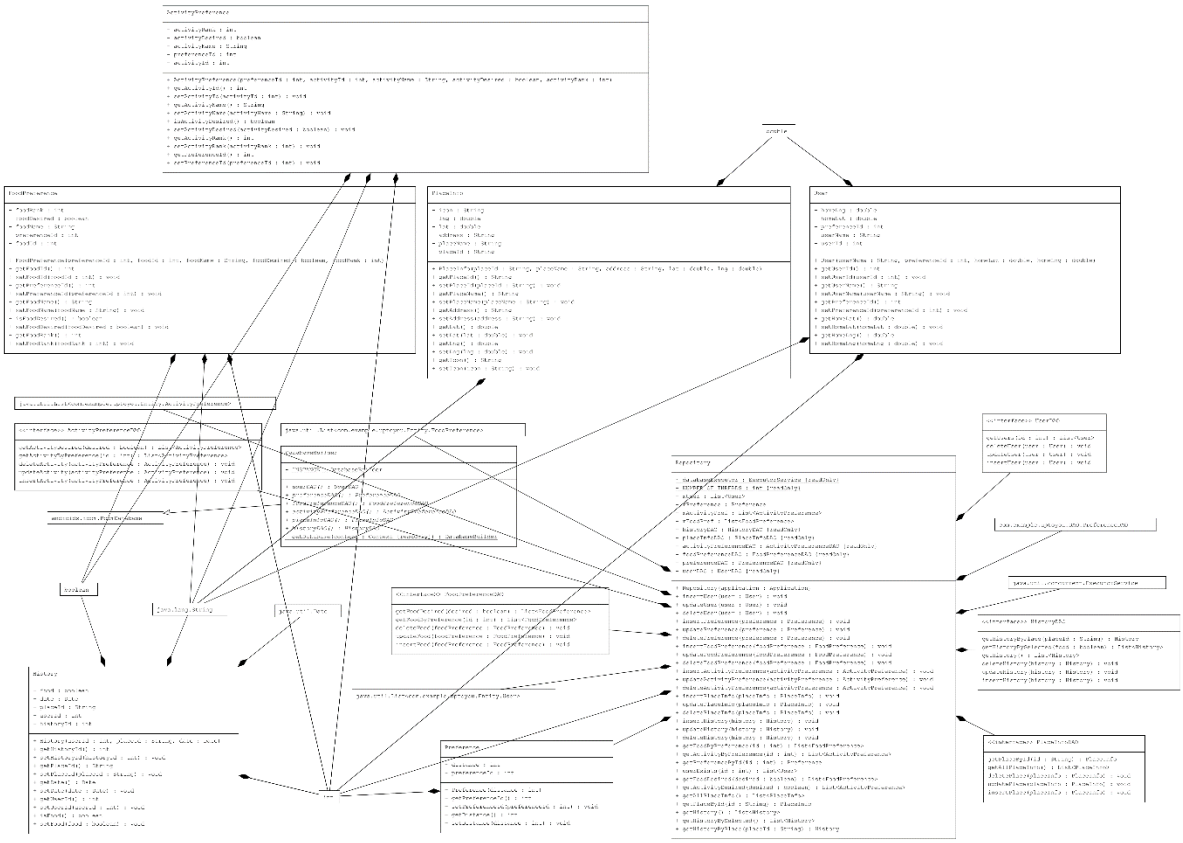
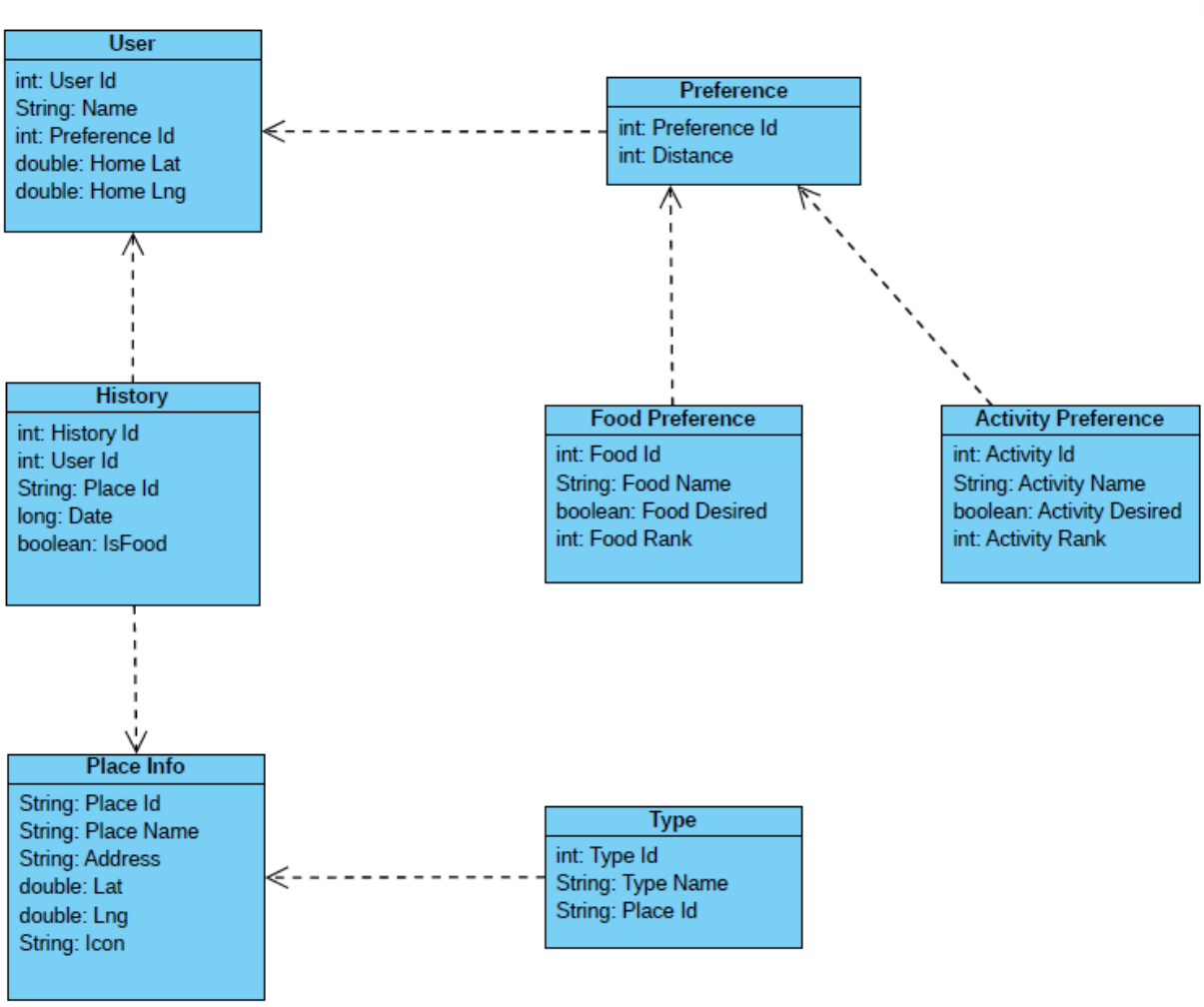
Design Document

Class Design

The figures below show the class design for the entities specific to the database portion of the application. These entities are crucial to the functioning of the application and are not only used as the objects for the which most of the application is based but also are the actual database objects that are saved on the local device in an SQL database. We have leveraged the Room database library to automatically create the backend using the classes provided. There are two images, one is a direct export from the Android IDE which depicts the entities and their relationships within the class structure. The other is a simple ERD that shows the same information but in a more uniform and easier to read image.

These documents show the entities' specific relationships with each other within the back end of the application. It may also be evident after observing the software that some of these entities are not all currently in use. This is purposeful as the software was designed specifically for future improvements and scalability in mind. Currently the application does not utilize a login system or identify individual users, instead it creates a local user automatically on runtime which is specific to the device, but backend planning will allow for this functionality in the future with other improvements.

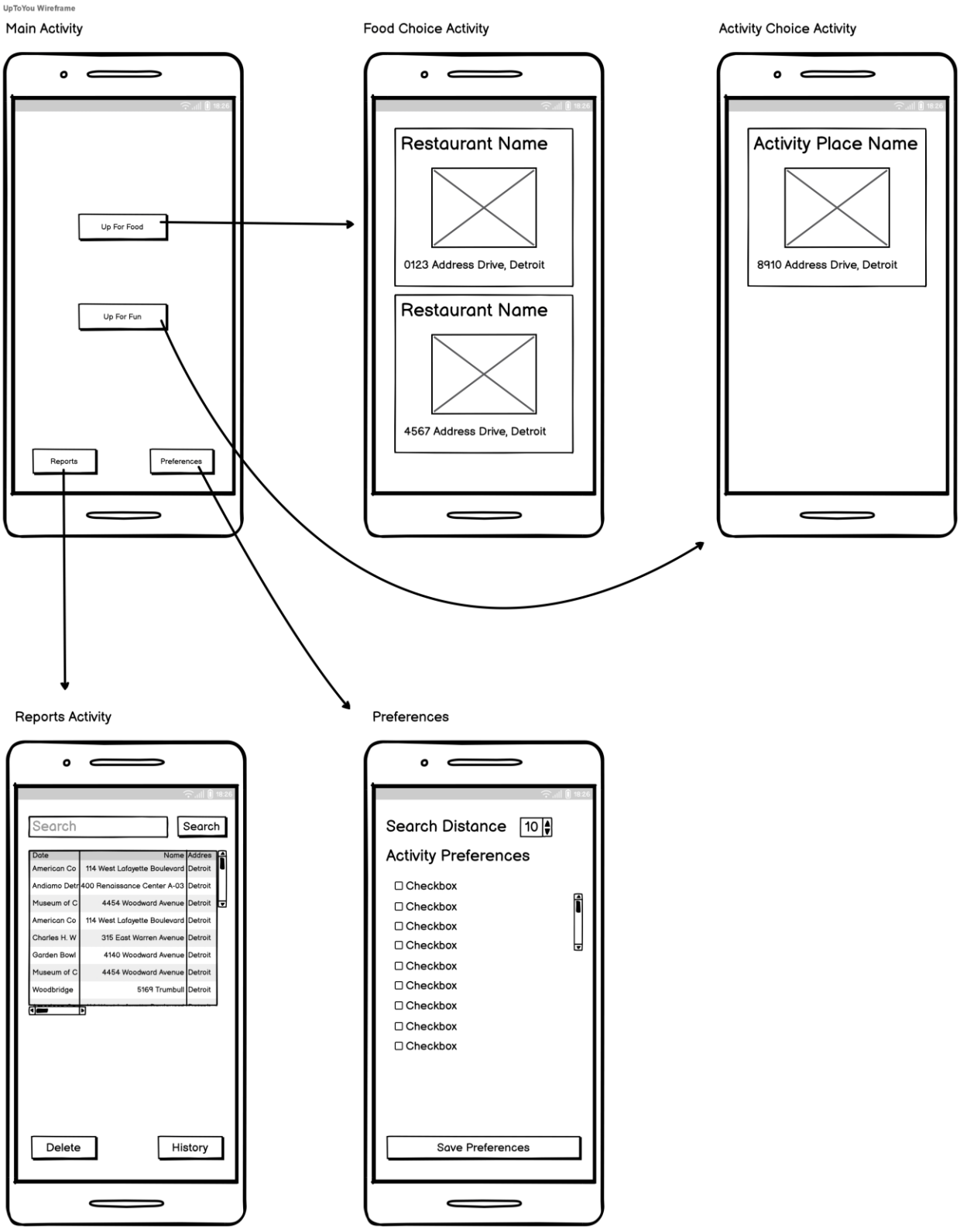




UI Design

Below is an initial low fidelity wireframe of the application. All the screens that the user might interact with are present. It also displays user paths for each screen interaction for a more intuitive visual of the user experience. In addition to the low fidelity wireframe, there are also high-fidelity images of the application.

Up To You


UpToYou Wireframe
Main Activity
Up For Food
Up For Fun
Reports
Preferences
Food Choice Activity
Restaurant Name
0123 Address Drive, Detroit
Restaurant Name
4567 Address Drive, Detroit
Activity Choice Activity
Activity Place Name
8910 Address Drive, Detroit
Reports Activity
Search
Search
Date
Name
Addres
American Co
114 West Lafayette Boulevard
Detroit
Andiamo Detr
400 Renaissance Center A-03
Detroit
Museum of C
4454 Woodward Avenue
Detroit
American Co
114 West Lafayette Boulevard
Detroit
Charles H. W
315 East Warren Avenue
Detroit
Garden Bowl
4140 Woodward Avenue
Detroit
Museum of C
4454 Woodward Avenue
Detroit
Woodbridge
5169 Trumbull
Detroit
Delete
History
Preferences
Search Distance
10
Activity Preferences
Checkbox
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Checkbox
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Checkbox
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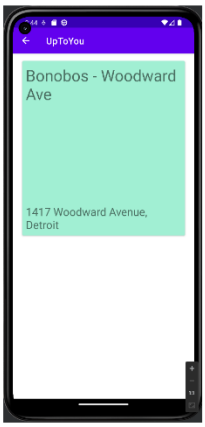
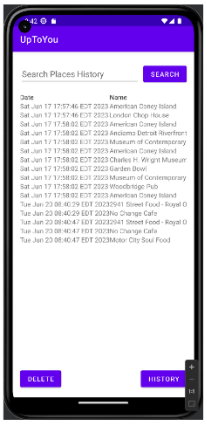
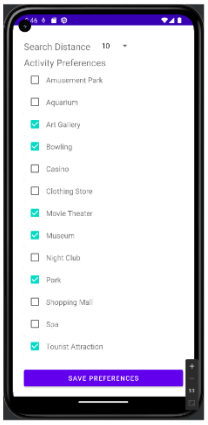






Test Plan

Overview

The test plan for this project is a multipronged approach including simple unit tests as well as user acceptance testing. This will ensure our code base is doing what is expected for the functions we have and ensures the customer is satisfied with the product's use. We will be utilizing the JUnit library to implement the unit testing within the Android Studio IDE. User acceptance testing will be performed by both the development team and the project stakeholders.

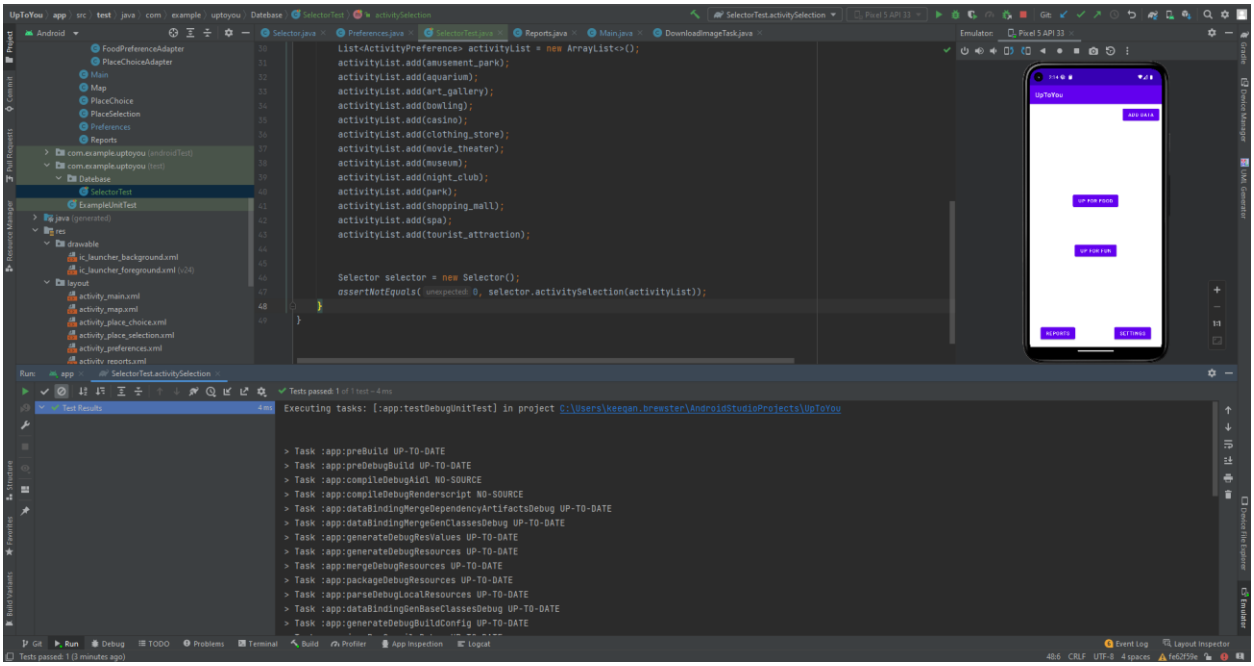
Unit Testing

Unit testing is performed for the core function of our Activity Search button which selects an activity in the Detroit area to do based on user preferences. We will be utilizing JUnit library to facilitate this testing and so it must be added as a dependency within our application. This is set in the "dependencies" section of the Gradle Build file for library version 4.13.2 and will need to be implemented with the following line. We are using JUnit version 4 instead of version 5 because there are

some known issues with the way version 5 interacts with Android Studio and we want to avoid any potentially unnecessary false positives or negatives during our testing.

- testImplementation 'junit:junit:4.13.2'

The function in the Selector class of the application we are focusing on here is specifically for randomly selecting one of the activity preferences that the user has set in the settings page for what they would prefer to do as an activity. This is important to the functionality of the application because the idea is that the selection of activities should be semi random. The class returns an integer which is the id for the activity preference to identify what to search in the Google Places API. Since the method sets a temporary integer to the value of zero which is replaced by the value of the activity id. We tested to verify the application does not return the value of 0 thereby having a valid activity id. The testing was successful, and the results can be viewed in the image below.



Additional Unit tests can also be implemented to check the functionality of the Room Database and validate the methods in the DAO classes. These tests would validate that the insert, delete, and update methods are working for each item. Also included in this section of unit tests would be the validation of the queries used in each of the DAO classes; including methods that are pulling Place Info data based on the place id.

A third section of unit testing includes the validation of the network functionality of connecting to Google Nearby Places API utilizing the Retrofit 2 library. Similar to the Room Database unit testing, these unit tests would validate the functionality of the of network calls made through Retrofit. Ensuring that the calls properly return appropriate JSON data information from the URLs used to find the nearby places in the application.

User Acceptance Testing

During the last portion of testing, we perform User Acceptance Testing that is completed by a sampling of individuals from public or a specialized testing service. Additionally, stakeholders for the project will be involved in this portion of the testing process. They will be given the completed application and asked to perform certain actions and steps with the application. Their feedback will be the last portion of the application development process which will help the development team to better cater the application functionality to the users' needs and enable the application to feel as intuitive as possible.

Guides

Maintenance Guide

This section will go into some detail on how to manage the application for future use by other administrators or developers. The application itself is relatively simple in terms of its functionality and limits user inputs so it would be difficult to break but for purposes of future development individuals will need the following:

Prerequisites

- Android Studio: Version Chipmunk or greater
- Mobile Phone emulator (contained within Android Studio): Pixel 5 API level 33

Installation

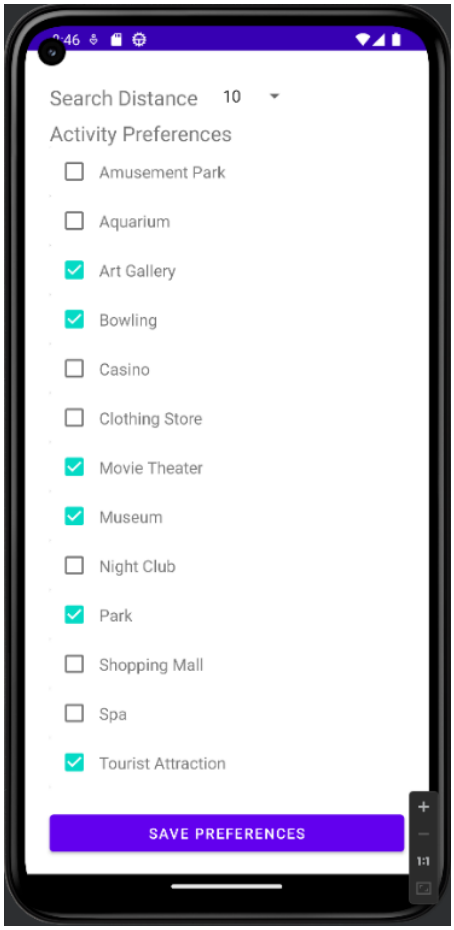
1. Open Android Studio device emulator
2. Drag Signed app-released.apk file onto emulator device to install the application.
3. Launch Up To You app
4. Add fake/dummy data to the database.
    a. For testing and ease of use purposes there is a button on the main activity screen that will add information to the database for you and can be viewed in the reports page of the application.

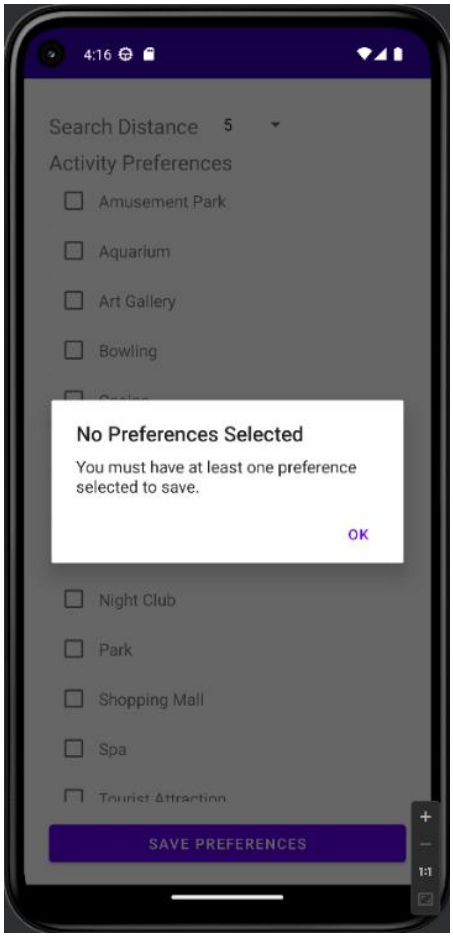
User Guide

There is little input required on the part of the user to maximize the functions of the application, this is by design. The application is purposefully meant to be easy to use and requiring little forethought or effort for the user, but we will discuss here the guide for the user. Upon launching the application, it will bring the user to a main screen displaying 4 buttons labeled as the following: Up For Food, Up For Fun, Reports, and Settings.

Settings:

This button takes the user to a screen which allows them to specify their preferences for a distinct activity in the Detroit area. A list of checkable boxes is present that identifies all the options. Users can check multiple different options for what they may find interest in but will be unable to save the preferences unless at least one option has been selected. An alert message is displayed in the case of this no selected options and the users is made aware that the changes were not saved. Additionally, the screen provides a drop down at the top which allows users to set their preferred search distance for locations of both activities and food. This distance will be used as a radius for the area around which they would like to search; distances include the following: 5 miles, 10 miles, 20 miles, or 30 miles.





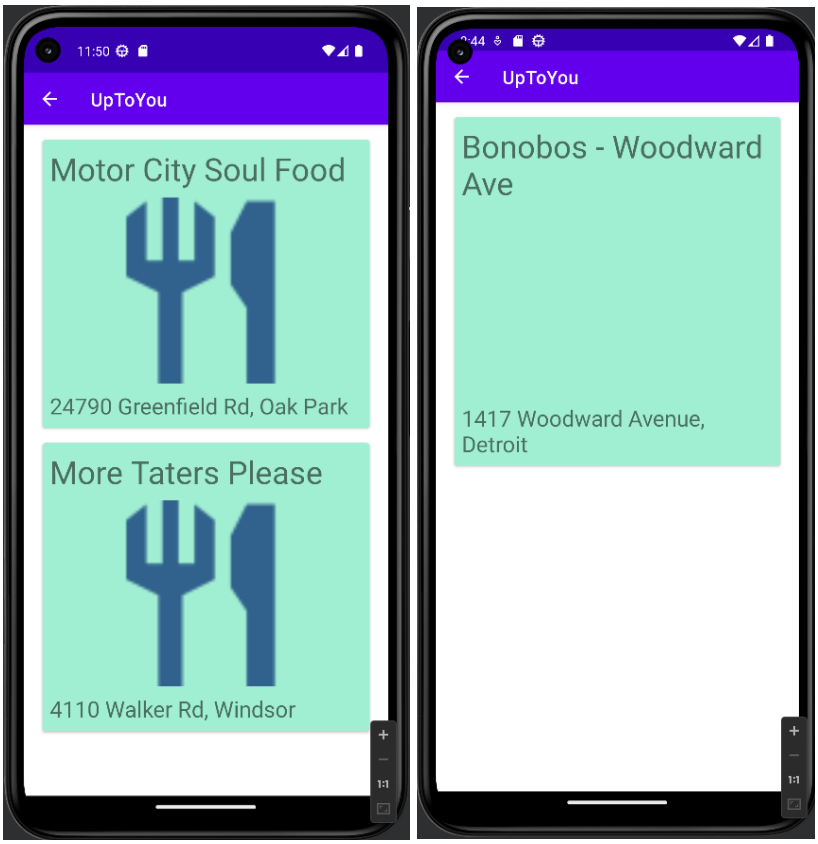
Up To You

Up For Food:

This button will take the user to a new screen that will display two result options for food in Detroit within the designated search radius area that was defined by the user in the Settings screen of the application. The name of the option will be displayed along with the address for the establishment and an icon indicating if it is a restaurant or bar. This makes picking a place to eat an easy task and finds a location to eat in the vicinity of the city. Locations that are selected will be saved to the local database and can be viewed at a later time in the Reports screen of the application. When the user is finished they can press the back button to return to the main screen of the application.

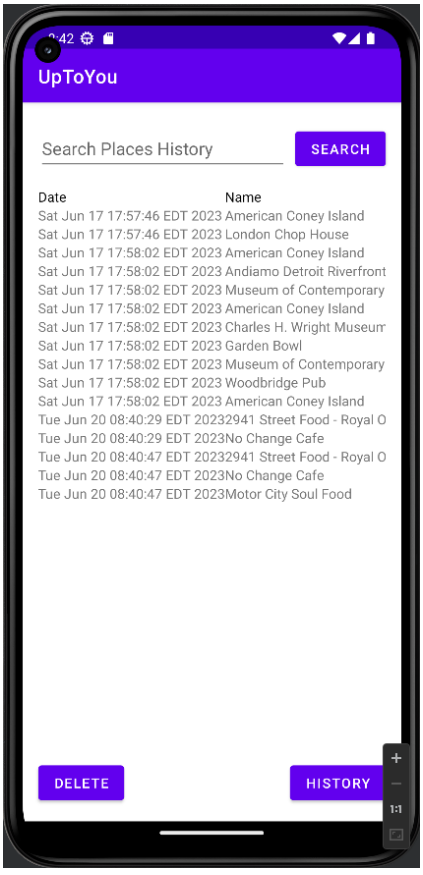
Up For Fun:

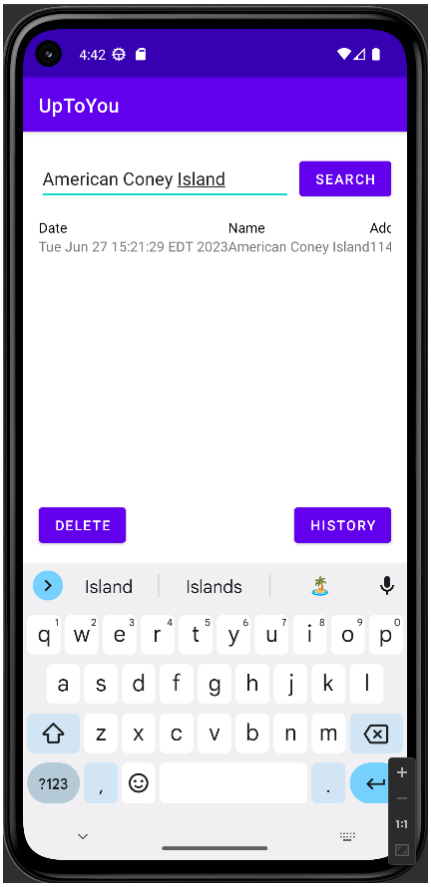
This button has a similar functionality to that of the “Up For Food” button, however it will only provide a single option and display that. It randomly selects one of the identified activities that the user set as their preference in the settings screen and produces a location to display after. The location is saved to the local database on the device and can be viewed at a later time in the Reports screen of the application. When the user is finished they can press the back button to return to the main screen of the application.



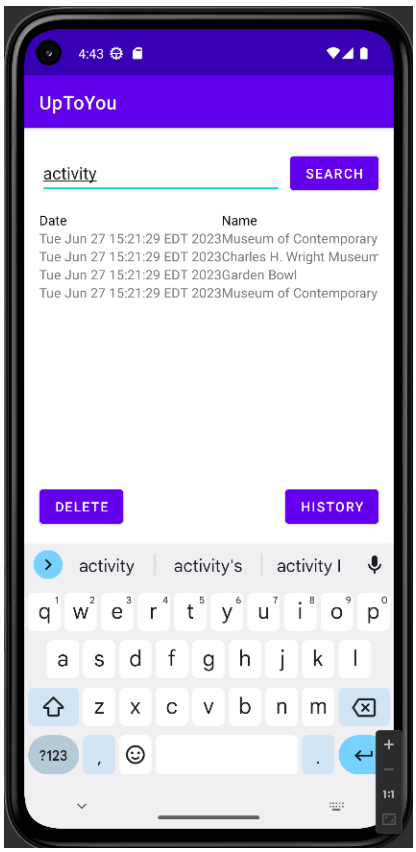
Reports:

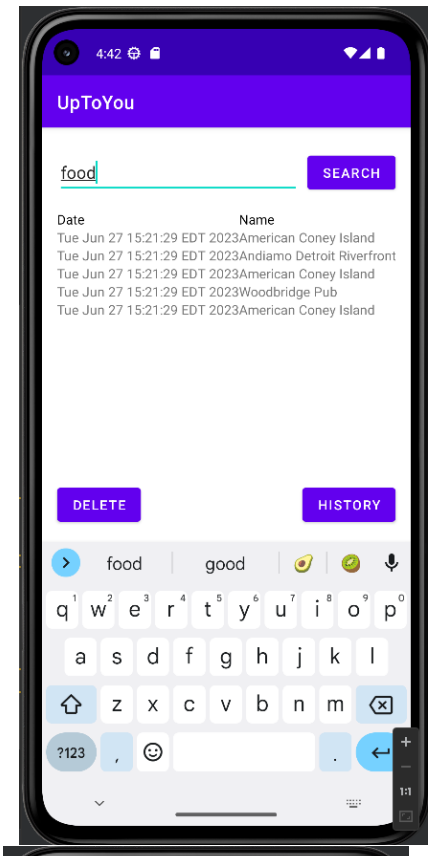
The reports button takes the user to a screen which displays the previous locations that were discovered while using the application. The user history is displayed in a table format which shows the date and time when the location was added to history, the name of the location, and the address of the location. Users are able to clear the application history for locations using the delete button at the bottom left of the screen. An attempt to delete the history will first warn the user and ask for confirmation before it deletes all the historical data. Additionally, users are able to use the search bar at the top of the screen to find specific locations. Searches are only complete by exact name of location and the displayed results will be for each time the user has observed the location within the application. Additionally, users are able to search history by restaurant or activity. The user can simply type “food” in the search bar and it will display only history for restaurant locations, and if they type “activity” in the search bar it will display results for only non-restaurant locations. Clicking delete will always wipe the entire history from the application regardless of the search currently displayed. Clicking the history button in the bottom right of the screen will display the entire history of location again.

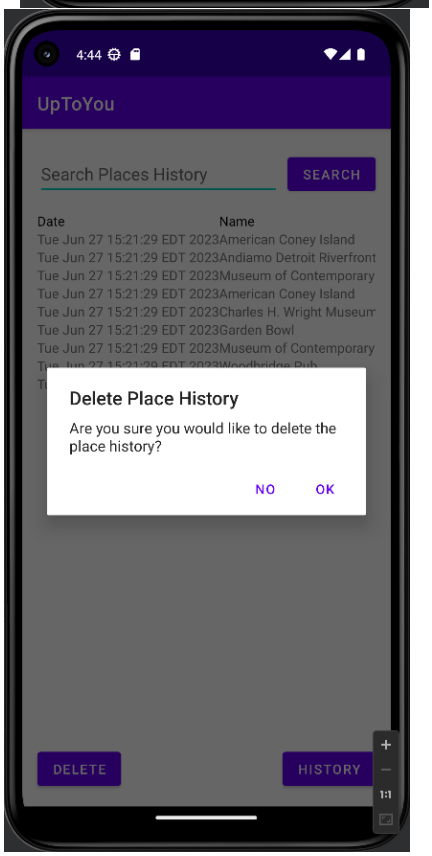




Up To You


4:43
UpToYou
activity
SEARCH
Date
Name
Tue Jun 27 15:21:29 EDT 2023Museum of Contemporary
Tue Jun 27 15:21:29 EDT 2023Charles H. Wright Museum
Tue Jun 27 15:21:29 EDT 2023Garden Bowl
Tue Jun 27 15:21:29 EDT 2023Museum of Contemporary
DELETE
HISTORY
activity
activity's
activity I


4:42
UpToYou
food
SEARCH
Date
Name
Tue Jun 27 15:21:29 EDT 2023American Coney Island
Tue Jun 27 15:21:29 EDT 2023Andiamo Detroit Riverfront
Tue Jun 27 15:21:29 EDT 2023American Coney Island
Tue Jun 27 15:21:29 EDT 2023Woodbridge Pub
Tue Jun 27 15:21:29 EDT 2023American Coney Island
DELETE
HISTORY
food
good


4:44
UpToYou
Search Places History
SEARCH
Date
Name
Tue Jun 27 15:21:29 EDT 2023American Coney Island
Tue Jun 27 15:21:29 EDT 2023Andiamo Detroit Riverfront
Tue Jun 27 15:21:29 EDT 2023Museum of Contemporary
Tue Jun 27 15:21:29 EDT 2023American Coney Island
Tue Jun 27 15:21:29 EDT 2023Charles H. Wright Museum
Tue Jun 27 15:21:29 EDT 2023Garden Bowl
Tue Jun 27 15:21:29 EDT 2023Museum of Contemporary
Delete Place History
Are you sure you would like to delete the place history?
NO
OK
DELETE
HISTORY