

**Mobile Technologies (11492 & 9076)**  
**Assignment 2**  
**Location Tracker – Android Mobile App**

**Submission date: 23:59 Friday 21/4/2023 (Week 11)**

**Type:** Individual assignment

**Total marks: 30**

**Submission:** Use **Android Studio** to **export your project to a zip file** then submit this file to the submission box for Assignment 2 on Canvas site of this unit. Email submission is not accepted.

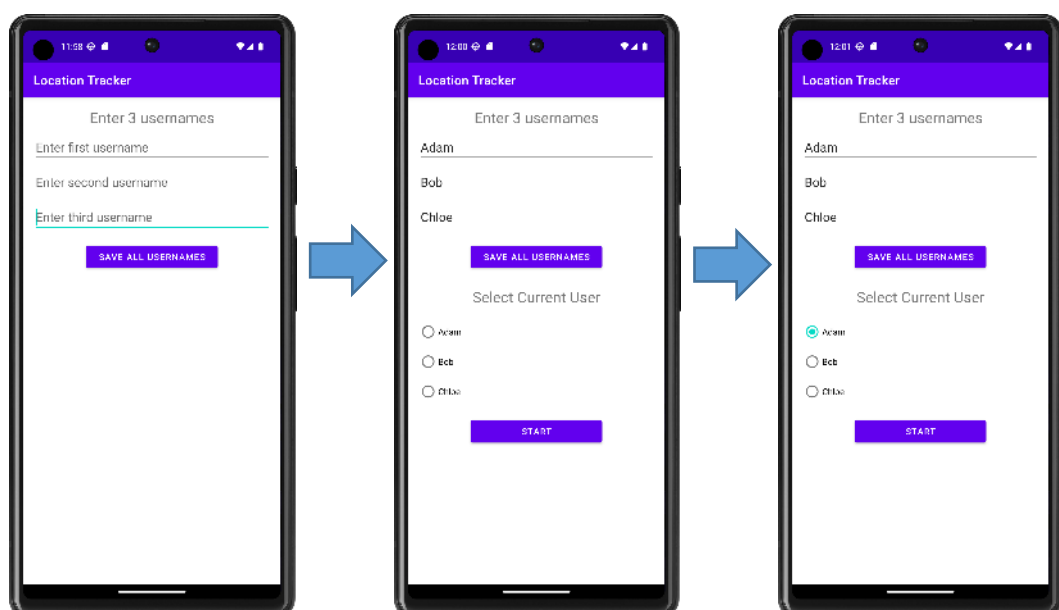
**Late submission:** 5% of the total marks (i.e., 1.5 mark) per day.

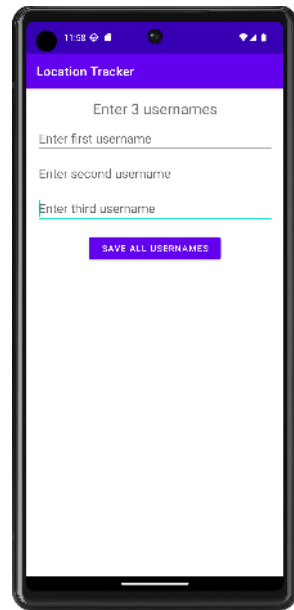
**Task: Complete the implementation of the Android mobile app for tracking locations in Assignment 1 with the requirements listed below**

- Use the Android Studio project implemented for Assignment 1.
- The app requires location data from 3 different users, where one user is selected as the current user and the other two are regarded as registered users. The usernames are stored in a local SQLite database.
- The app can upload last known location of the current user to Firebase Realtime Database.
- The app can download all locations of the current user and a registered user from Firebase Realtime Database and display those locations on the Google map.
- The app can show the distance between the latest location of the current user and that of the registered user and the driving time between those two locations.
- The user can rotate the emulator or phone without changing the status of the app. This requirement is applied to all statuses of the app.

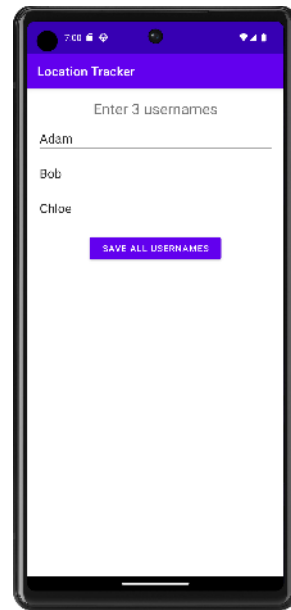
Below are details of the requirements and screenshots that show how the app works (they are from **Pixel 6 API 33** emulator; however, you can use other emulators or phones to run this app).

- Start the app on an emulator or phone. You enter 3 usernames then click the **Save All Usernames** button: a text view, 3 radio buttons and a button appear. These usernames are stored in an SQLite database and showed on the app if you run the app again. If you change those usernames and save them, SQLite will update its database.



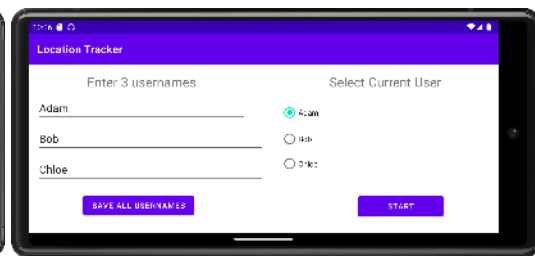
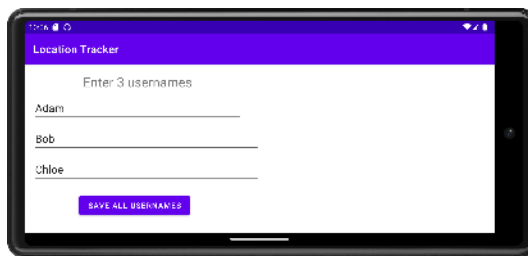


No usernames (first time)

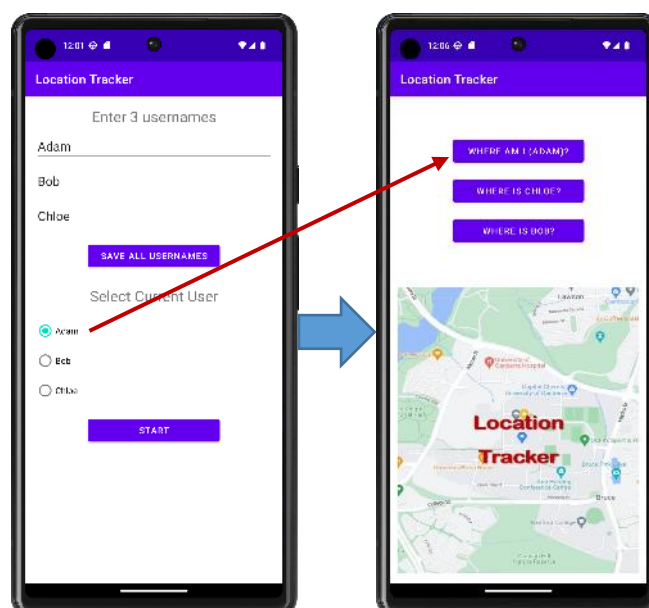


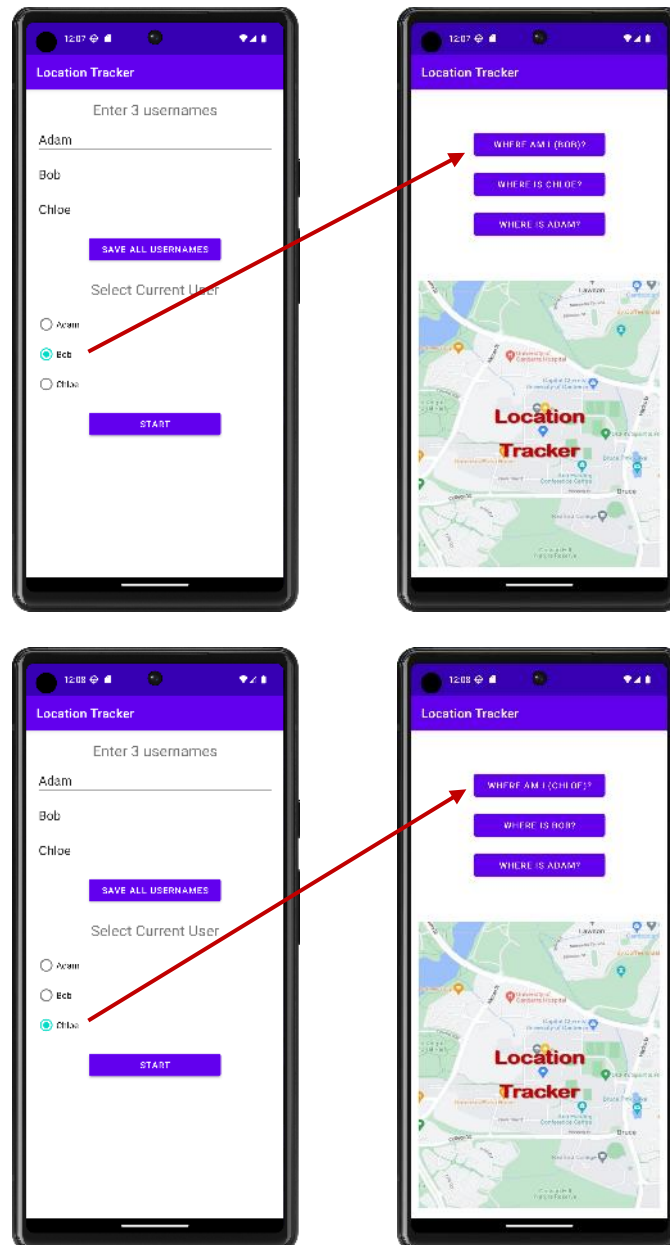
Existing usernames (other times)

- In landscape mode:

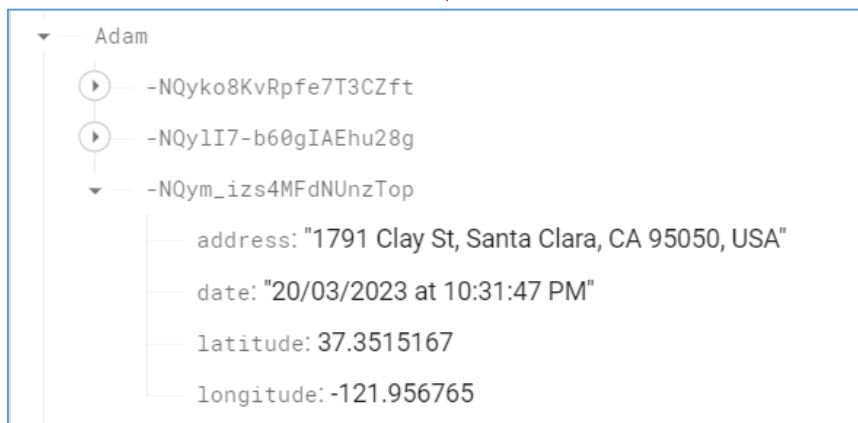
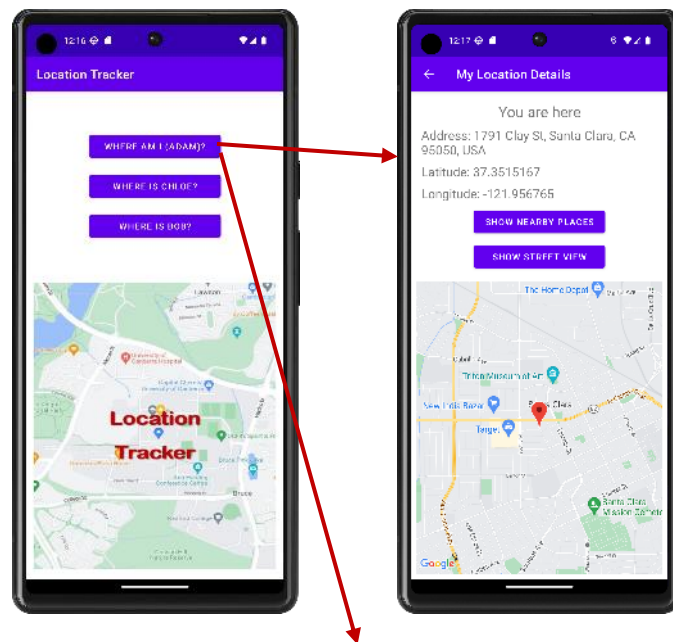


- You select a user and click the **Start** button. The SQLite database will update with the selected user and showed on the app next time you run the app. If you change the selected user and save, SQLite will update its database with the newly selected user.
- The **Save All Usernames** button and **Start** button should not work if not all 3 usernames are entered.
- Below are 3 examples for selecting different users.





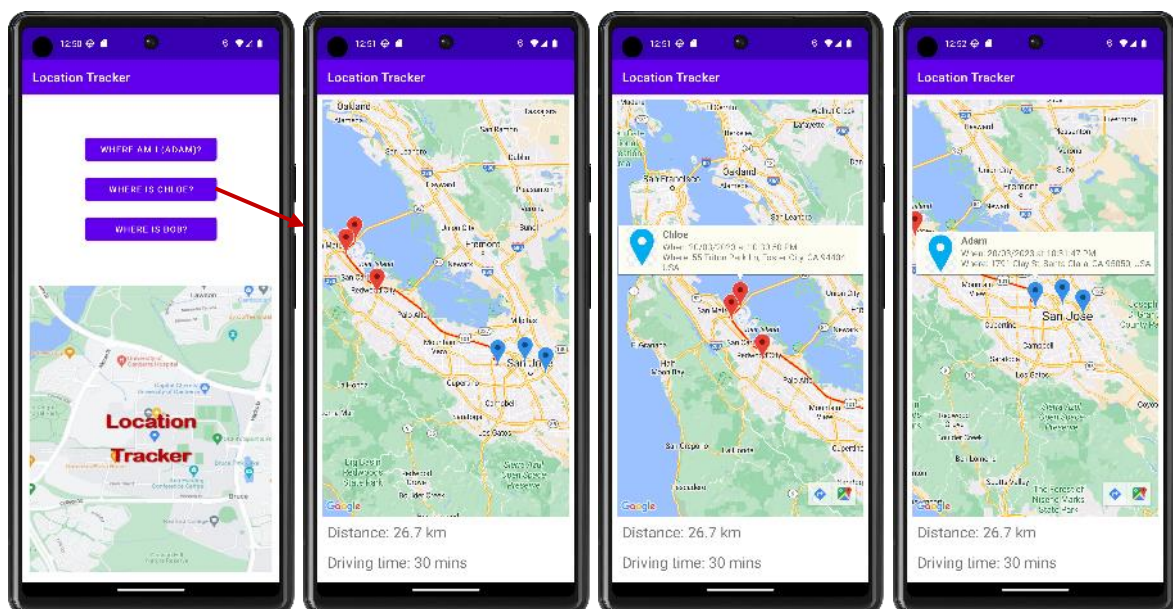
- If you click the first button (Where am I),
  - the app will show the Maps Activity with all details as seen in Assignment 1 and at the same time the app uploads the displaying location details and current date to the realtime database under the current username. Below is an example of the current user Adam with 3 locations already uploaded to the realtime database.
  - To upload a new location, you need to change the phone's location and click the Where am I button. **Note if you do not change the phone's location and keep clicking the Where am I button, no location data is uploaded to the database (this means no duplicate location found in the database, the next location must be different from the current one).**



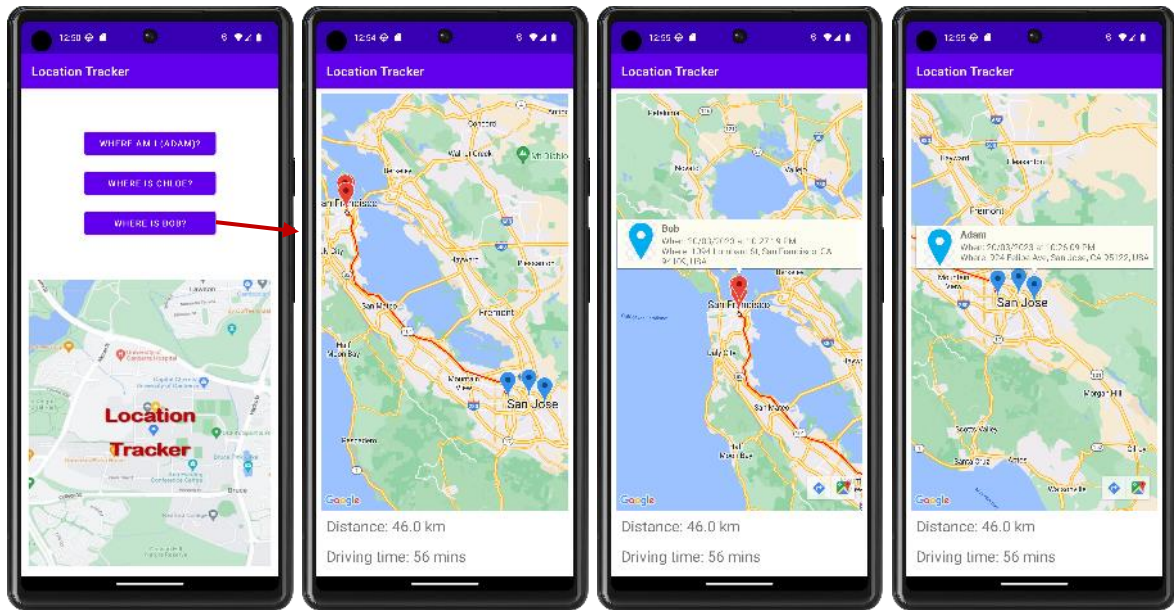
- Below is an example of the database with 3 locations for Adam, Bob and Chloe. At least one location for each user is found on the database.



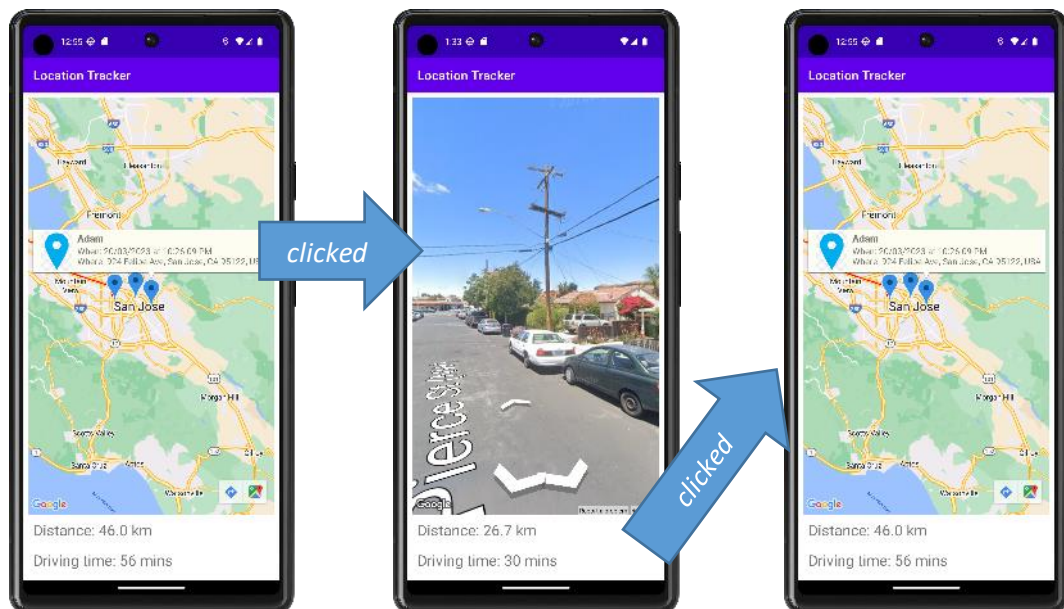
- If the second or third button is clicked, the app will show all locations of the current user (the username on Where am I button) and the registered user (the username found on the clicked button)
  - The map must show all the markers and zoom in at the greatest zoom level.
  - All the markers are at the locations downloaded from the realtime database.
  - The markers for the current user are blue, and those for the registered user are red.
  - There is a line between the **latest** location of the current user and that of the registered user. This line is the actual street direction for driving between the two locations. Use the date in each location data to identify the latest (newest) one.
  - Details of the street direction (distance and driving time) are shown at the bottom of the app. Use two TextView widgets to show the distance and driving time.
  - If a marker is clicked, an info window containing the username, date and address is shown.
  - If an info window is clicked, a street view at that clicked location will be shown. The street view and map must have the same size and same margins.
  - If the text view for distance or driving time is clicked while the street view is shown, the app will hide the street view and show the map.
  - The left, right, top, and bottom margins of the text view, map and street view widgets must be the same as seen in the screenshots. For your estimate, the left, top and right margin of the map or street view seen on the app are 8dp (applied to both portrait and landscape modes).
  - The title on each activity must be the same as seen the screenshots



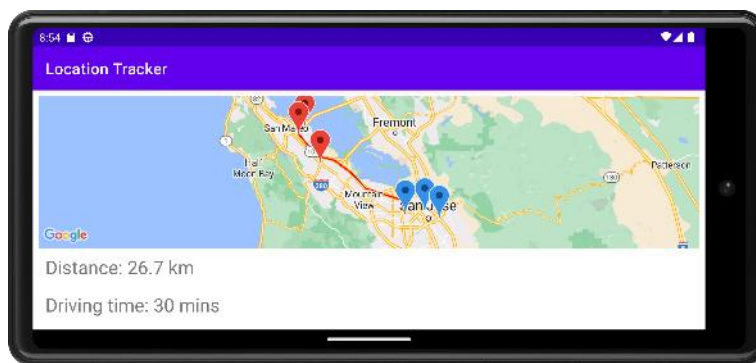




Example for clicking the second and the third buttons.

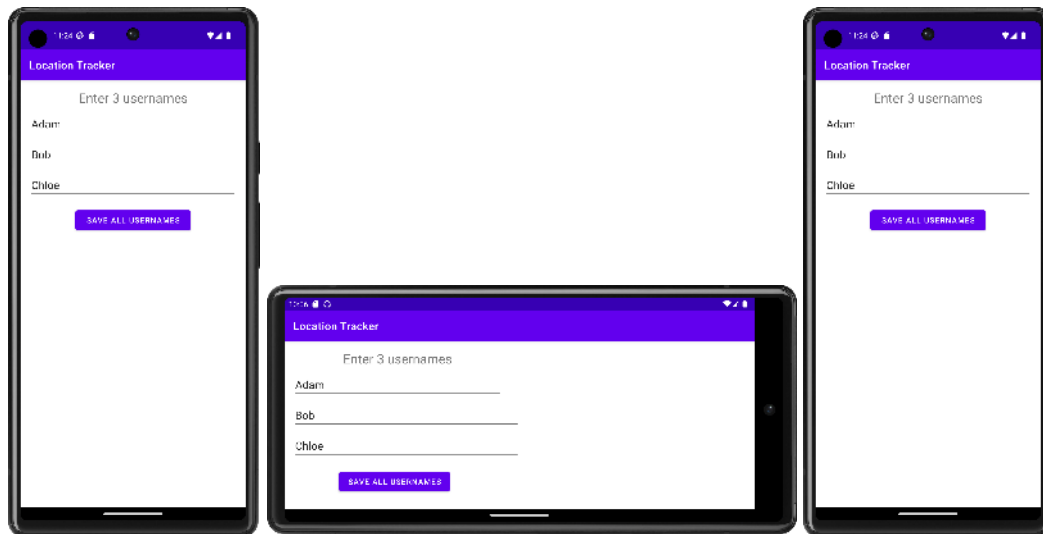


You click the info window then click the distance or driving time text.

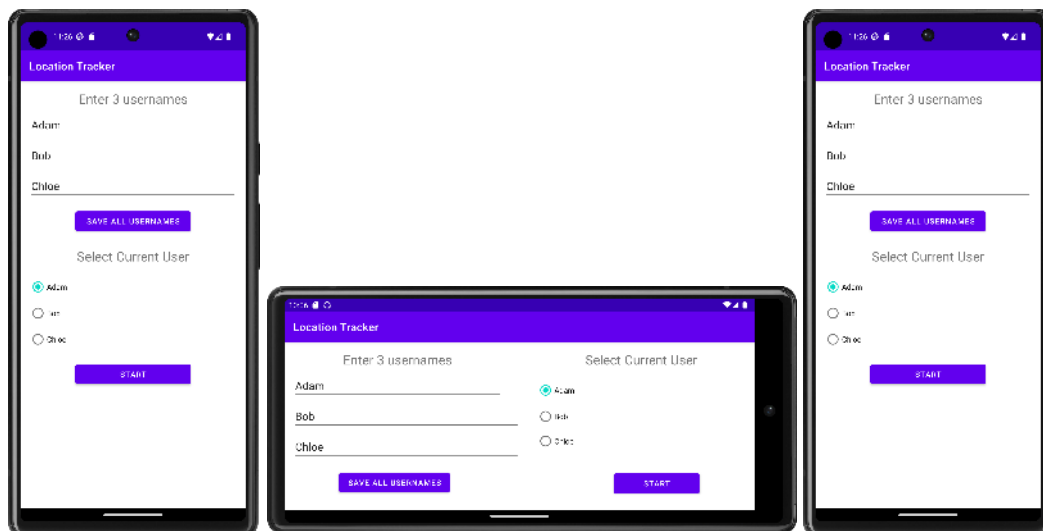


An example for landscape mode.

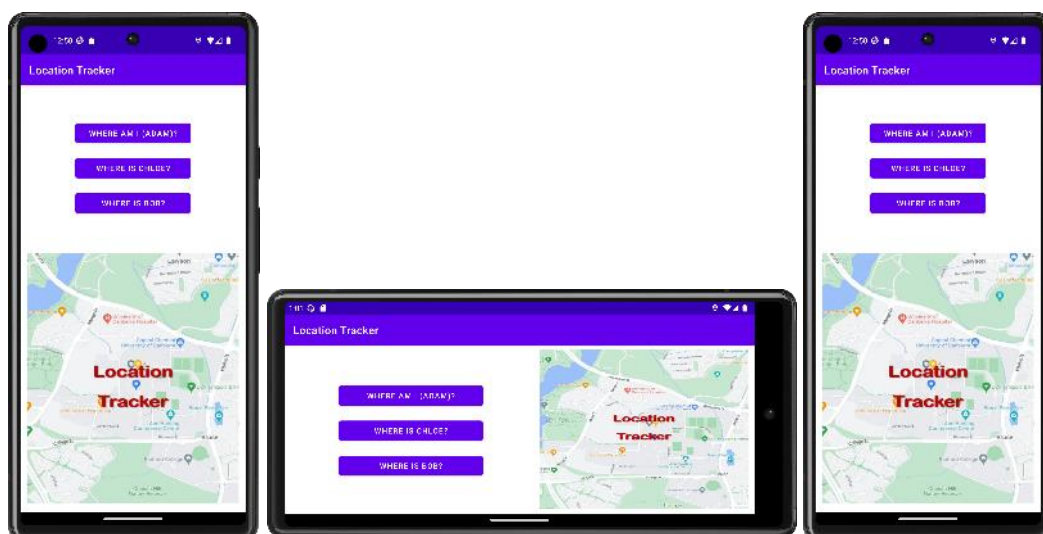
- You can rotate the emulator or phone from portrait to landscape or vice versa, however the state of the app must **remain the same** (only the layout is changed). Below are **all requirements**.



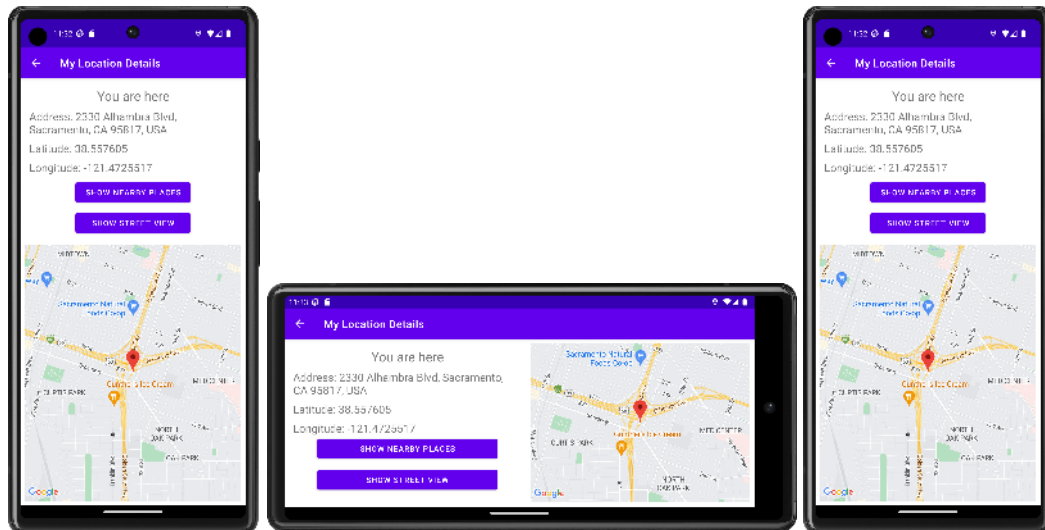
Start Activity BEFORE the SAVE ALL USERNAMES button is clicked.



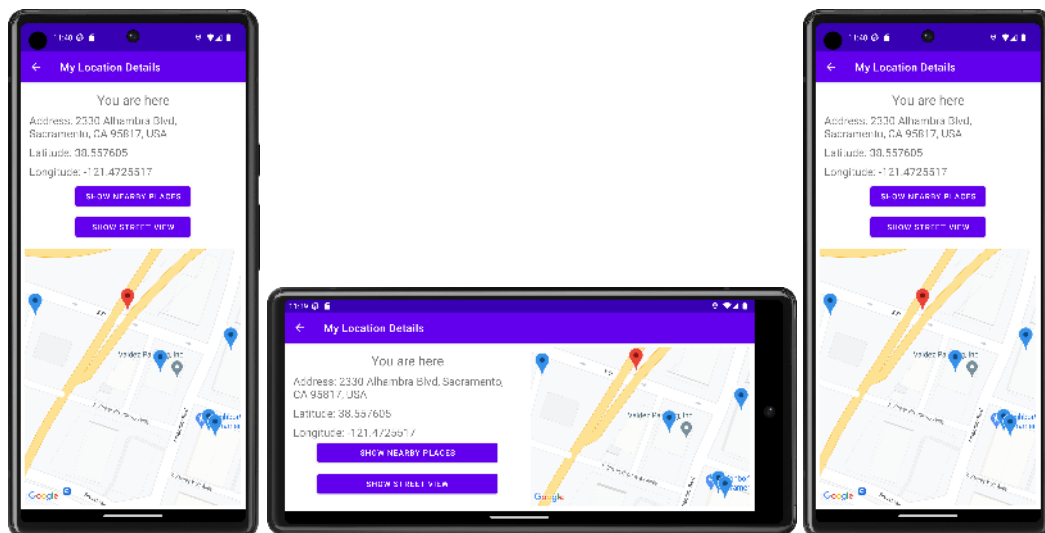
Start Activity AFTER the SAVE ALL USERNAMES button is clicked.



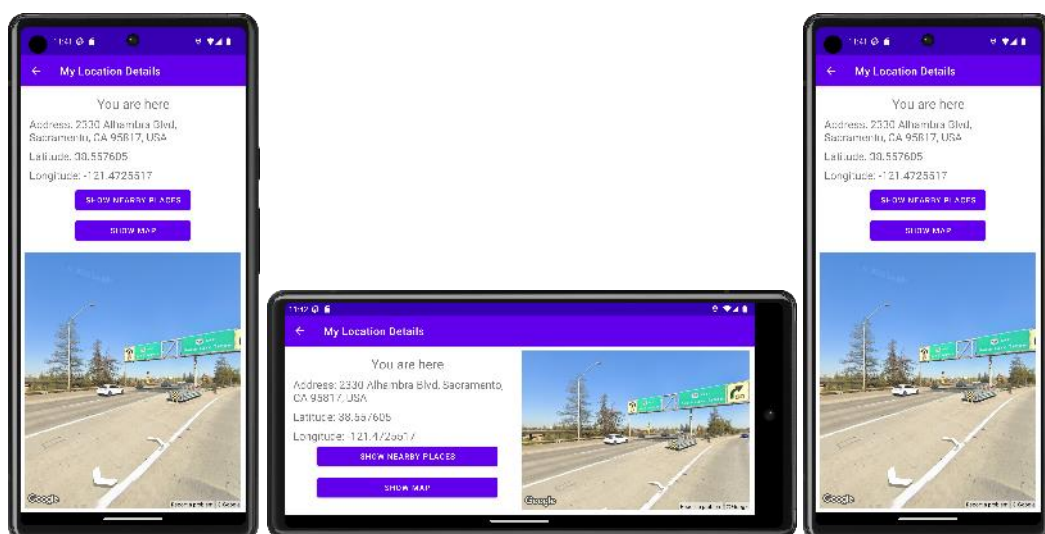
Main Activity with all 3 usernames.



Maps Activity BEFORE the SHOW NEARBY PLACES button is clicked.



Maps Activity AFTER the SHOW NEARBY PLACES button is clicked.



Maps Activity AFTER the SHOW NEARBY PLACES button is clicked AND the RED marker is clicked.

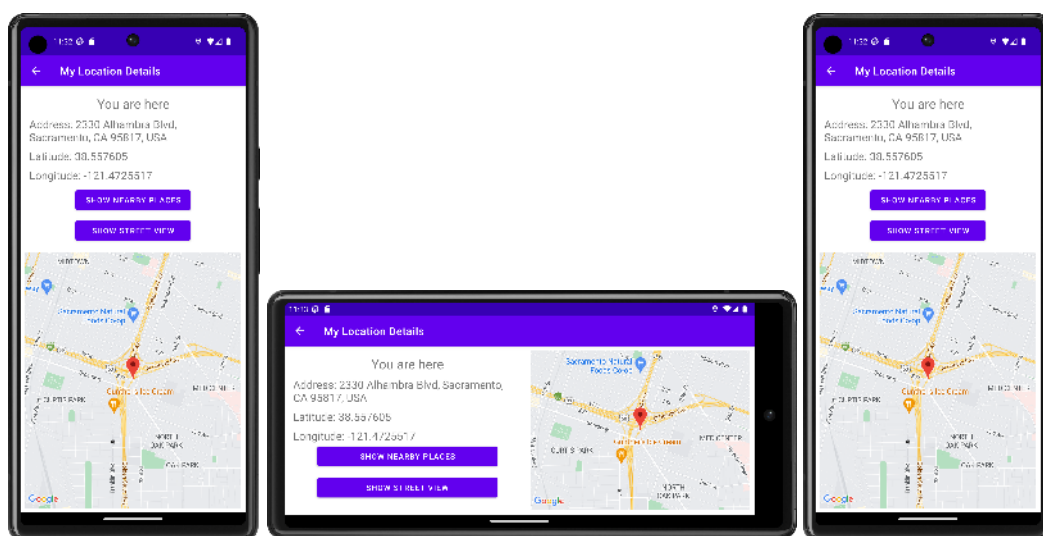




Maps Activity AFTER the SHOW NEARBY PLACES button is clicked AND the INFO WINDOW of a BLUE marker is clicked.



Maps Activity AFTER the SHOW STREET VIEW button is clicked.



Maps Activity AFTER the SHOW MAP button is clicked.

Hints are provided in lectures and tutorials in Weeks 7-11. Marking Rubric is available on Canvas in Week 8. Please review **UC Student Academic Integrity Policy** in the unit outline to avoid plagiarism.