Programmation d'applications mobiles - Android

Practical

Tinder • 8h (16h FI)

Goal

This practical will dive you into the world of making real mobile application.

You will make a revolutionary app based on Tinder, which if you don't know allows to :

- Show a list of people around you
- Match them by swiping right, or remove them from the list if you swipe left
- A settings screen to select the gender, and possibly more

Yes, there is no way to discuss or meet, but you're not ready for that. Yet.

Technical base

The main docs : https://developer.android.com/guide/index.html

This project uses several libraries :

- Appcompat and Design : https://developer.android.com/topic/libraries/support-library/features.html Lots of components provided by Google to make your app uses the last classes available on older devices.
- Retrofit - http://square.github.io/retrofit/ to make Http requests.
- Gson - https://github.com/google/gson serialize/deserialize Json
- Picasso - https://github.com/square/picasso To download and display pictures
- Swipecards - https://github.com/Diolor/Swipecards display a list of cards like Tinder, allows you to swipe left or right.

Design

There is no given design, feel free to blow our mind.

Development

This practical should be made in 8 hours, using the following libraries. Please read all the steps before doing anything.

1. **Compile the current project**
    - Download on http://etudiants.openium.fr/pam/sample.zip
    - You can find all the documentation you need on https://developer.android.com/guide/index.html
2. **Workspace**

    a. Init

        - Start Android Studio
        - If it asks you to Import Settings, choose No
        - If it asks for an SDK, enter the current location : /Applications/sdk
        - Open the project (not Import)
        - Start it in the default Android 6 or 7 or 8, Nexus 5 emulator.

    b. Android emulator creation

        - If you want to create differents size of devices to test your application on multiple resolutions
        - Go into Tools -> Android -> AVD Manager
        - Choose an existing emulator or create one
        - Press OK

3 - Use this library for…

- Use **Retrofit** to download information using https://uinames.com/
- Create the Java model for **Gson** binding. Your attributes needs to be named the same way as the Json ones.

- To have a view with a swipe left or right, you can use **Swipecards. Read the ListView documentation and this article** (https://developer.android.com/reference/android/widget/ListView.html and to understand the viewHolder pattern : https://developer.android.com/training/improving-layouts/smooth-scrolling.html)
- **Picasso** will allow you to download and display picture into ImageView

4 - Making the app

1. You will start by getting the list of users from UiNames, and displaying the first user name in the *TextView* displaying Hello World.
2. Then use **Swipecards** to display a full user picture and name, and allows the swipe. Make sure your app is still working when rotating the device, and when you swipe a person, another one take it place.
3. Handle the click on the user, display a new **Activity** with more details.
   You need to find a way to pass data to the new **Activity**.
4. Add a settings button (https://developer.android.com/training/appbar/actions.html) on the main screen that leads to parameters like gender preference. A new call to the webservice needs to be made.

Go further

- Store the users list in a database with **Room** (https://developer.android.com/training/data-storage/room/index.html), and load the webservice only when you stop having users or you want to refresh the app.
- Add a new toolbar button on the main screen, which will display the list of accepted users using a **RecyclerView**

FI

You will add Google Map into the details screen. Use this guide :
https://developers.google.com/maps/documentation/android-api/

- You can generate coordinates for each user with using the following method :

```
protected static Location getLocationInLatLngRad(double radiusInMeters, Location currentLocation) {
    double x0 = currentLocation.getLongitude();
    double y0 = currentLocation.getLatitude();

    Random random = new Random();

    // Convert radius from meters to degrees.
    double radiusInDegrees = radiusInMeters / 111320f;

    // Get a random distance and a random angle.
    double u = random.nextDouble();
    double v = random.nextDouble();
    double w = radiusInDegrees * Math.sqrt(u);
    double t = 2 * Math.PI * v;
    // Get the x and y delta values.
    double x = w * Math.cos(t);
    double y = w * Math.sin(t);

    // Compensate the x value.
    double new_x = x / Math.cos(Math.toRadians(y0));
    double foundLatitude;
    double foundLongitude;
    foundLatitude = y0 + y;
    foundLongitude = x0 + new_x;
    Location copy = new Location(currentLocation);
    copy.setLatitude(foundLatitude);
    copy.setLongitude(foundLongitude);
    return copy;
}
```

- Use the following API Key for Gmap : **AIzaSyBCYdCH-qigfRhm-7v7OmBpdEFgbUNb3So**
- Display the current user location using the new permission system (https://developer.android.com/training/permissions/requesting.html)