Lab 1: Activity

Submission Due: 01/26/2021

Objective

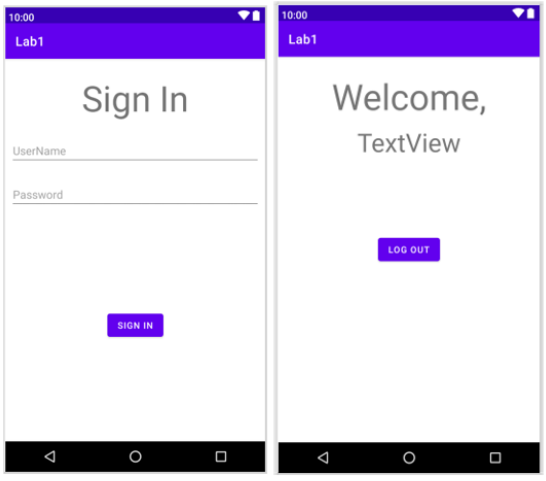
1. Learn how to navigate from one activity to another
2. Understand the activity lifecycle

Before Lab

1. If you are new to Android Studio:
    a. Learn how to create an application in Android Studio
    (Refer https://developer.android.com/training/basics/firstapp)
    b. Understand project structure in Android Studio
    (Refer https://developer.android.com/studio/projects)
2. Recall Activity Lifecycle
    (Refer class notes and https://developer.android.com/guide/components/activities/activity-lifecycle)
3. Download the lab1 starter code from Camino (Files -> Lab -> Lab1_StarterCode).
4. Unzip and open the Lab1_StarterCode project in Android Studio.

Lab1_StarterCode

1. Lab1_StarterCode has 2 Activity files (MainActivity.java, SecondActivity.java) that contain some code to get you started with the application.
2. Layouts (UI) for the two activities are also provided (You will find them under res->layout folder)



activity_main.xml activity_second.xml

3. You need to add your code to complete the application and submit the final code.

App Description & Tasks

In this lab, you are going to implement the callback methods used during the activity lifecycle in the MainActivity and SecondActivity to understand the activity lifecycle. You will also add code to navigate from MainActivity to SecondActivity and vice versa based on the user actions.

You need to complete the following tasks:

Task 1: Implement the callback methods used during the activity lifecycle

1. Implement the following callback methods in MainActivity.java and SecondActivity.java –
    a. onStart()
    b. onResume()
    c. onPause()
    d. onStop()
    e. onRestart()
    f. onDestroy()
2. Write info log in each of the callback methods.
   (For log syntax, refer: https://developer.android.com/reference/android/util/Log)

Code Hint

```
@Override
protected void onStart() {
    super.onStart();
    Log.i(TAG, "On Start");

}
```

(You may type code on your own or start typing onStart, click on the suggestion to add the above code. Similarly, implement other callbacks)

Task 2: Navigate from one activity to another activity

MainActivity is a login page. When a user enters a valid name and password (Hardcoded values: testUser and 123456) and clicks on the “SIGN IN” button, SecondActivity which is a Welcome page should be visible to the user.

1. Define click event handler for “SIGN IN” button
    a. Add android:onClick attribute to the button element in activity_main.xml
    (value for this attribute must be the name of the method, say login)
    b. Implement the login() in MainActivity.java as follows:
        i. Check whether the user entered the valid username and password. If not, notify the user that an incorrect name or password is entered by adding a toast message.
        (For toast messages, refer-
        https://developer.android.com/guide/topics/ui/notifiers/toasts.
        You can obtain the user entered values from EditText fields using getText())

ii. Start SecondActivity using explicit intent and pass the username to it.

Code Hint

```
public void login(View view) {
    //ToDo: Add code to validate username and password
    Intent intent = new Intent(this,SecondActivity.class);
    intent.putExtra("name",USERNAME);
    startActivity(intent);
}
```

When the SecondActivity is launched, a welcome text with the username must be displayed.

2. Get and set the username in onCreate()
    a. Get the username from the intent object
    (getIntent().getStringExtra("name"))
    b. Set username in the text field using setText()

Now, if the user clicks on the "LOG OUT" button, the app navigates back to MainActivity.

3. Define click event handler for "LOG OUT" button
    a. Add android:onClick attribute to the button element in activity_second.xml
    (value for this attribute must be the name of the method, say logout)
    b. Implement the logout() in SecondActivity.java
    (Start MainActivity using explicit intent)

Task 3: Execute & Observe

1. Run the app on an emulator or an Android device.
2. Test whether the application is working as expected.
3. View the logs (android lifecycle logs) with Logcat
(Refer: https://developer.android.com/studio/debug/am-logcat)
4. Based on your observation of logs, answer the following questions and submit the answers along with the final code:
    a. When the user opens the app for the first time, mention the order of the callback methods of MainActivity that gets invoked.
    b. When the user enters valid credentials and clicks on "SIGN IN" button which state does the MainActivity enters?
    c. Which callback method will be invoked in the SecondActivity when the SecondActivity is the foreground activity and the user clicks on Back Button?

Deliverables

1. Final code.
2. A file with answers for the above questions.
(Zip both the deliverables and submit a single zip file)