Software Development for Mobile Devices

Formative Assignment - 06 (Graded as Pass / Fail, Individual Work)

Due: Week 10 (Submit Start of lab)

Objectives

This assignment task has the following objectives,

1. Demonstrate your understanding of activities, fragments, action bar design pattern, capability in working with files, and your ability at creating custom lists.

Core Tasks — These are the final core tasks for this semester

Task 1 - Activities and Fragments

What is the difference between Activities and Fragments. Also briefly describe the function of a Fragment Manager and a fragment transaction.

Task 2 - Simple Custom List

Create a custom list that shows information about some movies with the following information (a crude design for each row is below): An icon, and Name & movie rating on two lines.

```
+------------------------------+
|Icon|      Moving Name        |
|    |      Rating             |
+------------------------------+
```

In the submission**,** you must **show the screen shot and the code** that renders the Row Adapter code. You can use any icons (i.e. they need not be associated with the movie name). You need 10 rows of test data in your application.

Task 3 - Action Bar Design Pattern

Briefly explain the Action Bar design pattern that is recommended by the Android Design Guidelines. What is the advantage of this pattern over the Dashboard design that used to be popular in apps created a few years ago. (Answer can be short — less than 5-6 lines, or a short paragraph)

Task 4 - Add a Custom Geo Location

Extend the Sun time calculator to allow the user to add a custom location. That is, they should be able to provide a Name, Latitude/Longitude and a Timezone. The time zone should be obtained as a offset from GMT. The location provided must be persisted to a file, and read back when the application is reloaded again. **In your submission** include a screen shot, and relevant code snippets.

Tasks for COS80019 (Masters) Students

The following tasks are core tasks that only Masters students should attempt. These tasks are optional for undergraduate students. The general concepts related to these questions are covered in the lectures, but Masters students are also expected to read, briefly research a bit more broadly to answer these questions.

Task 5 - File Security (COS80019 students only)

Describe the default data security model that is enforced by the Android architecture on application. In particular, how is it enforced? What are the benefits offered by this security model, and what are the trade offs?

Task 6 - Administrative Access to an Android Device (COS80019 students only)

It is possible to gain administrative access (root access) for many Android devices. In this context, answer the following questions:

- What does this mean?
- What are the benefits, and what are the security implications of gaining root access to a device?
- By default, device manufacturers and telephone companies lock devices and do not provide administrative access to a device — why is this the case?
- As a closing remark, are rooted devices more secure?

Task 7 - Processes and Threads (COS80019 students only)

Android treats each application as a separate process and all components within that (including Activities) run on the main thread. The architecture also has concepts for Foreground, Visible, Service, Empty, and Background processes. What are the different types of high-level components within an application, and what do the concepts Foreground, Visible, Empty, and Background mean? Read the reference document, and summarise in your own words.

Reference: http://developer.android.com/guide/components/processes-and-threads.html

Submission

You are required to submit a printed report:

- The header (or) footer of the document must contain your name, student id, and unit code.
- The document must have a title (e.g. Submission for Assignment 06)
- Evidence that shows you completed each task must be presented in a separate section.
- The document does NOT need a table of contents (or) a cover page.

The report is assessed and returned to you in the lab with feedback. You are expected to incorporate the feedback (esp. if changes are required) and submit the changed reports as part of the final portfolio.

Note: You must attempt and complete all tasks in this assignment in order to be eligible to pass this unit.

Demonstration

You may be asked to demonstrate your assignment in the lab. You should be able to do this and explain your code when asked in the lab session.

FAQ

What happens if a student is unable to submit the assignment?

If you are unable to submit due to medical reasons, then a doctors certificate will have to be shown. In exceptional circumstances, an email submission is permitted (with prior agreement with convenor). In normal conditions, ***all students are expected to make a submission by the due date, else the assignment is graded as a fail***.

What happens if assignment submission is graded as a 'fail'?

You will have to repeat the task and submit in the following weeks lab session. Students can repeat the task and submit for feedback twice. If your submission is graded as 'fail' twice then you may fail this unit.

Cross Reference for Assignment 6

The following checklist will help you check that you have covered key points required in order to pass this formative assessment.

Task 1 - Activities and Fragments

- Difference between Activities and Fragments is explained.
- Function of a Fragment Manager and a fragment transaction is explained.

Task 2 - Simple Custom List

- Screenshot with a custom list showing icon, Name & movie rating is provided.
- Code fragment of Row Adapter provided.

Task 3 - Action Bar Design Pattern

- Screen shot provided (or explained in text) to show Action Bar and Dashboard.
- Advantage is terms of usability / UX stated.

Task 4 - Add a Custom Geo Location

- Sun time calculator is extended to capture Name, Lat/Long & Timezone - demonstrated via screen shot
- Code snippet shows file load/write.

Task 5 - File Security (COS80019 students only)

- Default file/data security model is explained (visual from lecture notes is fine)
- Benefits and tradeoffs explained.

Task 6 - Administrative Access to an Android Device (COS80019 students only)

- Administrative access is explained.
- Benefits and side effects (implications) elaborated.
- Presents the case for why devices are locked down (by default)
- Discussion is presented around security of rooted devices.

Task 7 - Processes and Threads (COS80019 students only)

- What are the different types of high-level components within an application (e.g. Activity, Service, Receiver, Provider are explained — can be as a table)
- What do the concepts Foreground, Visible, Empty, and Background mean? // elaborated as a simple table or in other method.