COMP 41690 coursework 2018/19

Introduction

The Mobile Apps industry has grown from nothing over the past ten years into a venture worth tens of billions worldwide. It is therefore useful to have some experience of developing for smartphone platforms, as a way of better understanding this industry, or to gain experience that recruiters will value if you aim to work in these areas. The coursework requires you to explore the challenges of developing applications for the Android platforms. The primary goal is to gain a better understanding of how to develop applications for phone handsets that contain a range of sensors. The coursework will also help you develop an understanding of how to design effective user interfaces for mobile devices, how to display sensor data and how to use the media capabilities of modern smartphones.

Coursework

The coursework is in three parts:

1. Develop an Android app. (50% of the total mark for the module) ***Described below.***
2. Write a paper about your app. (30% of the total mark for the module) ***Described below.***
3. Individual reflective account. (20% of the total mark) ***This will be described elsewhere.***

Parts 1 and 2 will be done in groups.

Part 1: the app

You will develop an App for the Android platform that demonstrates innovative and exciting use of mobile sensors and the media capabilities of Android phones. The App must focus on either sustainability or on some aspect of student life. At a minimum it should include the following basic requirements:

1. It must make use of a range of user interface elements, e.g. lists, buttons, spinners, dialogues, an action bar, Toasts etc.
2. It must include at least seven distinct screens (Activities).
3. It must store data locally, e.g. in an SQLLite database. Remote storage is also allowed, but some element of local storage is a requirement.
4. It must make good use of at least two sensors (e.g. motion or location sensors) or web services (e.g. the Open Weather Map http://openweathermap.org/).
5. It should connect with and use at least one Activity from another Android application, e.g. email, maps, contacts.

Alongside these requirements your application should be robust and integrate well with the Android environment. For example, it should be able to handle being interrupted by an incoming call and manage system resources in an efficient manner. The design and visual presentation of your application is also important. For example, it should make use of a consistent style/theme and be intuitive to use. It should also provide appropriate representations of sensor or web service data, reflecting the properties of the data used and the requirements of your target users.

The app will be marked based on the following criteria:

- Minimum requirements (40%) – for supplying the project files (source code etc.) and meeting the minimum requirements. Your app should work without runtime errors.
- Quality of the user interface (20%)
- Overall quality and complexity (25%) – What is the level of technical complexity? Does your app function well and robustly? What extra features does it include beyond the basic requirements?
- Innovation and originality (15%) – How innovative and original is your app? Does it explore exiting new ideas regarding the capabilities and uses of mobile phones? Does it make innovative use of the sensor and media features of modern smartphones?

Part 2: the paper

Alongside developing an app you will prepare and submit a 6-page paper, which discusses the rationale and benefits of your app and the underlying ideas.

The paper should include the following sections:

1. An abstract and brief introduction describing the key features and rationale of your app. E.g. what did you aim to achieve and why? What makes your app interesting?
2. A description of how your app is different from other smartphone apps available in the Android Market. This does not need to be extensive, but should cover key examples.
3. A review of relevant research literature, which situates your ideas within this literature.
4. Based on 2 and 3 give a brief description of how you app is original.
5. A description of your key design consideration. E.g. who are the target users, what are the key use cases?
6. A brief description of the implementation of your app. This does not need to be extensive. Focus on the key features and technical achievements.
7. A description of the key lessons learned in designing and developing your app.
8. Final conclusions.

The mark for you paper will be based on how well you cover each of the points listed above. Consideration will also be given to the written presentation. For example, is the paper is clear and understandable?

Final submission and deadline

Submit a PDF file of your paper and a single zip file containing all the directories/files in your Android project. Therefore, all classes, source code, resources, manifest file etc. will be included. Please also include a screen print of the main/opening screen of your app. All submissions are via Moodle.

The deadline for submission is **Friday November 30th 2018 at 5pm**.

Groups

In the first instance course work groups will be self selecting. To suggest a group email d.coyle@ucd.ie. Groups ***should*** consist of 4 students. The deadline for suggesting a group is Monday September 17th at 5pm. After this point the remaining groups will be randomly assigned. This may include assigning students to existing groups or merging groups as required.

Important Notes

Comments

You will lose marks if your code does not include the following:

- A comment header block on each .java file;
- Inline comments at the beginning of key methods;
- Appropriately indented tidy java code.

In extreme cases your coursework will not be marked.

Code reuse

The app must be your own work. Any code snippets that are not directly written by the group (e.g. used from a tutorial) must be referenced as such within your code. You must directly comment the code to explain its source. Failure to reference code that is not yours will be treated as plagiarism.

Handsets

You do not have to own an Android handset because Android Studio includes an emulator for a phone handset with which you can test your code. In practice many of you will want to make use of media hardware, sensors etc. When forming groups for the coursework, it is a good idea if at least one member of the group has an Android phone. Please speak to me in class if this becomes a problem.

Late submissions

When the coursework is submitted late the following penalties apply:

Coursework submitted at any time up to 1 week after the due date: minus 2 grade points from grade awarded (from B+ to B-);

Coursework submitted more than 1 week but up to 2 weeks after the due date: minus 4 grade points from grade awarded (from B+ to C);

Coursework submitted after 2 weeks from the due date will not be accepted;

Late submissions may be accepted without penalty if agreed in advance, e.g. through formal extenuating circumstances.