DUBLIN INSTITUTE OF TECHNOLOGY
KEVIN STREET DUBLIN 8

BSc (Honours) Degree in Computer Science

Year 3

SEMESTER2 EXAMINATIONS 2013/2014

MOBILE SOFTWARE DEVELOPMENT

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Q1 is **compulsory**.

Answer Q1 and TWO of the remaining three questions.

Q1 carries 50 marks. All other questions carry 25 marks.

Q1. **(a)** Explain any *five* advantages of mobile *web* mobile applications over native applications.

(10 marks)

(b) *Custom adapters* are sometimes needed to support lists in Android. Explain how to develop a custom adapter for a list that works as follows: The adapter uses an array data source that contains a list of first names. When the list is displayed, names beginning with the letter "C" should display a ticked checkbox on that row. Use your own words and/or java code in your answer.

(10 marks)

(c) Explain the *purpose* and *implementation* of the AsynchTask class in Android. Use an example in your answer to support your explanation.

(10 marks)

(d) Figure 1 shows a Weather Forecast List in an Android application. Each list item has four separate pieces of information shown on the list screen: A weather image, city, weather description and number of degrees. Explain the layout(s) required in the application to render this screen. Include the XML code for the layout(s) you include in your answer.

(10 marks)

(e) A mobile application developed in Android is being re-released under a newer version in Google Playstore. The structure of the SQLlite database in the application has changed. Explain how the database structure changes should be implemented within the application code.

(10 marks)

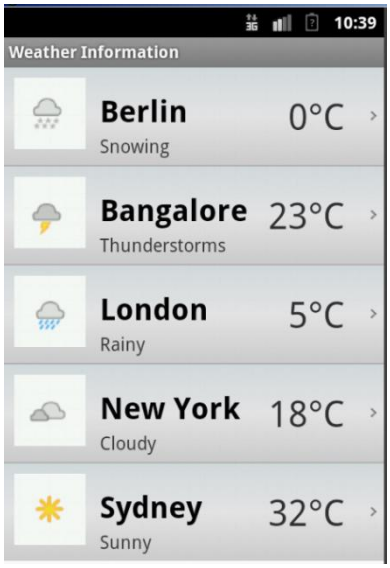

Figure 1 Weather Forecast list

Q2. **(a)** An Android mobile application to support the purchase and sale of household goods is under development. The application will allow users to create and view advertisements for goods throughout Ireland.

1. What choice(s) would you recommend for persistent data storage for such an application? Explain your reasoning clearly. (5 marks)

2. Draw a technical architecture for the application described in part 2(a), showing all hardware, communications and software components. Explain each component clearly. (5 marks)

(10 Marks)

(b) One of the biggest challenges in developing mobile applications through Android is the variety of screen sizes available on the market. Explain what support is provided via Android *resources* and the Android *manifest* file to allow for varying screen sizes.

(10 marks)

(c) Explain the role of *JSON* when using remote networked resources in an Android application.

(5 marks)

Q3. **(a)** Discuss the Android Framework's support for *touch screen input* under the following categories:

1. single touch gestures (3)
2. multi-touch gestures (4)
3. common gestures (3)

(10 Marks)

(b) Data entry on mobile devices is difficult on smaller screens. Explain any *five* ways of simplifying user input in an Android mobile application.

(10 marks)

(c) List five uses of the *Android Manifest* file.

(5 marks)

Q4. **(a)** Location tracking in Android is heavy on resource usage and can drain the device battery quickly. Discuss *three* ways to increase the efficiency of location tracking functionality when developing an Android application.

(10 Marks)

(b) *Resources* are key part of the Android framework. Describe any *five* examples of resources that can be set up for a mobile application.

(10 marks)

(c) Explain the purpose and usage of *fragments* in Android.

(5 marks)