TECHNOLOGICAL UNIVERSITY DUBLIN
CITY CAMPUS - GRANGEGORMAN

TU856 - BSc (Hons) Computer Science
TU857 - BSc (Hons) Computer Science (Infrastructure)
TU858 - BSc (Hons) Computer Science (International)

Year 3

SEMESTER 1
EXAMINATIONS 2023/24

Mobile Software Development

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Exam Duration: 2 hours

Instructions: Answer All Questions.
For question 3, choose four out of five sections.

Q1. (a) Describe the main steps for moving and passing two parameters from the main activity to another activity and displaying those values in the second activity? Use some Java code or pseudocode to support your answer.

(10 marks)

(b) Discuss 2 advantages of mobile web applications and 2 advantages of native mobile applications.

(10 marks)

(c) Explain the relationship between Gradle and the manifest file and give three important reasons why the manifest file is used.

(10 marks)

Q2 (a) Name the stages in the activity lifecycle and give a short definition of each of them, including which ones involve the activity user interface being visible to the user and which ones are not. In which callbacks does the system call the onSaveInstanceState() and onRestoreInstanceState() methods.

(10 marks)

(b) Name the six steps and all the necessary components to display a list in a RecyclerView from a dataset. Also explain the advantage of using RecyclerView versus normal ListView.

(10 marks)

(c) Explain the main components of the Room library and provide a short definition of each of them. Give two advantages of using Room versus SQLite directly in Android.

(10 marks)

Q3   **Answer four out of the five next sections:**

(a)   **Explain what fragments are, and two advantages of using them in Android?**

(10 marks)

(b)   **Explain what the "ExecutorService" is and why it is recommended to use it in android.**

(10 marks)

(c)   **What is the relationship between minTime and minDistance with the battery of the phone?**

Indicate whether the onLocationChanged parameter is triggered during the following events:

```
Location tracking set up with a minTime of 5 minutes and a minDistance of
1 kilometre.

  - At 9:00 am, the user is in point A.
  - At 9:02 am, the user moved 10 kilometres to point B.
  - At 9:03 am, the user is returning back to A, but still 5 kilometres away.
  - At 9:05 am, the user has reached point A again.
  - At 9:07 am, the user moved 20 kilometres from point A.
  - At 9:11 am, the user moved 40 kilometres from point A.
```

(10 marks)

(d)   **Explain the four types of layouts in android studied in class and give an example of when they can be applied.**

(10 marks)

(e)   **Explain the three main components of Volley, and their main functionalities. Give two advantages of using Volley.**

(10 marks)