ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
<u>Department of Computer Science and Engineering (CSE)</u>

MID SEMESTER EXAMINATION   **SUMMER SEMESTER, 2020-2021**
DURATION: 1.5 Hours   **FULL MARKS: 75**

CSE 4643: Mobile Application Development
Programmable calculators are not allowed. Do not write anything on the question paper.
There are **3 (three)** questions. Answer all **3 (three)** of them.
Marks of each question and corresponding CO and PO are written in brackets.

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1. a) State the cardinal characteristics of a Progressive Web Application (PWA) and explain how it is different from general web applications. (5) (CO1) (PO1, PO3)

   b) An application named *'XZY'* has defined its minSDK = (your last two id digits % 19) + 1, maxSDK = 29, targetSDK = 29 & compileSDK = 29. This app is currently running on your device. (10) (CO2) (PO1, PO2)
      i) If your device running on API 29 receives an OTA update and is updated to API 30 then what changes will occur to the application *'XYZ'*?
      ii) Explain the relationship between minSDK, targetSDK and compileSDK with application forward compatibility for the application *'XZY'*.

   c) Elucidate the different types of App Components which are the entry points through which the system of a user can enter your application with appropriate examples. (10) (CO2) (PO1, PO2)

2. a) What is Android Runtime (ART)? Explain the relationship of ART with Linux Kernel in Android Application Development? (5) (CO2) (PO1, PO2)

   b) What is Gradle and its types in Android Applications? What are the steps in producing an Android Application Package (.apk file)? Explain with diagram. (10) (CO2) (PO1, PO2)

   c) Suppose, you were using a video streaming application **"Zoom"** in your mobile device. You were attending an online class in **"Zoom"**, but suddenly someone messaged you in the "**WhatsApp**" app, and you viewed the message without closing **"Zoom"**. (7+3) (CO2) (PO1, PO2)
      i) In light of the Activity Life Cycle analyze the steps from starting the **"Zoom"** application to switching to the **"WhatsApp"** application. Explain with diagram.
      ii) If you have finished using the **"WhatsApp"** application then explain the steps for returning back to the **"Zoom"** application.

```java
public class MyApp extends Activity {
        public void onCreate() { ... }
        public void onStart()  { ... }
        public void onResume() { ... }
        public void onPause()  { ... }
        public void onStop()   { ... }
        public void onDestroy() { ... }
}
```

Fig 1: Activity Life Cycle

3. a) If Activity A is **"Photos"** application and Activity B is **"Messenger"** application then explain the phenomenon occurring in Fig 2.
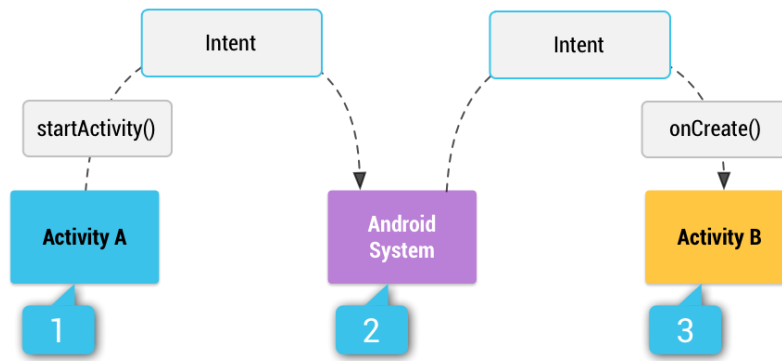
(8)
(CO2)
(PO1, PO2)

Fig 2: Activity & Intent

b) What are Layouts? Which layout is shown in Fig 3.1 & Fig 3.2? Describe at least 4 (four) attributes of the layout in Fig 3.1 & Fig 3.2 that define the layout parameters for the views/widgets.
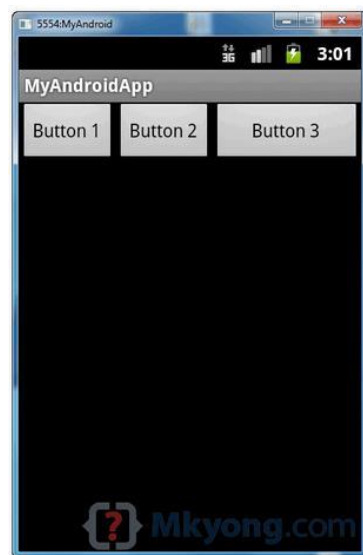
(10)
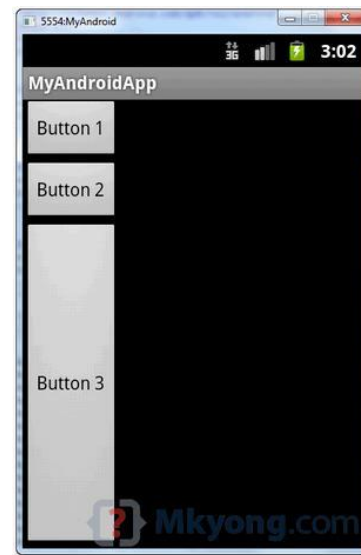(CO3)
(PO1, PO2)

Fig 3.1: Layout

Fig 3.2: Layout

c) Which Layout will you use for any application that you are developing and why? Between Relative and Constraint Layout which one do you prefer and why?
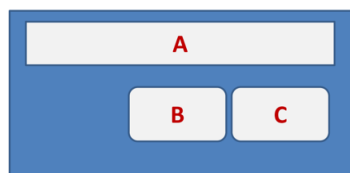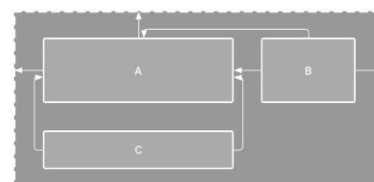
(7)
(CO3)
(PO1, PO2)

Fig 4.1: Relative Layout

Fig 4.2: Constraint Layout