



# THE CATHOLIC UNIVERSITY OF EASTERN AFRICA

**A. M. E. C. E. A**

**MAIN EXAMINATION**

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**AUGUST - DECEMBER 2016 TRIMESTER**

**FACULTY OF SCIENCE**

**DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE**

**REGULAR PROGRAMME**

**DIT 016: INTRODUCTION TO MOBILE COMPUTING**

**Date: DECEMBER 2016**

**Duration: 2 Hours**

**INSTRUCTIONS: Answer Question ONE and ANY other TWO Questions**

- Q1. a) What is the difference between **Service** and **Intent Service**? How is each used? **(2 Marks)**
- b) By use of valid code examples, explain the Android Exceptions. **(4 Marks)**
- c) Explain the key difference between the distribution of applications (apps) for Android based devices from other mobile device platform applications? **(2 Marks)**
- d) What is an APK file? How is it created? Explain the main components of an APK. **(3 Marks)**
- e) By use of example code, explain how one can check if an activity is already running before starting it? **(3 Marks)**
- f) Make a project whose initial screen has a TextView that says "Activity 1" and has a Button that says "Go to Activity 2". Have Activity2 show a TextView that says "Activity 2" and have a Button that says "Go to Activity 1". Have the buttons switch back and forth. **(8 Marks)**
- g) Android Name App
- i. A CUEA student wants to develop an Android app to allow the entering of a first and a last name (via EditTexts) and display "Hello firstname lastname!" when the button is clicked. **(4 Marks)**

- ii. Add a Clear button. The Clear button should remove any data in the EditText(s) and change the display to “Karibu Member!”

Required:

Write the source code (both XML layout and Android code) to accomplish the above tasks. **(4 Marks)**

- Q2. a) An Android application has two activity classes. A button on the first one should allow the showing of the second activity when it is clicked, but the app encounters an error.

**FirstActivity class:**

```
public class FirstActivity extends Activity {
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.main);

        Button orderButton = (Button)findViewById(R.id.order);

        orderButton.setOnClickListener(new View.OnClickListener() {

            @Override
            public void onClick(View view) {
                Intent intent = new Intent(FirstActivity.this, OrderScreen.class);
                startActivity(intent);
            }
        });
    }
}
```

**SecondActivity class:**

```
public class SecondActivity extends Activity {
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.order);

        Button orderButton = (Button) findViewById(R.id.end);

        orderButton.setOnClickListener(new View.OnClickListener() {

            @Override
            public void onClick(View view) {
                finish();
            }
        });
    }
}
```

**Required:**

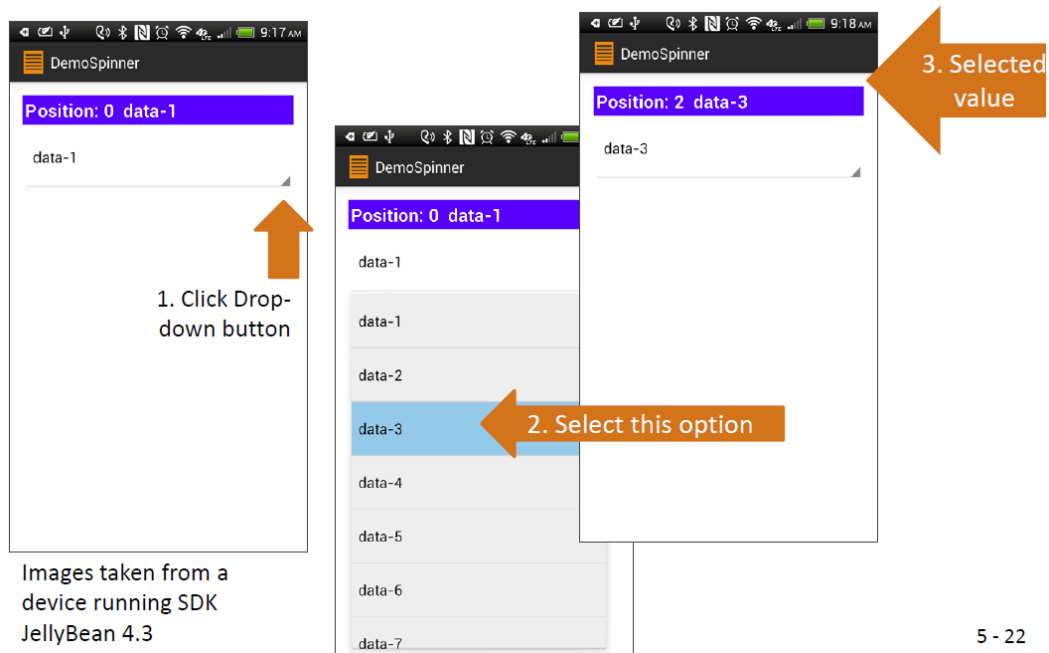
Why is it that the above code encounters an error? Explain the steps you would take to get the app running as it should **(4 Marks)**

- b) Describe three common use cases for using an Intent in Android application. **(3 Marks)**
- c) Explain the function of “strings.xml” in Android programming. **(3 Marks)**
- d) Below are the main components of the Android technology:
  - i) Activities **(2 Marks)**
  - ii) Services **(2 Marks)**
  - iii) Broadcast **(2 Marks)**
  - iv) Receivers **(2 Marks)**
  - v) Content Providers **(2 Marks)**

**Required:**

Using relevant examples, explain the above components

- Q3. a) Write the *XML source code* that would generate the below **THREE** Activities plus the *Android source code* to have the App transition from one activity to the other as shown and marked by the arrows



5 - 22

**(20 arks)**

- Q4. a) Explain the output of the below android source code
- ```

SensorManager mgr = (SensorManager)
getSystemService(SENSOR_SERVICE);
List<Sensor> sensors = mgr.getSensorList(Sensor.TYPE_ALL);
for (Sensor sensor : sensors) {
System.out.println(«»+sensor.getName());
}


```
- (5 Marks)**
- b) Write the Android code that would implement the AutoComplete feature on a TextView Widget
- (4 Marks)**
- c) Explain each line of the below code:
- ```

<EditText
android:id="@+id/ediName"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:textSize="18sp"
android:padding="30dp" />


```
- (5 Marks)**
- d) Using example code snippets, explain any THREE layouts used in Android programming.
- (6 Marks)**
- Q5. a) Show and explain the output of the below Android/XML code:
- ```

<GridView
android:id="@+id/grid"
android:background="#77ffff00"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:verticalSpacing="5dip"
android:horizontalSpacing="5dip"
android:numColumns="auto_fit"
android:columnWidth="100dip"
android:stretchMode="spacingWidth" />


```
- (4 Marks)**
- b) Give reasons why versioning is important in Android App *upgrade* and *maintenance*. What are the steps you would take to have a proper Android versioning scheme
- (3 Marks)**
- c) Suppose MyView is a class derived from View and mView is a variable of type MyView. Write the code that should be used to display mView when the Android application is started.

- d) Using example code snippets, explain the different techniques you can use to persistently store data in Android programming **(6 Marks)**
- e) Explain any THREE valid ways to deploy an Android application to a device? **(3 Marks)**
- f) Using example code, show how you can display an HTML web page in an Android application **(4 Marks)**

**\*END\***