



SLIATE

SRI LANKA INSTITUTE OF ADVANCED TECHNOLOGICAL EDUCATION

(Established in the Ministry of Higher Education, vide in Act No. 29 of 1995)

Higher National Diploma in Information Technology

Second year, second Semester Examination – 2018

IT2417 - Mobile Application Development

Instructions for Candidates:

Answer only five questions

No. of questions: 6

No. of pages : 3

Time: 3 hours

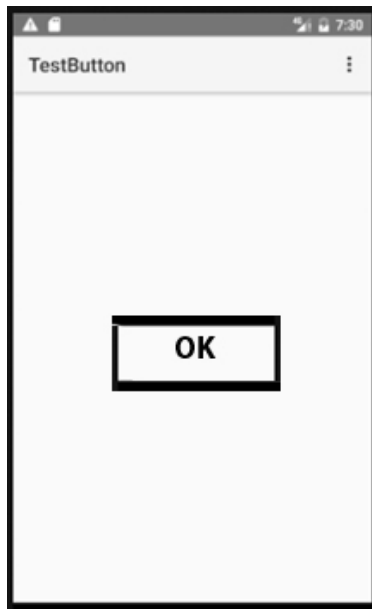
Question 01

- (i) Define, what is mobile computing (02 marks)
Set of technologies which allow people to access data and information from wherever they are
- (ii) What is meant by Dalvik (02 marks)
Android run time or virtual machine that runs applications and code written in Java
- (iii) Briefly explain the four principles of mobile computing (08 marks)
 - a. Portability: Devices connected within the mobile computing system should facilitate mobility
 - b. Connectivity: Ability to continuously stay connected with others
 - c. Social Interactivity: Collaborate with other users
 - d. Individuality: Adapting the technology to suit individual needs
- (iv) Briefly explain the four main layers of Android Architecture (08 marks)
 - a. Applications (written in java, executing in Dalvik)
 - b. Application Framework services and libraries (written mostly in java, executing in Dalvik)
 - c. Native libraries, daemons and services ,(written in C or C++)
 - d. Linux kernel, which includes Drivers for hardware, networking, file system access and inter-process-communication, Written in C++

(Total 20 marks)

Question 02

- (i) What is meant by Android SDK? (02 marks)
Set of development tools used to develop applications for Android platform
- (ii) Mention the use of “**res/layout**” directory in android project structure (02 marks)
This is a directory for files that define app's user interface.it include xml files
- (iii) Write XML code to create the button in following user interface. (08 marks)



Assume the button named Button1 is centered in a relative layout. Button width is 150sp, button height is 50sp, button back color is @android:color/darker_gray

```
<Button
    android:layout_width="150sp"
    android:layout_height="50sp"
    android:text="Ok"
    android:id="@+id/Button1"
    android:layout_centerVertical="true"
    android:layout_centerHorizontal="true"
    android:background="@android:color/darker_gray"
/>
```

- (iv) Write the java code to display “Hello World” as a toast in user interface, as the respond to button click in above created layout

```
import android.widget.Button;
import android.widget.TextView;
import android.widget.Toast;

public class MainActivity extends Activity {
    Button NewButton;
    TextView newText;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        NewButton=(Button) findViewById(R.id.button1);

        NewButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Toast.makeText(MainActivity.this, "Hi !",
                Toast.LENGTH_LONG).show();
            }
        });
    }
}
```

(Total 20 marks)

Question 03

(i) What is an activity in Android programming? (02 marks)
A single screen that's visible to user

(ii) What is intent in Android programming? (02 marks)
Message objects that make a request to the Android runtime to start an activity or other app component

(iii) Briefly explain any four callback methods of Activity object (08 marks)

Callback method	Description
onCreate()	First callback and called when the activity is first created.
onStart()	Called when the activity becomes visible to the user
onResume()	Called when the user starts interacting with the application. The activity is now at the top of the activity stack and is the activity with which the user is currently interacting.
onRestart()	Called when the activity restarts after stopping it
onPause()	Called when the current activity is being paused and the previous activity is being resumed.
onStop()	called when the activity is no longer visible
onDestroy()	called before the activity is destroyed by the system

(iv) Consider the given XML layout above in Question 2, and write the java code to launch a new Activity named SecondActivity for the button click (08 marks)

```
public class MainActivity extends Activity
{
    Button ButtonOk;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        ButtonOk= (Button) findViewById(R.id.buttonOk);
        ButtonOk.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v)
            {
                startActivity(new Intent(MainActivity.this, SecondActivity.class));
            }
        });
    }
}
```

(Total 20 marks)

Question 04

- (i) Briefly explain about broadcast receivers? (02 marks)

Android component which allows sending or receiving Android system or application events

- (ii) Mention two Broadcast Event Constants used to indicate device battery level

- android.intent.action.BATTERY_LOW (02 marks)
- android.intent.action.BATTERY_OKAY

- (iii) Write broadcast receiver to handle internet detect broadcast event. (08 marks)

```
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.widget.Toast;
public class Netdetected extends BroadcastReceiver {
    @Override
    public void onReceive(Context context, Intent intent) {
        Toast.makeText(context, "Intent Detected.", Toast.LENGTH_LONG).show();
    }
}
```

- (iv) Compare native apps and web apps (08 marks)

Native App	Web App
<ul style="list-style-type: none">• Developed for one particular mobile device and is installed directly onto the device itself• Download them via app stores online or the app marketplace• Easy to find(online store)• Compatible with device's built-in features• Easier to work with and perform faster on the device• Secure due to already approved on an app store	<ul style="list-style-type: none">• Internet-enabled apps• Accessible via the mobile device's web browser• Not downloaded onto the user's mobile device• Always up to date• No centralized store• Newest version is always loads when a user accesses a web app•

(Total 20 marks)

Question 05

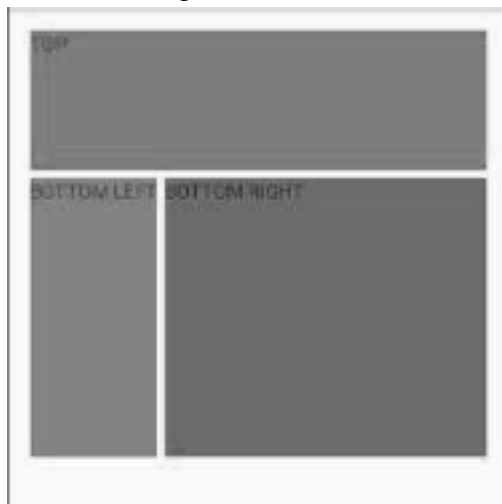
- (i) What is Gradle in Android IDE? (02 marks)

Gradle is open source build automation tool, to build the app's application package (APK) file.

- (ii) Compare the difference between **gravity** and **layout_gravity** in Android layout designing (02 marks)

Gravity	Layout_gravity
Specifies how an object should position its content	Positions the view with respect to its parent

- (iii) Consider the given XML code below and draw the expected layout. (08 marks)



- (iv) What are the callback methods invoked in following events of fragment life cycle (08 marks)

- a. `onAttach()`
- b. `onCreate()`
- c. `onStart()`
- d. `onStop()`

(Total 20 marks)

Question 06

- (i) What is meant by persistent data? (02 marks)

Data which survives after the process with which it was created has ended

- (ii) What are the shared preferences in Android (02 marks)

SharedPreferences is a method for activities and applications to keep user preference data in key value pairs

(iii) Explain following operating modes of `getSharedPreferences()` method (08 marks)

- a) **MODE_PRIVATE**: the default mode, where the created file can only be accessed by the calling application
- b) **MODE_WORLD_READABLE**: Creating world-readable files is very dangerous, and likely to cause security holes in applications
- c) **MODE_WORLD_WRITEABLE**: Creating world-writable files is very dangerous, and likely to cause security holes in applications
- d) **MODE_MULTI_PROCESS**: This method will check for modification of preferences even if the Shared Preference instance has already been loaded

(iv) Consider following java code and fill the blanks in `Save()` method to save entered data in shared preferences. (08 marks)

```
public class MainActivity extends Activity
{
    SharedPreferences MyPref;
    TextView TextName;
    TextView TextMail;
    public static final String Name = "nameKey";
    public static final String Email = "emailKey";
    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        TextName = (TextView) findViewById(R.id.TxtName);
        TextMail = (TextView) findViewById(R.id.TxtMail);
        MyPref = getSharedPreferences("mypref", Context.MODE_PRIVATE);
    }
    public void Save(View view)
    {
        String n = TextName.getText().toString();
        String e = TextMail.getText().toString();
        SharedPreferences.Editor editor = MyPref.edit();
        editor.putString(Name, n);
        editor.putString(Email, e);
        editor.commit();
    }
}
```

(Total 20 marks)