Higher National Diploma in Information Technology

Second year, second Semester Examination – 2019

ANSWERS IT2417 - Mobile Application Development

Instructions for Candidates: No. of questions:6

Answer only five questions No. of pages : 4

Time: 3 hours

Question 01

(i) Define, what is a mobile device (02 marks)

A portable computing device such as a smartphone or tablet computer

(ii) What is meant by application framework in android (02 marks)

set of services that collectively form the environment in which Android applications run and are managed.

(iii) Briefly explain four limitations of mobile computing (08 marks)

Range and bandwidth - Slower than cable
Security - Vulnerable to unknown access
Power consumption - Must rely entirely on battery power
Potential health hazards - Traffic hazards, Effect of radiation

(iv) Briefly explain the term "pervasive computing" (08 marks)

Embedding computational capability into everyday objects to make them effectively. Minimizes the end user's need to interact with computers. Pervasive computing devices are network connected and constantly available. Also called ubiquitous computing

(Total 20 marks)

Question 02

(i) What is Android SDK? (02 marks)

Set of development tools used to develop applications for Android platform.

(ii) Mention the use of "**res/values/string.xml**" directory in android project structure

To store the string type values. (02 marks)

(iii) Write JAVA code to add course list in an array into a listview, which is named "CourseListView" as given in following user interface. (08 marks)

```
String[] CourseArray = {"HNDA","HNDM","HNDE","HNDIT","HNDTHM"};
ArrayAdapter adapter = new ArrayAdapter(this,
android.R.layout.simple_dropdown_item_1line, CourseArray);
ListView CourseListView = (ListView) findViewById(R.id.listView1);
CourseListView.setAdapter(adapter);
```

(iv) Write the java code to display the selected course from the listView, in a toast. (08 marks)

```
CourseListView.setOnItemClickListener(new AdapterView.OnItemClickListener()
{
@Override
public void onItemClick(AdapterView parent, View view, int position, long id
{
        String item = ((TextView) view).getText().toString();
        Toast.makeText(getBaseContext(), item, Toast.LENGTH_LONG).show();

    }
});
```

. **(Total 20 marks)**

Question 03

(i) What is a **service** in Android programming? (02 marks)
Service is a component that runs in the background to perform long-running operations without needing to interact with the user.

(ii) What are the two life cycle states of service object? (02 marks)
Started, Bounded

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

Callback method	Description
onStartCommand()	called when another component, requests the service by calling *startService()*.
onBind()	called this method when another component wants to bind with the service by calling *bindService()*.
onUnbind()	called when all clients have disconnected from a particular interface published by the service
onRebind()	when new clients have connected to the service, after it had previously been notified that all had disconnected in its *onUnbind(Intent)*.
onCreate()	when the service is first created using *onStartCommand()* or *onBind()*.
onDestroy()	when the service is is being destroyed.

(iv) Following is XML code for two buttons for start a service and stop a service.

```
<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Start Service"
    android:id="@+id/button1"
    android:onClick="startService"
    android:nestedScrollingEnabled="false" />
<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Stop Service"
    android:id="@+id/button2"
    android:onClick="stopService"
    android:nestedScrollingEnabled="false" />
```

Write the java code for Activity class to:

a) Start a service named **newService** when click on button1

```
public void startService(View view) {
    startService(new Intent(getBaseContext(), newService.class));
    }
```

b) Stop a service named newService when click on button2

```
public void stopService(View view) {
        stopService(new Intent(getBaseContext(), MyService.class));
        }
```

(Total 20 marks)

Question 04

(i) What is the use of **BroadcastReceiver** class? (02 marks)

Detect or respond to broadcast messages from other applications or from the system

(ii) Mention two Broadcast Event Constants used detect battery (02 marks)

android.intent.action.BATTERY_LOW

android.intent.action.BATTERY_OKAY

(iii) Assume you are writing a code to detect power connecter to your mobile device.

a. Write the XML code to register the relevant broadcast receiver in AndroidManifest (08 marks)

```
<receiver android:name=".BatDetect">
    <intent-filter>
    <action android:name="android.intent.action.ACTION_POWER_CONNECTED">
    </action>
    </intent-filter>
</receiver>
```

b. Write the java class named **BatDetect** with required coding (08 marks)

```
public class BatDetect extends BroadcastReceiver
{
public void onReceive(Context context, Intent intent)
{
   Toast.makeText(context, "Intent Detected.",Toast.LENGTH_LONG).show();
}
}
```

(Total 20 marks)

Question 05

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

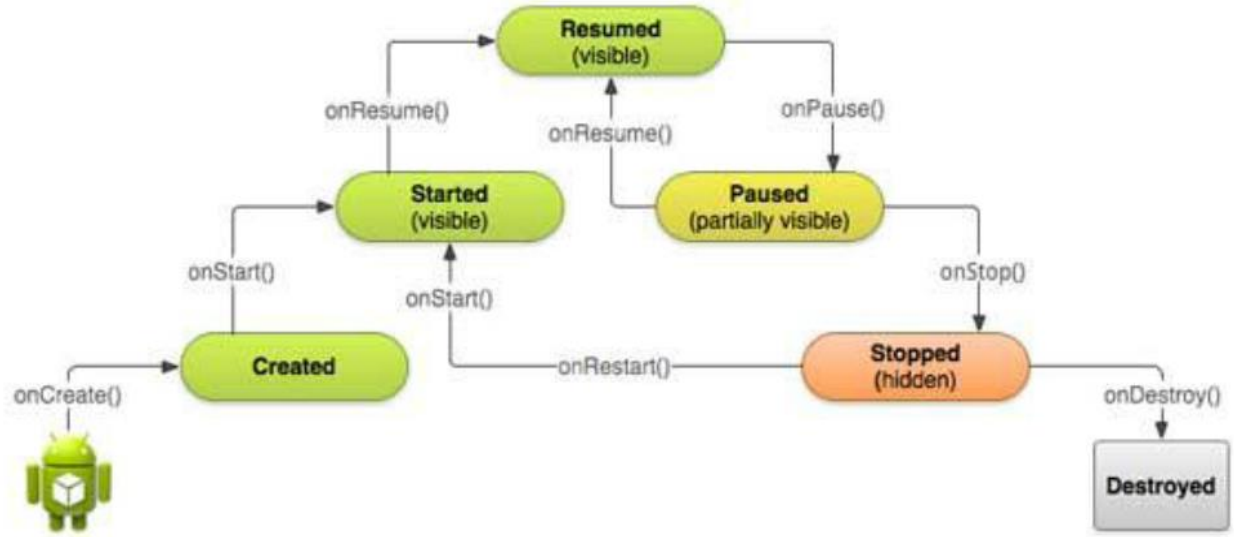
Gradle is open source build automation tool, to build the app's application package (APK) file.

(ii) Compare the deference between **`wrap_content`** and **`match_parent`** in Android layout designing (02 marks)

Wrap Content	Match Parent
Width or height cover the only its included content + declared padding size	Width or height match width and height same as its parent

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

(iv) Briefly explain four callback methods in the activity life cycle (08 marks)



(Total 20 marks)

Question 06

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

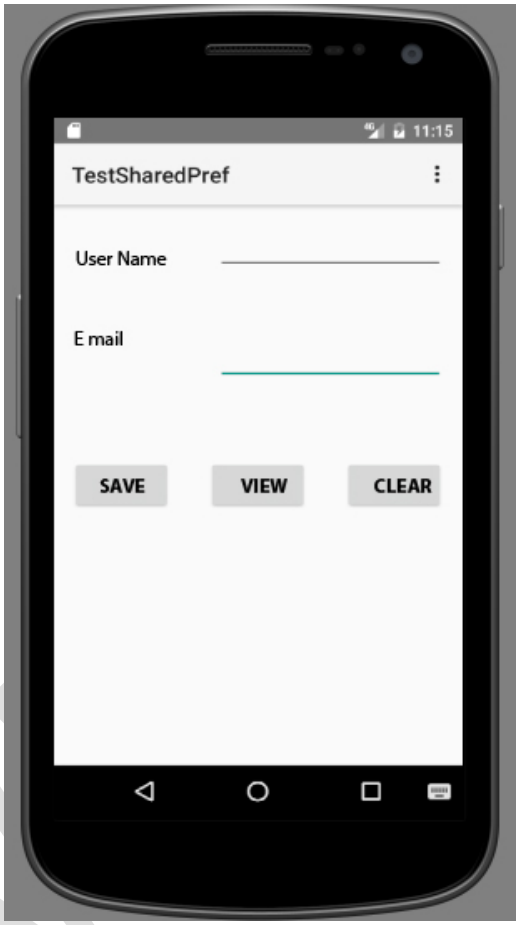
Data which survives after the process with which it was created has ended.

(ii) What is the shared preferences in Android (02 marks)

SharedPreferences temporary data in a mobile app to keep user preference. User-specified configuration details

(iii) Consider the following XML code for given user interface

```
<TextView android:text="User name"
    android:layout_alignBottom="@+id/TxtName"
    />
<EditText
    android:id="@+id/TxtName"/>
<TextView
    android:text="E mail"
    android:id="@+id/textView"
    />
<EditText
```



a. Write a java function for save data. (08 marks)

```
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();
```

b. Write a java function for view data. (08 marks)

```
public void Get(View view) {
    TextName = (TextView) findViewById(R.id.TxtName);
    TextMail = (TextView) findViewById(R.id.TxtMail);
    MyPref = getSharedPreferences("mypref",  Context.MODE_PRIVATE);

    if (MyPref.contains(Name)) {
        TextName.setText(MyPref.getString(Name, ""));
    }
    if (MyPref.contains(Email)) {
        TextMail.setText(MyPref.getString(Email, ""));

    }
```