



**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 – 2016**

**HNDIT2417- Mobile Application Development**

## Marking Scheme

Instructions

Answer **five** questions only

All questions carry equal marks.

No. of questions :6

No. of pages : 6

Time : **Three** hours

### Question 01

**[Total 20 Marks]**

- (i) Mention the code name of the latest Android version (2 Marks)

*Nougat*

- (ii) List the main components in Android architecture (5 Marks)

*Linux Kernel*

*Native Libraries*

*Android run time / DVM*

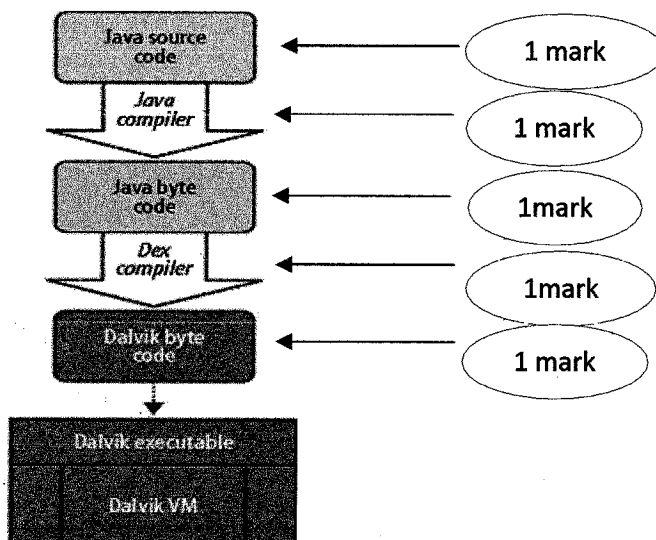
*Application Libraries*

*Applications*

- (iii) Draw a diagram to illustrate the source code compilation process of Dalvik

Virtual Machine

(5 Marks)



(iv) Describe the four types of app components

(8 Marks)

- a. **Activity:** A “single screen” that’s visible to user
- b. **Service:** Long-running background “part” of app
- c. **ContentProvider:** Manages app data and data access for queries
- d. **BroadcastReceiver:** Component that listens for particular Android system “events” and responds accordingly

**Question 02**

**[Total 20 Marks]**

(i) Name the following Android UI widgets

(5Marks)

a)  **Radio Button**

d)  **TextView**

b)  **Button**

e)  **ListView**

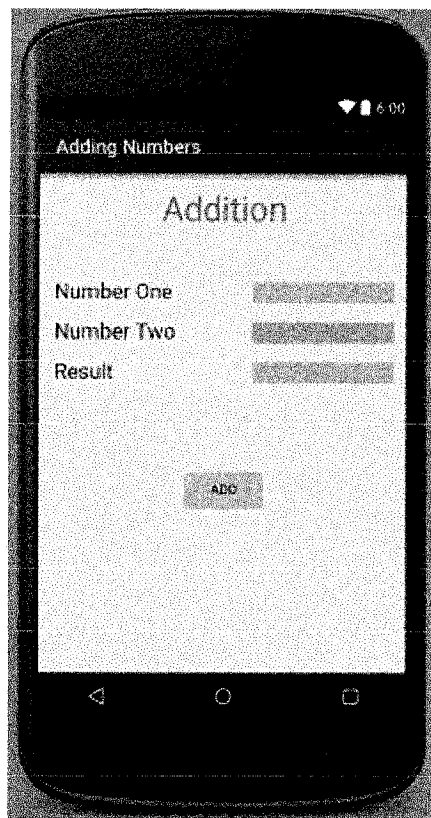
c)  **ImageView**

(ii) What is the purpose of following properties of a Button widget?

(5 Marks)

- a) id- **Supply an identifier name for this view, to later retrieve it with `View.findViewById()`**
- b) text - **Text to display.**
- c) Background - **A drawable to use as the background. This can be an image or a color**
- d) layout:gravity - **Defines how the button should be positioned**
- e) textColor - **Color of text**

(iii) The following interface has been created with Android studio. When the user enters two numbers and click the “ADD” button, total will be displayed on the textView.



MainActivity.java file is given below. Fill in the blanks of this code.

(10 Marks)

```
public class MainActivity extends AppCompatActivity {
    private EditText      firstNumber;
    private EditText      secondNumber;
    private TextView      addResult;
    private Button        btnAdd;

    double num1,num2,sum;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(.....(a).....activity_main);

        firstNumber= .....(b).....(R.id.txtNumber1);
        secondNumber= .....(c).....(R.id.txtNumber2);
        addResult= .....(d).....(R.id.txtResult);
        btnAdd= .....(e).....(R.id.btnAdd);

        btnAdd.....(f).....(new View.OnClickListener() {

            public void onClick(View v) {
                num1 = Double.parseDouble(firstNumber.....(g).....toString());
                num2 = .....(h).....
                sum = .....(i).....
                addResult.setText(Double.toString(.....(j).....));
            }
        }));
    }
}
```

- a) *R.layout*
- b) *(EditText)findViewById*
- c) *(EditText)findViewById*
- d) *(TextView)findViewById*
- e) *(Button)findViewById*
- f) *setOnClickListener*
- g) *getText()*
- h) *Double.parseDouble(secondNumber. getText().toString());*
- i) *num1+num2*
- j) *sum*

**Question 03**

**[Total 20 Marks]**

- (i) List three layout types available in Android Studio (3 Marks)

*Linear Layout*

*Relative Layout*

*Grid Layout*

*Frame Layout*

*Table Layout*

- (ii) Sketch the output of the following code (6 Marks)

```
<LinearLayout
xmlns:android="http://schemas.android.com/apk/res/android"
xmlns:tools="http://schemas.android.com/tools"
android:layout_width="match_parent"
android:layout_height="match_parent"
android:orientation="vertical">
```

```
<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:textAppearance="?android:attr/textAppearanceLarge"
android:text="User Login"
android:id="@+id/UserLogin"
android:layout_gravity="center" />
```

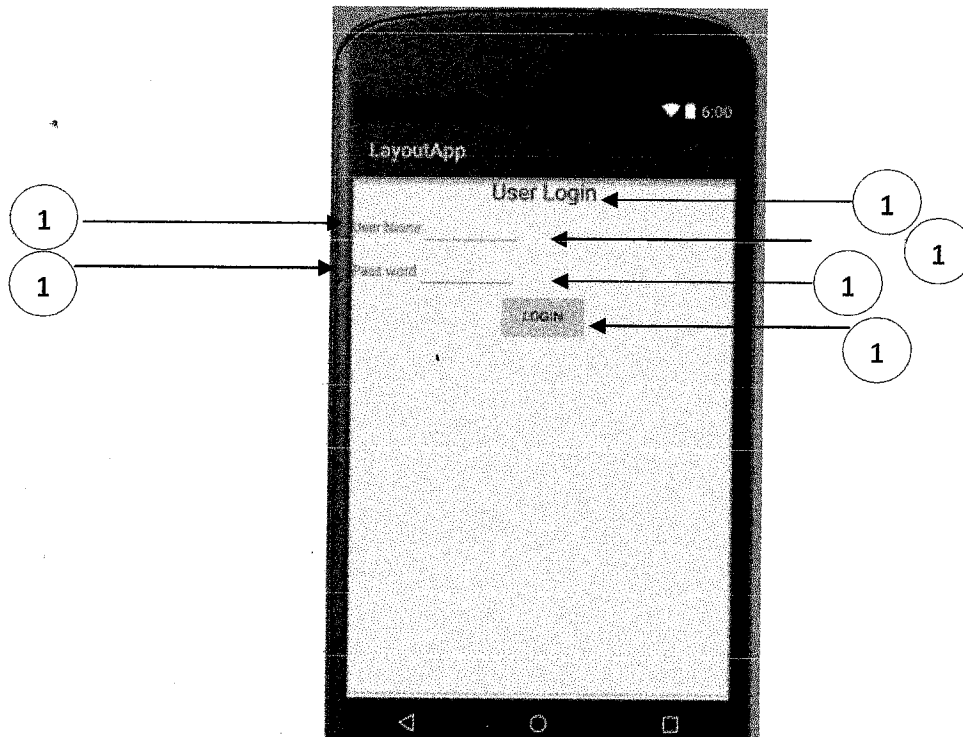
```
<LinearLayout
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:orientation="horizontal">
<TextViewandroid:text="User Name"
android:layout_width="wrap_content"
android:layout_height="wrap_content" />
<EditText
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:id="@+id/username"
android:width="100dp" />
```

```

</LinearLayout>
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:orientation="horizontal">
    <TextView android:text="Pass word"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" />
    <EditText
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/password"
        android:inputType="textPassword"
        android:width="100dp" />
</LinearLayout>
<Button
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/login"
    android:text="login"
    android:layout_gravity="center" />

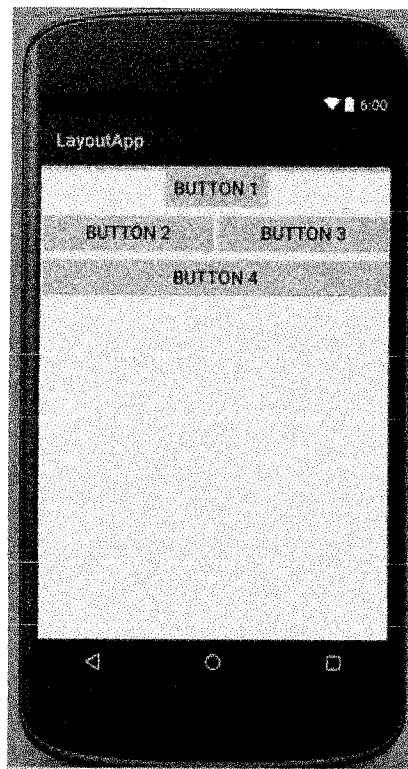
</LinearLayout>

```



(iii) Using the LinearLayout write the XML code to generate the layout shown below.

(11 Marks)



```
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical" android:layout_width="match_parent"
    android:layout_height="match_parent">
```

1

```
<Button
    android:text="Button 1"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:layout_width="wrap_content"
    android:textSize="20dp">
```

1

1

1

```
</Button>
<LinearLayout android:layout_height="wrap_content"
    android:layout_width="match_parent" >
```

1

```
<Button
    android:text="Button 2"
    android:layout_height="wrap_content"
    android:layout_weight="1"
    android:layout_width="match_parent"
    android:textSize="20dp">
```

1

1

```
</Button>
<Button
    android:text="Button 3"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:layout_weight="1"
    android:layout_width="match_parent"
    android:textSize="20dp">
```

1

1

```
</Button>
</LinearLayout>
```

```
<Button
    android:text="Button 4"
    android:layout_height="wrap_content"
    android:layout_width="match_parent"
    android:textSize="20dp">
```

1

1

```
</Button>
</LinearLayout>
```

(i)

- a) What is an Android Adapter?

(3 Marks)

*Android Adapter is a bridge between the View (e.g. ListView) and the underlying data for that view.*

- b) List three types of adapters available in Android

(3 Marks)

*Simple Adapter**ArrayAdapter,**BaseAdapter,**CursorAdapter,**SimpleCursorAdapter,**SpinnerAdapter**WrapperListAdapter*

- c) Write the code to create an ArrayAdapter that maps the data in a String array called fruitsArray in to a list view called myList

(4 Marks)

*ArrayAdapter<String> adapter = new ArrayAdapter<String> (this, R.layout.myList, fruitsArray)*

(ii)

- a) What is a Fragment?

(2 Marks)

*A Fragment is a portion of the graphical interface of an Activity.*

- b) Mention the two ways to add a Fragment to an Activity

(2 Marks)

*Layout File**FragmentManager*

- c) The method Fragment.onCreateView() is used to assign a layout to a Fragment

@Override

```
public View onCreateView(LayoutInflater inflater, ViewGroup container,
    Bundle savedInstanceState) {
    return super.onCreateView(inflater, container, savedInstanceState);
}
```

Explain the three parameters inflater, container, savedInstanceState in onCreateView method

(6 Marks)

*Inflater - useful to retrieve a view from an xml file in layout folder*

*Container - the ViewGroup that contains the Fragment.*

*savedInstanceState - the Bundle used to retrieve data saved before destroying*

- (i) List three data storage options available in Android

(3 Marks)

***Shared Preferences***

***Internal Storage***

***External Storage***

***SQLite Databases***

***Network Connection***

- (ii) Mention four data types available in SQLite

(4 Marks)

***CHAR***

***INT***

***DOUBLE***

***REAL***

***BLOB***

- (iii) Complete the following statement to create an SQLite database called 'InventoryDB'.

(2 Marks)

`db = openOrCreateDatabase("InventoryDB ", Context.MODE_PRIVATE, null);`

- (iv) Write the code to create the following Product table in SQLite

(5 Marks)

Product_ID	Name	Price
P001	CD	25
P002	DVD	35
P003	8GB Flash Drive	1000

***db.execSQL("CREATE TABLE IF NOT EXISTS***

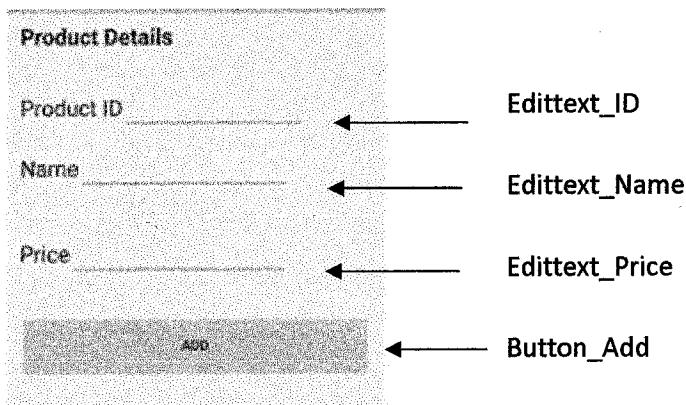
***product(product\_IDVARCHAR,nameVARCHAR,price INT);");***

- (v) Write the code to insert data to the above product table through the interface given

below

(6 Marks)





```
db.execSQL("INSERT INTO product VALUES('"+edittext_ID.getText().toString()+
+', '"+edittext_Name.getText().toString()+
+', '"+Integer.valueOf(edittext_Price.getText().toString()) +"'");");
```

### Question 06

[Total 20 Marks]

(i)

- a) What is a Shared Preference in Android? (2 Marks)

*It is an API which is used to save a small collection of data as key value pairs*

- b) List two methods which can be used to create a new Shared Preference (3 Marks)

*getSharedPreferences() , getPreferences()*

(ii)

- a) What is the API used in Android to send SMS (2 Marks)

*SmsManager API*

- b) Write the statement to set permission in Android manifest file to send SMS

(3 Marks)

*<uses-permission android:name="android.permission.SEND\_SMS" />*

(iii)

- a) What does JSON stands for? *JavaScript Object Notation* (2 Marks)

- b) Why JSON is used in Android (3 Marks)

*JSON is used to send and receive data to the server*

(iv)

- a) What is the package format used by Android operating system for distribution and installation of mobile apps (2 Marks)

*apk*

- b) List the three main steps for publishing an app in Google play store (3 Marks)

**Registering for a Google Play publisher account**

HN217- Mobile Application Development-2016 2<sup>nd</sup> Semester

***Setting up a Google payments merchant account***

***Add the application through Google Play Developer Console***