1. **Design an Android application to create and customize a Visiting Card.**

activity_main.xml

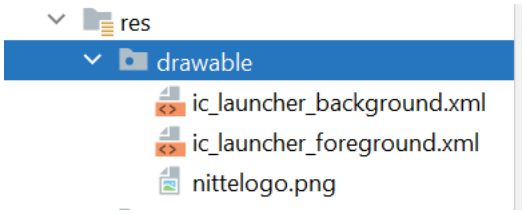
```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#FFFFFF"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/textView1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="200dp"
        android:layout_marginLeft="30dp"
        android:text="Nitte Meenakshi Institute Technology"
        android:textColor="#E91E63"
        android:textSize="20sp"
        android:textStyle="bold" />

    <ImageView
        android:id="@+id/imageView3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="80dp"
        android:layout_marginBottom="495dp"
        app:srcCompat="@drawable/nittelogo">
    </ImageView>


    <View
        android:id="@+id/view1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:background="#4444"
        android:layout_alignParentBottom="true"
        android:layout_marginBottom="487dp"
        />

    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="300dp"
        android:layout_marginLeft="140dp"
        android:text="Harsha B R"
        android:textSize="24sp"
        android:textStyle="bold" />

    <TextView
        android:id="@+id/textView3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="350dp"
        android:layout_marginLeft="70dp"
        android:text="Assistant Professor-ISE"
```

```
        android:textSize="24sp" />

    <TextView
        android:id="@+id/textView4"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="400dp"
        android:layout_marginLeft="30dp"
        android:text="Address:Yelahanka, | Bangalore - 560 064"
        android:textAlignment="center"
        android:textSize="24sp" />

    <TextView
        android:id="@+id/textView5"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="450dp"
        android:layout_marginLeft="90dp"
        android:text="Ph No: 9108380566"
        android:textSize="24sp" />

    <TextView
        android:id="@+id/textView6"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="500dp"
        android:layout_marginLeft="50dp"
        android:text="Email Id: harsha.br@nmit.ac.in"
        android:textAlignment="center"
        android:textSize="24sp" />


</RelativeLayout>
```

MainActivity.java

```
import android.os.Bundle;

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);
    }

}
```

Add image in the drawable folder



2. **Develop an application aimed at enhancing and extending the functionalities offered by the Android user interface library.**

a) Share data between activities.

. b) Utilize Events and Event Listeners.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginLeft="20dp"
    android:layout_marginTop="100dp"
    android:text="Send Data From One Activity to Another Activity"
    android:textColor="#E91E63"
    android:textSize="18sp"
    android:textStyle="bold">

</TextView>


    <EditText
        android:id="@+id/name"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="165dp"
        android:layout_marginTop="200dp"
        android:text="Name"
        >
    </EditText>

    <EditText
        android:id="@+id/usn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="170dp"
        android:layout_marginTop="250dp"
        android:text="USN"
        >
    </EditText>

    <EditText
        android:id="@+id/collegeName"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="140dp"
        android:layout_marginTop="300dp"
        android:text="College Name"
        >
    </EditText>

    <Button
```

```
        android:id="@+id/SendData"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="150dp"
        android:layout_marginTop="400dp"
        android:text="Send Data">
    </Button>

</RelativeLayout>
```

MainActivity.java

```
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

    EditText name;
    EditText usn;
    EditText collegeName;
    Button sendBtn;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);
        name = findViewById(R.id.name);
        usn = findViewById(R.id.usn);
        collegeName = findViewById(R.id.collegeName);
        sendBtn = findViewById(R.id.SendData);

        sendBtn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String strName=name.getText().toString();
                String strUsn=usn.getText().toString();
                String strCollegeName=collegeName.getText().toString();
                Intent intent =new Intent(getApplicationContext(),
SecondActivity.class);
                intent.putExtra("name",strName);
                intent.putExtra("usn",strUsn);
                intent.putExtra("collegeName",strCollegeName);
                startActivity(intent);
            }
        });
    }
}
```

activity_main2.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".SecondActivity">

    <TextView
        android:id="@+id/receiver_name_id"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="200dp"
        android:layout_marginTop="200dp">
    </TextView>

    <TextView
        android:id="@+id/receiver_usn_id"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="200dp"
        android:layout_marginTop="250dp">
    </TextView>

    <TextView
        android:id="@+id/receiver_collegeName_id"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="200dp"
        android:layout_marginTop="300dp"
        >
    </TextView>

</RelativeLayout>
```

SecondActivity.java

```
import android.content.Intent;
import android.os.Bundle;
import android.widget.TextView;

import androidx.appcompat.app.AppCompatActivity;

public class SecondActivity extends AppCompatActivity{
    TextView receiver_name_id;
    TextView receiver_usn_id;
    TextView receiver_collegeName_id;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main2);

        receiver_name_id = findViewById(R.id.receiver_name_id);
        receiver_usn_id = findViewById(R.id.receiver_usn_id);
        receiver_collegeName_id =
findViewById(R.id.receiver_collegeName_id);
```

```
        Intent intent = getIntent();
        String strName = intent.getStringExtra("name");
        receiver_name_id.setText(strName);
        String strUsn = intent.getStringExtra("usn");
        receiver_usn_id.setText(strUsn);
        String strCollegeName = intent.getStringExtra("collegeName");
        receiver_collegeName_id.setText(strCollegeName);


    }
}
```

AndroidManifest.xml

```
<activity android:name=".SecondActivity"></activity>
```

3. **Develop an application to demonstrate the life-cycle methods of an activity using Toast Notifications.**

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Activity LifeCycle Demo"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```
import android.os.Bundle;

import androidx.appcompat.app.AppCompatActivity;
import android.util.Log;
import android.widget.Toast;


public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Toast toast = Toast.makeText(getApplicationContext(), "onCreate
Called", Toast.LENGTH_SHORT);
        toast.show();
        Log.d("lifecycle","onCreate invoked");
    }

    @Override
    protected void onStart() {
        super.onStart();
        Toast toast = Toast.makeText(getApplicationContext(), "onStart
Called", Toast.LENGTH_LONG);
        toast.show();
        Log.d("lifecycle","onStart invoked");
    }
```

```
    @Override
    protected void onResume() {
        super.onResume();
        Toast toast = Toast.makeText(getApplicationContext(), "onResume
Called", Toast.LENGTH_LONG);
        toast.show();
        Log.d("lifecycle","onResume invoked");
    }
    @Override
    protected void onPause() {
        super.onPause();
        Toast toast = Toast.makeText(getApplicationContext(), "onPause
Called", Toast.LENGTH_LONG);
        toast.show();
        Log.d("lifecycle","onPause invoked");
    }
    @Override
    protected void onStop() {
        super.onStop();
        Toast toast = Toast.makeText(getApplicationContext(), "onStop
Called", Toast.LENGTH_LONG);
        toast.show();
        Log.d("lifecycle","onStop invoked");
    }
    @Override
    protected void onRestart() {
        super.onRestart();
        Toast toast = Toast.makeText(getApplicationContext(), "onRestart
Called", Toast.LENGTH_LONG);
        toast.show();
        Log.d("lifecycle","onRestart invoked");
    }
    @Override
    protected void onDestroy() {
        super.onDestroy();
        Toast toast = Toast.makeText(getApplicationContext(), "onDestroy
Called", Toast.LENGTH_LONG);
        toast.show();
        Log.d("lifecycle","onDestroy invoked");
    }
}
```

4. **Design an application to declare layouts statically as an XML resources.**

a) **Declare GridLayout statically as an XML resource.**
b) **Declare TableLayout statically as an XML resource.**

a. **activity_main.xml**

```
<GridLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:columnCount="2"
    android:orientation="horizontal"
    android:rowCount="4">


    <ImageButton
        android:id="@+id/imageButton1"
        android:layout_width="160dp"
        android:layout_height="90dp"
        android:src="@drawable/scene1" />
    <ImageButton
        android:id="@+id/imageButton2"
        android:layout_width="160dp"
        android:layout_height="90dp"
        android:layout_gravity="center_vertical"
        android:src="@drawable/scene2" />

    <ImageButton
        android:id="@+id/imageButton3"
        android:layout_width="160dp"
        android:layout_height="90dp"
        android:layout_gravity="center_vertical"
        android:src="@drawable/scene3" />
    <ImageButton
        android:id="@+id/imageButton4"
        android:layout_width="160dp"
        android:layout_height="90dp"
        android:layout_gravity="center_vertical"
        android:src="@drawable/scene4" />

    <ImageButton
        android:id="@+id/imageButton5"
        android:layout_width="160dp"
        android:layout_height="90dp"
        android:layout_gravity="center_vertical"
        android:src="@drawable/scene5" />
    <ImageButton
        android:id="@+id/imageButton6"
        android:layout_width="160dp"
        android:layout_height="90dp"
        android:layout_gravity="center_vertical"
        android:src="@drawable/scene6" />
</GridLayout>
```

Go to **app > res > drawable >**

Add all the images in **scene1 to scene6 (Download the any image from google and it here by naming it as scene1, scene2 etc…)**

MainActivity.java

```
import android.os.Bundle;
import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);

    }
}
```

b. **activity_main.xml**

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

    <!-- Add your table rows and views here -->

    <TextView
        android:id="@+id/txt"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="ICC Ranking of Players:"
        android:textSize = "20dp"
        android:textStyle="bold">

    </TextView>


    <TableRow android:background="#51B435" android:padding="10dp">
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="Rank" />
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="Player" />
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="Team" />
        <TextView
            android:layout_width="wrap_content"
```

```
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="Points" />
</TableRow>
<TableRow android:background="#F0F7F7" android:padding="5dp">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="1" />
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="Virat Kohli" />
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="IND" />
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="895" />
</TableRow>
<TableRow android:background="#F0F7F7" android:padding="5dp">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="2" />
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="Rohit Sharma" />
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="IND" />
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="863" />

</TableRow>
<TableRow android:background="#F0F7F7" android:padding="5dp">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="3" />
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:text="Faf du Plessis" />
    <TextView
```

```
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="PAK" />
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="834" />

    </TableRow>

    <TableRow android:background="#F0F7F7" android:padding="5dp">
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="4" />
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="Steven Smith" />
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="AUS" />
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="820" />

    </TableRow>
    <TableRow android:background="#F0F7F7" android:padding="5dp">
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="5" />
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="Ross Taylor" />
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="NZ" />
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="817" />

    </TableRow>
</TableLayout>
```

MainActivity.java

```
import android.os.Bundle;

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);

    }
}
```

5) Develop an application to Generate Context Menu.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<!-- Relative Layout to display all the details -->
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/relLayout"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#fff"
    android:padding="16dp"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="10dp"
        android:text="Context Menu Demo"
        android:textColor="#000"
        android:textSize="20sp"
        android:textStyle="bold" />

    <EditText
        android:id="@+id/contextEditText1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="60dp"
        android:text="Enter Text Long press me!"
        android:textColor="#000"
        android:textSize="20sp"
        android:textStyle="bold" />


    <EditText
```

```
        android:id="@+id/contextEditText2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="110dp"
        android:text="Paste Your Text"
        android:textColor="#000"
        android:textSize="20sp"
        android:textStyle="bold" />



    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/button"
        android:text="Close app"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="190dp"
         />
</RelativeLayout>
```

MainActivity.java

```
import android.content.ClipData;
import android.content.ClipboardManager;
import android.os.Bundle;
import android.view.ContextMenu;
import android.view.MenuItem;
import android.view.View;
import android.widget.EditText;
import androidx.appcompat.app.AppCompatActivity;


public class MainActivity extends AppCompatActivity {
    EditText editText;
    EditText editText1;
    ClipboardManager myClipboard;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        // Link those objects with their respective id's that we have given
in .XML file
        editText = (EditText) findViewById(R.id.contextEditText1);
        editText1 = (EditText) findViewById(R.id.contextEditText2);

    }

    @Override
 public void onCreateContextMenu(ContextMenu menu, View v,
ContextMenu.ContextMenuInfo menuInfo) {
        super.onCreateContextMenu(menu, v, menuInfo);
        // you can set menu header with title icon etc
        menu.setHeaderTitle("Choose a color");
        // add menu items
```

```
        menu.add(0, v.getId(), 0, "Copy");
        menu.add(0, v.getId(), 0, "Paste");
        menu.add(0, v.getId(), 0, "Cut");
    }

    // menu item select listener
    @Override
    public boolean onContextItemSelected(MenuItem item) {
        if (item.getTitle() == "Copy") {
            // cast the received View to TextView so that you can get its
text
            myClipboard =
(ClipboardManager)getSystemService(CLIPBOARD_SERVICE);
            ClipData myClip;
            myClip = ClipData.newPlainText("text",
editText.getText().toString());
            myClipboard.setPrimaryClip(myClip);
        } else if (item.getTitle() == "Paste") {

            ClipData abc = myClipboard.getPrimaryClip();
            ClipData.Item item1 = abc.getItemAt(0);

            String text = item1.getText().toString();
            editText1.setText(text);
        } else if (item.getTitle() == "Cut") {
            myClipboard =
(ClipboardManager)getSystemService(CLIPBOARD_SERVICE);
            ClipData myClip;
            myClip = ClipData.newPlainText("text",
editText.getText().toString());
            editText.setText("");
            myClipboard.setPrimaryClip(myClip);
        }
        return true;
    }
}
```

6) Develop an application to Generate Options Menu.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Options Menu Demo"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
```

```
</android.support.constraint.ConstraintLayout>
```

MainActivity.java

```
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuInflater;

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }

    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        MenuInflater in = getMenuInflater();
        in.inflate(R.menu.option_menu,menu);
        return super.onCreateOptionsMenu(menu);
    }
}
```

colors.xml

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <color name="purple_200">#FFBB86FC</color>
    <color name="purple_500">#FF6200EE</color>
    <color name="purple_700">#FF3700B3</color>
    <color name="teal_200">#FF03DAC5</color>
    <color name="teal_700">#FF018786</color>
    <color name="black">#FF000000</color>
    <color name="white">#FFFFFFFF</color>
</resources>
```

strings.xml

```
<resources>
    <string name="app_name">Options Menu</string>
</resources>
```

Go to res > right click> New> Directory > name it as menu >

Under menu > right click > New > Menu Resource file name it as option_menu.xml

option_menu.xml

```
<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto">
    <item
        android:id="@+id/item1"
        android:title="Home"
        app:showAsAction="never"
        />

    <item
        android:id="@+id/item2"
        android:title="About"
        app:showAsAction="never"
        />

    <item
        android:id="@+id/item3"
        android:title="Contact"
        app:showAsAction="never"
        />
</menu>
```

7) Develop an application to generate alert dialogs within your activity.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<!-- Relative Layout to display all the details -->
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/relLayout"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#fff"
    android:padding="16dp"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="10dp"
        android:text="Alert Dialog Demo"
        android:textColor="#000"
```

```
        android:textSize="20sp"
        android:textStyle="bold" />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/button"
        android:text="Close app"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="190dp"
        />
</RelativeLayout>
```

MainActivity.java

```
import android.app.AlertDialog;
import android.content.DialogInterface;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.Toast;

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

    Button closeButton;
    AlertDialog.Builder builder;


    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);

        closeButton = (Button) findViewById(R.id.button);
        builder = new AlertDialog.Builder(this);
        closeButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {

                //Uncomment the below code to Set the message and title
from the strings.xml file
                //   builder.setMessage(R.string.dialog_message)
.setTitle(R.string.dialog_title);

                //Setting message manually and performing action on button
click
                builder.setMessage("Do you want to close this application
?")
                        .setCancelable(false)
                        .setPositiveButton("Yes", new
DialogInterface.OnClickListener() {
                            public void onClick(DialogInterface dialog, int
id) {
                                finish();
```

```
                                    Toast.makeText(getApplicationContext(),
"you choose yes action for alertbox",
                                            Toast.LENGTH_SHORT).show();
                                }
                            })
                            .setNegativeButton("No", new
DialogInterface.OnClickListener() {
                                public void onClick(DialogInterface dialog, int
id) {
                                    //  Action for 'NO' Button
                                    dialog.cancel();
                                    Toast.makeText(getApplicationContext(),
"you choose no action for alertbox",
                                            Toast.LENGTH_SHORT).show();
                                }
                            });
                    //Creating dialog box
                    AlertDialog alert = builder.create();
                    //Setting the title manually
                    alert.setTitle("AlertDialogExample");
                    alert.show();
                }
            });
    }
}
```

8) Develop an application to Utilize a ArrayAdapter to connect a data source to a List View.

activity_main.xml

```
<RelativeLayout 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"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/titlepage"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:text="ListView Demo"
        android:layout_marginTop="110dp"
        android:textColor="#000" />

    <ListView
        android:id="@+id/simpleListView"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:divider="#000"
        android:dividerHeight="2dp"
        android:layout_marginTop="200dp"/>

</RelativeLayout>
```

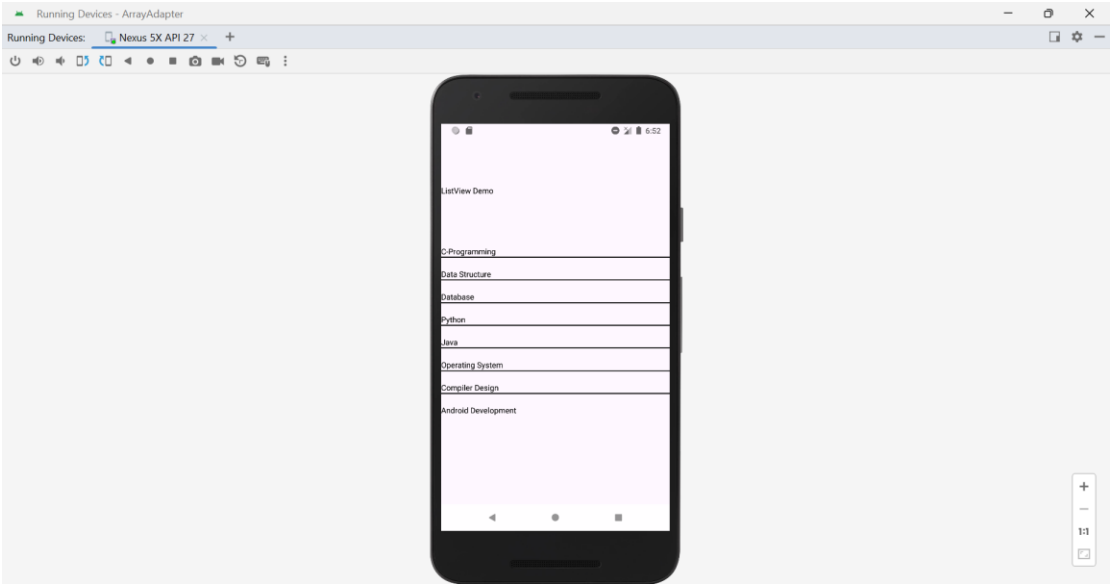
activity_list_view.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical">

    <TextView
        android:id="@+id/textView"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:textColor="#000" />
</LinearLayout>
```

MainActivity.java

```
import android.os.Bundle;
import android.widget.ArrayAdapter;
import android.widget.ListView;

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

    // Array of strings...
    ListView simpleList;
    String courseList[] = {"C-Programming", "Data Structure", "Database",
"Python",
            "Java", "Operating System", "Compiler Design", "Android
Development"};
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);

        simpleList = (ListView) findViewById(R.id.simpleListView);

        ArrayAdapter<String> arrayAdapter = new ArrayAdapter<String>(this,
R.layout.activity_list_view, R.id.textView, courseList);
        simpleList.setAdapter(arrayAdapter);

    }

}
```

output:



9. Develop an application that utilizes an SQLite Database that perform operations such as insertion, updating, removal, and retrieval of data from an SQLite Database.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:padding="10dp"
    tools:context=".MainActivity">
    <TextView
        android:id="@+id/texttitle"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Please enter the details below"
        android:textSize="24dp"
        android:layout_marginTop="20dp"/>

    <EditText
        android:id="@+id/name"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@+id/texttitle"
        android:hint="Name"
        android:inputType="textPersonName"
        android:textSize="24dp" />

    <EditText
        android:id="@+id/contact"
        android:layout_width="match_parent"
```

```
        android:layout_height="wrap_content"
        android:layout_below="@+id/name"
        android:hint="Contact"
        android:inputType="number"
        android:textSize="24dp" />

    <EditText
        android:id="@+id/dob"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@+id/contact"
        android:hint="Date of Birth"
        android:inputType="number"
        android:textSize="24dp" />

    <Button
        android:id="@+id/btnInsert"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@id/dob"
        android:layout_marginTop="30dp"
        android:text="Insert New Data"
        android:textSize="24dp" />

    <Button
        android:id="@+id/btnUpdate"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@id/btnInsert"
        android:text="Update Data"
        android:textSize="24dp" />

    <Button
        android:id="@+id/btnDelete"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@id/btnUpdate"
        android:text="Delete Existing Data"
        android:textSize="24dp" />

    <Button
        android:id="@+id/btnView"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@id/btnDelete"
        android:text="View Data"
        android:textSize="24dp" />
</RelativeLayout>
```

MainActivity.java

```
package com.example.program6;

import androidx.appcompat.app.AlertDialog;
import androidx.appcompat.app.AppCompatActivity;

import android.database.Cursor;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
```

```
import android.widget.EditText;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
    EditText name, contact, dob;
    Button insert, update, delete, view;
    DBHelper DB;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        name = findViewById(R.id.name);
        contact = findViewById(R.id.contact);
        dob = findViewById(R.id.dob);
        insert = findViewById(R.id.btnInsert);
        update = findViewById(R.id.btnUpdate);
        delete = findViewById(R.id.btnDelete);
        view = findViewById(R.id.btnView);
        DB = new DBHelper(this);
        insert.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                String nameTXT = name.getText().toString();
                String contactTXT = contact.getText().toString();
                String dobTXT = dob.getText().toString();

                Boolean checkinsertdata = DB.insertuserdata(nameTXT,
contactTXT, dobTXT);
                if(checkinsertdata==true)
                    Toast.makeText(MainActivity.this, "New Entry Inserted",
                            Toast.LENGTH_SHORT).show();
                else
                    Toast.makeText(MainActivity.this, "New Entry Not
Inserted",
                            Toast.LENGTH_SHORT).show();
            }        });
        update.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                String nameTXT = name.getText().toString();
                String contactTXT = contact.getText().toString();
                String dobTXT = dob.getText().toString();

                Boolean checkupdatedata = DB.updateuserdata(nameTXT,
contactTXT, dobTXT);
                if(checkupdatedata==true)
                    Toast.makeText(MainActivity.this, "Entry Updated",
                            Toast.LENGTH_SHORT).show();
                else
                    Toast.makeText(MainActivity.this, "New Entry Not
Updated",
                            Toast.LENGTH_SHORT).show();
            }        });

        delete.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                String nameTXT = name.getText().toString();
                Boolean checkudeletedata = DB.deletedata(nameTXT);
                if(checkudeletedata==true)
```

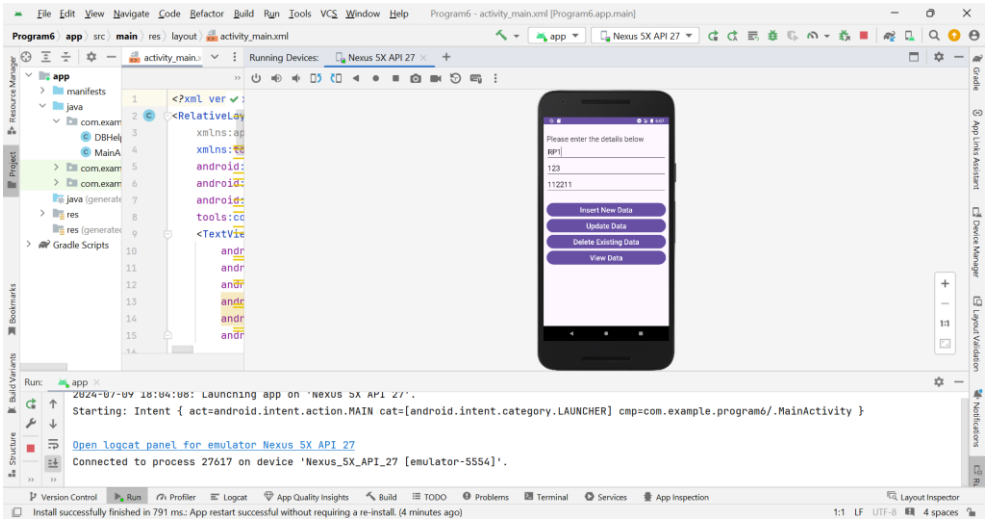
```
                    Toast.makeText(MainActivity.this, "Entry Deleted",
                            Toast.LENGTH_SHORT).show();
                else
                    Toast.makeText(MainActivity.this, "Entry Not Deleted",
                            Toast.LENGTH_SHORT).show();
            }        });

        view.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Cursor res = DB.getdata();
                if(res.getCount()==0){
                    Toast.makeText(MainActivity.this, "No Entry Exists",
                            Toast.LENGTH_SHORT).show();
                    return;
                }
                StringBuffer buffer = new StringBuffer();
                while(res.moveToNext()){
                    buffer.append("Name :"+res.getString(0)+"\n");
                    buffer.append("Contact :"+res.getString(1)+"\n");
                    buffer.append("Date of Birth
:"+res.getString(2)+"\n\n");
                }

                AlertDialog.Builder builder = new
AlertDialog.Builder(MainActivity.this);
                builder.setCancelable(true);
                builder.setTitle("User Entries");
                builder.setMessage(buffer.toString());
                builder.show();
            }        });
    }
}
```

DBHelper.java
Right-click ->New->Java Class

```
package com.example.program6;

import android.content.ContentValues;
import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
import androidx.annotation.Nullable;

public class DBHelper extends SQLiteOpenHelper {
    public DBHelper(Context context) {
        super(context, "Userdata.db", null, 1);
    }
    @Override
    public void onCreate(SQLiteDatabase DB) {
        DB.execSQL("create Table Userdetails(name TEXT primary key, contact
TEXT, dob TEXT)");
    }
    @Override
    public void onUpgrade(SQLiteDatabase DB, int i, int ii) {
        DB.execSQL("drop Table if exists Userdetails");
    }
    public Boolean insertuserdata(String name, String contact, String dob)
    {
```

```
        SQLiteDatabase DB = this.getWritableDatabase();
        ContentValues contentValues = new ContentValues();
        contentValues.put("name", name);
        contentValues.put("contact", contact);
        contentValues.put("dob", dob);
        long result=DB.insert("Userdetails", null, contentValues);
        if(result==-1){
            return false;
        }else{
            return true;
        }
    }
    public Boolean updateuserdata(String name, String contact, String dob)
    {
        SQLiteDatabase DB = this.getWritableDatabase();
        ContentValues contentValues = new ContentValues();
        contentValues.put("contact", contact);
        contentValues.put("dob", dob);
        Cursor cursor = DB.rawQuery("Select * from Userdetails where name =
?", new
                String[]{name});
        if (cursor.getCount() > 0) {
            long result = DB.update("Userdetails", contentValues, "name=?",
new
                    String[]{name});
            if (result == -1) {
                return false;
            } else {
                return true;
            }
        } else {
            return false;
        }
    }
    public Boolean deletedata (String name)
    {
        SQLiteDatabase DB = this.getWritableDatabase();
        Cursor cursor = DB.rawQuery("Select * from Userdetails where name =
?", new
                String[]{name});
        if (cursor.getCount() > 0) {
            long result = DB.delete("Userdetails", "name=?", new
String[]{name});
            if (result == -1) {
                return false;
            } else {
                return true;
            }
        } else {
            return false;
        }
    }

    public Cursor getdata ()
    {
        SQLiteDatabase DB = this.getWritableDatabase();
        Cursor cursor = DB.rawQuery("Select * from Userdetails", null);
        return cursor;
    }
}
```

Output:



10. Develop an app

a. Capture a photo and store it into SDCard utilizing the Camera functionality.
b. Display image by selecting from the gallery or storage

a. Capture a photo and store it into SDCard utilizing the Camera functionality.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:gravity="center_horizontal"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <ImageView
        android:id="@+id/imgCamera"
        android:layout_width="400dp"
        android:layout_height="240dp"
        android:scaleType="fitXY" />
    <Button
        android:id="@+id/btnCamera"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="21dp"
        android:text="Open Camera"/>
</LinearLayout>
```

MainActivity.java

```
package com.example.program7;

import androidx.activity.result.ActivityResult;
import androidx.activity.result.ActivityResultCallback;
import androidx.activity.result.ActivityResultLauncher;
import androidx.activity.result.contract.ActivityResultContracts;
import androidx.annotation.Nullable;
import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.graphics.Bitmap;
import android.os.Bundle;
import android.provider.MediaStore;
import android.view.View;
import android.widget.Button;
import android.widget.ImageView;

public class MainActivity extends AppCompatActivity {
    private final int CAMERA_REQ_CODE = 100;
    ImageView imgCamera;
    ActivityResultLauncher<Intent> activityResultLauncher;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        imgCamera = findViewById(R.id.imgCamera);
        Button btnCamera = findViewById(R.id.btnCamera);

        activityResultLauncher = registerForActivityResult(new
ActivityResultContracts.StartActivityForResult(), new
ActivityResultCallback<ActivityResult>() {
                    @Override
                    public void onActivityResult(ActivityResult result) {
                        if (result.getResultCode() == RESULT_OK) {
                            if (result.getResultCode() == CAMERA_REQ_CODE)
{
                                //for camera
                                Bitmap img = (Bitmap)
(result.getData().getExtras().get("data"));
                                imgCamera.setImageBitmap(img);

                            }
                        }
                    }


        });
        btnCamera.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Intent iCamera = new
Intent(MediaStore.ACTION_IMAGE_CAPTURE);
                activityResultLauncher.launch(iCamera);
              //  startActivityForResult(iCamera, CAMERA_REQ_CODE);
            }
        });
    }

}
```

b) Display image by selecting from the gallery or storage

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    tools:context=".MainActivity"
    tools:ignore="ExtraText">

    <Button
        android:id="@+id/buttonSelectedImage"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="select_image"/>
    <ImageView
        android:id="@+id/selectedImage"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:adjustViewBounds="true"
        android:contentDescription="@string/app_name" />
    android:adjustViewBounds="true"
    android:contentDescription="@string/app_name" />

</LinearLayout>
```

MainActivity.java

```
package com.example.program7a;

import androidx.activity.result.ActivityResultLauncher;
import androidx.annotation.Nullable;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import androidx.core.content.ContextCompat;
import android.Manifest;
import android.content.Intent;
import android.content.pm.PackageManager;
import android.graphics.Bitmap;
import android.graphics.BitmapFactory;
import android.net.Uri;
import android.os.Bundle;
import android.provider.MediaStore;
import android.view.View;
import android.widget.ImageView;
import android.widget.Toast;
import java.io.InputStream;

public class MainActivity extends AppCompatActivity
{
    private static final int REQUEST_CODE_STORAGE_PERMISSION = 1;
    private static final int REQUEST_CODE_SELECT_IMAGE = 2;
```

```
    private ImageView imageSelected;
    ActivityResultLauncher<Intent> activityResultLauncher;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        imageSelected = findViewById(R.id.selectedImage);

        findViewById(R.id.buttonSelectedImage).setOnClickListener(new
View.OnClickListener() {
            @Override
            public void onClick(View view) {
                if (ContextCompat.checkSelfPermission(
                        getApplicationContext(),
Manifest.permission.READ_EXTERNAL_STORAGE
                ) != PackageManager.PERMISSION_GRANTED) {
                    ActivityCompat.requestPermissions(
                            MainActivity.this,
                            new
String[]{Manifest.permission.READ_EXTERNAL_STORAGE},
                            REQUEST_CODE_STORAGE_PERMISSION);
                } else {
                    selectImage();

                }
            }
        });

    }


    private void selectImage()
    {
        Intent intent = new

Intent(Intent.ACTION_PICK,MediaStore.Images.Media.EXTERNAL_CONTENT_URI);
        if(intent.resolveActivity(getPackageManager()) != null){
            startActivityForResult(intent,REQUEST_CODE_SELECT_IMAGE);
        }
    }
    @Override
    public void onRequestPermissionsResult(int requestCode,@Nullable
String[]
            permissions,@Nullable int[] grantResults)
    {

super.onRequestPermissionsResult(requestCode,permissions,grantResults);

        if(requestCode == REQUEST_CODE_STORAGE_PERMISSION &&
grantResults.length > 0)
        {
            if(grantResults[0] == PackageManager.PERMISSION_GRANTED)
            {
                selectImage();
            }
            else
            {
                Toast.makeText(this, "Permission Denied",
Toast.LENGTH_SHORT).show();
            }
```

```
        }
    }

    @Override
    protected void onActivityResult(int requestCode, int resultCode,
@Nullable Intent data) {
        super.onActivityResult(requestCode, resultCode, data);
        if(requestCode == REQUEST_CODE_SELECT_IMAGE && resultCode ==
RESULT_OK){
            if(data != null){
                Uri selectedImageUri = data.getData();
                if(selectedImageUri != null){
                    try{

                        InputStream inputStream =
getContentResolver().openInputStream(selectedImageUri);
                        Bitmap bitmap =
BitmapFactory.decodeStream(inputStream);
                        imageSelected.setImageBitmap(bitmap);
                    }catch (Exception exception){
                        Toast.makeText(this,exception.getMessage(),
Toast.LENGTH_SHORT).show();
                    }
                }
            }
        }
    }
}
```

AndroidManifest.xml

```
<uses-permission android:name="android.permission.READ_EXTERNAL_STORAGE"/>
```