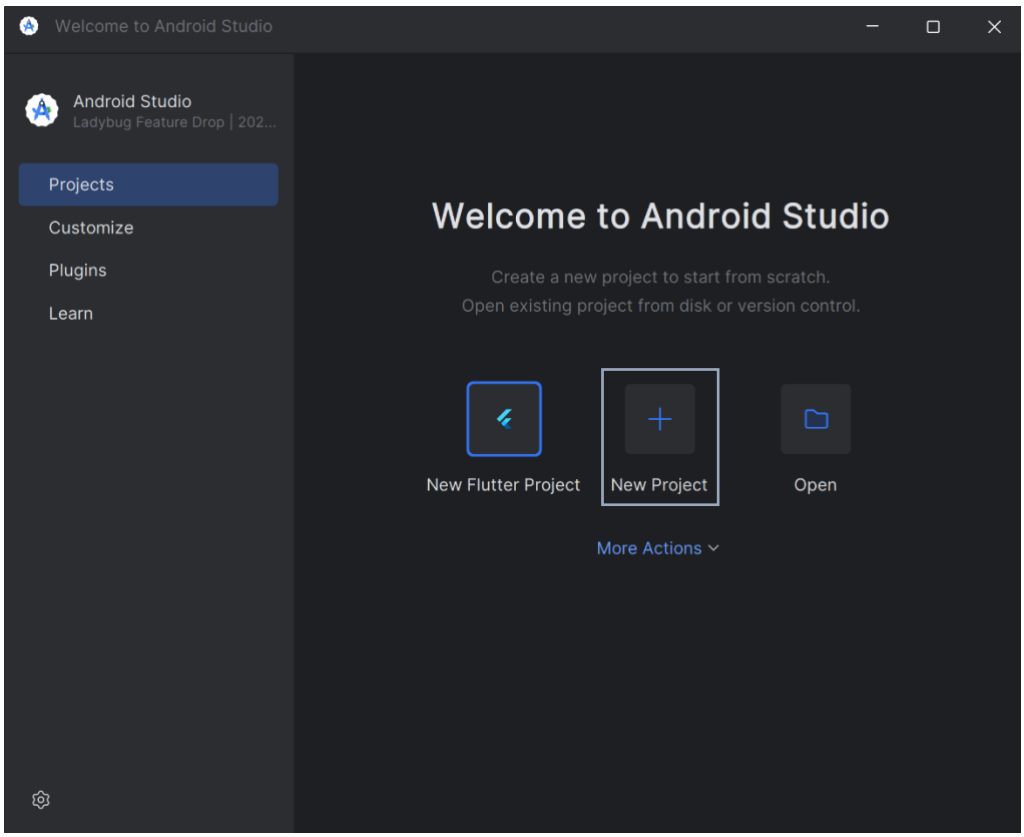
Practical 0

Introduction to Android, Introduction to Android Studio IDE, Application Fundamentals

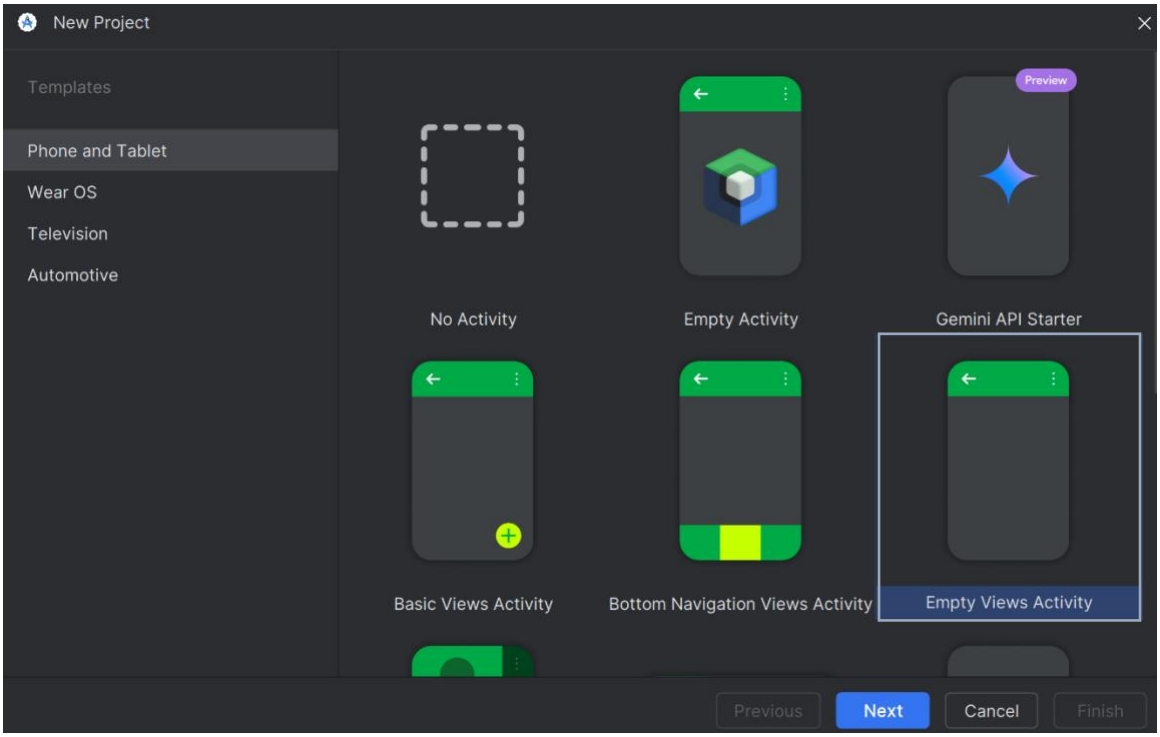
Aim: Creating a simple project with "Hello World" program.

Steps to create Project:

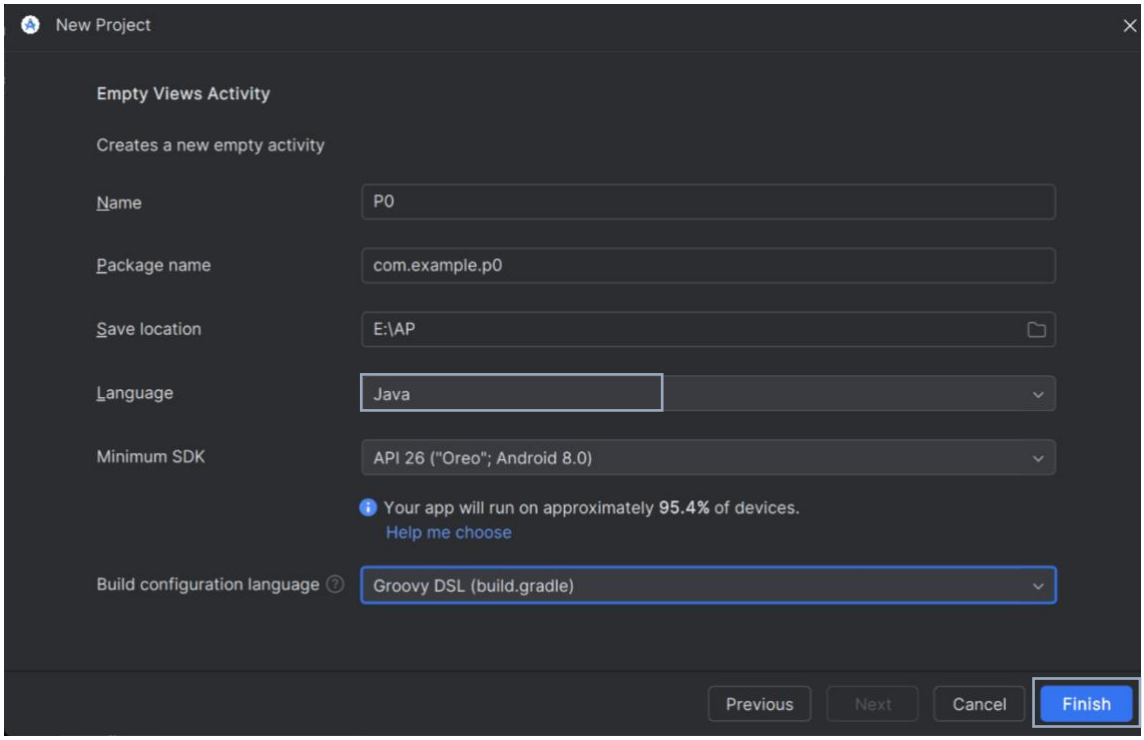
1. Open Android Studio → Click on 'New Project'.



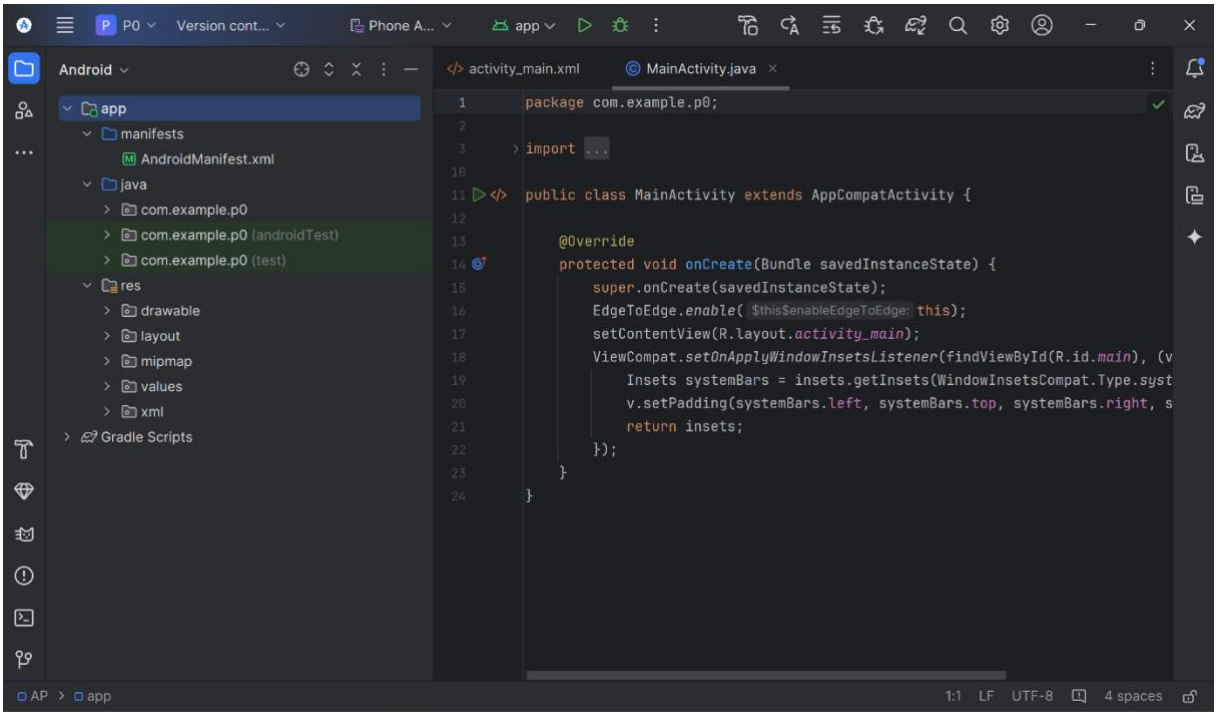
2. Select ‘Empty View Activity’.

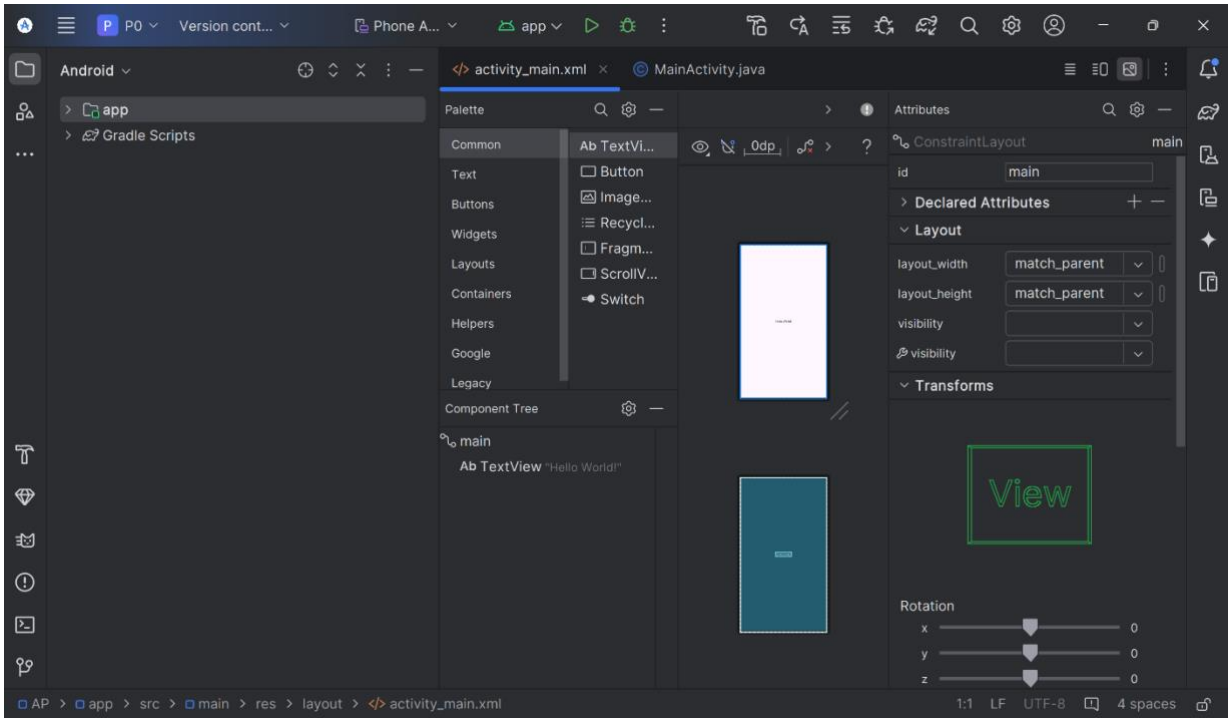


3. Give Project Name as ‘**P0**’ →Select ‘Java’ in language. Click ‘Finish’.



4. ‘Project (P0)’ is successfully created.





Code: MainActivity.java

```
package com.example.prac_0;
import android.os.Bundle;

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

public class MainActivity extends AppCompatActivity {
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      EdgeToEdge.enable(this);
      setContentView(R.layout.activity_main);
      ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main), (v, insets) ->
{
         Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars());
         v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom);
         return insets; }); }}
```

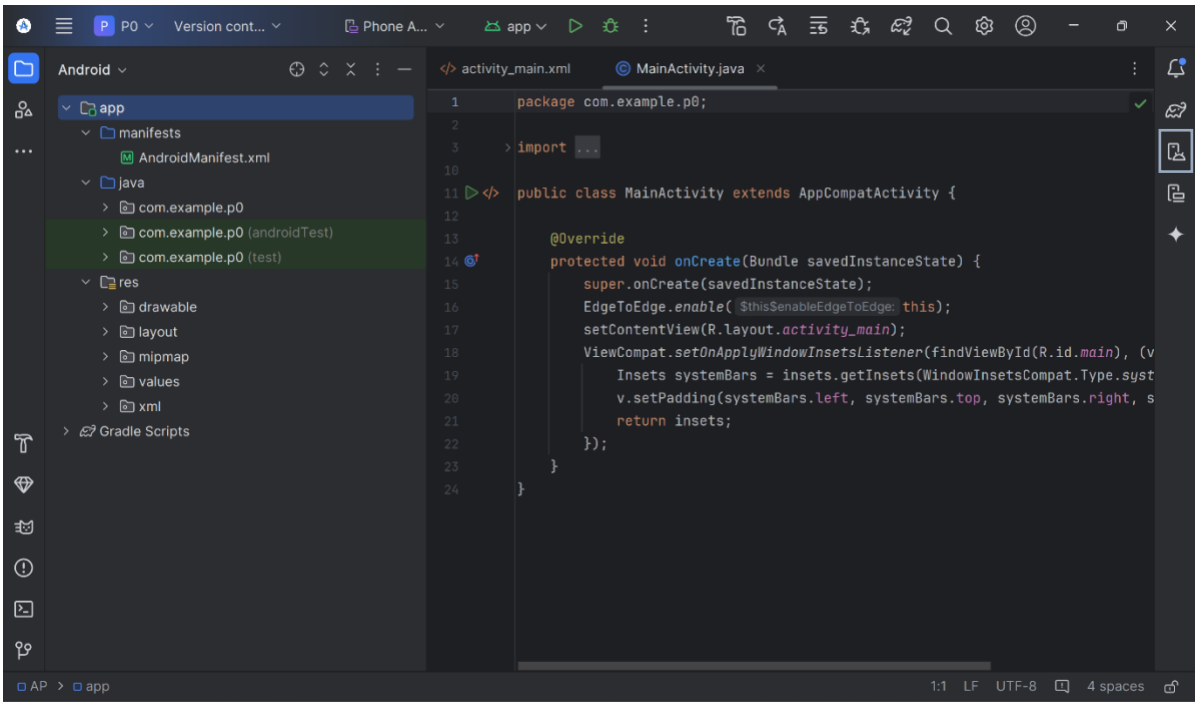
activity_main.xml

```
<?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="Hello World!"
      app:layout_constraintBottom_toBottomOf="parent"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

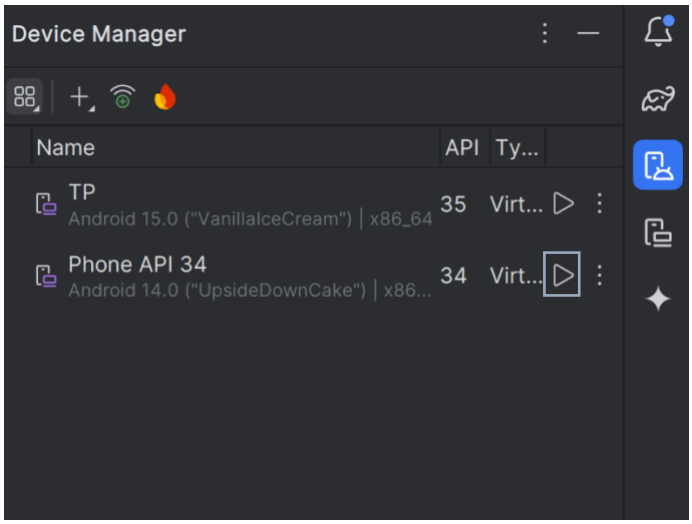
Steps to run the project:

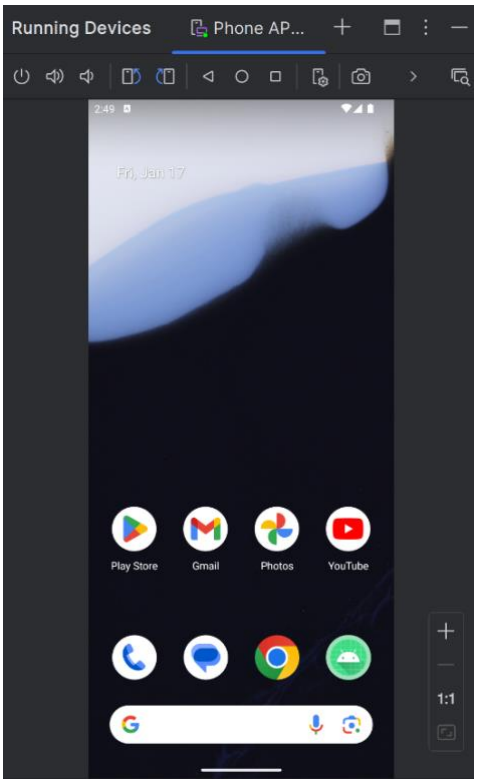
ANDROID PROGRAMMING PRACTICAL

1. Open ‘Device Manager’



2. Click on ‘Play’ button (which will turn on the device).





Practical No. 1

Practical 1

Aim: Android Programming Resources : (Colour, Theme, String, Dimension, Image).

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">
   <TextView
      android:id="@+id/textView"
      android:layout_width="@dimen/d1"
      android:layout_height="wrap_content"
      android:background="@color/d4"
      android:text="My application"
      android:textColor="@color/white"
      app:layout_constraintBottom_toBottomOf="parent"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintTop_toTopOf="parent"
      app:layout_constraintVertical_bias="0.022" />
   <TextView
      android:id="@+id/textView2"
      android:layout_width="@dimen/d2"
      android:layout_height="wrap_content"
      android:background="@color/d1"
      android:rotationX="4"
      android:text="@string/t1"
      android:textColor="#212121"
      app:layout_constraintBottom_toBottomOf="parent"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintTop_toTopOf="parent" />
   <ImageView
      android:id="@+id/imageView"
      android:layout_width="135dp"
      android:layout_height="180dp"
      app:srcCompat="@drawable/circle" />
   <ImageView
      android:id="@+id/imageView3"
      android:layout_width="136dp"
```

```
        android:layout_height="181dp"
        app:srcCompat="@drawable/random" />
</LinearLayout>
```

strings.xml

```
<resources>
    <string name="app_name">pract1</string>
    <string name="t1">This Application will help You.</string>
</resources>
```

themes.xml

```
<resources xmlns:tools="http://schemas.android.com/tools">
    <!-- Base application theme. -->
    <style name="Base.Theme.Pract1" parent="Theme.Material3.DayNight.NoActionBar">
        <!-- Customize your light theme here. -->
        <!-- <item name="colorPrimary">@color/my_light_primary</item> -->
    </style>
    <style name="Theme.Pract1" parent="Base.Theme.Pract1" >
        <item name="android:textColor">#ff0810</item>
        <item name="android:background">#aa9911</item>
    </style>
</resources>
```

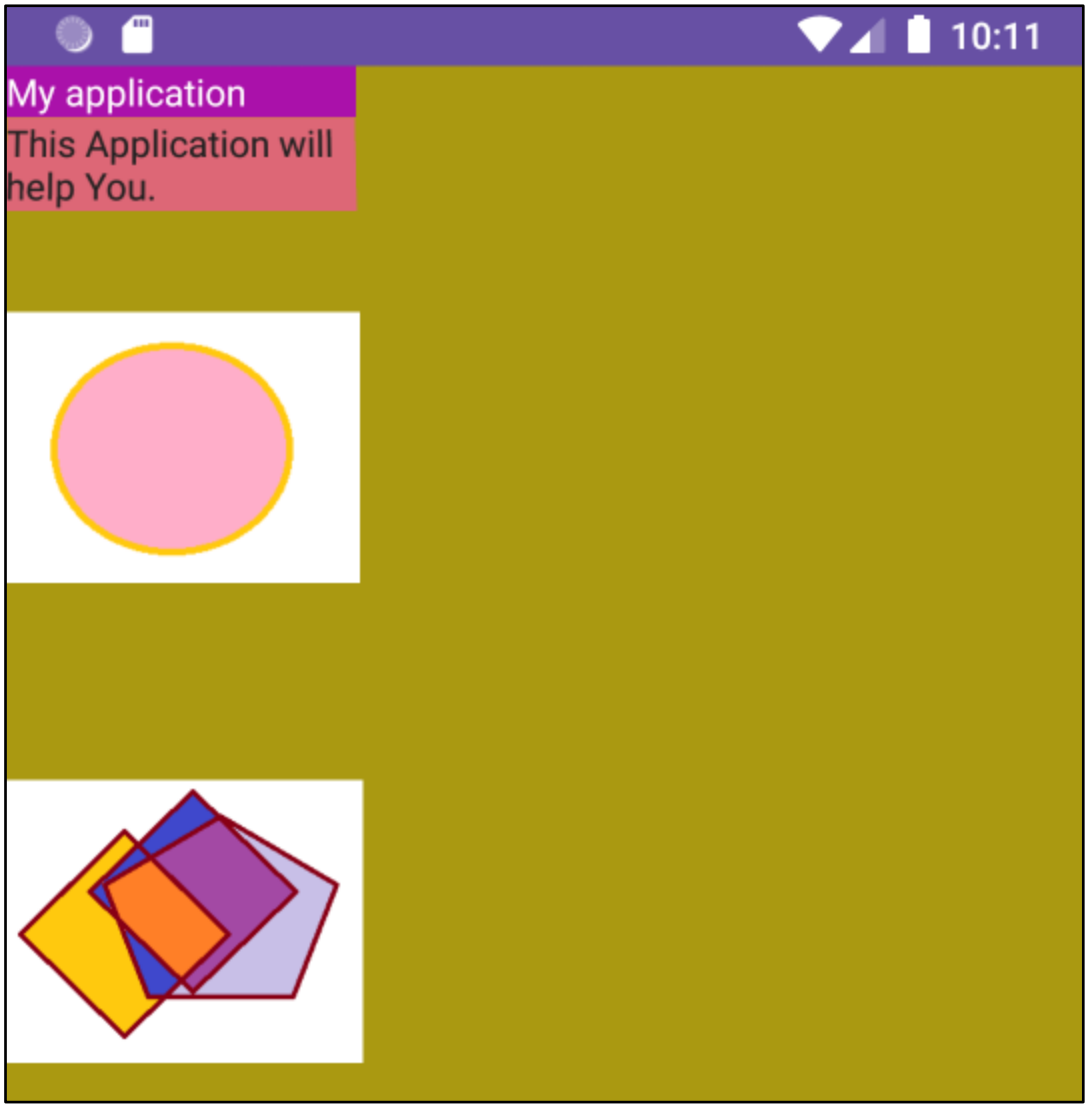
colors.xml

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <color name="black">#FF000000</color>
    <color name="white">#FFFFFFFF</color>
    <color name="d1">#dd6776</color>
    <color name="d2">#ddaacc</color>
    <color name="d3">#ff5566</color>
    <color name="d4">#aa11aa</color>
</resources>
```

dimens.xml

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <dimen name="d1">350px</dimen>
    <dimen name="d2">350px</dimen>
</resources>
```

Output:



Practical No. 2

Practical 2A

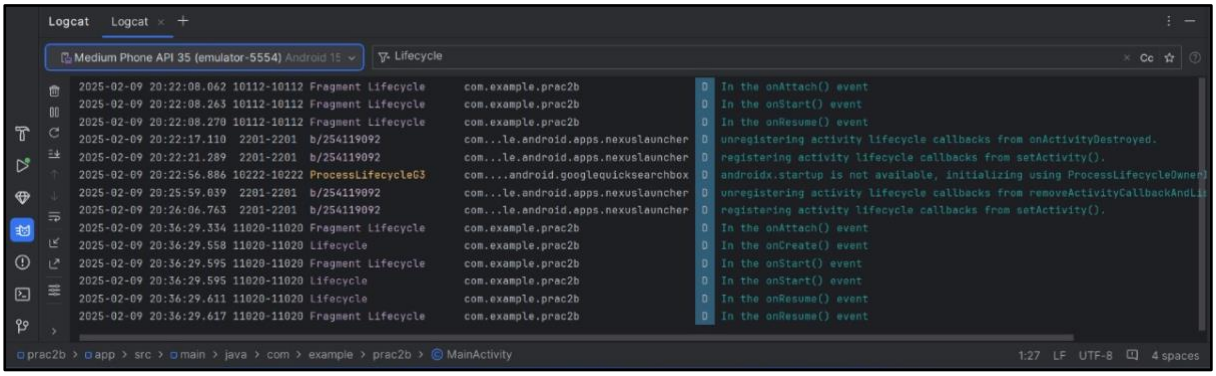
Aim: Life Cycle of Androids Activity

MainActivity.java

```
package com.example.prac2b;
import android.os.Bundle;
import androidx.appcompat.app.AppCompatActivity;
import android.util.Log;
public class MainActivity extends AppCompatActivity {
   String tag = "Lifecycle";
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      Log.d(tag, "In the onCreate() event");
   }
   @Override
   protected void onStart() {
      super.onStart();
      Log.d(tag, "In the onStart() event");
   }
   @Override
   protected void onRestart() {
      super.onRestart();
      Log.d(tag, "In the onRestart() event");
   }
   @Override
   protected void onResume() {
      super.onResume();
      Log.d(tag, "In the onResume() event");
   }
```

```
    @Override
    protected void onPause() {
        super.onPause();
        Log.d(tag, "In the onPause() event");
    }
    @Override
    protected void onStop() {
        super.onStop();
        Log.d(tag, "In the onStop() event");
    }
    @Override
    protected void onDestroy() {
        super.onDestroy();
        Log.d(tag, "In the onDestroy() event");
    }
}
```

Output:



Practical 2B

Aim: Creating a Fragment

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:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <!-- Take a fragment in our activity -->
    <fragment
        android:id="@+id/test_fragment"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        class="com.example.prac2b.BlankFragment"
        tools:layout="@layout/fragment_blank" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```
package com.example.prac2b;
import android.os.Bundle;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}
```

fragment_blank.xml

```
<?xml version="1.0" encoding="utf-8"?>
<FrameLayout 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=".BlankFragment">
    <TextView
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:textSize="48dp"
        android:text="Check Logcat" />
</FrameLayout>
```

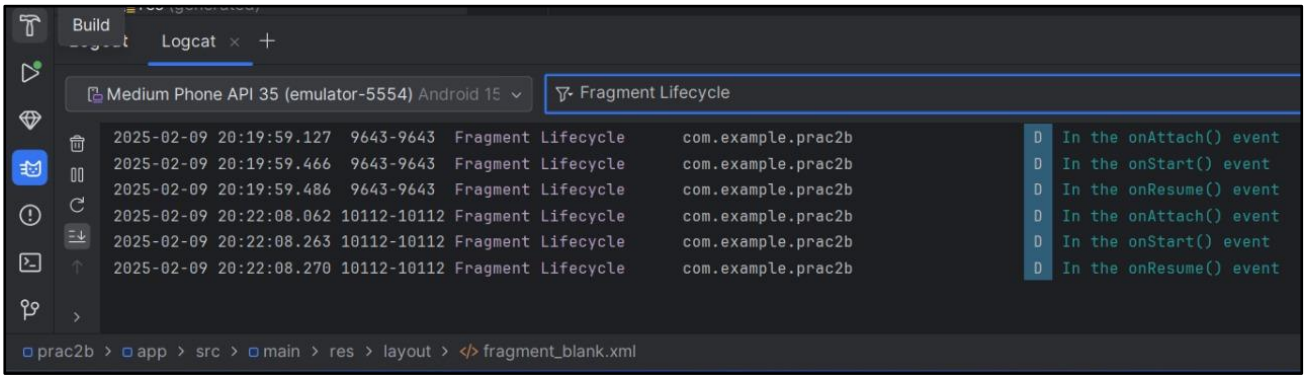
BlankFragment.java

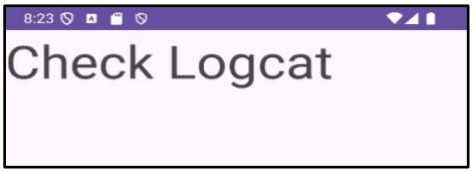
```
package com.example.prac2b;
import android.content.Context;
import android.os.Bundle;
import androidx.annotation.NonNull;
import androidx.fragment.app.Fragment;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.util.Log;
public class BlankFragment extends Fragment {
    String tag = "Fragment Lifecycle";
    @Override
    public void onAttach(@NonNull Context context) {
        super.onAttach(context);
        Log.d(tag, "In the onAttach() event");
    }@Override
    public void onStart() {
```

```
        super.onStart();
        Log.d(tag, "In the onStart() event");
    }   @Override
    public void onResume() {
        super.onResume();
        Log.d(tag, "In the onResume() event");
    }@Override
    public void onPause() {
        super.onPause();
        Log.d(tag, "In the onPause() event");
    }@Override
    public void onStop() {
        super.onStop();
        Log.d(tag, "In the onStop() event");
    }
    @Override
    public void onDestroy() {
        super.onDestroy();
        Log.d(tag,"In the onDestroy() event");
    }
    private static final String ARG_PARAM1 = "param1";
    private static final String ARG_PARAM2 = "param2";
    private String mParam1;
    private String mParam2;
    public BlankFragment() {
        // Required empty public constructor
    }
    public static BlankFragment newInstance(String param1, String param2) {
        BlankFragment fragment = new BlankFragment();
        Bundle args = new Bundle();
        args.putString(ARG_PARAM1, param1);
```

```
        args.putString(ARG_PARAM2, param2);
        fragment.setArguments(args);
        return fragment;
    }
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        if (getArguments() != null) {
            mParam1 = getArguments().getString(ARG_PARAM1);
            mParam2 = getArguments().getString(ARG_PARAM2);
        }}
    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container, Bundle
savedInstanceState) {
        // Inflate the layout for this fragment
        return inflater.inflate(R.layout.fragment_blank, container, false)  }}
```

Output:





Practical No 3

1. Relative Layout

activity_main.xml

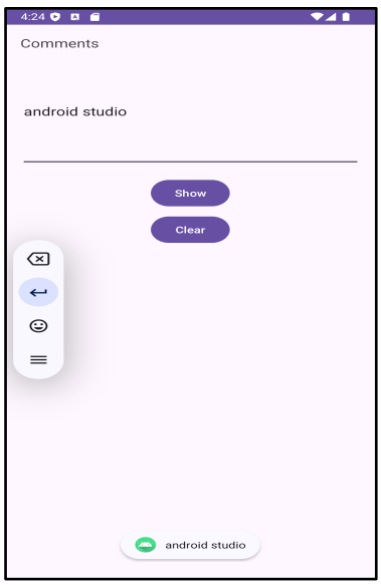
```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <TextView
        android:id="@+id/lblComments"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Comments"
        android:textSize="18sp"
        android:layout_alignParentTop="true"
        android:layout_alignParentLeft="true"
        android:layout_marginLeft="16dp"
        android:layout_marginTop="16dp"/>
    <EditText
        android:id="@+id/txtComments"
        android:layout_width="match_parent"
        android:layout_height="170dp"
        android:textSize="18sp"
        android:layout_below="@id/lblComments"
        android:layout_marginTop="8dp"
        android:layout_marginLeft="16dp"
        android:layout_marginRight="16dp"
        android:layout_centerHorizontal="true"
        android:hint="Enter your comment"/>
    <Button
        android:id="@+id/btnShow"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Show"
        android:layout_below="@id/txtComments"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="16dp"
        android:onClick="show"
        tools:ignore="OnClick" /> <!-- Correct binding -->
    <Button
        android:id="@+id/btnClear"
```

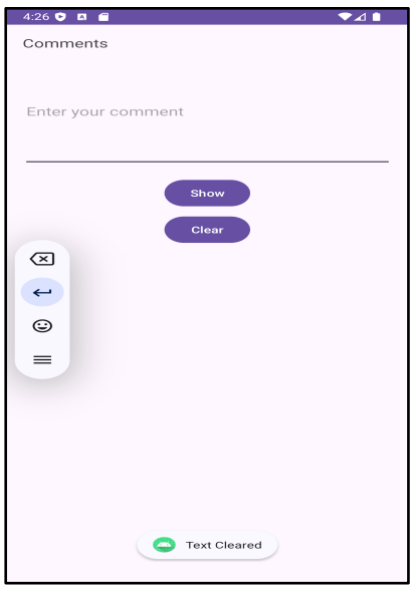
```
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Clear"
        android:layout_below="@id/btnShow"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="8dp"
        android:onClick="clear"
        tools:ignore="OnClick" /> <!-- Correct binding -->
</RelativeLayout>
```

MainActivity.java

```
package com.example.practical3;
import android.os.Bundle;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.EditText;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity {    @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);   }
   public void show(View view) {
      EditText data = findViewById(R.id.txtComments);
      String str = data.getText().toString();
      Toast.makeText(this, str, Toast.LENGTH_SHORT).show();}
   public void clear(View view) {
      EditText data = findViewById(R.id.txtComments);
      data.setText("");
      Toast.makeText(this, "Text Cleared", Toast.LENGTH_SHORT).show();}}
```

Output:





2. Linear Layout

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:id="@+id/main"
   android:orientation="horizontal"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   tools:context=".MainActivity">
   <Button
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:id="@+id/b1"
      android:onClick="button1"
      android:text="@string/button1_text"/>
   <Button
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:id="@+id/b2"
      android:onClick="button2"
      android:text="@string/button2_text"/>
   <Button
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:id="@+id/b3"
      android:onClick="button3"
      android:text="@string/button3_text"/>
   <Button
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:id="@+id/b4"
      android:onClick="button4"
      android:text="@string/button4_text"/>
</LinearLayout>
```

MainActivity.java

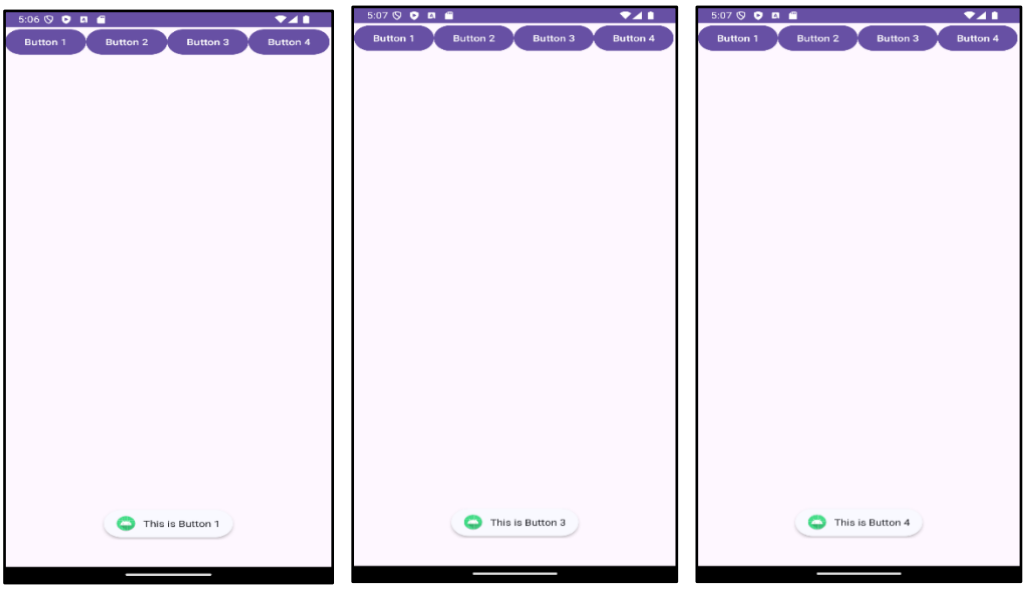
```
package com.example.linearlayout;
import android.os.Bundle;
import android.view.View;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity {
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);  }
```

```
    public void button1(View view) {
        Toast.makeText(this, "This is Button 1", Toast.LENGTH_SHORT).show(); }
    public void button2(View view) {
        Toast.makeText(this, "This is Button 2", Toast.LENGTH_SHORT).show(); }
    public void button3(View view) {
        Toast.makeText(this, "This is Button 3", Toast.LENGTH_SHORT).show();  }
    public void button4(View view) {
        Toast.makeText(this, "This is Button 4", Toast.LENGTH_SHORT).show();
    }
}
```

strings.xml

```
<resources>
    <string name="app_name">LinearLayout</string>
        <string name="button1_text">Button 1</string>
        <string name="button2_text">Button 2</string>
        <string name="button3_text">Button 3</string>
        <string name="button4_text">Button 4</string>
</resources>
```

Output:



3. VerticalLinearLayout

activity_main.xml

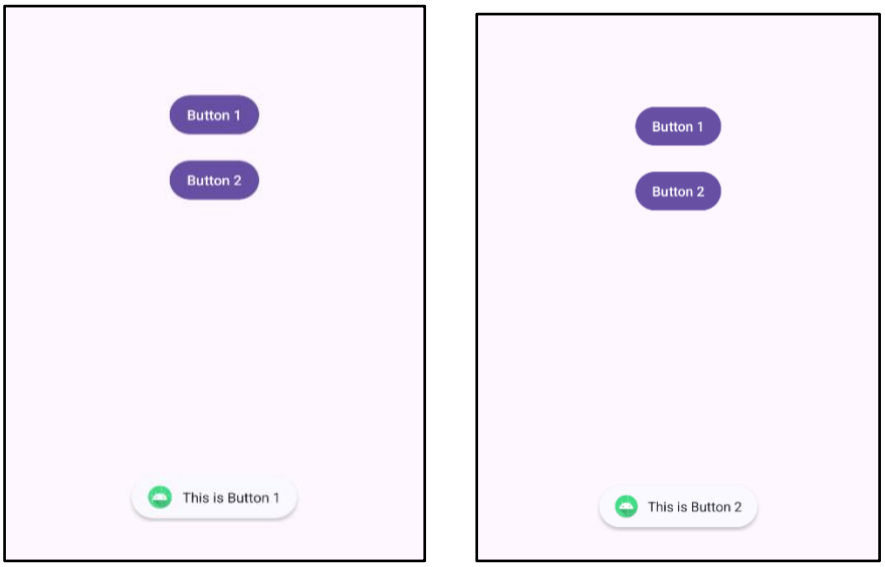
```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
   xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   xmlns:tools="http://schemas.android.com/tools"
   android:id="@+id/main"
   android:orientation="vertical"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   android:gravity="center"
   android:padding="16dp"
   tools:context=".MainActivity">
   <Button
      android:id="@+id/b1"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:onClick="button1"
      android:text="Button 1"
      android:padding="10dp"
      android:layout_margin="10dp" />
   <Button
      android:id="@+id/b2"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:onClick="button2"
      android:text="Button 2"
      android:padding="10dp"
      android:layout_margin="10dp" />
</LinearLayout>
```

MainActivity.java

```
package com.example.practical3;
import android.os.Bundle;
import android.view.View;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity {
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
   }
   public void button1(View view) {
```

```
        Toast.makeText(this, "This is Button 1", Toast.LENGTH_SHORT).show();
    }
    public void button2(View view) {
        Toast.makeText(this, "This is Button 2", Toast.LENGTH_SHORT).show();
    }
}
```

Output:



4. TableLayout

activity_main.xml

```
<?xml version=”1.0” encoding=”utf-8”?>
<TableLayout
    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”>
    <TableRow>
        <TextView
            Android:text=”User Name:”
            Android:layout_width=”120dp”
```

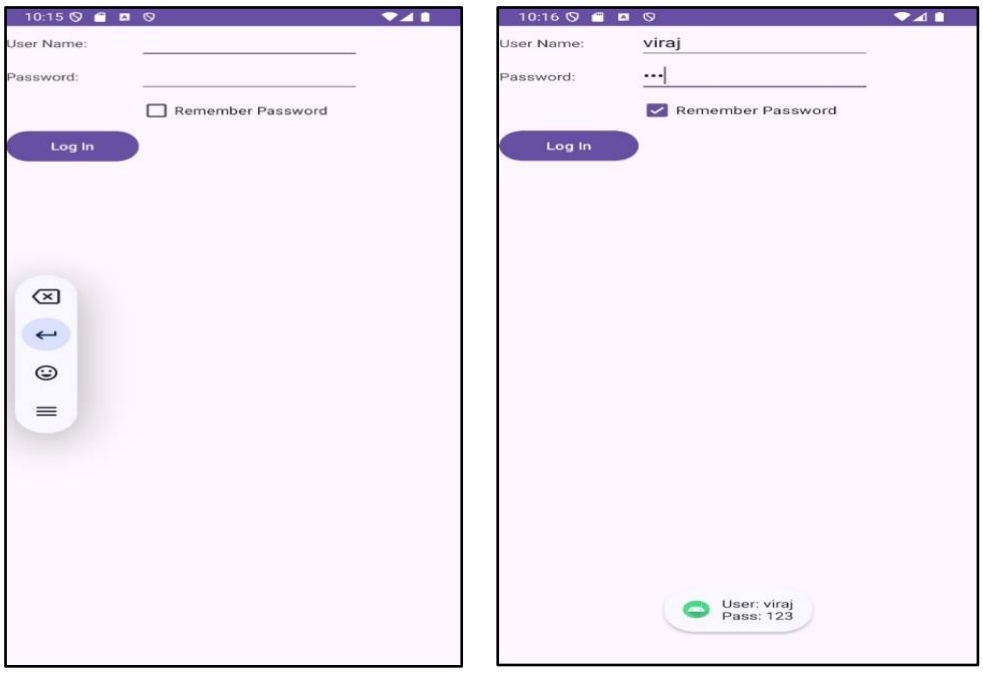
```
        Android:layout_height=”wrap_content”/>
    <EditText
        Android:id=”@+id/txtUserName”
        Android:layout_width=”200dp”
        Android:layout_height=”wrap_content”/>
</TableRow>
<TableRow>
    <TextView
        Android:text=”Password:”
        Android:layout_width=”120dp”
        Android:layout_height=”wrap_content”/>
    <EditText
        Android:id=”@+id/txtPassword”
        Android:inputType=”textPassword”
        Android:layout_width=”200dp”
Android:layout_height=”wrap_content”/>
</TableRow>
<TableRow>
    <TextView />
    <CheckBox
        Android:id=”@+id/chkRememberPassword”
        Android:layout_width=”wrap_content”
        Android:layout_height=”wrap_content”
        Android:text=”Remember Password”/>
</TableRow>
<TableRow>
    <Button
        Android:id=”@+id/buttonSignIn”
        Android:onClick=”login”
        Android:text=”Log In”/>
</TableRow>
```

```
</TableLayout>
```

MainActivity.java

```
Package com.example.table_layout;
Import android.os.Bundle;
Import android.view.View;
Import android.widget.EditText;
Import android.widget.Toast;
Import androidx.appcompat.app.AppCompatActivity;
Public class MainActivity extends AppCompatActivity {    @Override
   Protected void onCreate(Bundle savedInstanceState) {
      Super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);}
   Public void login(View view) {
      // Correct the variable names
      EditText txtUserName = findViewById(R.id.txtUserName);
      EditText txtPassword = findViewById(R.id.txtPassword);
      // Display user input with Toast
      Toast.makeText(this, "User: " + txtUserName.getText().toString() +
            "\nPass: " + txtPassword.getText().toString(), Toast.LENGTH_SHORT).show();}}
```

Output:



5. Scroll Layout

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<ScrollView 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:scrollbarSize="10dp"

tools:context=".MainActivity">
<LinearLayout
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
        android:orientation="vertical">
       <TextView
          android:layout_width="wrap_content"
          android:layout_height="wrap_content"
           android:text="Line1"
          android:textSize="48dp"/>
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Line2"
        android:textSize="48dp"/>
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Line3"
        android:textSize="48dp"/>
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Line4"
        android:textSize="48dp"/>
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Line5"
        android:textSize="48dp"/>
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Line6"
        android:textSize="48dp"/>
```

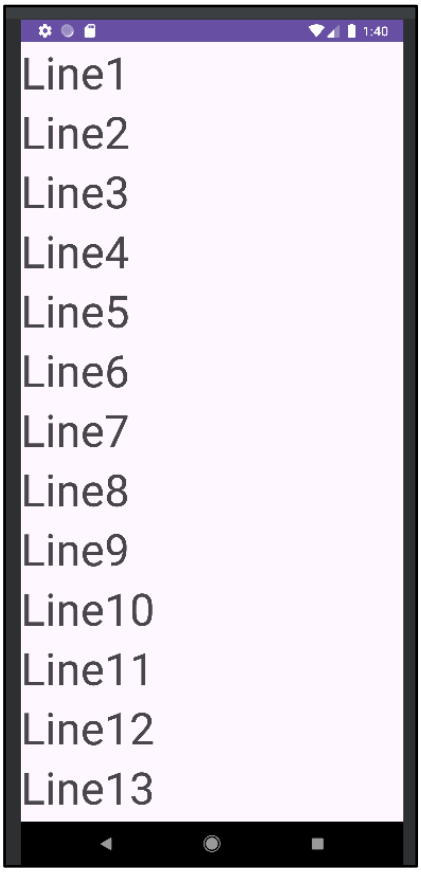
```
<TextView
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:text="Line7"
   android:textSize="48dp"/>
<TextView
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:text="Line8"
   android:textSize="48dp"/>
<TextView
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:text="Line9"
   android:textSize="48dp"/>
<TextView
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:text="Line10"
   android:textSize="48dp"/>
<TextView
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:text="Line11"
   android:textSize="48dp"/>
<TextView
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:text="Line12"
   android:textSize="48dp"/>
<TextView
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:text="Line13"
   android:textSize="48dp"/>
<TextView
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:text="line14"
   android:textSize="48dp"/>
<TextView
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:text="Line15"
   android:textSize="48dp"/>
<TextView
```

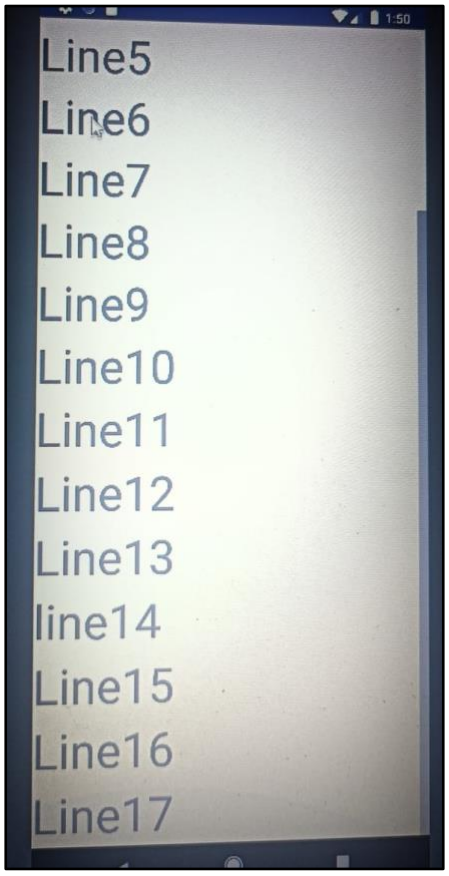
```
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Line16"
        android:textSize="48dp"/>
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Line17"
        android:textSize="48dp"/>
</LinearLayout>
</ScrollView>
```

MainActivity.java (No change)

```
package com.example.listview;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}
```

Output:





6. Absolute Layout

activity_main.xml

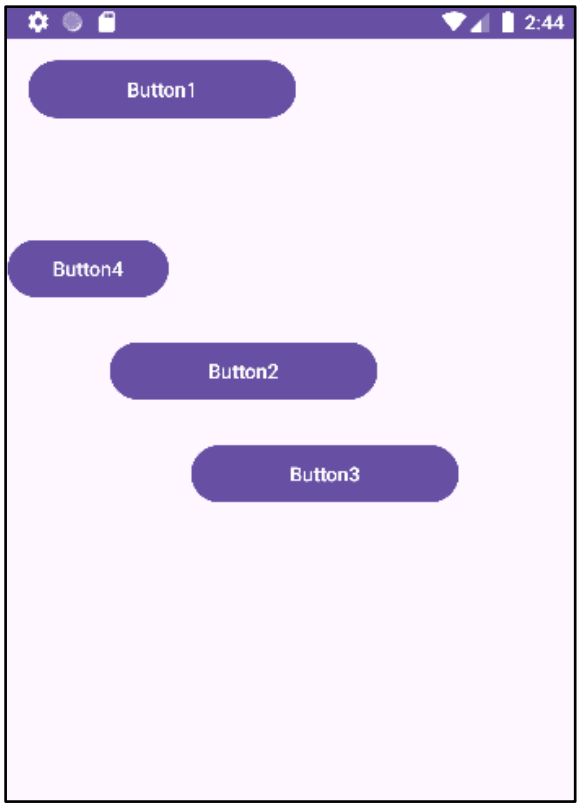
```
<?xml version="1.0" encoding="utf-8"?>
<AbsoluteLayout
   xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   tools:context=".MainActivity">
   <Button
      android:layout_width="188dp"
      android:layout_height="wrap_content"
      android:text="Button1"
      android:layout_x="50px"
      android:layout_y="30px"/>
   <Button
      android:layout_width="188dp"
      android:layout_height="wrap_content"
      android:text="Button2"
      android:layout_x="200px"
      android:layout_y="550px"/>
   <Button
      android:layout_width="188dp"
      android:layout_height="wrap_content"
      android:text="Button3"
      android:layout_x="350px"
      android:layout_y="740px"/>
   <Button
      android:layout_width="113dp"
      android:layout_height="wrap_content"
      android:text="Button4"
      android:layout_x="12px"
      android:layout_y="361px"/>
</AbsoluteLayout>
```

MainActivity.java

```
package com.example.absolute_layout;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.Toast;
import android.view.View;
public class MainActivity extends AppCompatActivity {
   @Override
   protected void onCreate(Bundle savedInstanceState) {
```

```
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
    public void button1(View view)
    {
        Toast.makeText(this,"This is Button 1",Toast.LENGTH_SHORT).show();
    }
    public void button2(View view)
    {
        Toast.makeText(this,"This is Button 2",Toast.LENGTH_SHORT).show();
    }
    public void button3(View view)
    {
        Toast.makeText(this,"This is Button 3",Toast.LENGTH_SHORT).show();
    }
    public void button4(View view)
    {
        Toast.makeText(this,"This is Button 4",Toast.LENGTH_SHORT).show();
    }
}
```

Output:



7. ListView

activity_main.xml

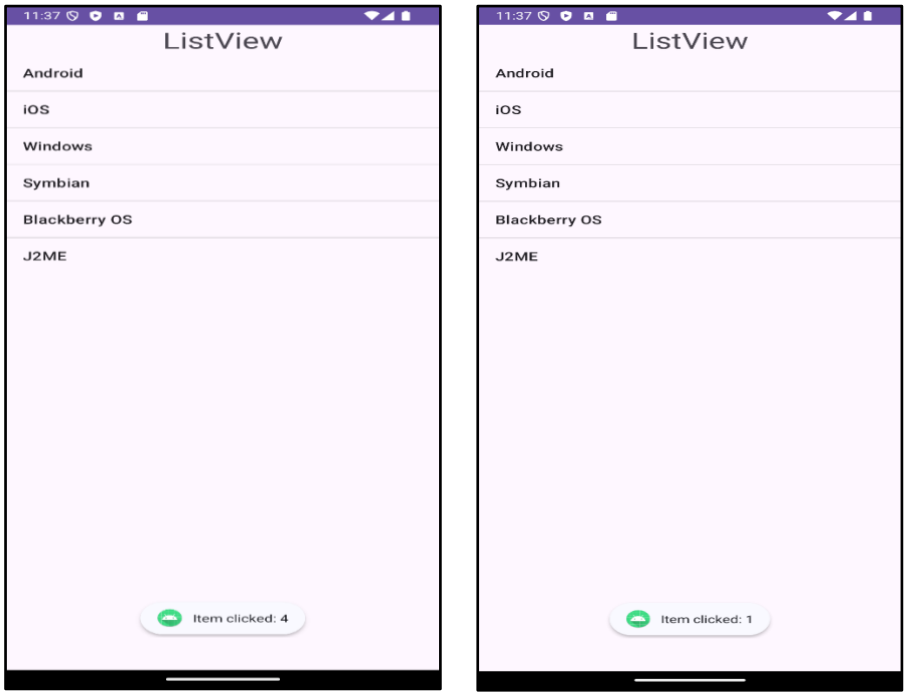
```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
   xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   tools:context=".MainActivity">
   <TextView
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="ListView"
      android:textSize="30dp"
      android:layout_alignParentTop="true"
      android:layout_centerHorizontal="true"
      android:id="@+id/tvt"/>
   <ListView
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:id="@+id/lv"
      android:layout_below="@id/tvt"/>
</RelativeLayout>
```

MainActivity.java

```
package com.example.practical3;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.ArrayAdapter;
import android.widget.EditText;
import android.widget.ListView;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity {
   ListView l;
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      final String[] s = {"Android", "iOS", "Windows", "Symbian", "Blackberry OS",
"J2ME"};
      l = findViewById(R.id.lv);
      ArrayAdapter<String> ada = new ArrayAdapter<>(this,
```

```
android.R.layout.simple_list_item_1, s);
        l.setAdapter(ada);
        l.setOnItemClickListener(new AdapterView.OnItemClickListener() {
            @Override
            public void onItemClick(AdapterView<?> parent, View view, int position, long id) {
                Toast.makeText(getApplicationContext(), "Item clicked: " + position,
Toast.LENGTH_LONG).show();
            }});
    }}
```

Output:



8. Gridview

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"
    tools:context=".MainActivity">
  <GridView
      android:id="@+id/gridview"
      android:layout_width="fill_parent"
      android:layout_height="fill_parent"
      android:numColumns="2"
      android:verticalSpacing="10dp"
      android:horizontalSpacing="10dp"
```

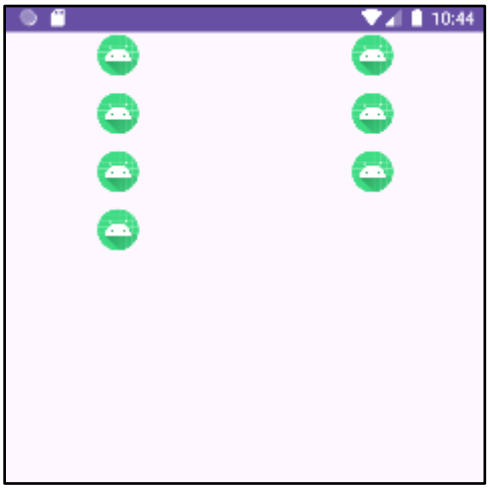
```
    android:columnWidth="90dp"
    android:stretchMode="columnWidth"
android:gravity="center"/>
</LinearLayout>
```

MainActivity.java

```
package com.example.gridview;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Context;
import android.os.Bundle;
import android.view.View;
import android.view.ViewGroup;
import android.widget.AdapterView;
import android.widget.BaseAdapter;
import android.widget.GridView;
import android.widget.ImageView;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity {
   Integer[] imageIDs = {
         R.mipmap.ic_launcher,
         R.mipmap.ic_launcher,
         R.mipmap.ic_launcher,
         R.mipmap.ic_launcher,
         R.mipmap.ic_launcher,
         R.mipmap.ic_launcher,
         R.mipmap.ic_launcher
   };
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      GridView gridView = (GridView) findViewById(R.id.gridview);
      gridView.setAdapter(new ImageAdapter(this));
      gridView.setOnItemClickListener(new AdapterView.OnItemClickListener() {
         public void onItemClick(AdapterView<?> parent, View v, int position, long id) {
            Toast.makeText(getBaseContext(),
                  "pic" + (position + 1) + " selected",
                  Toast.LENGTH_SHORT).show();
         }
      });
   }
   public class ImageAdapter extends BaseAdapter {
      private Context context;
      public ImageAdapter(Context c) {
         context = c;
      }
```

```
        public int getCount() {
            return imageIDs.length;
        }
        public Object getItem(int position) {
            return position;
        }
        public long getItemId(int position) {
            return position;
        }
        public View getView(int position, View convertView, ViewGroup parent) {
            ImageView imageView;
            if (convertView == null) {
                imageView = new ImageView(context);
                imageView.setLayoutParams(new ViewGroup.LayoutParams(85, 85));
                imageView.setScaleType(ImageView.ScaleType.CENTER_CROP);
                imageView.setPadding(5, 5, 5, 5);
            } else {
                imageView = (ImageView) convertView;
            }
            imageView.setImageResource(imageIDs[position]);
            return imageView;
        }
    }
}
```

Output:



Practical No 4

Practical 4A

Aim: Programming UI elements: App Bar

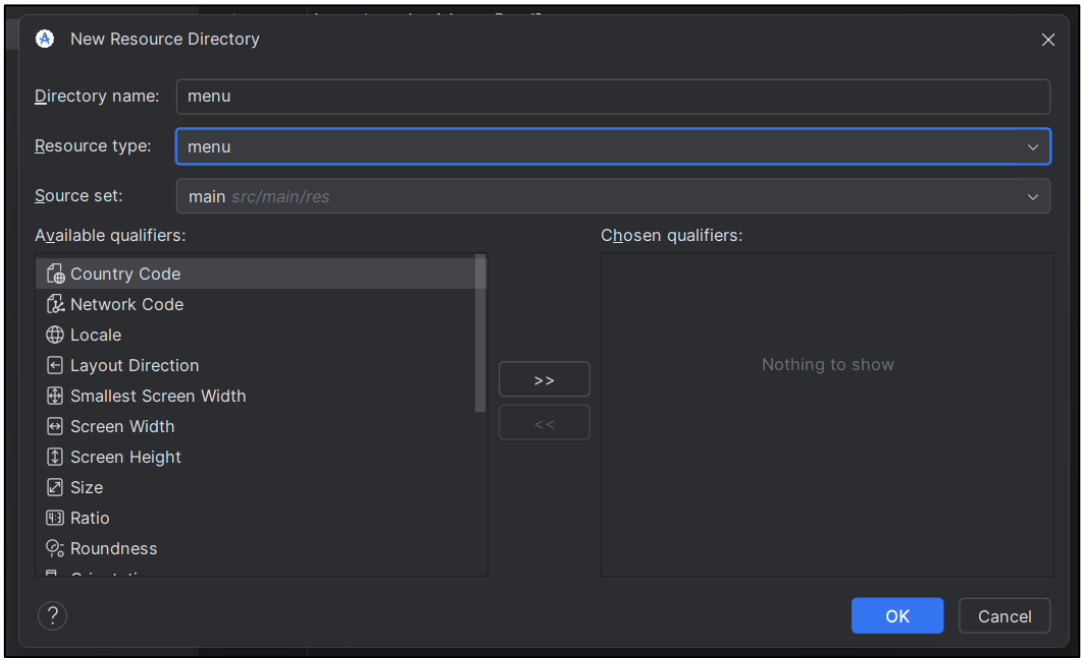
activity_main.xml

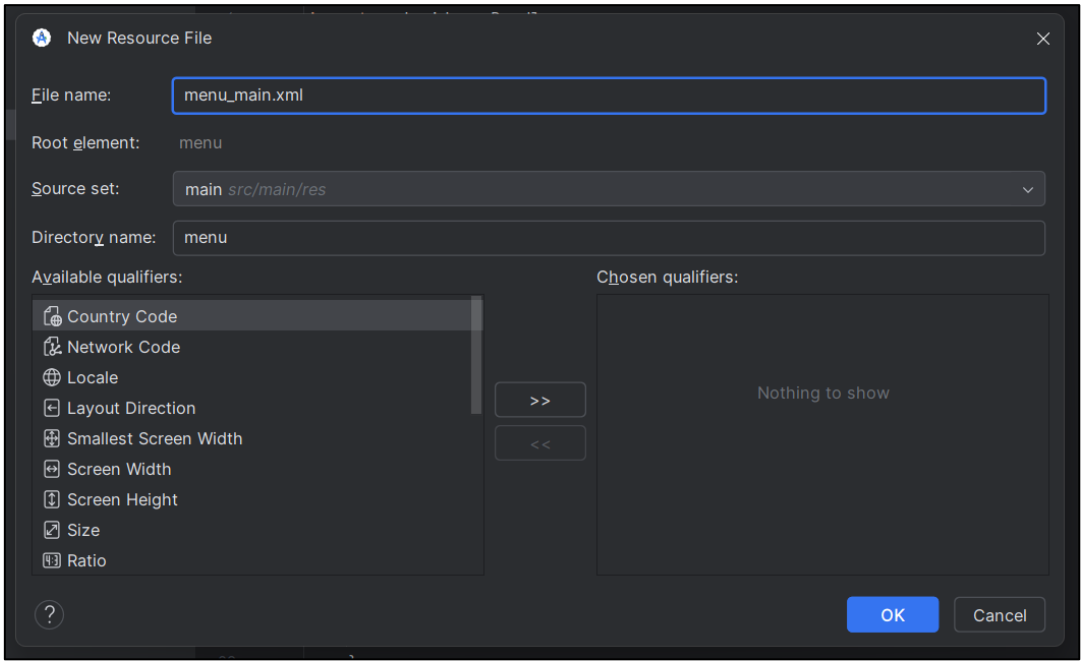
```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   android:orientation="vertical"
   tools:context=".MainActivity">
   <!-- Toolbar at the top -->
   <androidx.appcompat.widget.Toolbar
      android:id="@+id/toolbar"
      android:layout_width="match_parent"
      android:layout_height="?attr/actionBarSize"
      android:background="?attr/colorPrimary"
      android:elevation="4dp"
      android:theme="@style/ThemeOverlay.AppCompat.Dark.ActionBar"
      app:title="Simple AppBar" />
   <!-- Other UI elements can go below -->
   <!-- For example, a content area -->
</LinearLayout>
```

MainActivity.java

```
package com.example.appbar;
import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;
import android.graphics.Color;
import android.os.Bundle;
import android.text.SpannableString;
import android.text.style.ForegroundColorSpan;
import android.view.Menu;
import android.view.MenuItem;
import android.widget.Toast;
import androidx.appcompat.widget.Toolbar;
public class MainActivity extends AppCompatActivity {
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
```

```
        Toolbar toolbar = findViewById(R.id.toolbar);
        setSupportActionBar(toolbar);
    }
    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        getMenuInflater().inflate(R.menu.menu_main, menu);
        return true;
    }
    @Override
    public boolean onPrepareOptionsMenu(Menu menu) {
        for (int i = 0; i < menu.size(); i++) {
            MenuItem item = menu.getItem(i);
            SpannableString s = new SpannableString(item.getTitle());
            s.setSpan(new ForegroundColorSpan(Color.BLACK), 0, s.length(), 0);
            item.setTitle(s);
        }
        return super.onPrepareOptionsMenu(menu);
    }
    @Override
    public boolean onOptionsItemSelected(MenuItem item) {
        int id = item.getItemId();
        if (id == R.id.action_settings) {
            Toast.makeText(this, "Settings Clicked", Toast.LENGTH_SHORT).show();
            return true;
        }
        if (id == R.id.action_settings1) {
            Toast.makeText(this, "Settings1 Clicked", Toast.LENGTH_SHORT).show();
            return true;
        }
        return super.onOptionsItemSelected(item);
    }
}
```



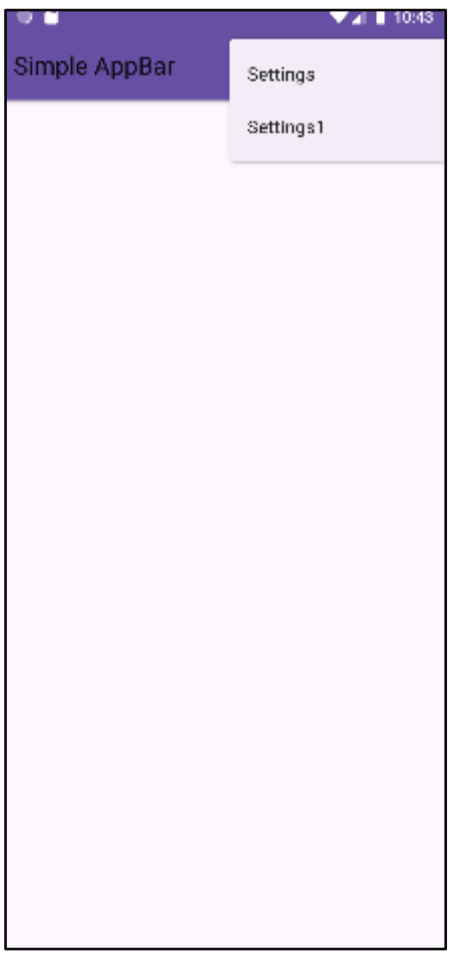


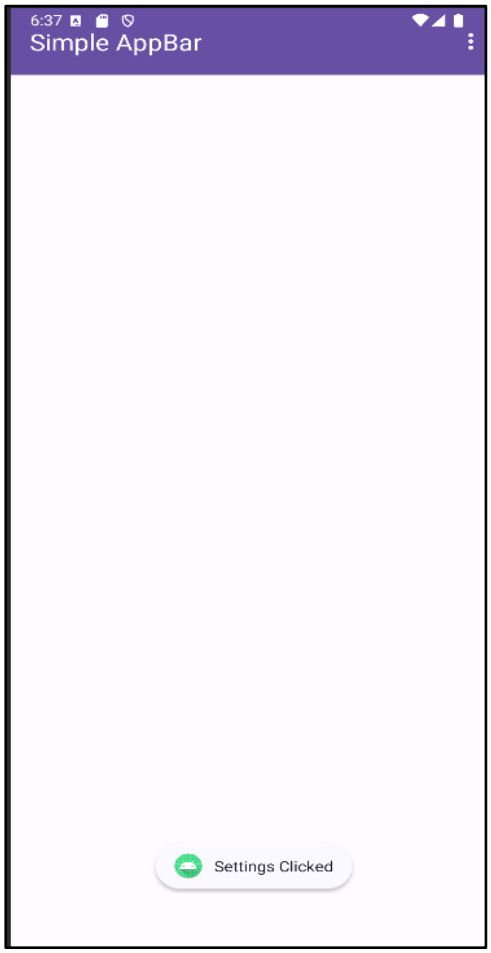
menu_main.xml

```
<?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">
   <!-- Menu item 1 -->
   <item
      android:id="@+id/action_settings"
      android:title="Settings"
      android:orderInCategory="100" />
   <!-- Menu item 2 -->
   <item
      android:id="@+id/action_settings1"
```

```
    android:title="Settings1"
    android:orderInCategory="100" />
</menu>
```

Output:





Practical 4B

Aim: Programming Elements: Fragment

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:id="@+id/main"
android:layout_width="match_parent"
android:layout_height="match_parent"
tools:context=".MainActivity">
<Button
android:id="@+id/button_load_fragment"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Load Fragment"/>
<FrameLayout
android:id="@+id/fragment_container"
android:layout_width="match_parent"
android:layout_height="match_parent"
android:layout_marginTop="16dp"/>
</LinearLayout>
```

MainActivity.java

```
package com.example.prac4b;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import androidx.appcompat.app.AppCompatActivity;
import androidx.fragment.app.Fragment;
```

```
import androidx.fragment.app.FragmentManager;
import androidx.fragment.app.FragmentTransaction;
public class MainActivity extends AppCompatActivity {
@Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      Button buttonLoadFragment = findViewById(R.id.button_load_fragment);
      buttonLoadFragment.setOnClickListener(new View.OnClickListener() {
         @Override
         public void onClick(View v) {
            loadFragment(new BlankFragment());
         }    });  }
   private void loadFragment(Fragment fragment) {
      // Create a FragmentManager
      FragmentManager fragmentManager = getSupportFragmentManager();
      // Create a FragmentTransaction to begin the transaction and replace the Fragment
      FragmentTransaction fragmentTransaction = fragmentManager.beginTransaction();
      fragmentTransaction.replace(R.id.fragment_container, fragment);
      // Commit the transaction
      fragmentTransaction.commit();
   }}
```

fragment_blank.xml

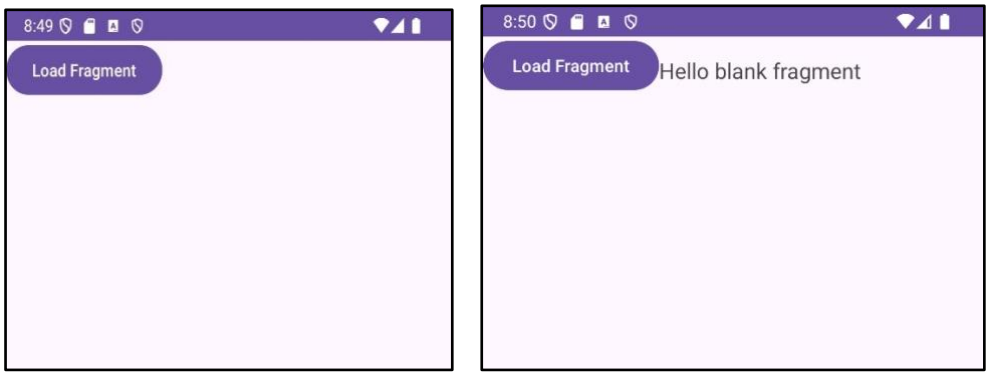
```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   android:orientation='horizontal'
   android:gravity="center">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

```
    android:id="@+id/textView_fragment"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:text="@string/hello_blank_fragment"
    android:textSize="18sp"/>
</LinearLayout>
```

BlankFragment.java

```
package com.example.prac4b;
import android.os.Bundle;
import androidx.annotation.NonNull;
import androidx.annotation.Nullable;
import androidx.fragment.app.Fragment;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
public class BlankFragment extends Fragment {
  @Nullable
  @Override
  public View onCreateView(@NonNull LayoutInflater inflater,@Nullable ViewGroup
container,                @Nullable Bundle savedInstanceState) {
    // Inflate the layout for this fragment
    return inflater.inflate(R.layout.fragment_blank, container, false);
  }}
```

Output:



Practical 4C

Aim: Programming UI elements : UI Components

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">
  <Button
     android:layout_width="match_parent"
     android:layout_height="wrap_content"
     android:id="@+id/btnSave"
     android:text="Save"
     android:layout_alignParentTop="true"/>
   <ImageButton
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:id="@+id/ib"
      android:src="@mipmap/ic_launcher"/>
   <EditText
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:hint="edit text"
      android:id="@+id/et"/>
   <CheckBox
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:id="@+id/cb1"
      android:text="Auto Save"/>
   <CheckBox
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:id="@+id/cbst"
      android:text=""
      style="?android:attr/starStyle"/>
   <RadioGroup
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:id="@+id/rg">
      <RadioButton
         android:layout_width="wrap_content"
         android:layout_height="wrap_content"
```

```
        android:id="@+id/rb1"
        android:text="Option1"/>
        <RadioButton
          android:layout_width="wrap_content"
          android:layout_height="wrap_content"
          android:id="@+id/rb2"
          android:text="Option2"/>
    </RadioGroup>
    <ToggleButton
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:id="@+id/tb"/>
</LinearLayout>
```

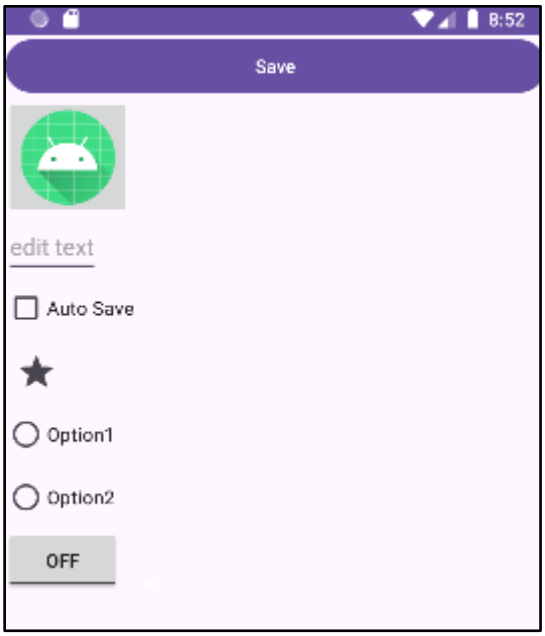
MainActivity.java

```
package com.example.uicomponents;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.Display;
import android.view.View;
import android.widget.Button;
import android.widget.CheckBox;
import android.widget.CompoundButton;
import android.widget.EditText;
import android.widget.ImageButton;
import android.widget.RadioButton;
import android.widget.ToggleButton;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      Button btsave=(Button) findViewById(R.id.btnSave);
      ImageButton imgb=(ImageButton) findViewById(R.id.ib);
      EditText etext=(EditText) findViewById(R.id.et);
      CheckBox cb1=(CheckBox) findViewById(R.id.cb1);
      CheckBox cbst=(CheckBox) findViewById(R.id.cbst);
      RadioButton rb1=(RadioButton) findViewById(R.id.rb1);
      RadioButton rb2=(RadioButton) findViewById(R.id.rb2);
      ToggleButton tbutton =(ToggleButton) findViewById(R.id.tb);
      btsave.setOnClickListener(new View.OnClickListener()
      {
        @Override
        public void onClick(View v)
        {
```

```
            DisplayToast("Save Button clicked");
        }
    });
    imgb.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            DisplayToast("ImageButton Clicked");
        }
    });
    cb1.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            if(((CheckBox)v).isChecked())
                DisplayToast("CheckBox Option1 is checked");
            else
                DisplayToast(" CheckBox  unchecked");
        }
    });
    cbst.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            if(((CheckBox)v).isChecked())
                DisplayToast("CheckBox Option2 is checked");
            else
                DisplayToast(" CheckBox  unchecked");
        }
    });
    cbst.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            if(((CheckBox)v).isChecked())
                DisplayToast("CheckBox Option2 is checked");
            else
                DisplayToast(" CheckBox  unchecked");
        }
    });
   rb1.setOnCheckedChangeListener(new CompoundButton.OnCheckedChangeListener()
   {
      @Override
      public void onCheckedChanged(CompoundButton buttonView,boolean ischecked)
      {
         if(rb1.isChecked()) {
            DisplayToast("RadioButton 1 is checked");
         }
            else
            DisplayToast("RadioButton 1 is unchecked");
```

```
        }
    });
     rb2.setOnCheckedChangeListener(new CompoundButton.OnCheckedChangeListener()
     {
        @Override
        public void onCheckedChanged(CompoundButton buttonView,boolean ischecked)
        {
            if(rb2.isChecked()) {
                DisplayToast("RadioButton 2 is checked");
            }
            else
                DisplayToast("RadioButton 2 is unchecked");
        }
     });
     tbutton.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            if(tbutton.isChecked()) {
                DisplayToast("ToggleButton is on");
            }
            else
                DisplayToast("ToggleButton is off");
        }
     });    }
   public void DisplayToast(String s)
   {
      Toast.makeText(this,s,Toast.LENGTH_SHORT).show();
   }}
```

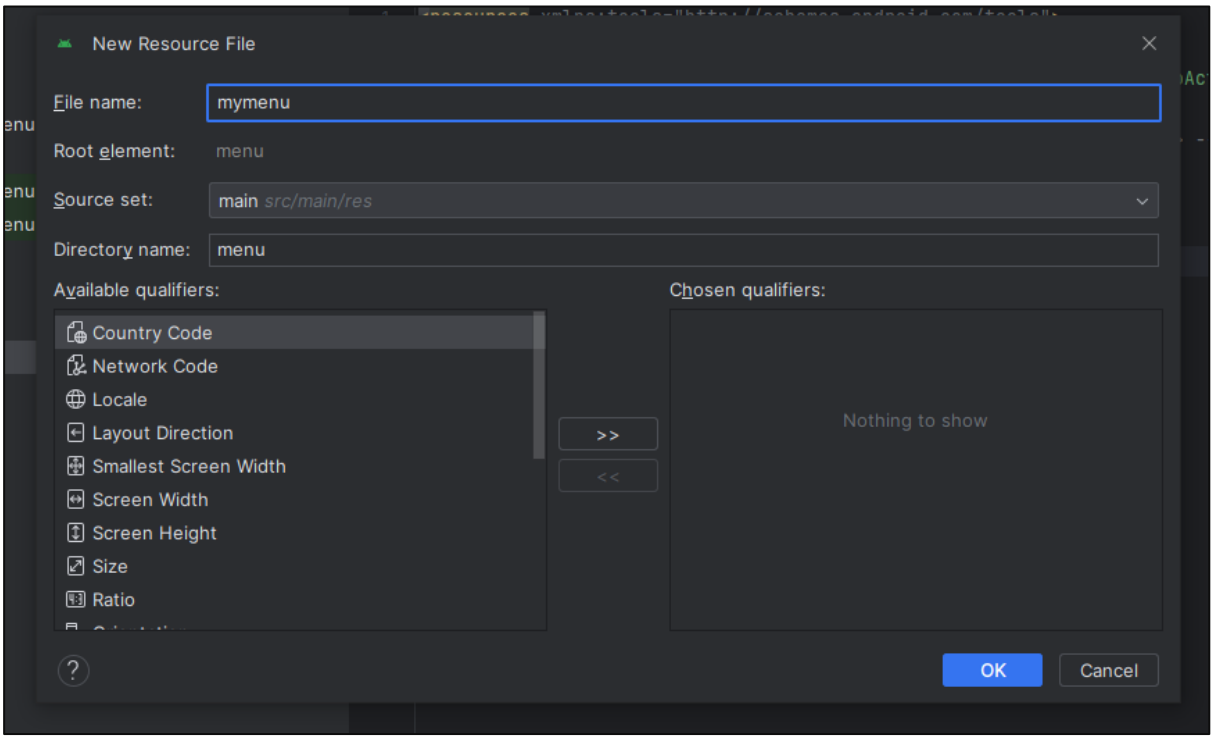
Output:



Practical 5

Practical 5A

Aim: Creating Menus



themes.xml

```
<resources xmlns:tools="http://schemas.android.com/tools">
    <!-- Base application theme. -->
    <style name="Base.Theme.Menu" parent="Theme.AppCompat.Light.DarkActionBar">
        <!-- Customize your light theme here. -->
        <!-- <item name="colorPrimary">@color/my_light_primary</item> -->
    </style>
    <style name="Theme.Menu" parent="Base.Theme.Menu" />
</resources>
```

Mymenu.xml

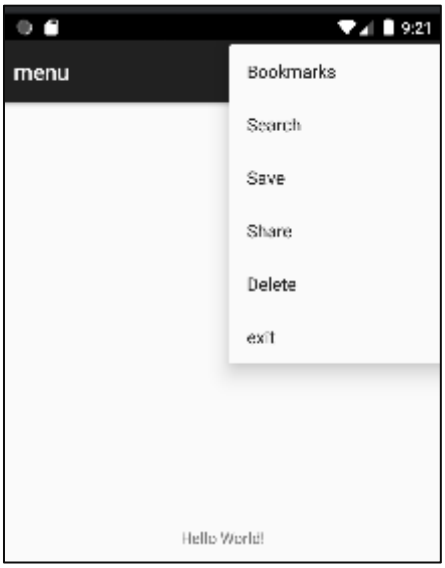
```
<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android">
<item
    android:id="@+id/newb"
    android:title="Bookmarks"/>
    <item
        android:id="@+id/search"
        android:title="Search"/>
    <item
        android:id="@+id/save"
        android:title="Save"/>
    <item
```

```
        android:id="@+id/Share"
        android:title="Share"/>
    <item
        android:id="@+id/delete"
        android:title="Delete"/>
  <item
        android:id="@+id/exit"
    android:title="exit"/>
</menu>
```

MainActivity.java

```
package com.example.menu;
import androidx.appcompat.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) {
        // Inflating the menu resource file
        MenuInflater mi = getMenuInflater();
        mi.inflate(R.menu.mymenu, menu);
        return true;
    }

}
```

Output:



Practical 5B

Aim: Creating Dialog

activity_main.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"
   android:padding="20dp">
   <Button
      android:id="@+id/button_dialog"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:onClick="onClickDialog"
      android:text="Click to display an AlertDialog" />
   <Button
      android:id="@+id/button_progressdialog"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:onClick="onClickProgressDialog"
      android:text="Click to display a ProgressDialog" />
   <Button
      android:id="@+id/button_datedialog"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:onClick="onClickDateDialog"
      android:text="Click to display a DatePickerDialog" />
   <Button
      android:id="@+id/button_timedialog"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:onClick="onClickTimeDialog"
      android:text="Click to display a TimePickerDialog" />
   <TextView
      android:id="@+id/textView_date"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:text="Selected Date:"
      android:textSize="20sp"
      android:paddingTop="10dp"/>
   <TextView
      android:id="@+id/textView_time"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
```

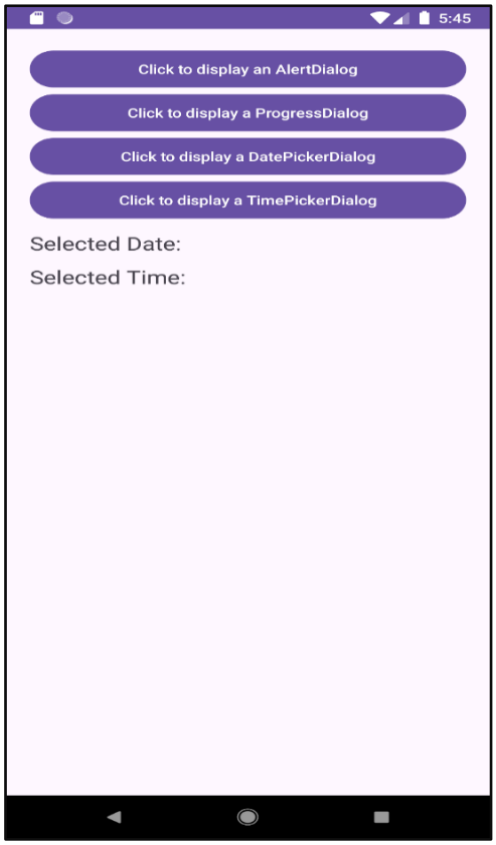
```
        android:text="Selected Time:"
        android:textSize="20sp"
        android:paddingTop="10dp"/>
</LinearLayout>
```

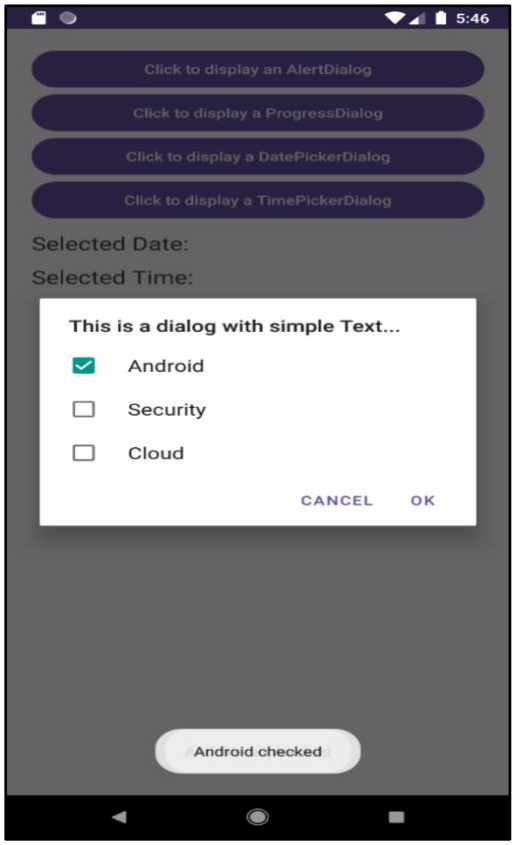
MainActivity.java

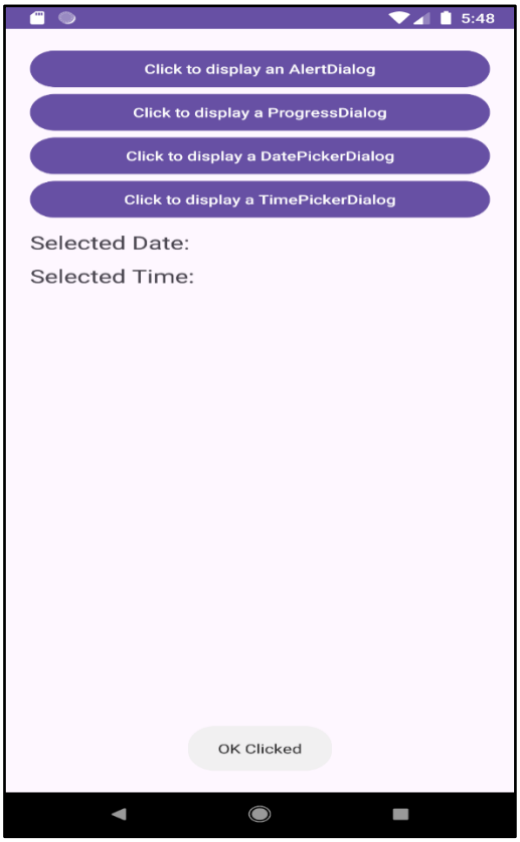
```
package com.example.practical5b;
import android.app.AlertDialog;
import android.app.DatePickerDialog;
import android.app.ProgressDialog;
import android.app.TimePickerDialog;
import android.content.DialogInterface;
import android.os.Bundle;
import android.view.View;
import android.widget.DatePicker;
import android.widget.TextView;
import android.widget.TimePicker;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
import java.util.Calendar;
public class MainActivity extends AppCompatActivity {
    CharSequence[] items = {"Android", "Security", "Cloud"};
    boolean[] itemsChecked = new boolean[items.length];
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
    public void onClickDialog(View v) {
        AlertDialog.Builder builder = new AlertDialog.Builder(this);
        builder.setTitle("This is a dialog with simple Text...");
        builder.setPositiveButton("OK", (dialog, id) ->
                Toast.makeText(getBaseContext(), "OK Clicked",
Toast.LENGTH_SHORT).show());
        builder.setNegativeButton("CANCEL", (dialog, id) ->
                Toast.makeText(getBaseContext(), "CANCEL Clicked",
Toast.LENGTH_SHORT).show());
        builder.setMultiChoiceItems(items, itemsChecked, (dialog, id, isChecked) ->
                Toast.makeText(getBaseContext(), items[id] + (isChecked ? " checked" : "
unchecked"),
                        Toast.LENGTH_SHORT).show());
        builder.show();
    }
    public void onClickProgressDialog(View v) {
        ProgressDialog pDialog = new ProgressDialog(this);
        pDialog.setProgressStyle(ProgressDialog.STYLE_HORIZONTAL);
```

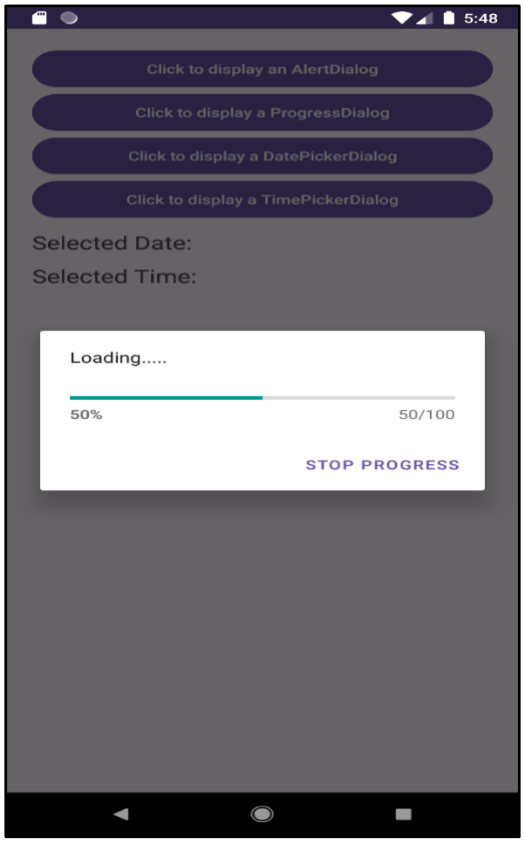
```
        pDialog.setMessage("Loading.....");
        pDialog.setMax(100);
        pDialog.setProgress(0);
        pDialog.setCancelable(false);
        pDialog.setButton(DialogInterface.BUTTON_POSITIVE, "STOP PROGRESS", (dialog,
id) -> pDialog.dismiss());
        pDialog.show();
        // Simulate progress update
        new Thread(() -> {
            try {
                for (int i = 0; i <= 100; i += 10) {
                    Thread.sleep(500);  // Simulate loading time
                    int finalI = i;
                    runOnUiThread(() -> pDialog.setProgress(finalI));
                }
                pDialog.dismiss();
            } catch (InterruptedException e) {
                e.printStackTrace();
            }
        }).start();
    }
    public void onClickDateDialog(View v) {
        final TextView dateDisplay = findViewById(R.id.textView_date);
        final Calendar c = Calendar.getInstance();
        int mYear = c.get(Calendar.YEAR);
        int mMonth = c.get(Calendar.MONTH);
        int mDay = c.get(Calendar.DAY_OF_MONTH);
        DatePickerDialog dateDialog = new DatePickerDialog(this,
                (view, year, month, day) ->
                        dateDisplay.setText("Selected Date: " + (month + 1) + "-" + day + "-" + year),
                mYear, mMonth, mDay);
        dateDialog.show();
    }
    public void onClickTimeDialog(View v) {
        final TextView timeDisplay = findViewById(R.id.textView_time);
        final Calendar c = Calendar.getInstance();
        int mHour = c.get(Calendar.HOUR_OF_DAY);
        int mMinute = c.get(Calendar.MINUTE);
        TimePickerDialog timeDialog = new TimePickerDialog(this,
                (view, hour, minute) ->
                        timeDisplay.setText("Selected Time: " + hour + ":" + String.format("%02d",
minute)),
                mHour, mMinute, true);
        timeDialog.show();
    }
}
```

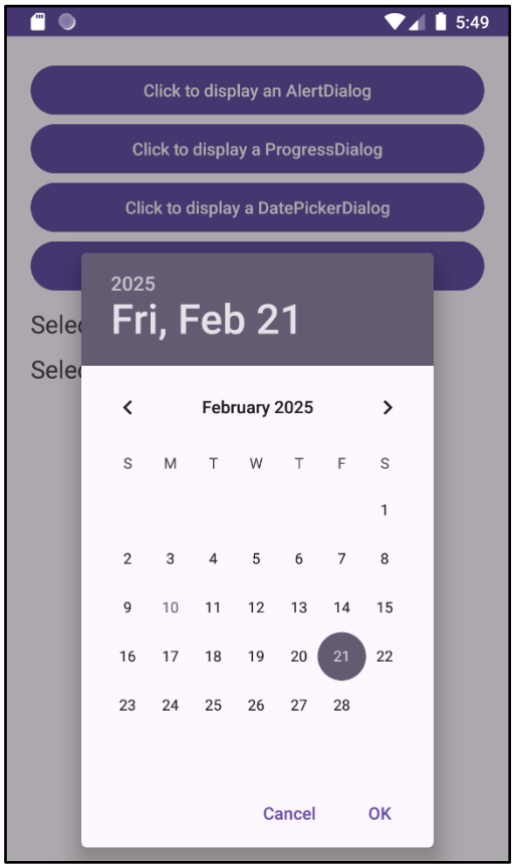
Output:

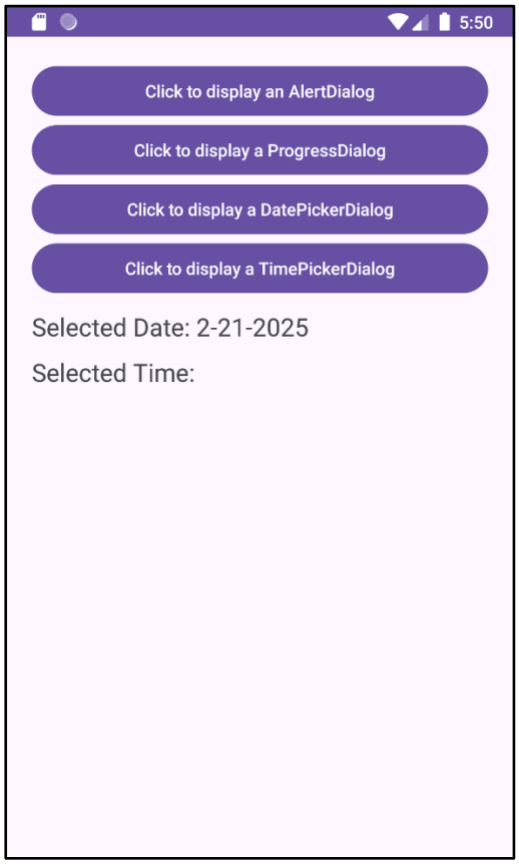

5:45
Click to display an AlertDialog
Click to display a ProgressDialog
Click to display a DatePickerDialog
Click to display a TimePickerDialog
Selected Date:
Selected Time:

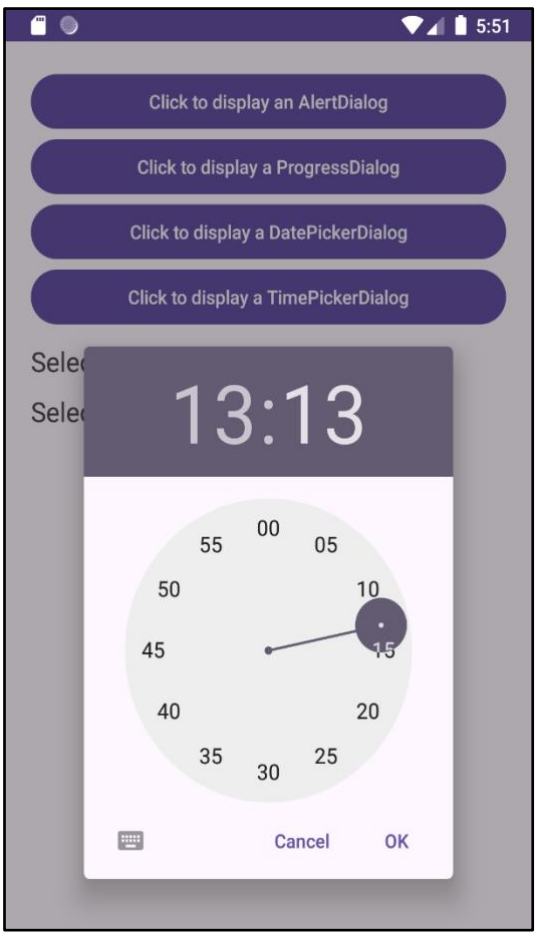

5:46
Click to display an AlertDialog
Click to display a ProgressDialog
Click to display a DatePickerDialog
Click to display a TimePickerDialog
Selected Date:
Selected Time:
This is a dialog with simple Text...
Android
Security
Cloud
CANCEL
OK
Android checked

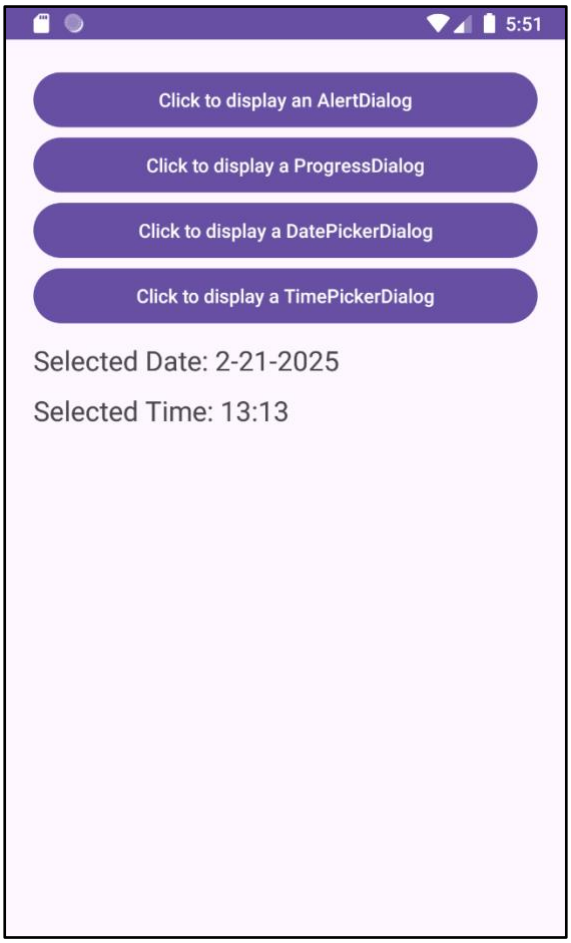

5:48
Click to display an AlertDialog
Click to display a ProgressDialog
Click to display a DatePickerDialog
Click to display a TimePickerDialog
Selected Date:
Selected Time:
OK Clicked


5:48
Click to display an AlertDialog
Click to display a ProgressDialog
Click to display a DatePickerDialog
Click to display a TimePickerDialog
Selected Date:
Selected Time:
Loading.....
50%
50/100
STOP PROGRESS


5:49
Click to display an AlertDialog
Click to display a ProgressDialog
Click to display a DatePickerDialog
2025
Fri, Feb 21
February 2025
S M T W T F S
1
2 3 4 5 6 7 8
9 10 11 12 13 14 15
16 17 18 19 20 21 22
23 24 25 26 27 28
Cancel
OK


5:50
Click to display an AlertDialog
Click to display a ProgressDialog
Click to display a DatePickerDialog
Click to display a TimePickerDialog
Selected Date: 2-21-2025
Selected Time:


5:51
Click to display an AlertDialog
Click to display a ProgressDialog
Click to display a DatePickerDialog
Click to display a TimePickerDialog
13:13
00
05
10
15
20
25
30
35
40
45
50
55
Cancel
OK


5:51
Click to display an AlertDialog
Click to display a ProgressDialog
Click to display a DatePickerDialog
Click to display a TimePickerDialog
Selected Date: 2-21-2025
Selected Time: 13:13

Practical 5C

Aim: Creating Dialogs Fragments

DFragment.java

```
package com.example.practical5c;
import android.os.Bundle;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import androidx.annotation.NonNull;
import androidx.annotation.Nullable;
import androidx.fragment.app.DialogFragment;
public class DFragment extends DialogFragment {
   @Nullable
   @Override
   public View onCreateView(@NonNull LayoutInflater inflater, @Nullable ViewGroup
container, @Nullable Bundle savedInstanceState) {
      View rootView = inflater.inflate(R.layout.dialog_fragment, container, false);
      getDialog().setTitle("DialogFragment Test");
      return rootView;
   }
}
```

dialog_fragment.xml

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
   xmlns:android="http://schemas.android.com/apk/res/android"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   android:padding="20dp">
   <TextView
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_centerInParent="true"
      android:text="This is a DialogFragment"
      android:textSize="18sp"/>
</RelativeLayout>
```

AlertDFragment.java

```
package com.example.practical5c;
import android.app.AlertDialog;
import android.app.Dialog;
import android.content.DialogInterface;
import android.os.Bundle;
import android.widget.Toast;
import androidx.annotation.NonNull;
```

```
import androidx.fragment.app.DialogFragment;
public class AlertDFragment extends DialogFragment {
   @NonNull
   @Override
   public Dialog onCreateDialog(Bundle savedInstanceState) {
      return new AlertDialog.Builder(getActivity())
            .setIcon(android.R.mipmap.sym_def_app_icon)  // Set Dialog Icon
            .setTitle("Alert Dialog Fragment")           // Set Dialog Title
            .setMessage("This is an AlertDialogFragment.")  // Set Dialog Message
            .setPositiveButton("OK", (dialog, which) ->
                  Toast.makeText(getContext(), "Ok Clicked", Toast.LENGTH_LONG).show())
            .setNegativeButton("Cancel", (dialog, which) ->
                  Toast.makeText(getContext(), "Cancel Clicked",
Toast.LENGTH_LONG).show())
            .create();
   }
}
```

activity_main.xml

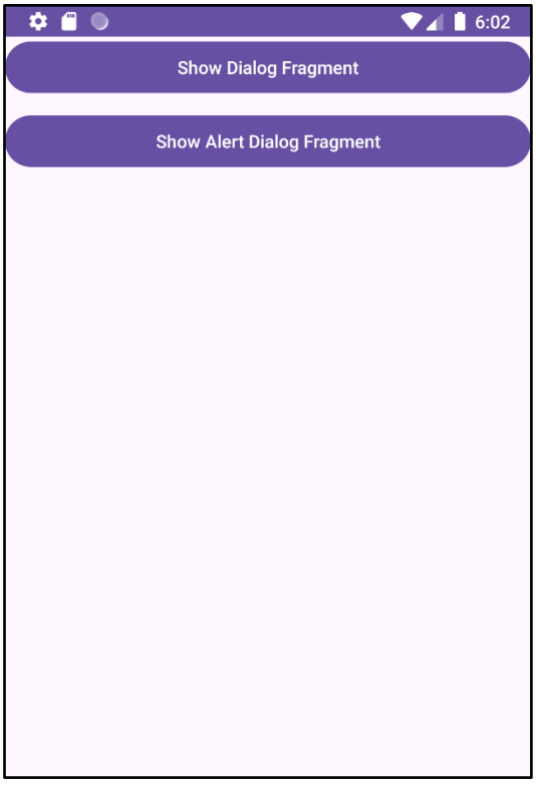
```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
   xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   tools:context=".MainActivity">
   <Button
      android:id="@+id/button_dialog_fragment"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:text="Show Dialog Fragment"
      android:onClick="DialogFragment"/>
   <Button
      android:id="@+id/button_alert_fragment"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:text="Show Alert Dialog Fragment"
      android:layout_below="@id/button_dialog_fragment"
      android:layout_marginTop="10dp"
      android:onClick="AlertFragment"/>
</RelativeLayout>
```

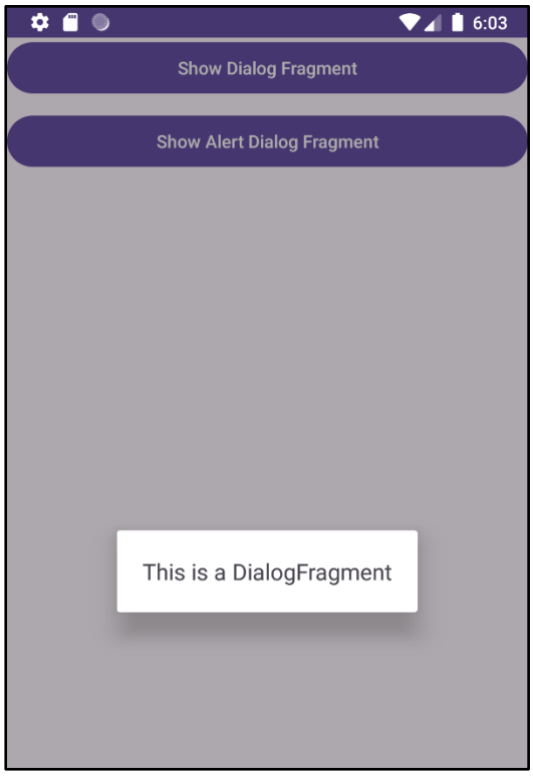
MainActivity.java

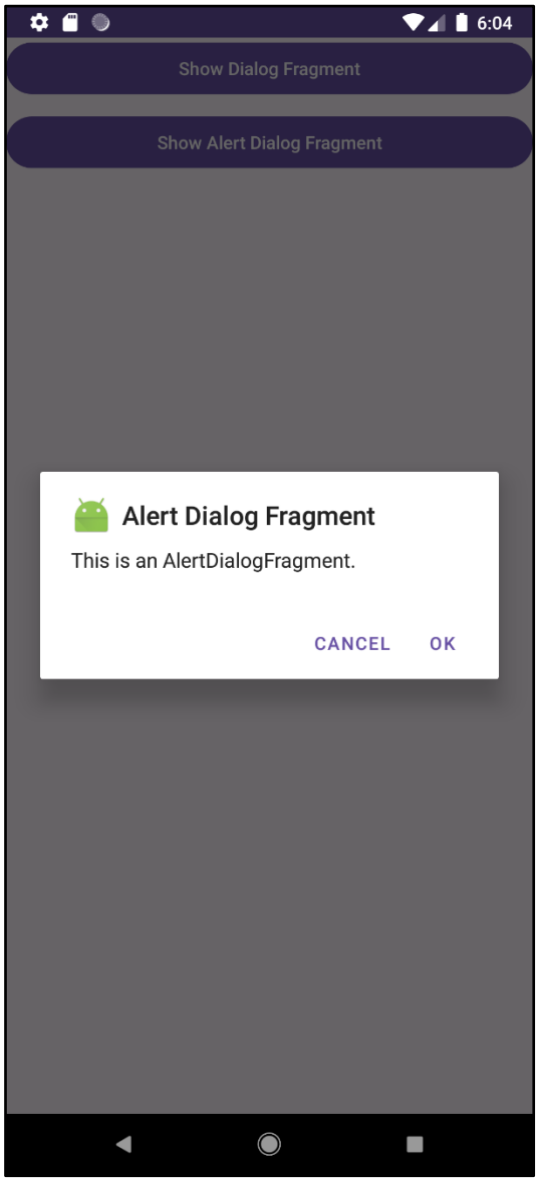
```
package com.example.practical5c;
import android.os.Bundle;
import android.view.View;
```

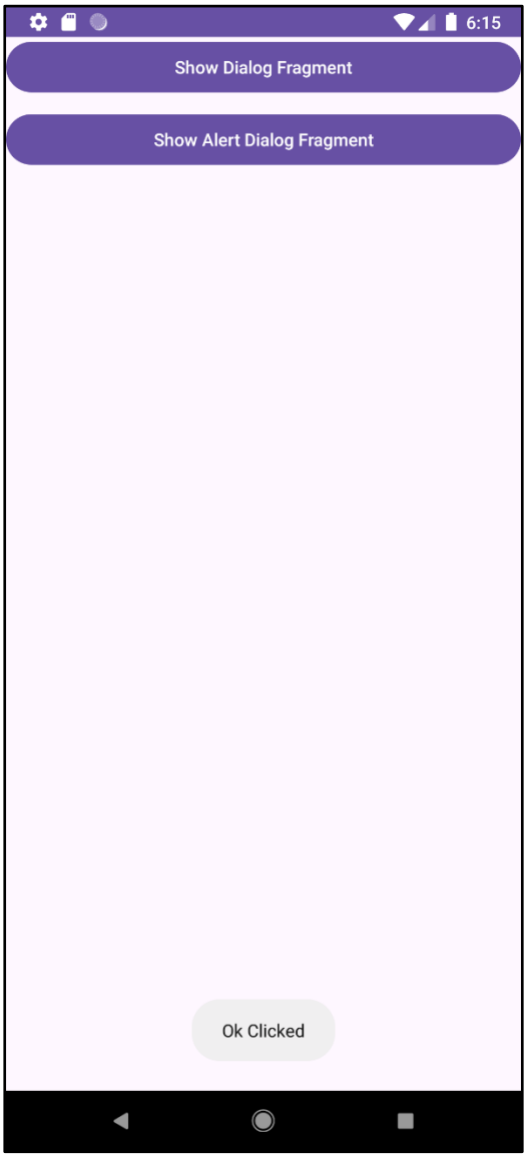
```
import androidx.appcompat.app.AppCompatActivity;
import androidx.fragment.app.FragmentManager
public class MainActivity extends AppCompatActivity {
    FragmentManager fm;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        fm = getSupportFragmentManager();
    }
    public void DialogFragment(View view) {
        DFragment dFragment = new DFragment();
        dFragment.show(fm, "Dialog Fragment");
    }
    public void AlertFragment(View view) {
        AlertDFragment alertDFragment = new AlertDFragment();
        alertDFragment.show(fm, "Alert Dialog Fragment");
    }
}
```

Output:






6:04
Show Dialog Fragment
Show Alert Dialog Fragment
Alert Dialog Fragment
This is an AlertDialogFragment.
CANCEL
OK


6:15
Show Dialog Fragment
Show Alert Dialog Fragment
Ok Clicked

Practical No 6

Aim : The Android Intent Class

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"
    android:padding="16dp">
    <!-- EditText for user input -->
    <EditText
        android:id="@+id/editText_text"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter a value"
        android:textSize="48dp"
        android:inputType="text" />
    <!-- Button to trigger action -->
    <Button
        android:id="@+id/button_click"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Click"
        android:layout_gravity="center"
        android:onClick="showntext" />
</LinearLayout>
```

MainActivity.java

```
package com.example.prac6;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.EditText;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
    // This method is triggered when the button is clicked
    public void showntext(View view) {
        // Get the EditText view
        EditText ed = findViewById(R.id.editText_text);
        // Get the text entered in the EditText
        String msg = ed.getText().toString();
        // Create an Intent to start the newpage activity
        Intent in = new Intent(this, newpage.class);
        // Pass the value to the new activity
        in.putExtra("my key", msg);
        // Start the new activity
        startActivity(in);
    }
}
```

activity_newpage.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"
```

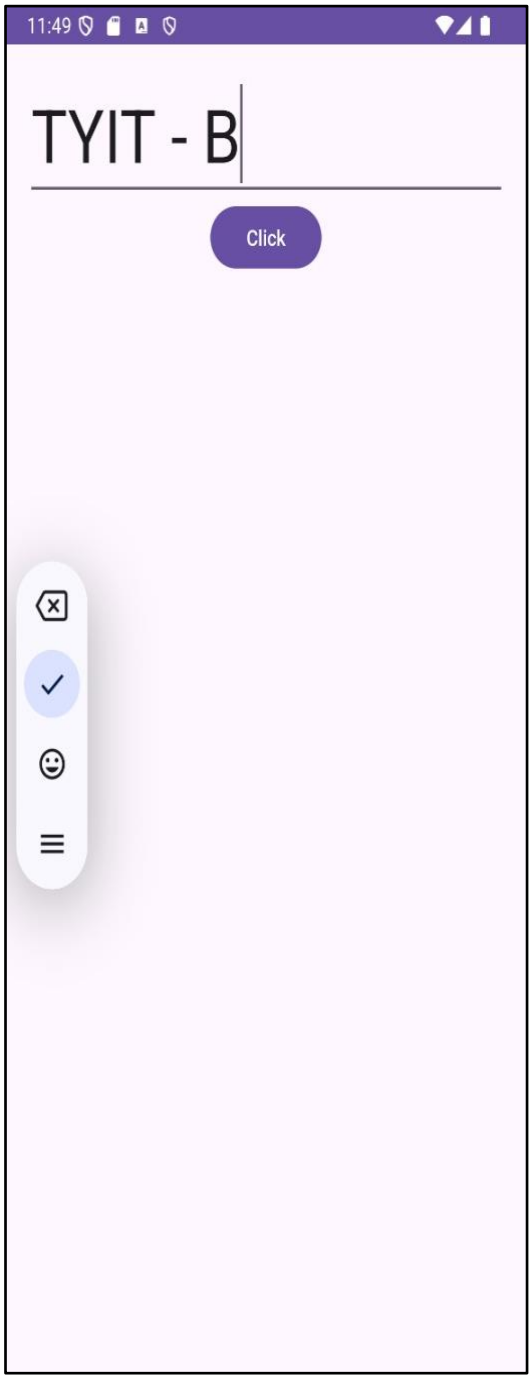
```
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".newpage">
    <!-- TextView to display some text -->
    <TextView
        android:id="@+id/textView_view"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="New Text"
        android:textSize="20sp"
        android:layout_centerInParent="true" />
</RelativeLayout>
```

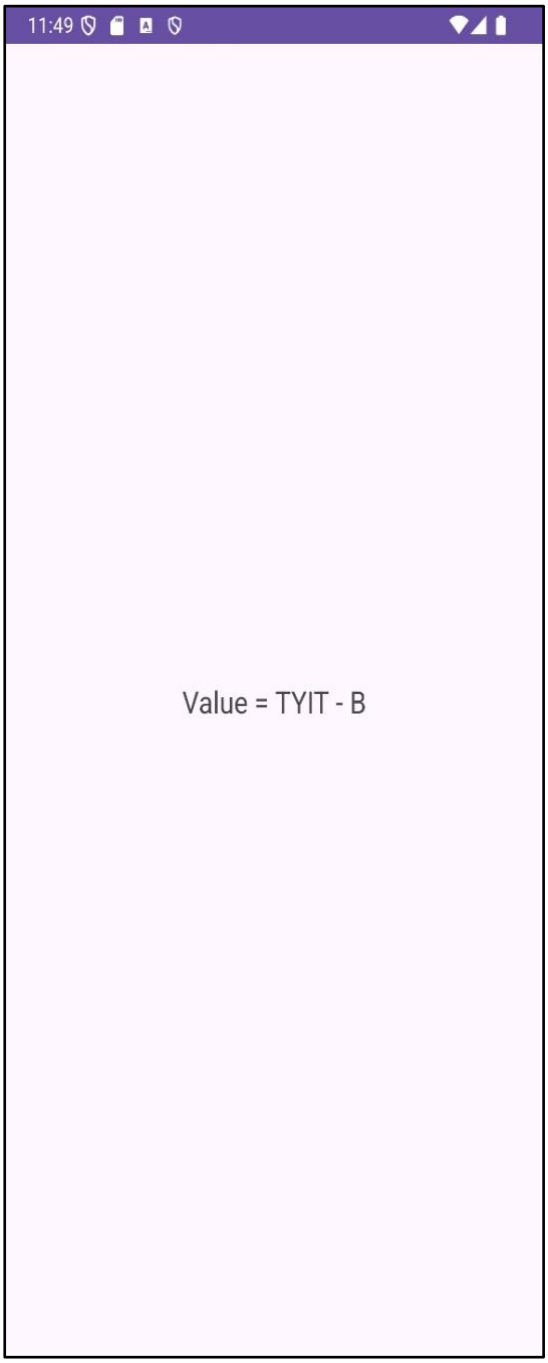
newpage.java

```
package com.example.prac6;
import android.os.Bundle;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;
public class newpage extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_newpage);
        // Find the TextView
        TextView tv1 = findViewById(R.id.textView_view);
        // Get the value passed through the intent
        String myvalue = getIntent().getStringExtra("my key");
        // Check if the value is null
        if (myvalue != null) {
            tv1.setText("Value = " + myvalue);
```

```
        } else {
            tv1.setText("No value passed");
        }
    }
}
```

Output:





Practical No 7

Practical 7A

Aim : Program on Services

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:layout_width="match_parent"
   android:layout_height="match_parent"
   tools:context=".MainActivity">
<Button
   android:id="@+id/btnStart"
   android:layout_width="wrap_content"
   android:layout_height="wrap_content"
   android:text="Start Service"
   android:onClick="startService"
   app:layout_constraintBottom_toBottomOf="parent"
   app:layout_constraintEnd_toEndOf="parent"
   app:layout_constraintStart_toStartOf="parent"
   app:layout_constraintTop_toTopOf="parent"></Button>
<Button
android:id="@+id/btnStop"
android:onClick="stopService"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Stop Service"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toBottomOf="@+id/btnStart">

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

MyServices.java

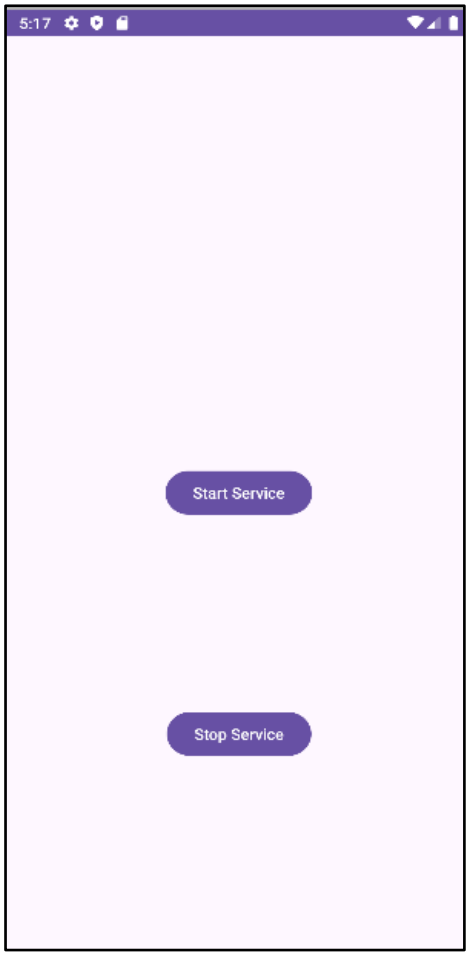
```
package com.example.practical7a;
import android.app.Service;
import android.content.Intent;
import android.os.IBinder;
import android.widget.Toast;
import androidx.annotation.Nullable;
public class MyServices  extends Service {
```

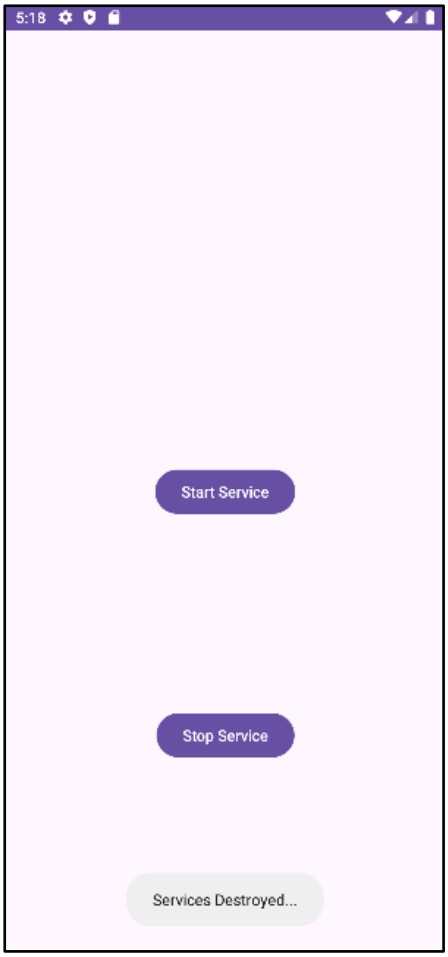
```
    @Override
    public void onCreate(){
        super.onCreate();
    }
    @Override
    public int onStartCommand(Intent intent, int flags , int startId){
        Toast.makeText(this, "Services Started...", Toast.LENGTH_LONG).show();
        return START_STICKY;
    }
    public void onDestroy(){
        Toast.makeText(this, "Services Destroyed...", Toast.LENGTH_LONG).show();
    }
    @Nullable
    @Override
    public IBinder onBind (Intent intent){
        return null;
    }
}
```

MainActivity.java

```
package com.example.practical7a;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.content.Intent;
import android.view.View;
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
    public void startService(View view)
    {
        Intent intent=new Intent(this, MyServices.class);
        startService(intent);
    }
    public void stopService(View view)
    {
        Intent intent=new Intent(this, MyServices.class);
        stopService(intent);
    }
}
```

Output:


5:17
Start Service
Stop Service


5:18
Start Service
Stop Service
Services Destroyed...

Practical 7B

Aim : Programs on notification

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: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="Hello World!"
      app:layout_constraintBottom_toBottomOf="parent"
      app:layout_constraintEnd_toEndOf="parent"
      app:layout_constraintStart_toStartOf="parent"
      app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

AndroidManifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:tools="http://schemas.android.com/tools">
<uses-permission android:name="android.permission.POST_NOTIFICATIONS"/>
   <application
      android:allowBackup="true"
      android:dataExtractionRules="@xml/data_extraction_rules"
      android:fullBackupContent="@xml/backup_rules"
      android:icon="@mipmap/ic_launcher"
      android:label="@string/app_name"
      android:roundIcon="@mipmap/ic_launcher_round"
      android:supportsRtl="true"
      android:theme="@style/Theme.Pract"
      tools:targetApi="31">
      <activity
         android:name=".MainActivity"
         android:exported="true">
         <intent-filter>
            <action android:name="android.intent.action.MAIN" />
            <category android:name="android.intent.category.LAUNCHER" />
         </intent-filter>
      </activity>
```

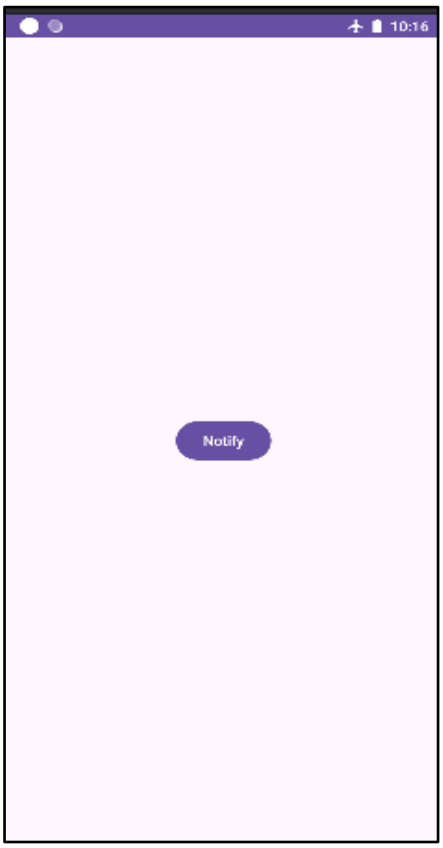
```
    </application>
</manifest>
```

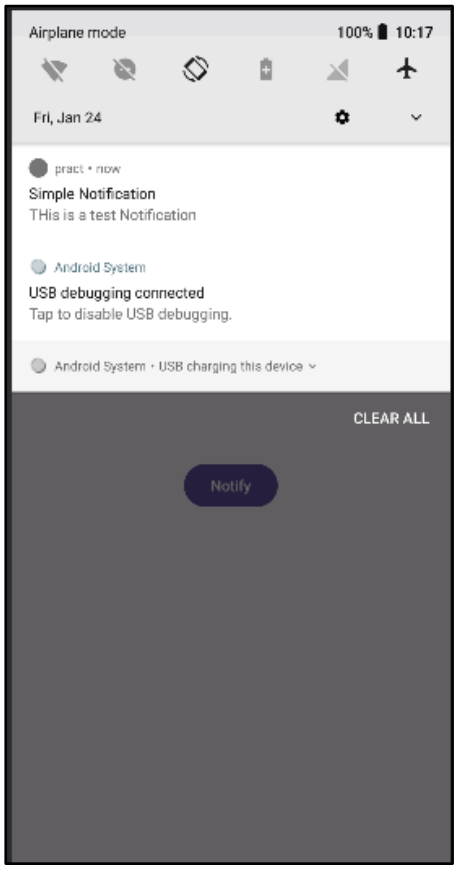
MainActivity.java

```
package com.example.pract;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.NotificationCompat;
import androidx.core.app.NotificationManagerCompat;
import android.app.NotificationChannel;
import android.app.NotificationManager;
import android.os.Build;
import android.os.Bundle;
import android.widget.Toast;
import android.view.View;
public class MainActivity extends AppCompatActivity {
public final String CHANNEL_ID="personal_notification";
public final int NOTIFICATION_ID=001;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
    public void displayNotification(View view)
    {
        createNotificationChannel();
        Toast.makeText(getApplicationContext(), "Hi", Toast.LENGTH_LONG).show();
        NotificationCompat.Builder builder=new
NotificationCompat.Builder(this,CHANNEL_ID);
        builder.setSmallIcon(R.mipmap.ic_launcher);
        builder.setContentTitle("Simple Notification");
        builder.setContentText("THis is a test Notification");
        builder.setPriority(NotificationCompat.PRIORITY_DEFAULT);
        NotificationManagerCompat
notificationManagerCompat=NotificationManagerCompat.from(this);
        notificationManagerCompat.notify(NOTIFICATION_ID,builder.build());
    }
    private void createNotificationChannel()
    {
        if(Build.VERSION.SDK_INT>=Build.VERSION_CODES.O)
        {
            CharSequence name="Personal Notification";
            String description="This is description";
            int importance= NotificationManager.IMPORTANCE_DEFAULT;
            NotificationChannel notificationChannel=new
NotificationChannel(CHANNEL_ID,name,importance);
            notificationChannel.setDescription(description);
```

```
        NotificationManager
notificationManager=(NotificationManager)getSystemService(NOTIFICATION_SERVICE);
        notificationManager.createNotificationChannel(notificationChannel);
      }
   }
}
```

Output:





Practical 7C

Aim : Programs on broadcast receivers

MainActivity.java

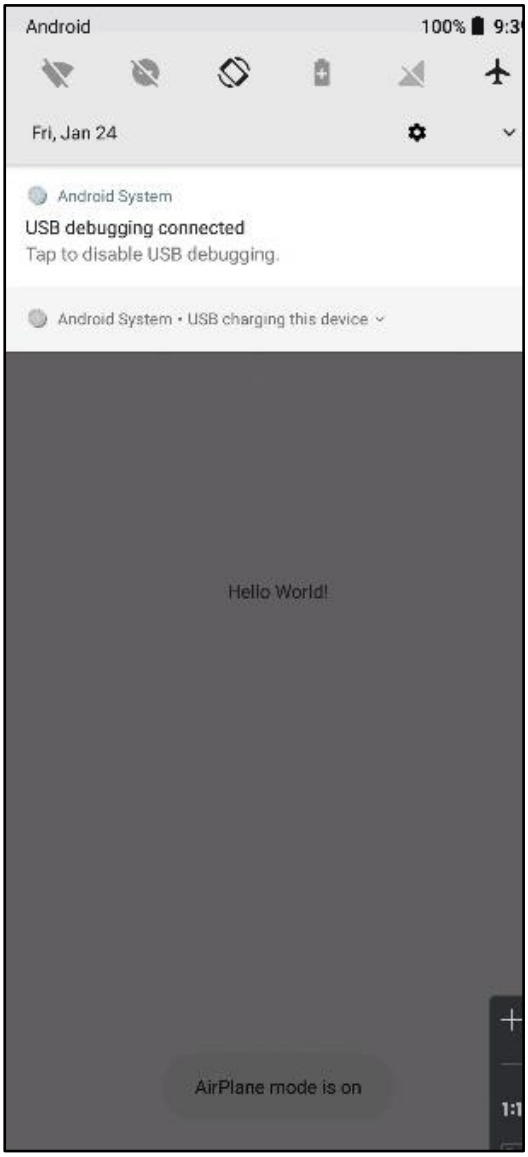
```
package com.example.broadcastb;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.content.IntentFilter;
import android.os.Bundle;
public class MainActivity extends AppCompatActivity {
AirplaneModeChangeReceiver airplaneModeChangeReceiver=new
AirplaneModeChangeReceiver();
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
   }
   @Override
   protected void onStart()
   {
      super.onStart();
      IntentFilter filter=new IntentFilter(Intent.ACTION_AIRPLANE_MODE_CHANGED);
      registerReceiver(airplaneModeChangeReceiver,filter);
   }
   @Override
   protected void onStop()
   {
      super.onStop();
      unregisterReceiver(airplaneModeChangeReceiver);
   }
}
```

Java Class –AirplaneModeChangeReceiver.java

```
package com.example.broadcastb;
import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.provider.Settings;
import android.widget.Toast;
public class AirplaneModeChangeReceiver extends BroadcastReceiver {
   @Override
   public void onReceive(Context context, Intent intent)
   {
      if(isAirplaneModeOn(context.getApplicationContext()))
      {
         Toast.makeText(context, "AirPlane mode is on", Toast.LENGTH_LONG).show();
```

```
        }
        else {
            Toast.makeText(context, "AirPlane mode is off", Toast.LENGTH_LONG).show();
        }
    }
    private static boolean isAirplaneModeOn(Context context)
    {
        return Settings.System.getInt(context.getContentResolver(),
            Settings.Global.AIRPLANE_MODE_ON,0) !=0;
    }
}
```

Output:



Practical 8

Practical 8A

Aim : Database Programming with SQLite

activity_main.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"
   android:padding="16dp">
   <LinearLayout
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:orientation="horizontal"
      android:gravity="center_vertical"
      android:paddingBottom="8dp">
      <TextView
         android:id="@+id/user"
         android:layout_width="wrap_content"
         android:layout_height="wrap_content"
         android:text="Username:" />
      <EditText
         android:id="@+id/etun"
         android:layout_width="0dp"
         android:layout_height="wrap_content"
         android:layout_weight="1"
         android:hint="Enter username"
         android:inputType="textPersonName"
         android:layout_marginStart="8dp" />
   </LinearLayout>
   <LinearLayout
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:orientation="horizontal"
      android:gravity="center_vertical"
      android:paddingBottom="16dp">
      <TextView
         android:id="@+id/ipass"
         android:layout_width="wrap_content"
         android:layout_height="wrap_content"
         android:text="Password:" />
      <EditText
         android:id="@+id/etp"
```

```
            android:layout_width="0dp"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:hint="Enter password"
            android:inputType="textPassword"
            android:layout_marginStart="8dp" />
    </LinearLayout>
    <Button
        android:id="@+id/reg"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Register" />
    <Button
        android:id="@+id/lg"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="16dp"
        android:text="Login" />
    <Button
        android:id="@+id/dr"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="16dp"
        android:text="Drop" />
</LinearLayout>
```

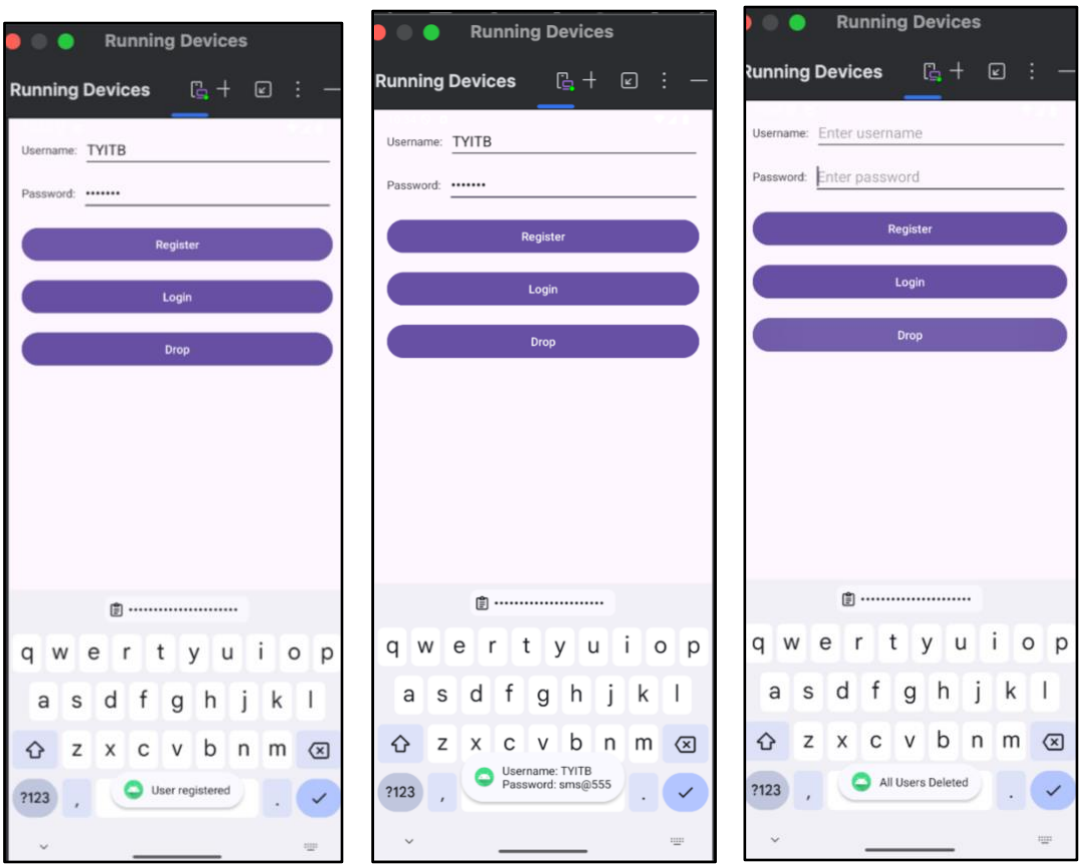
MainActivity.java

```
package com.example.prac_8a;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteException;
import android.database.sqlite.SQLiteOpenHelper;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
class MyDB extends SQLiteOpenHelper {
    MyDB(Context c) {
        super(c, "logindb", null, 1);
    }    @Override
    public void onCreate(SQLiteDatabase db) {
        String str = "CREATE TABLE login(username TEXT, password TEXT)";
        db.execSQL(str);
```

```
    }
    @Override
    public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
        String dr = "DROP TABLE IF EXISTS login";
        db.execSQL(dr);
        onCreate(db);
    }}
public class MainActivity extends AppCompatActivity {
    MyDB mdb;
    EditText u, p;
    Button breg, bdr, blg;
    SQLiteDatabase db;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        u = findViewById(R.id.etun);
        p = findViewById(R.id.etp);
        blg = findViewById(R.id.lg);
        breg = findViewById(R.id.reg);
        bdr = findViewById(R.id.dr);
        mdb = new MyDB(this);
        // Set click listeners for buttons
        blg.setOnClickListener(this::login_fun);
        breg.setOnClickListener(this::reg_fun);
        bdr.setOnClickListener(this::dr_fun);
    }
    public void login_fun(View v) {
        String un = u.getText().toString();
        String pas = p.getText().toString();
        db = mdb.getReadableDatabase();
        String q = "SELECT * FROM login WHERE username=? AND password=?";
        try (Cursor c = db.rawQuery(q, new String[]{un, pas})) {
            if (c.getCount() == 0) {
                Toast.makeText(getApplicationContext(), "Username or password wrong or user
doesn't exist", Toast.LENGTH_SHORT).show();
            } else {
                while (c.moveToNext()) {
                    String uname = c.getString(0);
                    String passw = c.getString(1);
                    Toast.makeText(getApplicationContext(), "Username: " + uname + "\nPassword:
" + passw, Toast.LENGTH_LONG).show();
                    if (un.equals(uname) && pas.equals(passw)) {
                        Toast.makeText(getApplicationContext(), "Welcome user: " + un,
Toast.LENGTH_LONG).show();
                    }   }   }
```

```
        } catch (SQLiteException sqle) {
            sqle.printStackTrace();
        }
    }
    public void reg_fun(View v) {
        String un = u.getText().toString();
        String pas = p.getText().toString();
        db = mdb.getWritableDatabase();
        String q = "INSERT INTO login VALUES(?, ?)";
        db.execSQL(q, new Object[]{un, pas});
        Toast.makeText(getApplicationContext(), "User registered",
Toast.LENGTH_LONG).show();
    }

public void dr_fun(View v) {

        u.setText("");

        p.setText("");

        db = mdb.getWritableDatabase();

        mdb.onUpgrade(db, 1, 2);

        Toast.makeText(getApplicationContext(), "All Users Deleted",
Toast.LENGTH_SHORT).show();

    }}
```

Output:



Practical 8B

Aim : Programming Network Communications and Services (JSON)

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">
   <Button
      android:id="@+id/button_fetch"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Fetch JSON"/>
   <TextView
      android:id="@+id/textView_result"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:layout_marginTop="16dp"
      android:text="JSON data will appear here"/>
</LinearLayout>
```

MainActivity.java

```
package com.example.json;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
import com.android.volley.Request;
import com.android.volley.RequestQueue;
import com.android.volley.toolbox.Volley;
import com.android.volley.toolbox.JsonObjectRequest;
import com.android.volley.Response;
import com.android.volley.VolleyError;
import org.json.JSONObject;
public class MainActivity extends AppCompatActivity {
   TextView textViewResult;  // Declare TextView here for consistency
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      Button buttonFetch = findViewById(R.id.button_fetch);
```

```
        textViewResult = findViewById(R.id.textView_result);  // Assign the TextView
correctly
        buttonFetch.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                fetchJSON();
            }
        });
    }
    private void fetchJSON() {
        String url ="https://jsonplaceholder.typicode.com/todos/1";
        RequestQueue queue = Volley.newRequestQueue(this);
        JsonObjectRequest jsonObjectRequest = new JsonObjectRequest(
                Request.Method.GET, url, null,
                new Response.Listener<JSONObject>() {
                    @Override
                    public void onResponse(JSONObject response) {
                        try {
                            // Extracting all fields from the JSON response
                            String userId = response.getString("userId");
                            String id = response.getString("id");
                            String title = response.getString("title");
                            String completed = response.getString("completed");
                            // Displaying all the fields in the TextView
                            textViewResult.setText("User ID: " + userId + "\nID: " + id + "\nTitle: " +
title + "\nCompleted: " + completed);
                        } catch (Exception e) {
                            textViewResult.setText("Error: " + e.getMessage());
                        }
                    }
                },
                new Response.ErrorListener() {
                    @Override
                    public void onErrorResponse(VolleyError error) {
                        textViewResult.setText("Error: " + error.getMessage());
                    }
                }
        );
        queue.add(jsonObjectRequest);
    }
}
```

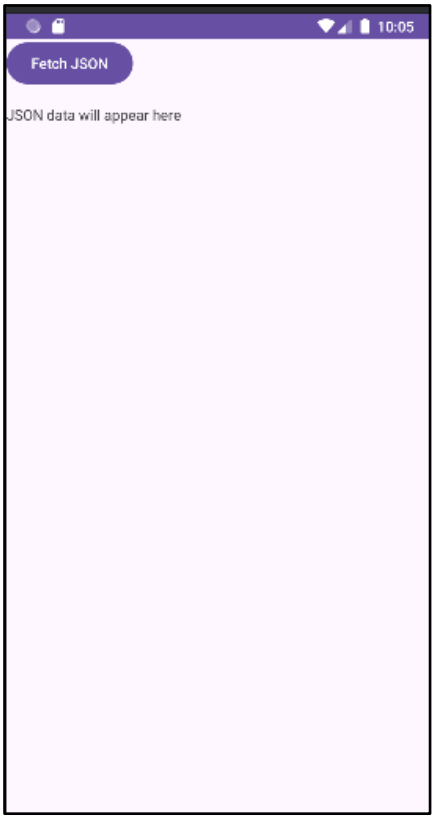
buid.gradle(module:app)

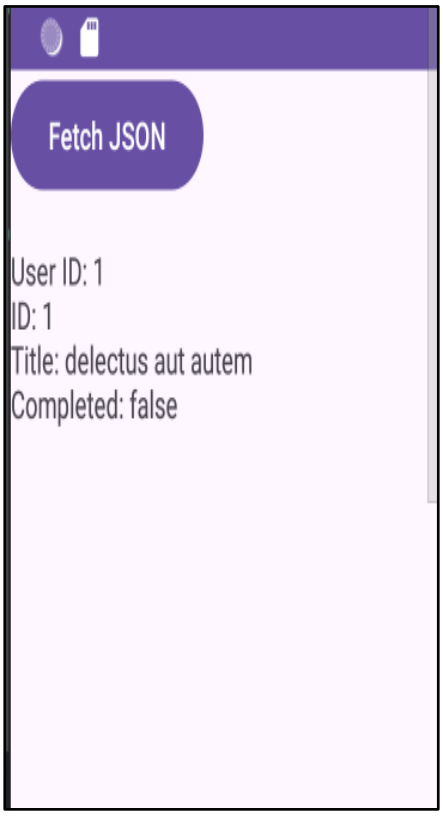
```
dependencies {
implementation"com.android.volley:volley:1.2.1"}
```

AndroidManifest.xml

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

Output:





Practical 9

Practical 9A

Aim : Threads

activity_main.xml

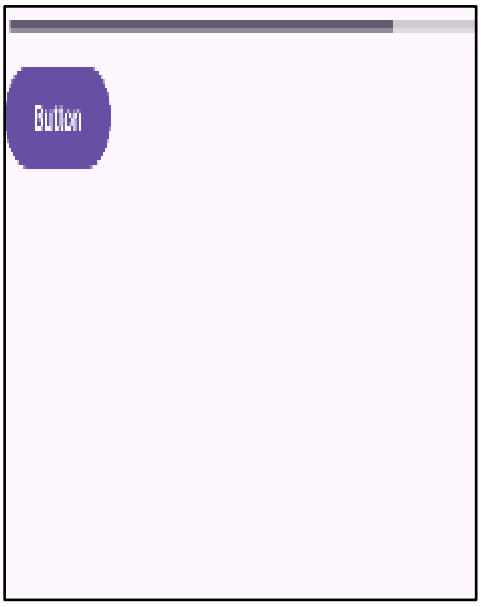
```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:app="http://schemas.android.com/apk/res-auto"
   xmlns:tools="http://schemas.android.com/tools"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   android:orientation="vertical"
   tools:context=".MainActivity">
   <ProgressBar
      android:id="@+id/progressBar1"
      style="?android:attr/progressBarStyleHorizontal"
      android:layout_width="match_parent"
      android:layout_height="wrap_content"
      android:indeterminate="false"
      android:max="10"
      android:padding="4dip"/>
   <Button
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Button"
      android:onClick="startProgress"/>
</LinearLayout>
```

MainActivity.java

```
package com.example.practical8a;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.ProgressBar;
public class MainActivity extends AppCompatActivity {
   private ProgressBar bar;
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      bar=(ProgressBar) findViewById(R.id.progressBar1);
   }
   public void startProgress(View view){
      bar.setProgress(0);
      new Thread(new Task()).start();
```

```
    }
    class Task implements Runnable{
        public void run(){
            for(int i=0;i<=10;i++)
            {
                final int value=i;
                try{
                    Thread.sleep(1000);
                }catch (InterruptedException e){
                    e.printStackTrace();
                }
                bar.setProgress(value);
            }
        }
    }
}
```

Output:



Practical 9B

Aim : Handler

activity_main.xml

```
package com.example.practical9b;
import android.os.Bundle;
import android.os.Handler;
import android.view.View;
import android.widget.TextView;
import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;
public class MainActivity extends AppCompatActivity {
    TextView textView;
    private int stopLoop=30;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);
        ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main), (v, insets) ->
{
            Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom);
            return insets;
        });
        textView=(TextView) findViewById(R.id.textView);
    }
    public void timer(View view){
        final Handler handler=new Handler();
        handler.post(new Runnable(){
            public void run(){
                if(stopLoop>0){
                    stopLoop--;
                    textView.setText("Time:"+stopLoop);
                    handler.postDelayed(this,1000);
                }
                else{
                }
            }
        });
    }
    public void nonTimer(View view){
        int i=0;
```

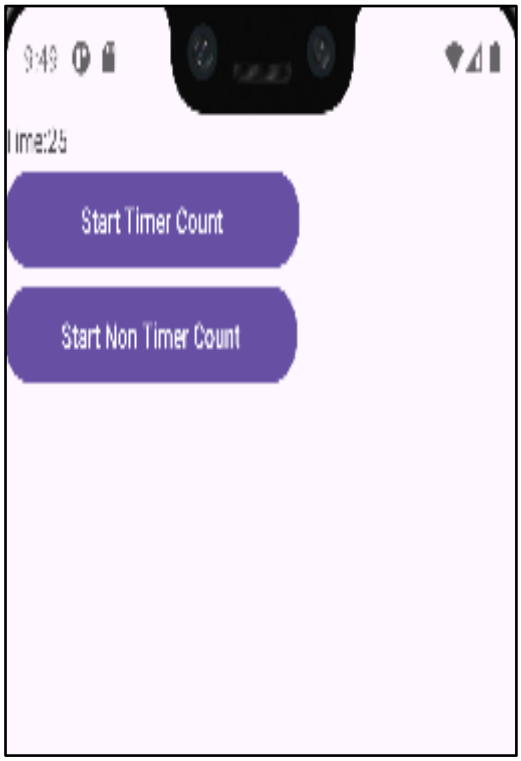
```
        for(i=0;i<3;i++){
            textView.setText("Time:"+i);
            try{
                Thread.sleep(1000);
            }catch(InterruptedException e){
                e.printStackTrace();
            }
        }
    }
}
```

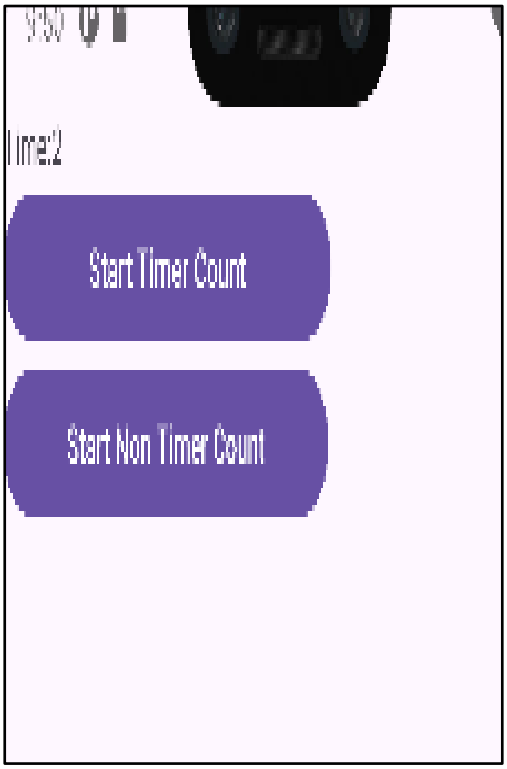
MainActivity.java

```
package com.example.practical9b;
import android.os.Bundle;
import android.os.Handler;
import android.view.View;
import android.widget.TextView;
import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;
public class MainActivity extends AppCompatActivity {
    TextView textView;
    private int stopLoop=30;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);
        ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main), (v, insets) ->
{
            Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom);
            return insets;
        });
        textView=(TextView) findViewById(R.id.textView);
    }
    public void timer(View view){
        final Handler handler=new Handler();
        handler.post(new Runnable(){
            public void run(){
                if(stopLoop>0){
                    stopLoop--;
                    textView.setText("Time:"+stopLoop);
                    handler.postDelayed(this,1000);
```

```
            }
            else{
            }
        }
    });
}
public void nonTimer(View view){
    int i=0;
    for(i=0;i<3;i++){
        textView.setText("Time:"+i);
        try{
            Thread.sleep(1000);
        }catch(InterruptedException e){
            e.printStackTrace();
        }
    }
}
}
```

Output:





Practical 9C

Aim : Programming AsyncTask

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:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World!"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.168"/>
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/button"
        android:layout_marginTop="112dp"
        android:text="Button"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
```

```
        app:layout_constraintTop_toTopOf="parent"/>
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```
package com.example.prac_9c;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

    TextView textView;
    Button button;

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

        textView = findViewById(R.id.textView);
        button = findViewById(R.id.button);

        button.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                MyTask myTask = new MyTask(MainActivity.this, textView, button);
                myTask.execute();
                button.setEnabled(false);
            }
        });
```

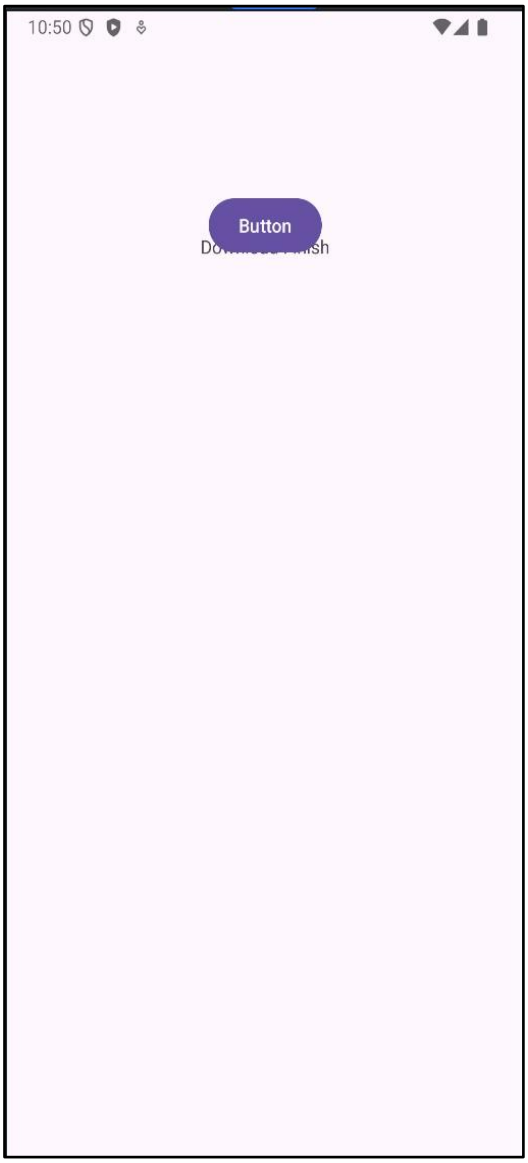
```
    }
}
```

MyTask.java

```
package com.example.prac_9c;

import android.app.ProgressDialog;

import android.content.Context;

import android.os.AsyncTask;

import android.widget.Button;

import android.widget.TextView;

public class MyTask extends AsyncTask<Void, Integer, String> {

    Context context;

    Button button;

    TextView textView;

    ProgressDialog progressDialog;

    MyTask(Context context, TextView textView, Button button) {

        this.context = context;

        this.textView = textView;

        this.button = button;

    }

    @Override

    protected void onPreExecute() {

        super.onPreExecute();

        progressDialog = new ProgressDialog(context);

        progressDialog.setTitle("Download in Progress");

        progressDialog.setMax(10);

        progressDialog.setProgress(0);

        progressDialog.setProgressStyle(ProgressDialog.STYLE_HORIZONTAL);

        progressDialog.show();

    }

    @Override
```

```
    protected void onPostExecute(String s) {
        super.onPostExecute(s);
        progressDialog.dismiss();  // Dismiss progress dialog after completion
        textView.setText("Download Finish");
        button.setEnabled(true);
    }
    @Override
    protected void onProgressUpdate(Integer... values) {
        super.onProgressUpdate(values);
        int progress = values[0];
        progressDialog.setProgress(progress);
        textView.setText("Download In Progress (" + progress + "/10)");
    }
    @Override
    protected String doInBackground(Void... voids) {
        for (int i = 1; i <= 10; i++) {
            try {
                Thread.sleep(1000); // Corrected the issue (previously used wait())
                publishProgress(i);
            } catch (InterruptedException e) {
                e.printStackTrace();
                return "Download Interrupted"; // Handle interruption properly
            }
        }
        return "Download Finish";
    }
}
```

Output:


10:50
Button


10:51
Button
Download In Progress (6/10)
Download in Progress
60%
6/10

Practical 10

Practical 10A

Aim : Programming Media API

activity_main.xml

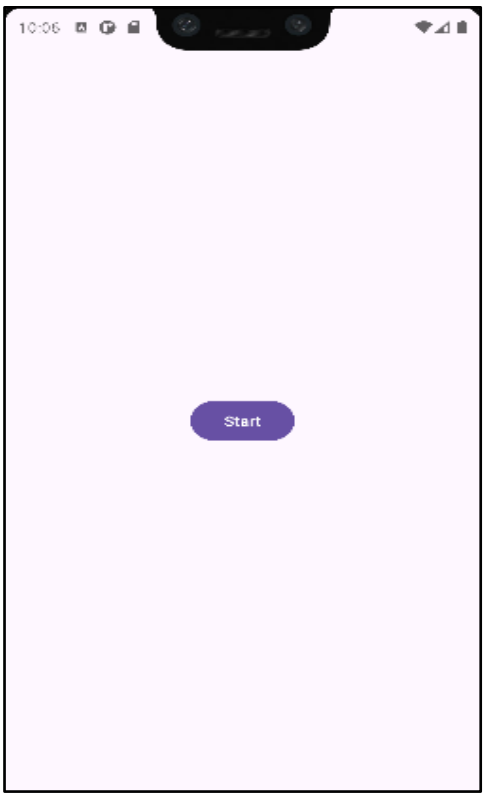
```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
   <!-- Button with id for reference -->
   <Button
      android:id="@+id/button"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Start"
      android:layout_centerInParent="true"/>
</RelativeLayout>
```

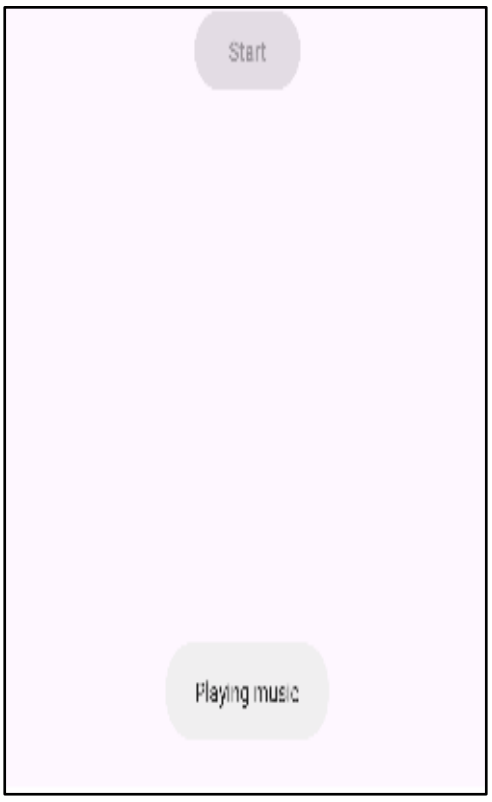
MainActivity.java

```
package com.example.practical10a;
import android.os.Bundle;
import android.media.MediaPlayer;
import android.view.View;
import android.widget.Button;
import android.widget.Toast;
import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;
public class MainActivity extends AppCompatActivity {
    private Button bn;
    private MediaPlayer mediaPlayer;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);
        // Apply window insets for edge-to-edge display
        ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main), (v, insets) ->
{
```

```
        Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars());
        v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom);
        return insets;
    });  // Initialize the button
    bn = findViewById(R.id.button);
    bn.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            mediaPlayer = MediaPlayer.create(getApplicationContext(), R.raw.song);
            mediaPlayer.start();
            bn.setEnabled(false);
            Toast.makeText(getApplicationContext(), "Playing music",
Toast.LENGTH_SHORT).show();
            // Set a completion listener for the media player
            mediaPlayer.setOnCompletionListener(new MediaPlayer.OnCompletionListener()
{                 @Override
                public void onCompletion(MediaPlayer mp) {
                    mediaPlayer.release();
                    mediaPlayer = null;
                    Toast.makeText(getApplicationContext(), "Playing Done",
Toast.LENGTH_SHORT).show();
                    bn.setEnabled(true);
                }
            });  }
    });  }}
```

Output:





Practical 10B

Aim : Programming Telephone API

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<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">
   <EditText
      android:id="@+id/editText"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_centerHorizontal="true"
      android:layout_marginTop="50dp"
      android:hint="Enter Phone Number"
      android:inputType="phone"/>
   <Button
      android:id="@+id/button"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_centerHorizontal="true"
      android:layout_below="@id/editText"
      android:layout_marginTop="20dp"
      android:text="Make Call"/>
</RelativeLayout>
```

AndroidManifest.xml

```
<!-- Corrected permission declaration -->
<uses-permission android:name="android.permission.CALL_PHONE" />
<!-- Declare telephony as an optional feature -->
<uses-feature android:name="android.hardware.telephony" android:required="false" />
```

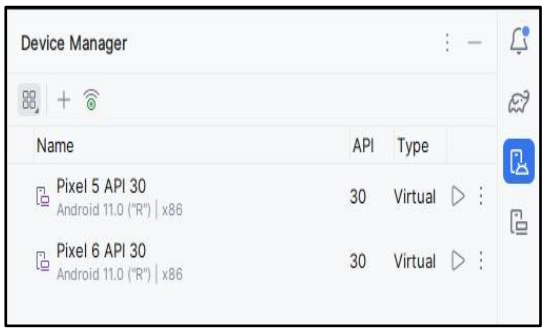
MainActivity.java

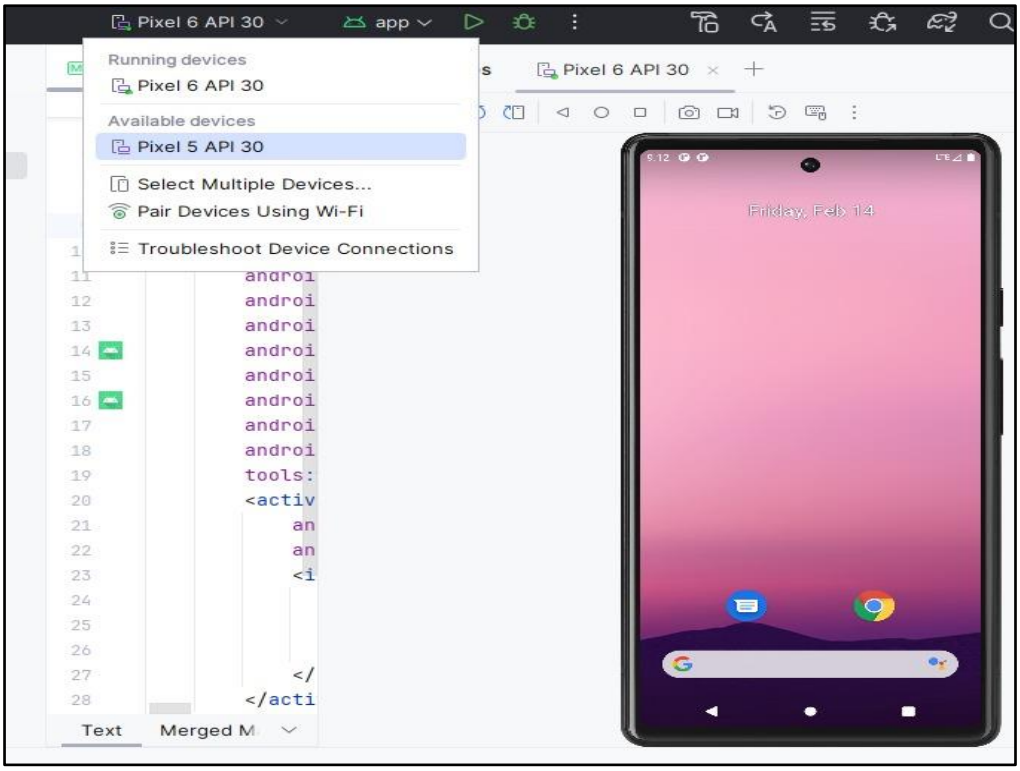
```
package com.example.practical10b;
import android.Manifest;
import android.content.Intent;
import android.content.pm.PackageManager;
import android.net.Uri;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
```

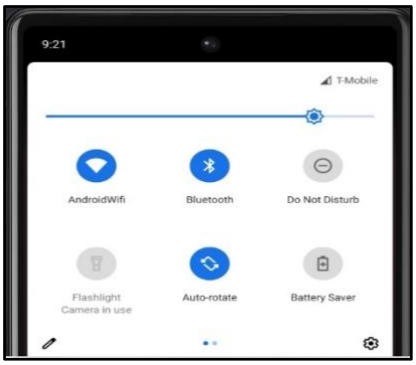
```
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import androidx.core.content.ContextCompat;
public class MainActivity extends AppCompatActivity {
   EditText editText;
   Button button;
   private static final int REQUEST_CALL_PERMISSION = 1;
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      editText = findViewById(R.id.editText);
      button = findViewById(R.id.button);
      button.setOnClickListener(new View.OnClickListener() {
         @Override
         public void onClick(View v) {
            makePhoneCall();
         }
      });
   }
   private void makePhoneCall() {
      String phoneNumber = editText.getText().toString();
      if (phoneNumber.isEmpty()) {
         Toast.makeText(this, "Enter a phone number", Toast.LENGTH_SHORT).show();
         return;
      }
      Intent phoneIntent = new Intent(Intent.ACTION_CALL);
      phoneIntent.setData(Uri.parse("tel:" + phoneNumber));
      if (ContextCompat.checkSelfPermission(MainActivity.this,
Manifest.permission.CALL_PHONE)
            != PackageManager.PERMISSION_GRANTED) {
         ActivityCompat.requestPermissions(MainActivity.this,
               new String[]{Manifest.permission.CALL_PHONE},
REQUEST_CALL_PERMISSION);
      } else {
         startActivity(phoneIntent);
      }
   }
   @Override
   public void onRequestPermissionsResult(int requestCode, String[] permissions, int[]
grantResults) {
      super.onRequestPermissionsResult(requestCode, permissions, grantResults);
      if (requestCode == REQUEST_CALL_PERMISSION) {
         if (grantResults.length > 0 && grantResults[0] ==
PackageManager.PERMISSION_GRANTED) {
            makePhoneCall();
```

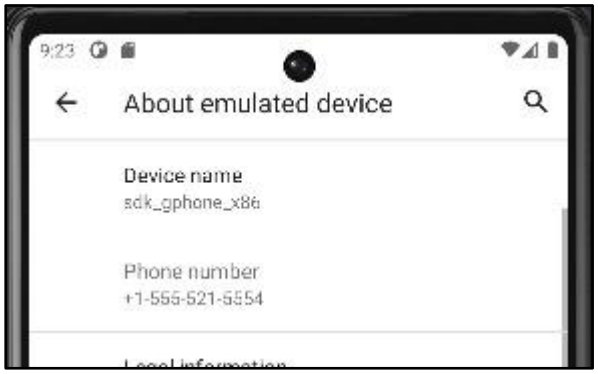
```
} else {
    Toast.makeText(this, "Permission Denied", Toast.LENGTH_SHORT).show();
}}}}
```

Output:

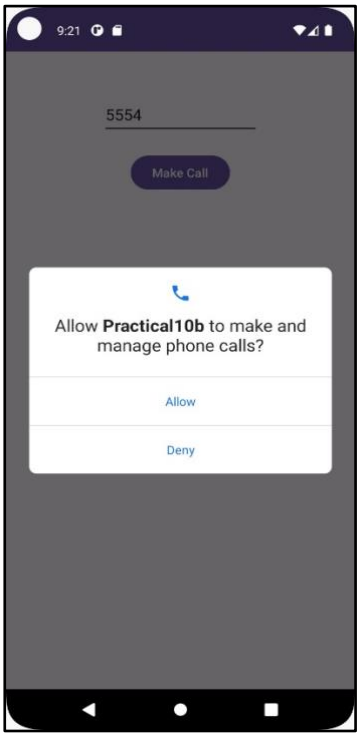


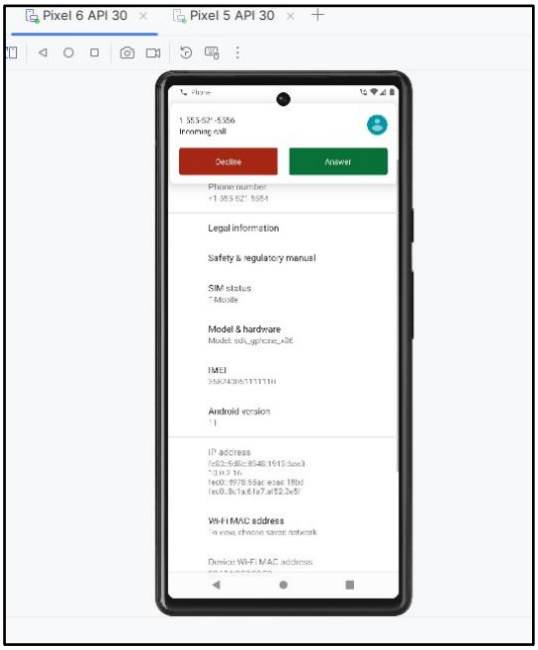


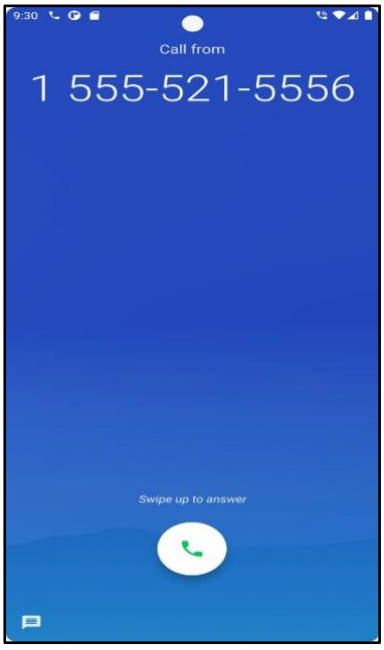





9:20
5554
Make Call
1
2 ABC
3 DEF
4 GHI
5 JKL
6 MNO
7 PQRS
8 TUV
9 WXYZ
* #
0 +


9:21
5554
Make Call
Allow Practical10b to make and manage phone calls?
Allow
Deny


Pixel 6 API 30
Pixel 5 API 30
Decline
Answer
Legal information
Safety & regulatory manual
SIM status
Model & hardware
IMEI
Android version
IP address
Wi-Fi MAC address


9:30
Call from
1 555-521-5556
Swipe up to answer

Practical 10C

Aim : Programming Security and permissions

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:id="@+id/main"
   android:layout_width="match_parent"
   android:layout_height="match_parent"
   tools:context=".MainActivity">
   <!-- A TextView example -->
   <TextView
      android:id="@+id/textView"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Hello, World!"
      android:textSize="48sp"
      android:layout_centerInParent="true" />
   <!-- A Button example -->
   <Button
      android:id="@+id/button"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Click Me"
      android:layout_below="@id/textView"
      android:layout_centerHorizontal="true"
      android:layout_marginTop="30dp" />
</RelativeLayout>
```

AndroidManifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
   xmlns:tools="http://schemas.android.com/tools">
   <uses-permission android:name="android.permission.CAMERA"
      tools:ignore="PermissionImpliesUnsupportedChromeOsHardware" />
   <uses-permission android:name="android.permission.ACCESS_FINE_LOCATION"/>
   <uses-permission
android:name="android.permission.ACCESS_COARSE_LOCATION"/>
```

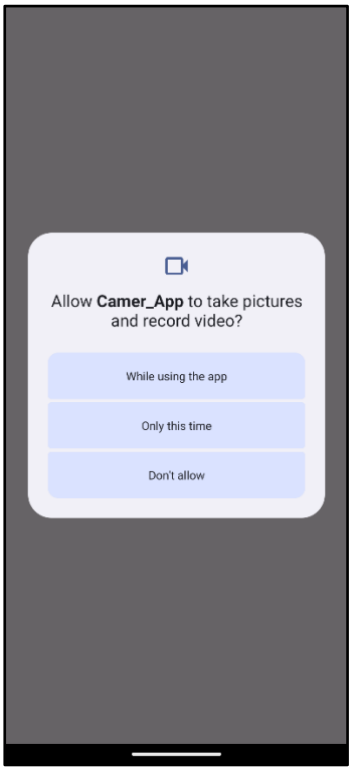
MainActivity.java

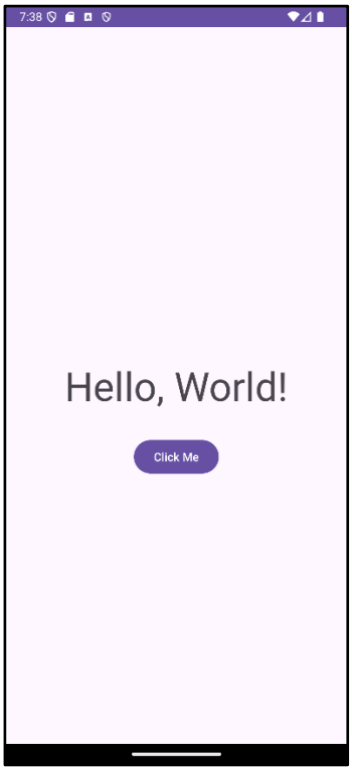
```
package com.example.practical10c;
import android.content.pm.PackageManager;
import android.os.Bundle;
import android.view.View;
```

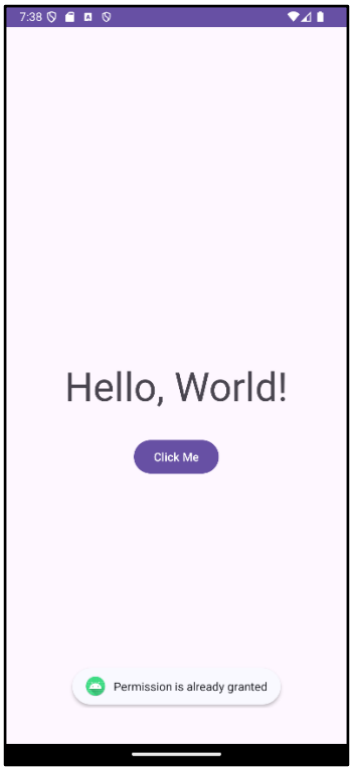
```
import android.widget.Button;
import android.widget.Toast;
import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import androidx.core.content.ContextCompat;
public class MainActivity extends AppCompatActivity {
   private static final int CAMERA_PERMISSION_CODE = 100;
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      // Check if the app already has camera permission
      if (ContextCompat.checkSelfPermission(this, android.Manifest.permission.CAMERA)
            == PackageManager.PERMISSION_GRANTED) {
         // Permission is already granted
         Toast.makeText(this, "Permission is already granted",
Toast.LENGTH_SHORT).show();
      } else {
         // Request camera permission
         Toast.makeText(this, "Requesting Permission", Toast.LENGTH_SHORT).show();
         requestCameraPermission();
      }
   }
   // Method to request camera permission
   public void requestCameraPermission() {
      ActivityCompat.requestPermissions(this,
            new String[]{android.Manifest.permission.CAMERA},
            CAMERA_PERMISSION_CODE);
   }
   // Handle the result of the permission request
   @Override
   public void onRequestPermissionsResult(int requestCode, @NonNull String[] permissions,
@NonNull int[] grantResults) {
      super.onRequestPermissionsResult(requestCode, permissions, grantResults);
      if (requestCode == CAMERA_PERMISSION_CODE) {
         if (grantResults.length > 0 && grantResults[0] ==
PackageManager.PERMISSION_GRANTED) {
            // Permission was granted
            Toast.makeText(this, "Camera Permission Granted",
Toast.LENGTH_SHORT).show();
         } else {
            // Permission was denied
            Toast.makeText(this, "Camera Permission Denied",
Toast.LENGTH_SHORT).show();
         }
```

```
        }
    }
}
```

Output:


Allow Camer_App to take pictures and record video?
While using the app
Only this time
Don't allow


7:38
Hello, World!
Click Me


7:38
Hello, World!
Click Me
Permission is already granted