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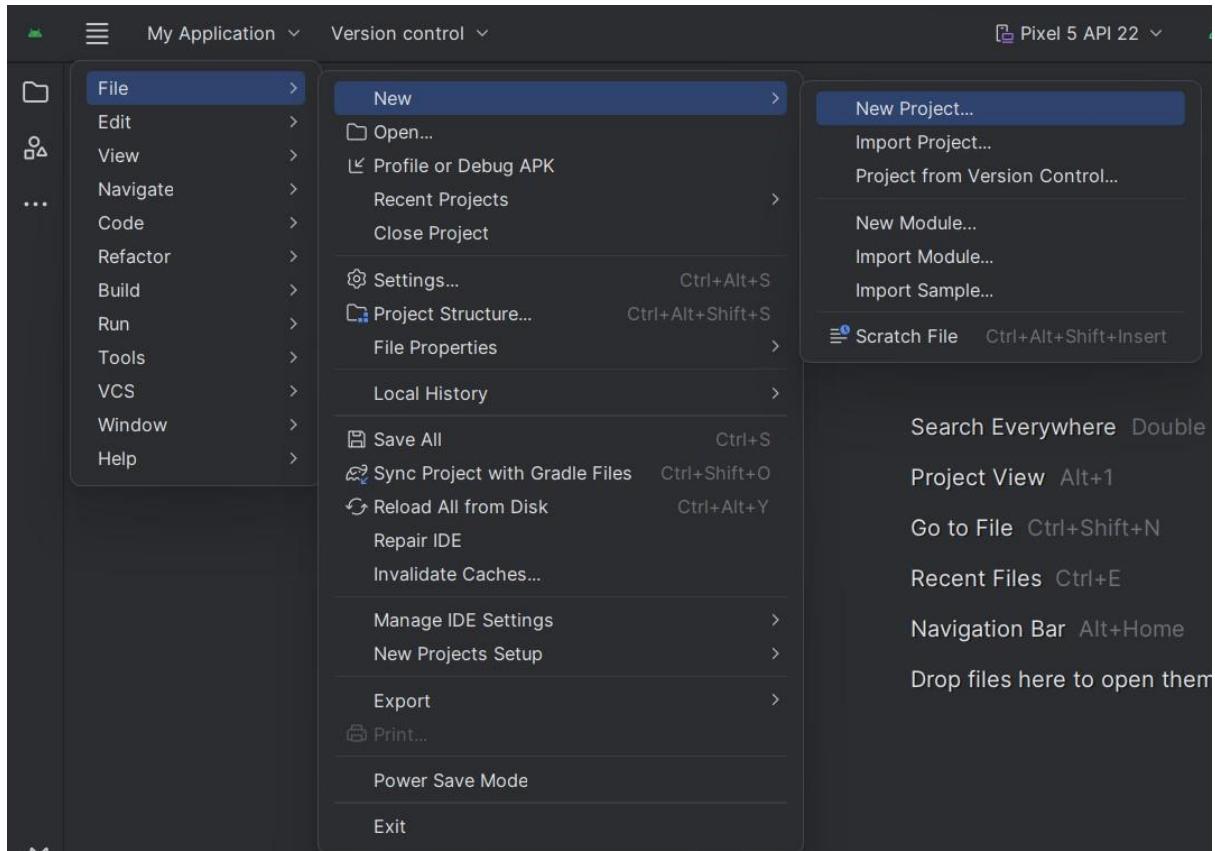
Sr No.	Question	Signature
0.	Introduction to Android, Introduction to Android Studio IDE	
1.	Programming Resources (Color, Theme, String, Drawable , Dimension, Image)	
2.	Programming Activity and fragments a) Activity life cycle b) Multiple Activity c) Fragment Lifecycle d) Multiple Fragment	
3.	Program related to different Layout a) Linear Layout b) Relative Layout c) Table d) Grid View e) List View	
4.	Programming UI elements a) AppBar b) Programming UI component	
5.	a) Programming menus b) Alert dialog Box	
6.	a) Programming on intents b) Using Events and Event Listeners	
7.	a) program on Service b) program on Notification	
9.	a) Programming Using threat b) Programming handles	

Practical No :-0

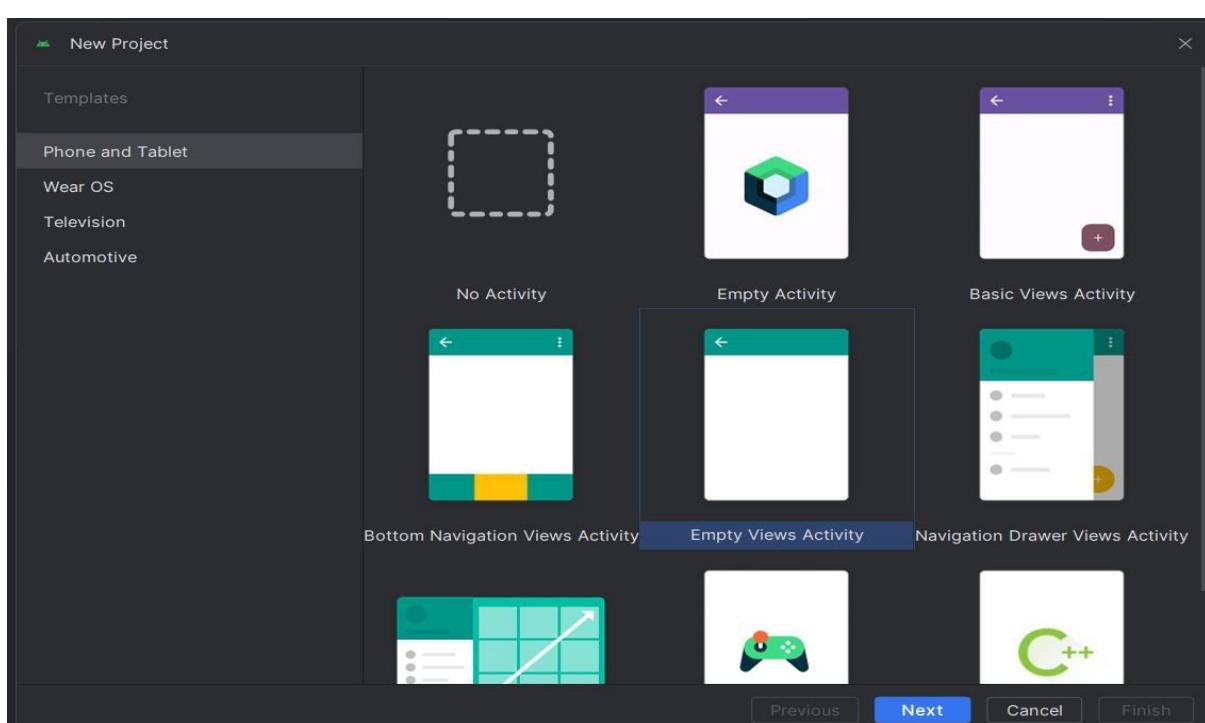
Aim :- Using Android Studio Create Hello World Program.

Step 1: Create New Project in Android Studio

Open Android Studio and go to the File Menu >> New >> New Project.



Select>> Empty Views Activity

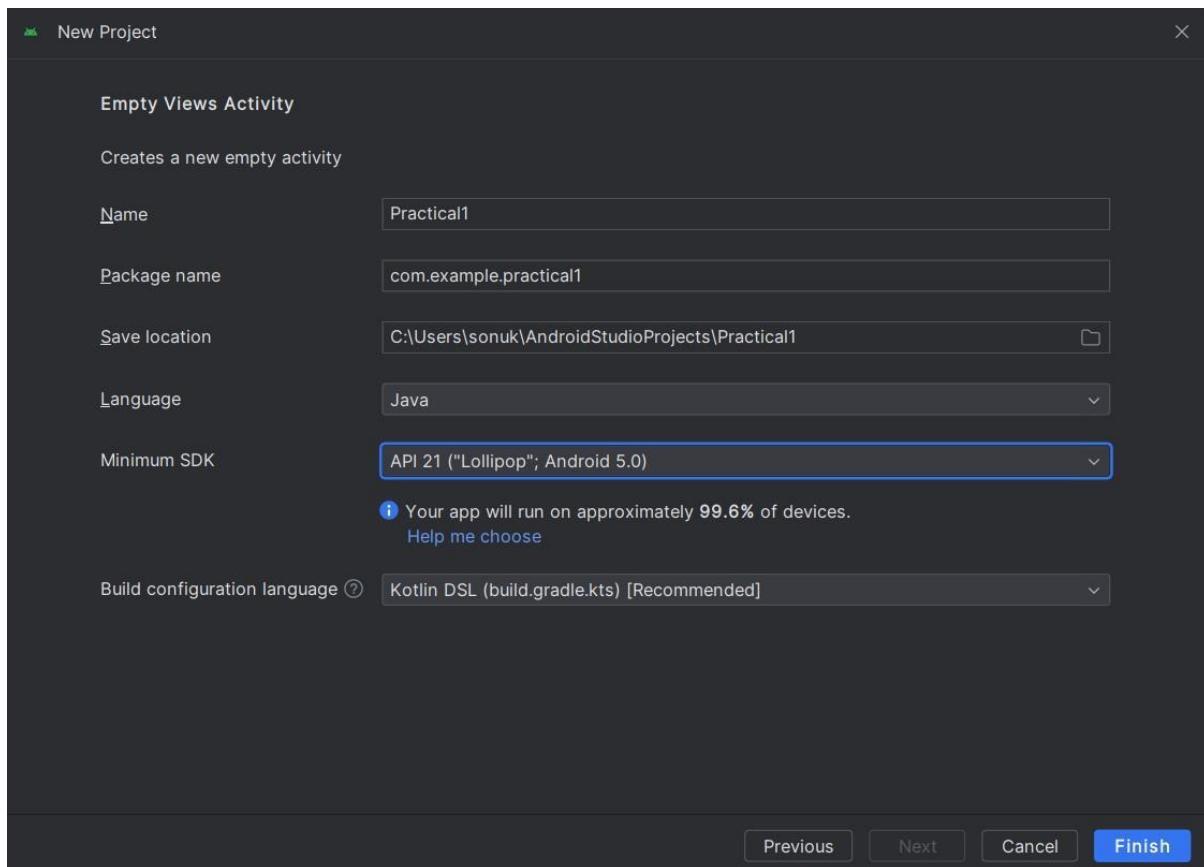


Step 2: Configure Your New Project

Add your application details over here and hit "Next" button.

i.e.

- Application name
- Package name
- Language
- Project location



➤ 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>
```

➤ **MainActivity.java**

```
package com.example.practical1;

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);
    }
}
```



Practical No :-2

Aim :- Android Resources: (Color, Theme, String, Drawable, Dimension, Image)

1. Color:-

Colors.xml

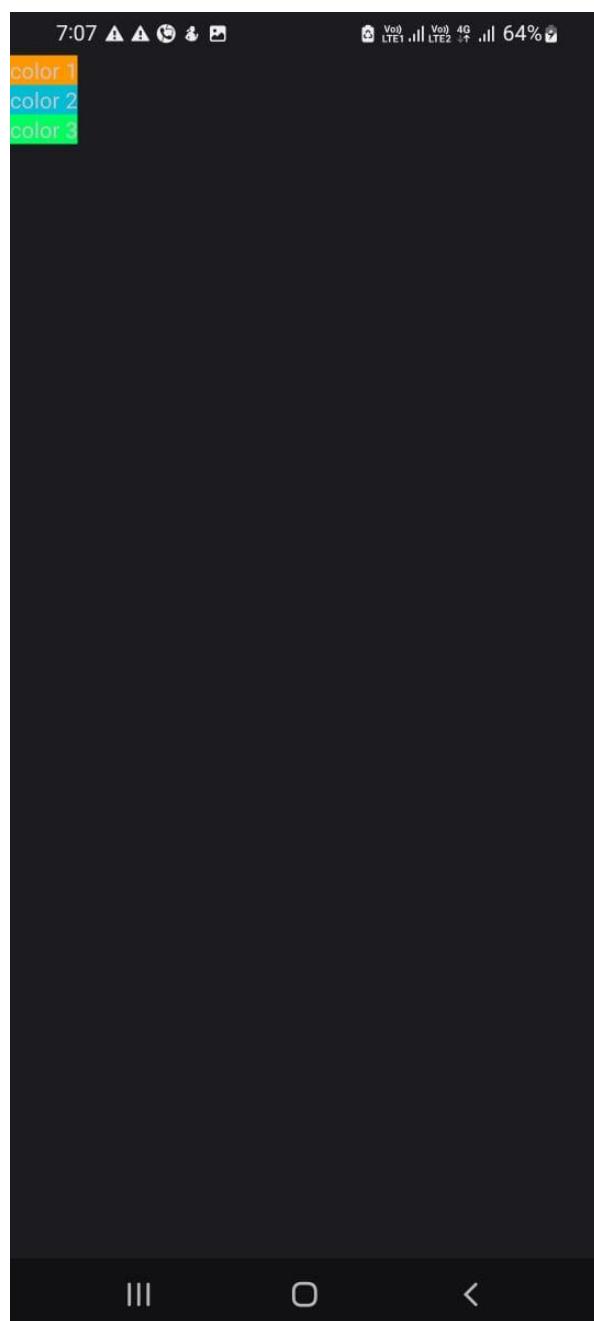
```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <color name="black">#FF000000</color>
    <color name="white">#FFFFFF</color>
    <color name="darkblue">#673AB7</color>
    <color name="green">#00FE5F</color>
    <color name="purple">#C500FE</color>
    <color name="orange">#FE9700</color>
    <color name="blue">#00BCD4</color>
</resources>
```

Activity_main.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"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:id="@+id/main"
    android:orientation="vertical"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <TextView
        android:id="@+id/t1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:background="@color/orange"
        android:text="color 1"
        tools:ignore="TextContrastCheck"
        tools:layout_editor_absoluteX="28dp"
        tools:layout_editor_absoluteY="70dp" />
    <TextView
        android:id="@+id/t2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:background="@color/blue"
        android:text="color 2"
        tools:ignore="TextContrastCheck"
```

```
    tools:layout_editor_absoluteX="28dp"
    tools:layout_editor_absoluteY="70dp" />
<TextView
    android:id="@+id/t3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:background="@color/green"
    android:text="color 3"
    tools:layout_editor_absoluteX="28dp"
    tools:layout_editor_absoluteY="70dp"/>

</LinearLayout>
```



2. Theme:-

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">
    <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/mytheme"
        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>
```

Styles.xml

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <!-- Base application theme -->
    <style name="AppTheme" parent="Theme.AppCompat.Light.DarkActionBar">
        <item name="colorPrimary">@color/colorPrimary</item>
        <item name="colorPrimaryDark">@color/colorPrimaryDark</item>
        <item name="colorAccent">@color/colorAccent</item>
    </style>
    <!-- Custom theme -->
    <style name="mytheme" parent="Theme.AppCompat.Light.DarkActionBar">
        <item name="colorPrimary">@color/colorPrimary</item>
        <item name="colorPrimaryDark">@color/colorPrimaryDark</item>
        <item name="colorAccent">@color/colorAccent</item>
        <item name="android:windowBackground">#00FF00</item>
        <item name="android:textColorPrimary">#000000</item>
```

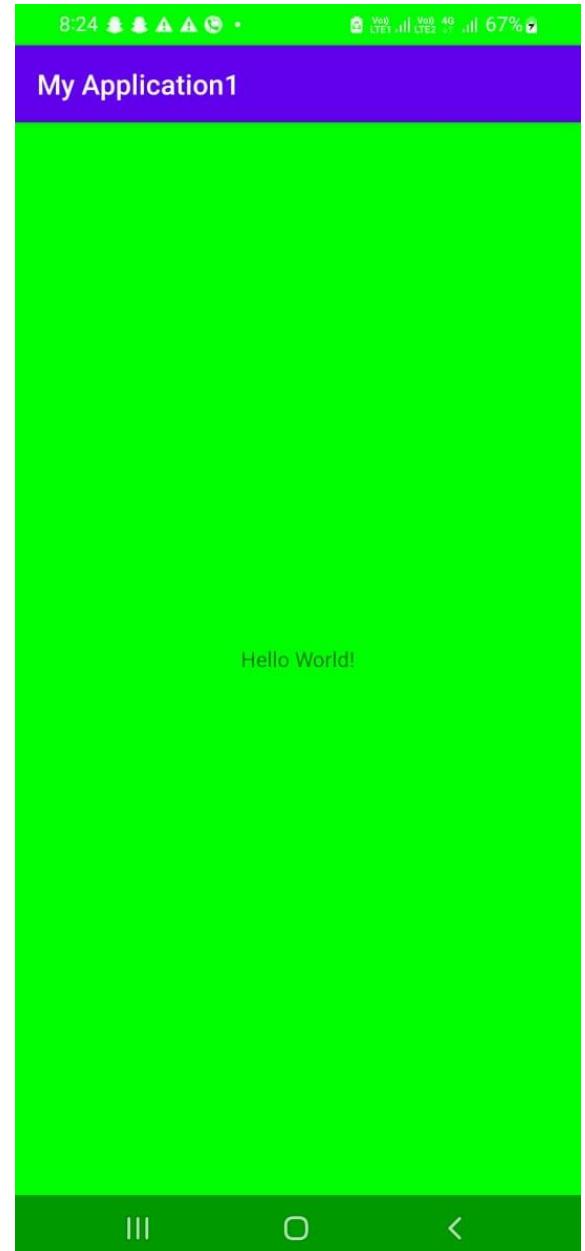
```
</style>
</resources>
```

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>
```

Colors.xml

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <color name="colorPrimary">#6200EE</color>
    <color name="colorPrimaryDark">#3700B3</color>
    <color name="colorAccent">#03DAC5</color>
</resources>
```



3. Dimension:-

Dimens.xml

```
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <dimen name="myfontsize">20sp</dimen>
    <dimen name="myheight">200dp</dimen>
    <dimen name="mywidth">200dp</dimen>
    <string name="mystring">Shailendra college</string>
</resources>
```

Activity_main_xml

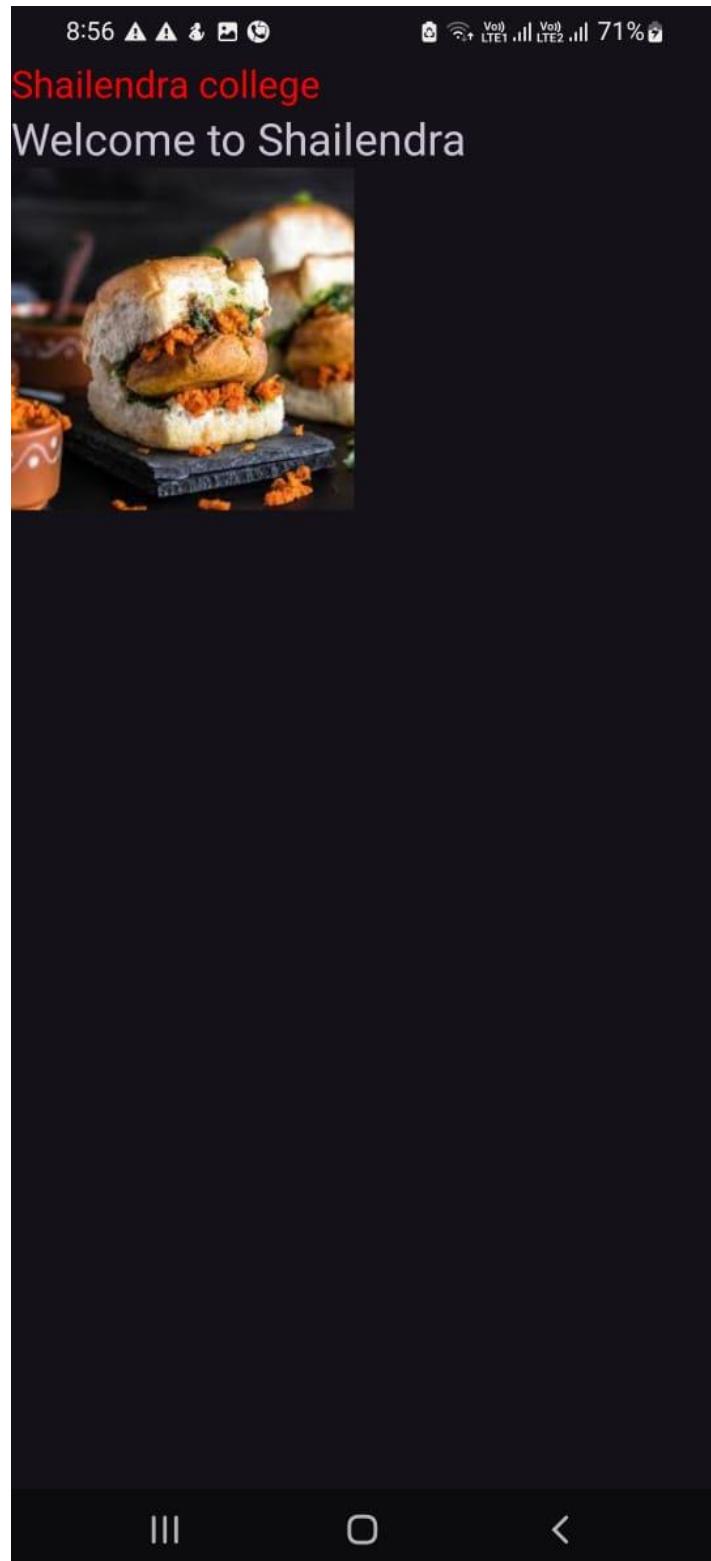
```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"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

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/mystring"
        android:textSize="@dimen/myfontsize"
        android:textColor="@color/mycolor"
        tools:ignore="MissingConstraints" />
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Welcome to Shailendra"
        android:textSize="12pt"
        tools:ignore="MissingConstraints" />
    <ImageView
        android:layout_width="@dimen/mywidth"
        android:layout_height="@dimen/myheight"
        android:src="@drawable/food1"/>
</LinearLayout>
```

Colors.xml

```
<?xml version="1.0" encoding="utf-8"?>
```

```
<resources>  
    <color name="black">#FF000000</color>  
    <color name="white">#FFFFFF</color>  
    <color name="mycolor">#FF0000</color>  
</resources>
```



4. String:-

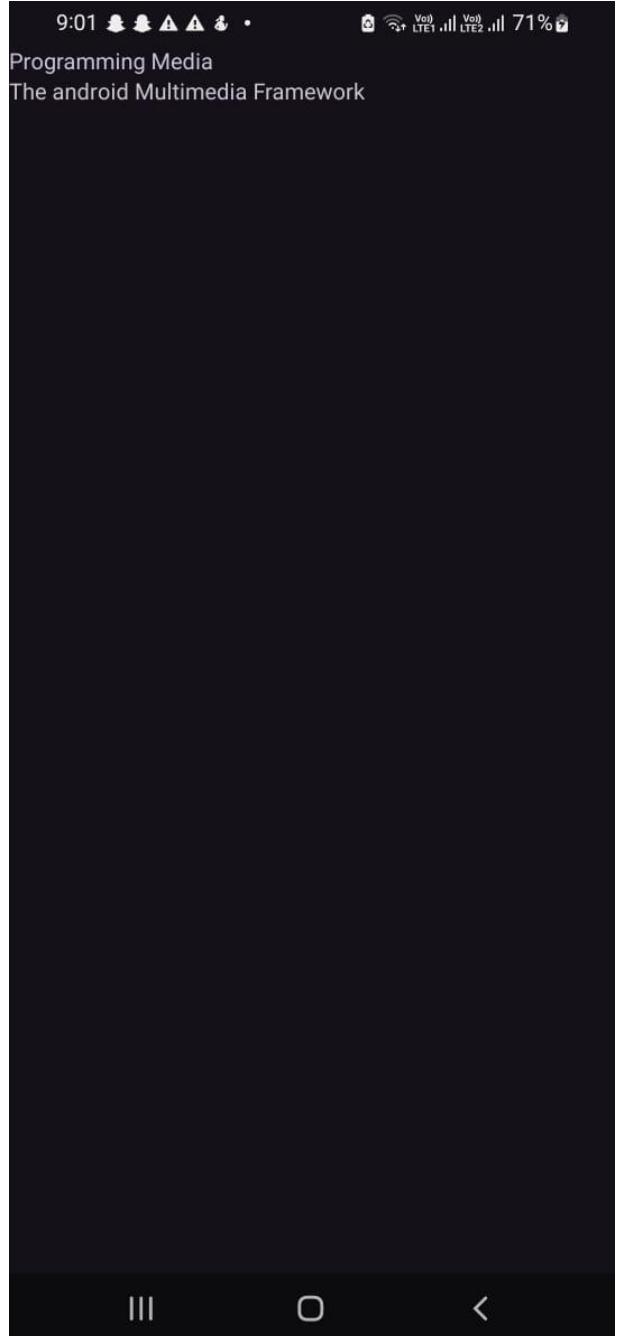
Strings.xml

```
<resources>
    <string name="app_name">My Application2</string>
    <string name="ParaHead">Programming Media</string>
    <string name="Description">The android Multimedia Framework</string>
</resources>
```

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"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/ParaHead"
    />
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/Description"/>
</LinearLayout>
```



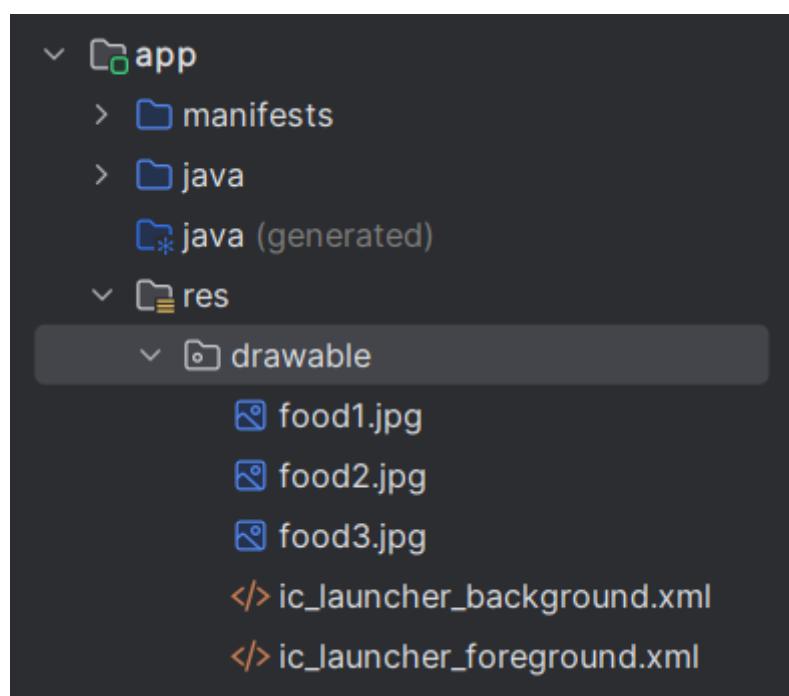
5. Drawable and Images:-

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"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <ImageView
        android:id="@+id/img1"
        android:layout_width="259dp"
        android:layout_height="150dp"
        android:src="@drawable/food1" />
    <ImageView
        android:id="@+id/img2"
        android:layout_width="230dp"
        android:layout_height="136dp"
        android:src="@drawable/food2" />
    <ImageView
        android:id="@+id/img3"
        android:layout_width="304dp"
        android:layout_height="165dp"
        android:src="@drawable/food3" />
</LinearLayout>
```

Add Images





Practical No :-2

A- Activity Life Cycle

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"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <Button
        android:id="@+id/b1"
        android:layout_width="197dp"
        android:layout_height="67dp"
        android:text="Click Here"
        android:onClick="MessageButton"
        tools:layout_editor_absoluteX="107dp"
        tools:layout_editor_absoluteY="222dp"
        tools:ignore="MissingConstraints" />
</LinearLayout>
```

MainActivity.java

```
package com.example.myapplication2;

import android.os.Bundle;
import android.util.Log;
import android.view.View;
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 {
    String tag="lifecycle";
    @Override
    protected void onCreate(Bundle savedInstanceState) {
```

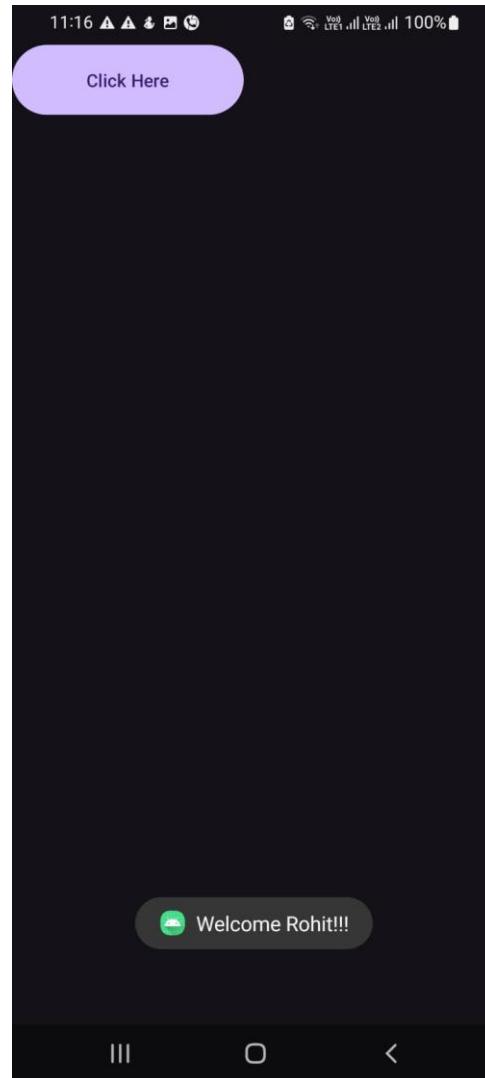
```
super.onCreate(savedInstanceState);
EdgeToEdge.enable(this);
setContentView(R.layout.activity_main);
ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main), (v, insets) -> {
    Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars());
    v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom);
    return insets;
});
}
@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");
}
public void MessageButton(View v)
{
    if(v.getId() == R.id.b1)
    {
        MessageBox("Welcome Rohit!!!");
    }
}
```

```

        }
    }

    public void MessageBox(String message)
    {
        Toast.makeText(this, message, Toast.LENGTH_SHORT).show();
    }
}

```



Logcat Logcat +

samsung SM-A315F (RZ8N82RM19Y) Android 12; API 31

Filter: lifecycle

Time	Process	Category	Message
2025-02-25 23:16:04.210	5480-5604 SessionSco...initializer	com.instagram.android	I Initialize com.instagram.creation.capture.quickcapture.lifecyclemanager.User
2025-02-25 23:16:18.628	1435-1466 GameSDK@Lifecycle	system_server	I noteResumeComponent(): package name : com.sec.android.app.launcher
2025-02-25 23:16:19.880	1435-1466 GameSDK@Lifecycle	system_server	I noteResumeComponent(): package name : com.example.myapplication2
2025-02-25 23:16:20.388	5915-5915 lifecycle	com.example.myapplication2	D in the onStart event
2025-02-25 23:16:20.391	5915-5915 lifecycle	com.example.myapplication2	D in the onResume() event
2025-02-25 23:16:29.521	29055-29139 Gallery	com.sec.android.gallery3d	I [284: LifecycleReLoader] onDataChanged EventMessage{EVENT_PICTURES_DATA_CHANGED}
2025-02-25 23:16:29.540	29055-29139 Gallery	com.sec.android.gallery3d	I [287: LifecycleReLoader] DataStamp{5249331888.0_2147507864_1073461}
2025-02-25 23:16:29.775	5915-5915 lifecycle	com.example.myapplication2	D in the onPause event
2025-02-25 23:16:29.938	1435-1466 GameSDK@Lifecycle	system_server	I noteResumeComponent(): package name : com.sec.android.app.launcher
2025-02-25 23:16:30.240	5915-5915 lifecycle	com.example.myapplication2	D in the onStop event
2025-02-25 23:16:30.788	1435-1466 GameSDK@Lifecycle	system_server	I noteResumeComponent(): package name : com.sec.android.gallery3d
2025-02-25 23:16:37.602	29055-29103 Gallery	com.sec.android.gallery3d	I [609: LifecycleReLoader] DataStamp{5249331888.0_2147507864_1073461}
2025-02-25 23:16:37.602	29055-29103 Gallery	com.sec.android.gallery3d	T [610: LifecycleReLoader] onPause

MyApplication22 > app > src > main > res > layout > activity_main.xml

19:45 LF UTF-8 4 spaces

B- Multiple Activity

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"
    android:orientation="vertical"
    android:gravity="center"
    tools:context=".MainActivity">
    <Button
        android:id="@+id	btnOpenSecondActivity"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Open Second Activity" />
</LinearLayout>
```

MainActivity.java

```
package com.example.myapplication;

import android.content.Intent;
import android.os.Bundle;
import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import android.view.View;
import android.widget.Button;

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;
    });
    // Find the button and set an onClick listener
    Button btnOpenSecondActivity = findViewById(R.id.btnOpenSecondActivity);
    btnOpenSecondActivity.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            Intent intent = new Intent(MainActivity.this, SecondActivity.class);
            intent.putExtra("message", "Hello from MainActivity!");
            startActivity(intent);
        }
    });
}
}
```

Activity_second.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"
    android:orientation="vertical"
    android:gravity="center"
    tools:context=".SecondActivity">
    <TextView
        android:id="@+id/textViewMessage"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Default Message"
        android:textSize="18sp" />
</LinearLayout>
```

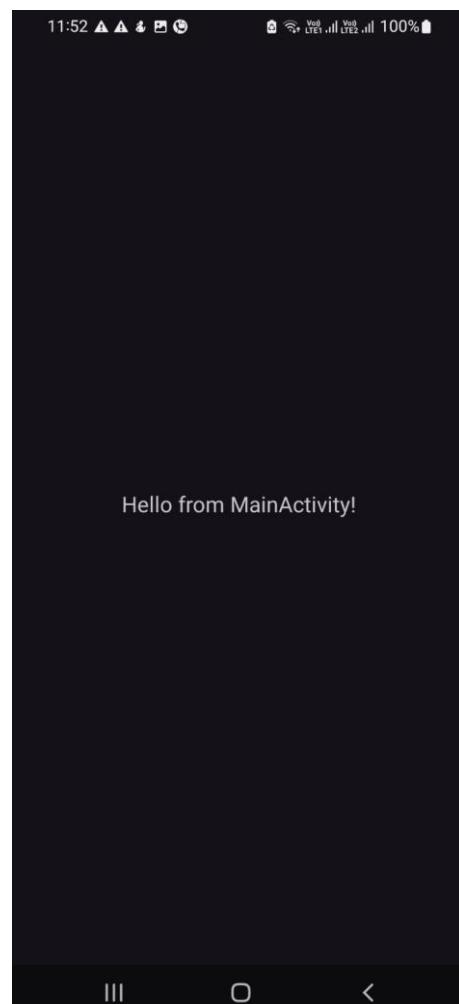
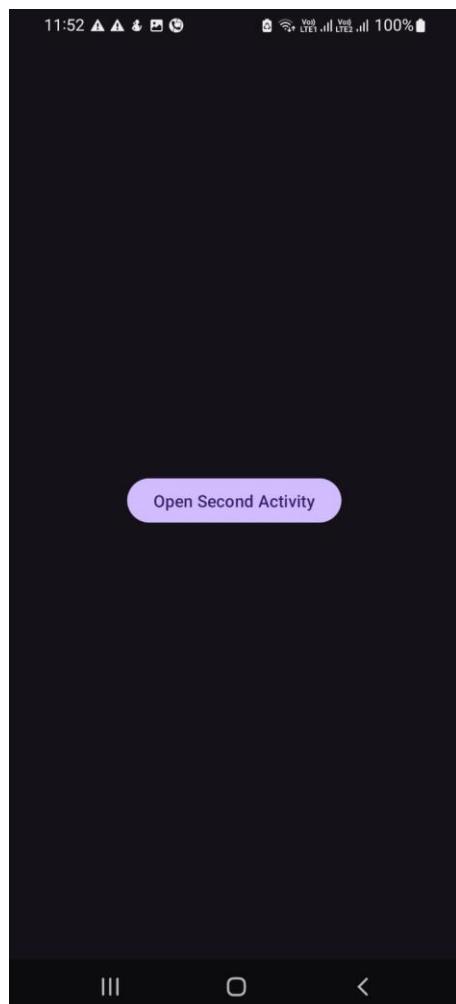
SecondActivity.java

```
package com.example.myapplication;

import android.os.Bundle;
```

```
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 SecondActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_second);
        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 textViewMessage = findViewById(R.id.textViewMessage);
        String message = getIntent().getStringExtra("message");
        textViewMessage.setText(message);
    }
}
```



C- Fragment Lifecycle

activity_main.xml

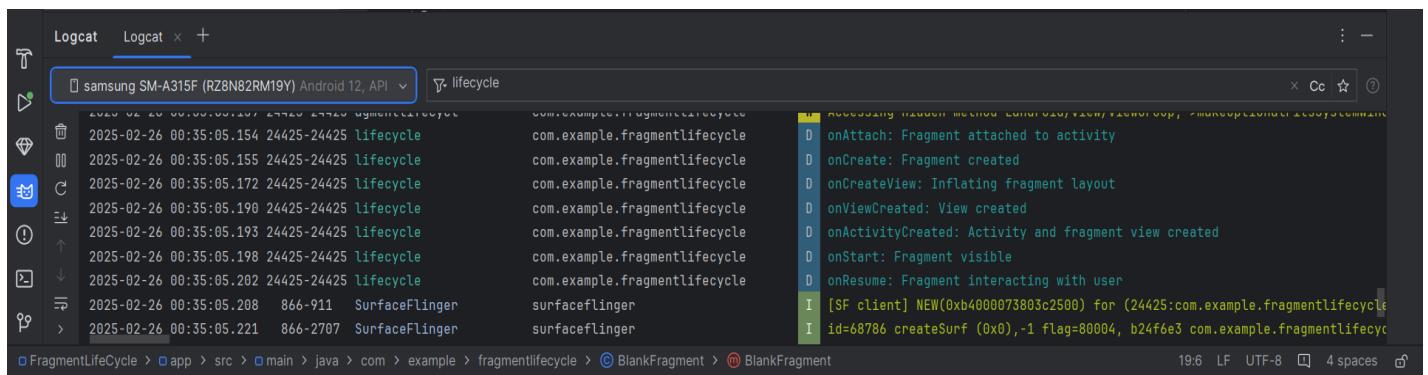
```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"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

    <fragment
        android:id="@+id/f1"
        class="com.example.fragmentlifecycle.BlankFragment"
        tools:layout="@layout/fragment_blank"
        android:layout_width="match_parent"
        android:layout_height="match_parent"/>

</LinearLayout>
```

Create New Fragment

In Fragment select → Fragment(Blank)



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"
    android:gravity="center"
```

```
tools:context=".BlankFragment">

<!-- TODO: Update blank fragment layout -->
<TextView
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:text="Check Logcat" />

</FrameLayout>
```

BlankFragment.java

```
package com.example.fragmentlifecycle;

import android.content.Context;
import android.os.Bundle;

import androidx.annotation.NonNull;
import androidx.annotation.Nullable;
import androidx.fragment.app.Fragment;

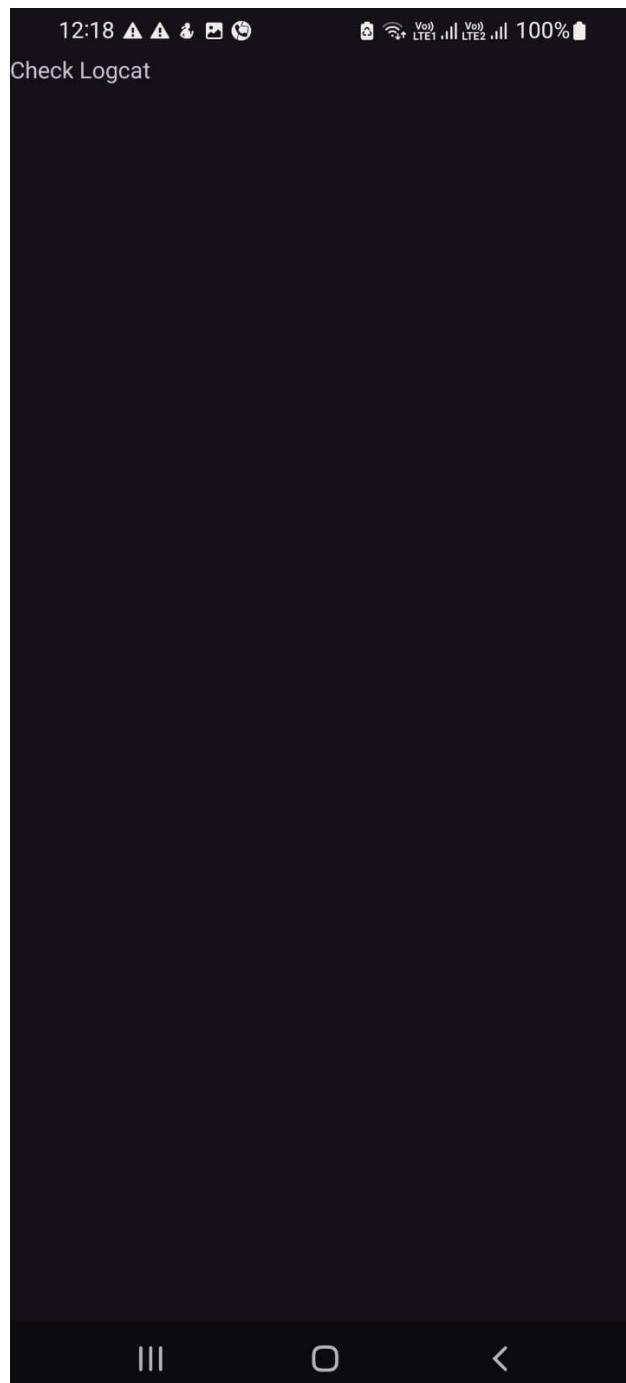
import android.util.Log;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;

public class BlankFragment extends Fragment {
    String tag="lifecycle";
    public BlankFragment() {
        // Required empty public constructor
    }
    @Override
    public void onAttach(Context context) {
        super.onAttach(context);
        Log.d(tag, "onAttach: Fragment attached to activity");
    }
    @Override
    public void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        Log.d(tag, "onCreate: Fragment created");
    }
    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container,
```

```
        Bundle savedInstanceState) {
    // Inflate the layout for this fragment
    Log.d(tag, "onCreateView: Inflating fragment layout");
    return inflater.inflate(R.layout.fragment_blank, container, false);
}
@Override
public void onViewCreated(@NonNull View view, @Nullable Bundle
    savedInstanceState) {
    super.onViewCreated(view, savedInstanceState);
    Log.d(tag, "onViewCreated: View created");
}
@Nullable
@Override
public View getView() {
    return super.getView();
}
@Override
public void onActivityCreated(@Nullable Bundle savedInstanceState) {
    super.onActivityCreated(savedInstanceState);
    Log.d(tag, "onActivityCreated: Activity and fragment view created");
}
@Override
public void onStart() {
    super.onStart();
    Log.d(tag, "onStart: Fragment visible");
}
@Override
public void onResume() {
    super.onResume();
    Log.d(tag, "onResume: Fragment interacting with user");
}
@Override
public void onPause() {
    super.onPause();
    Log.d(tag, "onPause: Fragment no longer interacting with user");
}

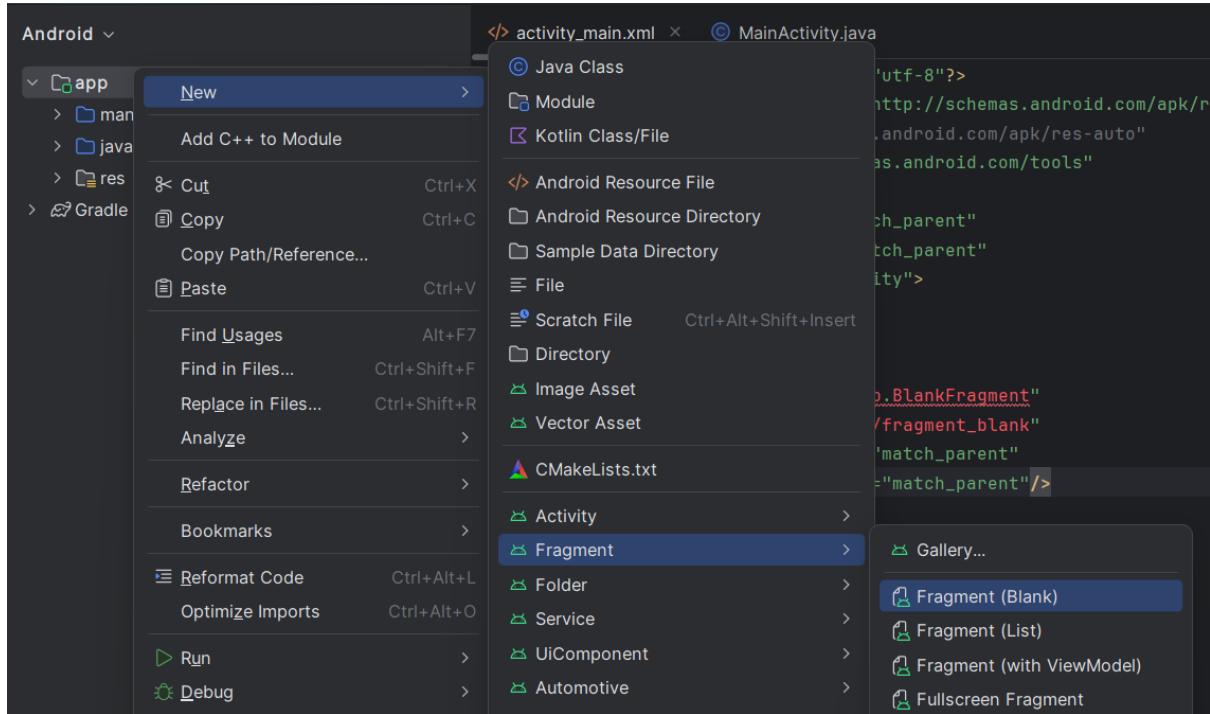
}
@Override
public void onStop() {
    super.onStop();
    Log.d(tag, "onStop: Fragment no longer visible");
}
@Override
public void onDestroyView() {
```

```
super.onDestroyView();
Log.d(tag, "onDestroyView: Fragment view destroyed");
}
@Override
public void onDestroy() {
    super.onDestroy();
    Log.d(tag, "onDestroy: Fragment destroyed");
}
}
```



D- Multiple Fragment

Add 2 Blank Fragments, First_Fragment and Second_Fragment



activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<FrameLayout 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"
    android:orientation="vertical"
    tools:context=".MainActivity">
    <LinearLayout
        android:id="@+id/frag_contain"
        android:layout_width="312dp"
        android:layout_height="564dp"
        android:layout_marginStart="24dp"
        android:layout_marginTop="24dp"
        android:layout_marginEnd="24dp"
        android:layout_marginBottom="24dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
```

```
    app:layout_constraintTop_toTopOf="parent">
<Button
    android:id="@+id/b1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_weight="1"
    android:text="Fragment1" />
<Button
    android:id="@+id/b2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_weight="1"
    android:text="Fragment2" />
</LinearLayout>
</FrameLayout>
```

MainActivity.java

```
package com.example.multiplefragment;

import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;
import androidx.fragment.app.Fragment;
import androidx.fragment.app.FragmentManager;
import androidx.fragment.app.FragmentTransaction;

public class MainActivity extends AppCompatActivity {
    private Button clickbutton;
    @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;
        });
    }
}
```

```

    });
    View.OnClickListener listener = new View.OnClickListener() {
        public void onClick(View view) {
            Fragment fragment = null;
            if (view == findViewById(R.id.b1)) {
                fragment = new fragment_first();
            } else {
                fragment = new fragment_second();
            }
            FragmentManager manager = getSupportFragmentManager();
            FragmentTransaction transaction = manager.beginTransaction();
            transaction.replace(R.id.frag_contain, fragment);
            transaction.commit();
        }
    };
    Button btn1 = (Button) findViewById(R.id.b1);
    btn1.setOnClickListener(listener);
    Button btn2 = (Button) findViewById(R.id.b2);
    btn2.setOnClickListener(listener);
}
}

```

fragment_first.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="vertical"
    tools:context=".fragment_first">
    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="24dp"
        android:layout_marginTop="24dp"
        android:text="First Fragment"
    />
    <Button
        android:id="@+id/button1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"

```

```
    android:layout_marginStart="24dp"
    android:layout_marginTop="40dp"
    android:text="click First Fragment "
  />
</LinearLayout>
```

fragment_first.java

```
package com.example.multiplefragment;

import android.os.Bundle;
import androidx.fragment.app.Fragment;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.Button;
import android.widget.Toast;

public class fragment_first extends Fragment {
  private Button button;
  public fragment_first() {
    // Required empty public constructor
  }
  @Override
  public View onCreateView(LayoutInflater inflater, ViewGroup container,
    Bundle savedInstanceState) {
  View view = inflater.inflate(R.layout.fragment_first, container, false);
  button = view.findViewById(R.id.button1);
  button.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
      Toast.makeText(getActivity(), "First Fragment",
        Toast.LENGTH_SHORT).show();
    }
  });
  return view;
}
}
```

fragment_second.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="vertical"
    tools:context=".fragment_second">
    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="24dp"
        android:layout_marginTop="24dp"
        android:text="Second fragment"
    />
    <Button
        android:id="@+id/button2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="24dp"
        android:layout_marginTop="40dp"
        android:text="Click Second Fragment"
    />
</LinearLayout>
```

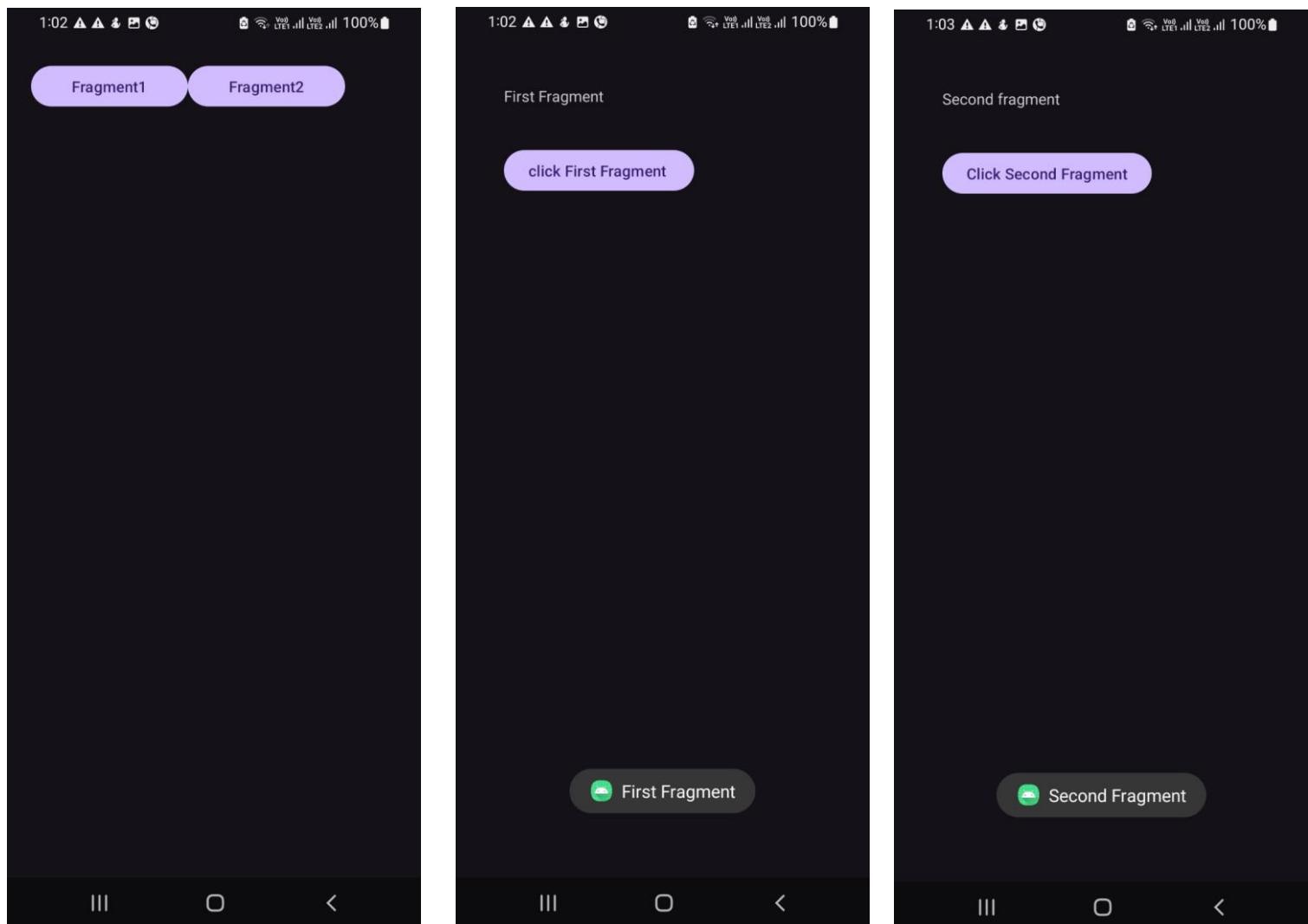
fragment_second.java

```
package com.example.multiplefragment;

import android.os.Bundle;
import androidx.fragment.app.Fragment;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.Button;
import android.widget.Toast;

public class fragment_second extends Fragment {
    private Button button;
    public fragment_second() {
        // Required empty public constructor
    }
    @Override
```

```
public View onCreateView(LayoutInflater inflater, ViewGroup container,
    Bundle savedInstanceState) {
    View view=inflater.inflate(R.layout.fragment_second,container,false);
    button=view.findViewById(R.id.button2);
    button.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            Toast.makeText(getActivity(),"Second Fragment",Toast.LENGTH_SHORT).show();
        }
    });
    return view;
}
```

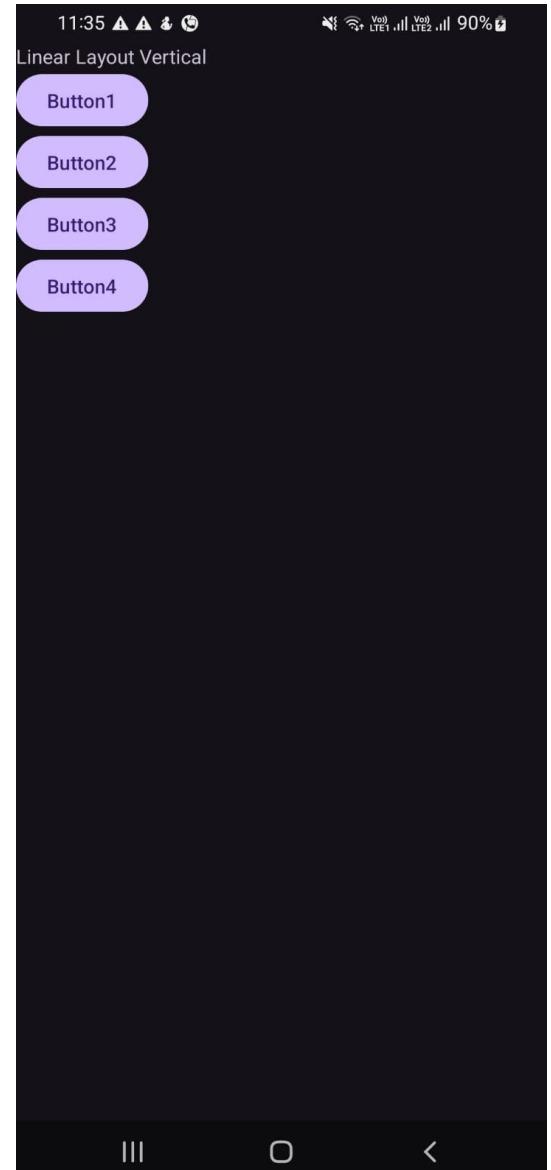


Practical No :-3

A-1 Linear layout with vertical

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"
    android:orientation="vertical"
    tools:context=".MainActivity">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Linear Layout Vertical" />
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/b1"
        android:text="Button1" />
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/b2"
        android:text="Button2" />
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/b3"
        android:text="Button3" />
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/b4"
        android:text="Button4" />
</LinearLayout>
```

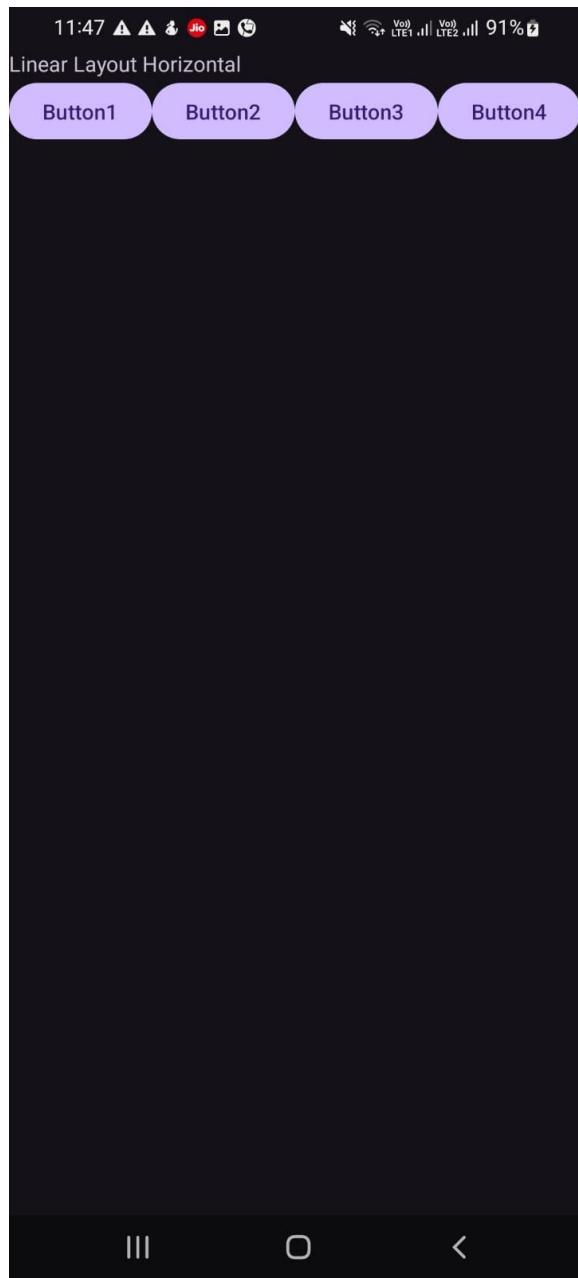


A-1 Linear layout with horizontal

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"
    android:orientation="vertical"
    tools:context=".MainActivity">
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="horizontal">
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Linear Layout Horizontal" />
    </LinearLayout>
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="horizontal">
        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:id="@+id/b1"
            android:text="Button1" />
        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:id="@+id/b2"
            android:text="Button2" />
        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:id="@+id/b3"
            android:text="Button3" />
        <Button
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:id="@+id/b4"
```

```
        android:text="Button4" />  
    </LinearLayout>  
</LinearLayout>
```



B- 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:layout_alignParentTop="true"
        android:layout_alignParentLeft="true" />
    <EditText
        android:id="@+id/txtComments"
        android:layout_width="fill_parent"
        android:layout_height="170px"
        android:textSize="18dp"
        android:layout_alignLeft="@+id/lblComments"
        android:layout_below="@+id/lblComments"
        android:layout_centerHorizontal="true" />
    <Button
        android:id="@+id/btnSave"
        android:layout_width="220px"
        android:layout_height="wrap_content"
        android:text="Save"
        android:layout_below="@+id/txtComments"
        android:layout_alignRight="@+id/txtComments" />
    <Button
        android:id="@+id btnCancel"
        android:layout_width="250px"
        android:layout_height="wrap_content"
        android:text="Cancel"
        android:layout_below="@+id/txtComments"
        android:layout_alignLeft="@+id/txtComments" />
</RelativeLayout>
```

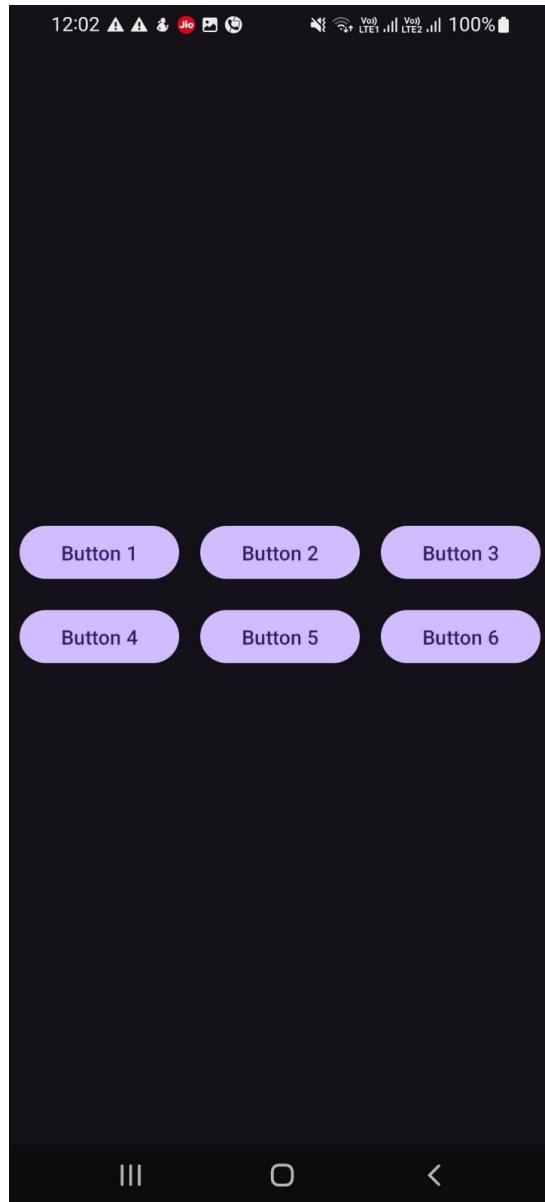


C- Table

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"
    android:gravity="center"
    tools:context=".MainActivity">
    <TableLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:stretchColumns="*">
        <TableRow>
            <Button
                android:id="@+id/b1"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_margin="8dp"
                android:text="Button 1" />
            <Button
                android:id="@+id/b2"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_margin="8dp"
                android:text="Button 2" />
            <Button
                android:id="@+id/b3"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_margin="8dp"
                android:text="Button 3" />
        </TableRow>
        <TableRow>
            <Button
                android:id="@+id/b4"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_margin="8dp"
                android:text="Button 4" />
            <Button
```

```
        android:id="@+id/b5"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="8dp"
        android:text="Button 5" />
<Button
        android:id="@+id/b6"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="8dp"
        android:text="Button 6" />
</TableRow>
</TableLayout>
</LinearLayout>
```



D- Grid View

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">
    <GridView
        android:id="@+id/myGridview1"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_gravity="center"
        android:columnWidth="100dp"
        android:gravity="center"
        android:minHeight="90dp"
        android:numColumns="auto_fit"
        android:stretchMode="columnWidth"
    />
</LinearLayout>
```

MainActivity.java

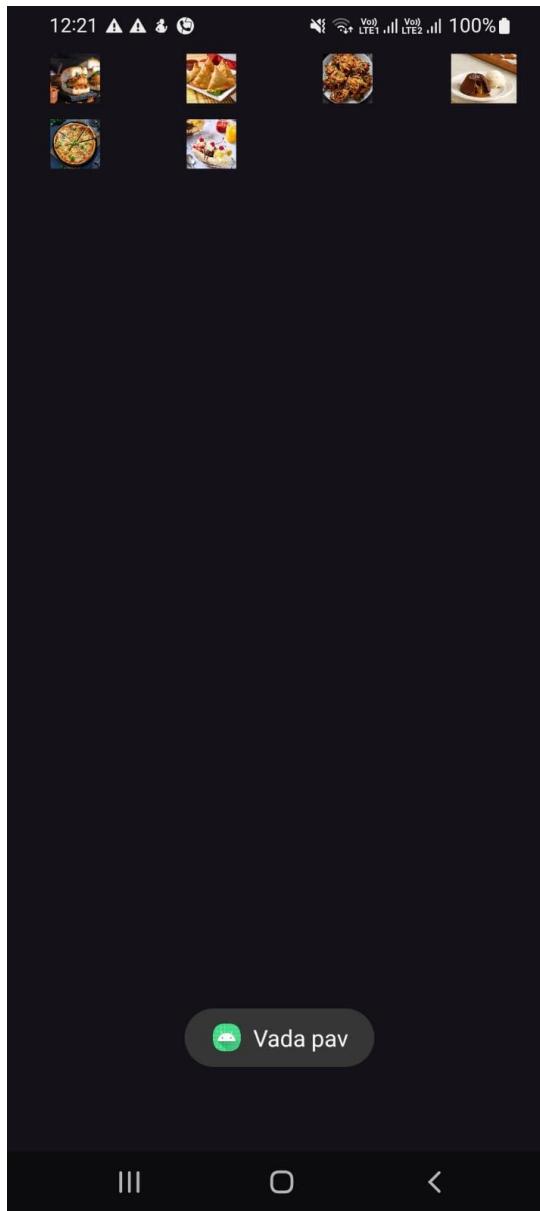
```
package com.example.prac3;

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

```
import java.util.ArrayList;

public class MainActivity extends AppCompatActivity {
    GridView androidGridView;
    Integer[] imageIDs={ R.drawable.food1,R.drawable.food2,R.drawable.food3,
    R.drawable.food4,R.drawable.food5,R.drawable.food6
    };
    @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;
        });
        androidGridView = (GridView) findViewById(R.id.myGridview1);
        androidGridView.setAdapter(new ImageAdapterGridView(this));
        final ArrayList<String> message = new ArrayList<>();
        message.add("Vada pav");
        message.add("samosa");
        message.add("kanda bhaji");
        message.add("Chocolate Lava Cake");
        message.add("Margherita Pizza");
        message.add("Ice Cream Sundae");
        androidGridView.setOnItemClickListener(new AdapterView.OnItemClickListener() {
            public void onItemClick(AdapterView<?> parent,
                View v, int position, long id) {
                String m = message.get(position);
                Toast.makeText(MainActivity.this, "" + m, Toast.LENGTH_LONG).show();
            }
        });
    }
    public class ImageAdapterGridView extends BaseAdapter {
        private Context mContext;
        public ImageAdapterGridView(Context c) {
            mContext = c;
        }
        public int getCount() {
            return imageIDs.length;
        }
        public Object getItem(int position) {
```

```
        return null;
    }
    public long getItemId(int position) {
        return 0;
    }
    public View getView(int position, View convertView, ViewGroup parent) {
        ImageView mImageView;
        if (convertView == null) {
            mImageView = new ImageView(mContext);
            mImageView.setLayoutParams(new GridView.LayoutParams(130, 130));
            mImageView.setScaleType(ImageView.ScaleType.CENTER_CROP);
            mImageView.setPadding(16, 16, 16, 16);
        } else {
            mImageView = (ImageView) convertView;
        }
        mImageView.setImageResource(imageIDs[position]);
        return mImageView;
    }
}
```



E- List View

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">
    <ListView
        android:id="@+id/listView"
        android:layout_width="match_parent"
        android:layout_height="match_parent"/>
</LinearLayout>
```

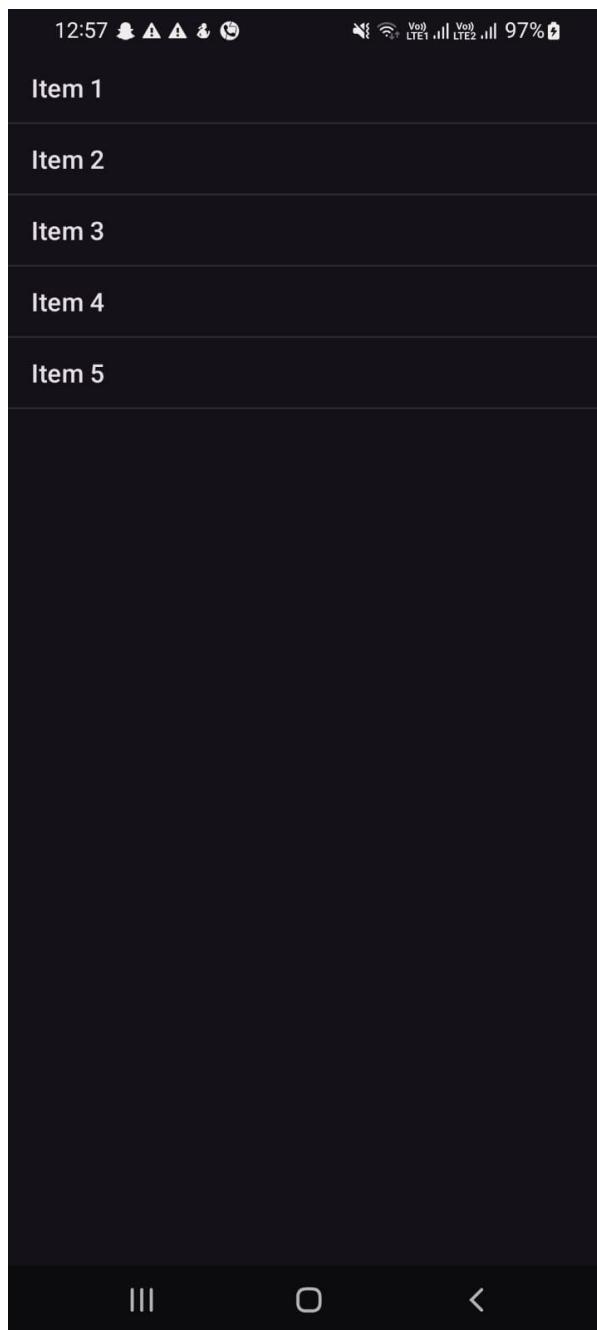
MainActivity.java

```
package com.example.prac3;

import android.os.Bundle;
import android.widget.ArrayAdapter;
import android.widget.ListView;
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;
        });
        String[] items = {"Item 1", "Item 2", "Item 3", "Item 4", "Item 5"};
        ListView listView = findViewById(R.id.listView);
        ArrayAdapter<String> adapter = new ArrayAdapter<String>(this, android.R.layout.simple_list_item_1, items);
        listView.setAdapter(adapter);
    }
}
```

```
ArrayAdapter<String> adapter = new ArrayAdapter<>(  
    this, android.R.layout.simple_list_item_1, items);  
listView.setAdapter(adapter);  
}  
}
```



Practical No :-4

A- 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:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <!-- Toolbar -->
    <include layout="@layout/toolbar_layout" />

</LinearLayout>
```

MainActivity.java

```
package com.example.appbar;

import android.os.Bundle;
import android.view.Menu;
import android.view.MenuInflater;
import android.view.MenuItem;
import android.widget.Toast;

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

public class MainActivity extends AppCompatActivity {
    private Toolbar tbar;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
```

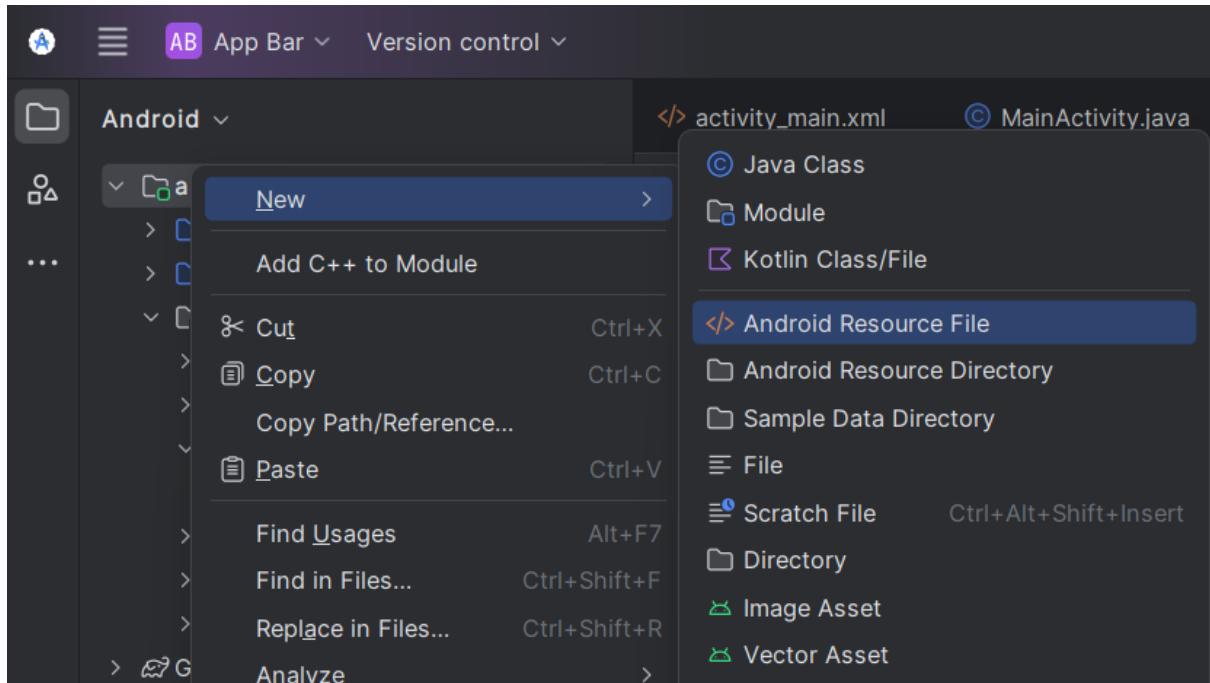
```

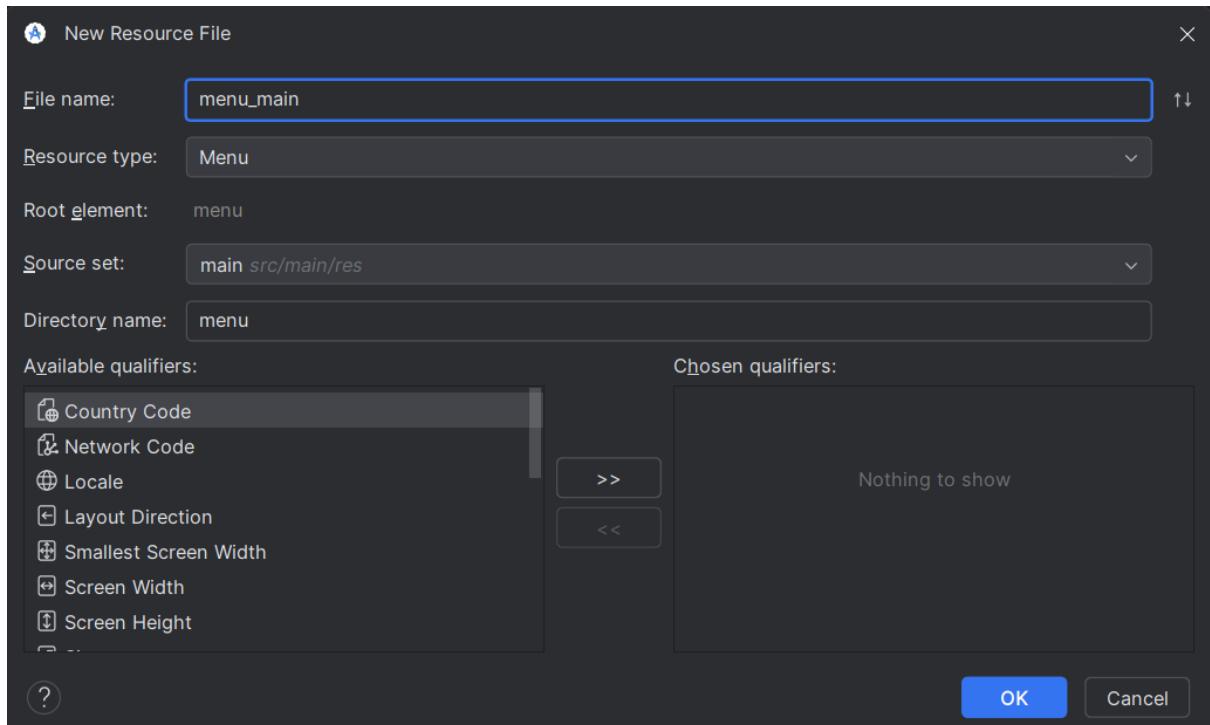
setContentView(R.layout.activity_main);
ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main), (v, insets) -> {
    Insets systemBars = insets.getInsets(WindowInsetsCompat.Type.systemBars());
    v.setPadding(systemBars.left, systemBars.top, systemBars.right, systemBars.bottom);
    return insets;
});
tbar= (Toolbar) findViewById(R.id.toolbar);
setSupportActionBar(tbar);
}
@Override
public boolean onCreateOptionsMenu(Menu menu) {
    MenuInflater mi=getMenuInflater();
    mi.inflate(R.menu.menu_main,menu);
    return true;
}
@Override
public boolean onOptionsItemSelected(MenuItem item) {
    if (item.getItemId() == R.id.action_search) {
        Toast.makeText(this, "search menu click", Toast.LENGTH_SHORT).show();
        return true;
    } else if (item.getItemId() == R.id.action_about) {
        Toast.makeText(this, "About menu click", Toast.LENGTH_SHORT).show();
        return true;
    } else {
        return super.onOptionsItemSelected(item);
    }
}
}

```

Create New xml file for menu.

In java → New → Android Resource File



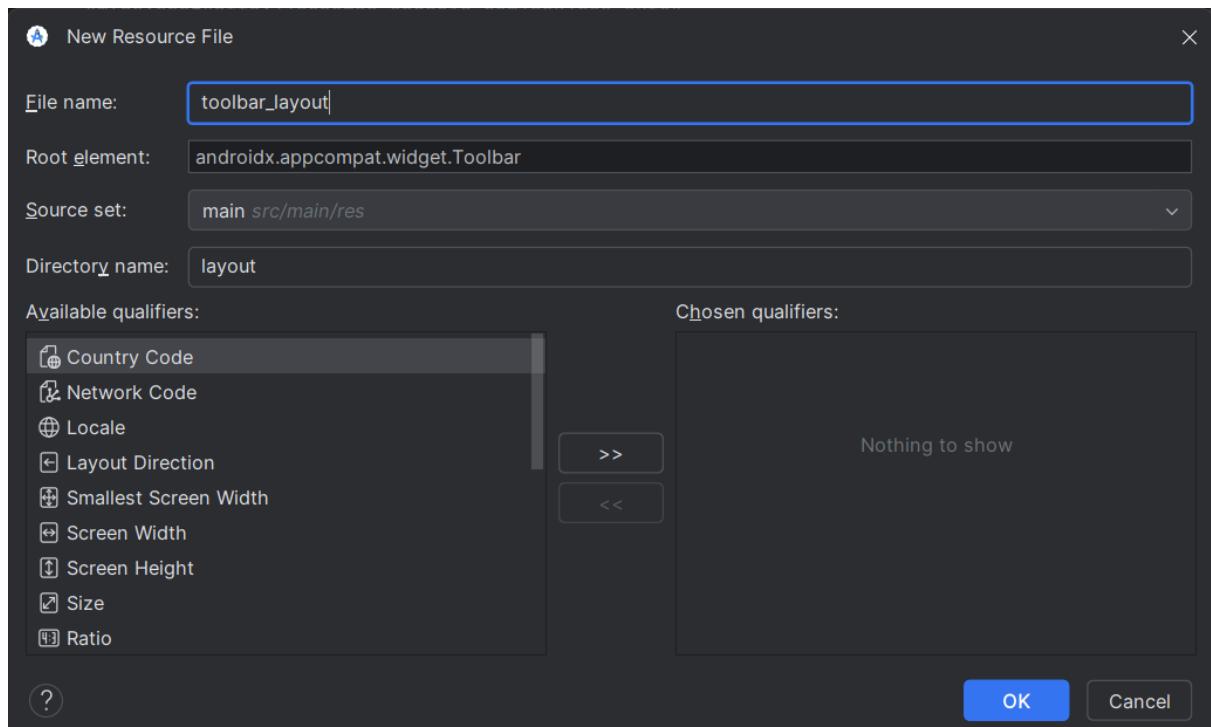


menu_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    xmlns:app="http://schemas.android.com/apk/res-auto">
    <item
        android:id="@+id/action_search"
        android:title="Setting"
        android:icon="@drawable/ic_launcher_foreground"
        app:showAsAction="always"/>
    <item
        android:id="@+id/action_about"
        android:title="About" />
</menu>
```

Create New xml file for menu.

In res → layout → New → Layout Resource File



toolbar_layout.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.appcompat.widget.Toolbar
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:layout_width="match_parent"
    android:layout_height="?attr/actionBarSize"
    android:background="@android:color/holo_blue_dark"
    android:theme="@style/ThemeOverlay.AppCompat.Dark.ActionBar"
    android:id="@+id/toolbar">
</androidx.appcompat.widget.Toolbar>
```



B- Programming UI Component

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"
    tools:context=".MainActivity">

    <Button
        android:id="@+id/button"
        android:layout_width="109dp"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"
        android:text="Save" />
    <ImageButton
        android:id="@+id/imageButton2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        app:srcCompat="@mipmap/ic_launcher" />
    <EditText
        android:id="@+id/et"
        android:hint="Edit Text"
        android:layout_width="match_parent"
        android:layout_height="wrap_content" />
    <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/cb2"
        android:text="Option 2"
        style="?android:attr/starStyle"/>
    <RadioGroup
        android:id="@+id/rg"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content">
```

```
<RadioButton
    android:id="@+id/r1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Option 1"/>

<RadioButton
    android:id="@+id/r2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Option 2"/>
</RadioGroup>
<ToggleButton
    android:id="@+id/tb"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content" />

</LinearLayout>
```

MainActivity.java

```
package com.example.programminguicomponent;

import android.os.Bundle;
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.RadioGroup;
import android.widget.Toast;
import android.widget.ToggleButton;

import androidx.activity.EdgeToEdge;
import androidx.annotation.IdRes;
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 {
```

```
Button bsave;
ImageButton img;
CheckBox cb11,cb12;
RadioButton r11,r12;
EditText ettext;
RadioGroup rgroup;
ToggleButton tbutton;
@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;
    });
    bsave = (Button) findViewById(R.id.button);
    img = (ImageButton) findViewById(R.id.imageButton2);
    ettext = (EditText) findViewById(R.id.et);
    cb11 = (CheckBox) findViewById(R.id.cb1);
    cb12 = (CheckBox) findViewById(R.id.cb2);
    r11 = (RadioButton) findViewById(R.id.r1);
    r12 = (RadioButton) findViewById(R.id.r2);
    tbutton = (ToggleButton) findViewById(R.id.tb);
    rgroup = (RadioGroup) findViewById(R.id.rg);
    bsave.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            DisplayToast("Saved");
        }
    });
    img.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            DisplayToast("Image Button");
        }
    });
    cb11.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            if(cb11.isChecked())
                DisplayToast("CheckBox op 1");
            else

```

```
        DisplayToast("CheckBox unchecked");

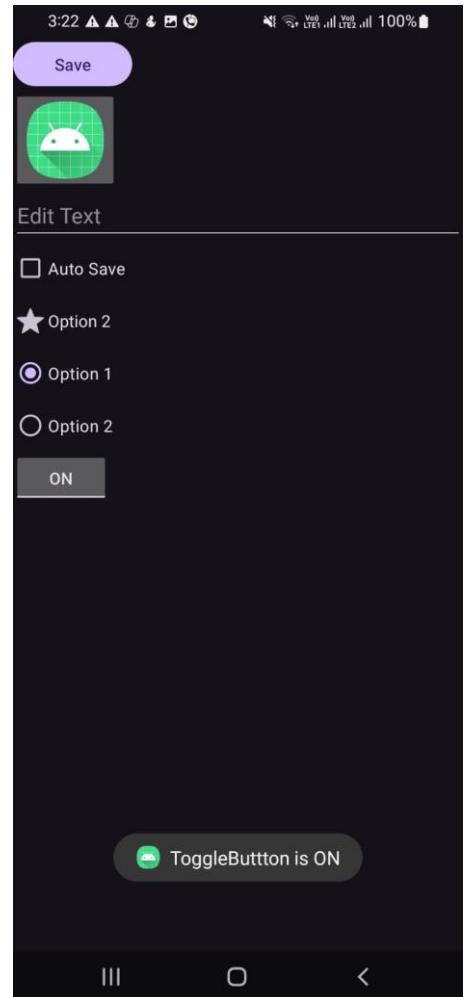
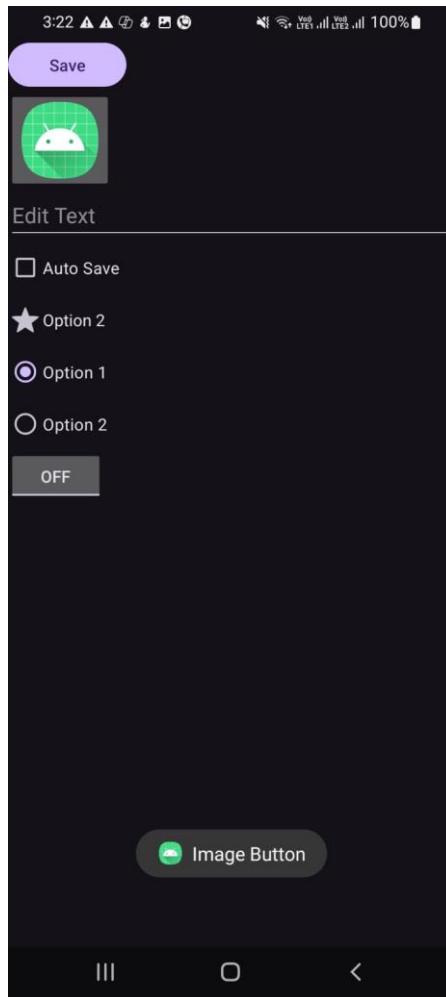
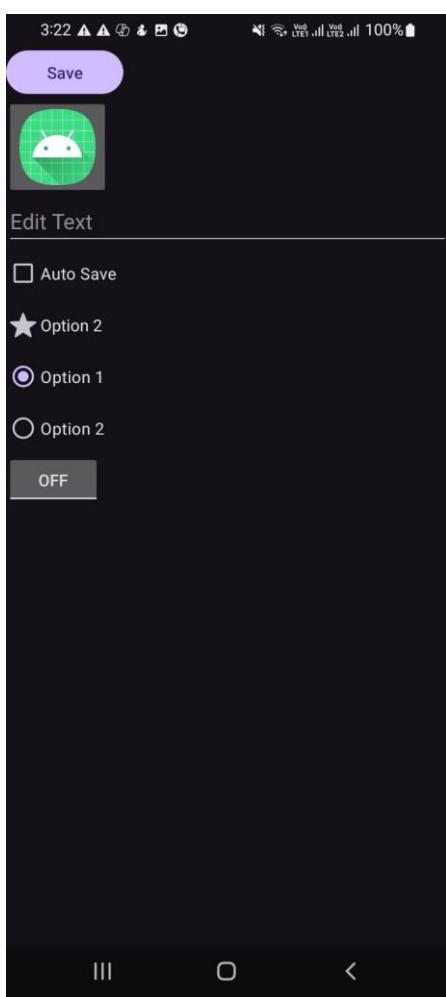
    }
});

cb12.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        if(cb12.isChecked())
            DisplayToast("CheckBox op 2");
        else
            DisplayToast("CheckBox unchecked");
    }
});
r11.setOnCheckedChangeListener(new CompoundButton.OnCheckedChangeListener(){
    @Override
    public void onCheckedChanged(CompoundButton buttonView, boolean isChecked) {
        if(r11.isChecked())
            DisplayToast("Radio Buttuon 1 checked");
        else
            DisplayToast("Radio Button 1 unchecked");
    }
});
r12.setOnCheckedChangeListener(new CompoundButton.OnCheckedChangeListener(){
    @Override
    public void onCheckedChanged(CompoundButton buttonView, boolean isChecked) {
        if(r12.isChecked())
            DisplayToast("Radio Button 2 checked");
        else
            DisplayToast("Radio Button 2 unchecked");
    }
});
tbutton.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        if(tbutton.isChecked())
            DisplayToast("ToggleButtton is ON");
        else
            DisplayToast("Toogle OFF");
    }
});
rgroup.setOnCheckedChangeListener(new RadioGroup.OnCheckedChangeListener() {
    @Override
    public void onCheckedChanged(RadioGroup group, @IdRes int checkedId) {
    }
});
```

```
    });
}

public void DisplayToast(String s)
{
    Toast.makeText(this,s,Toast.LENGTH_SHORT).show();
}

}
```



Practical No :-5

A- Programming menus

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"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <!-- Toolbar -->
    <androidx.appcompat.widget.Toolbar
        android:id="@+id/toolbar"
        android:layout_width="match_parent"
        android:layout_height="?attr/actionBarSize"
        android:background="@android:color/holo_blue_dark"
        app:title="My App"
        app:layout_constraintTop_toTopOf="parent" />
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="App Bar"
        />
</LinearLayout>
```

MainActivity.java

```
package com.example.appbar;

import android.os.Bundle;
import android.view.Menu;
import android.view.MenuInflater;
import android.view.MenuItem;
import android.widget.Toast;
import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.appcompat.widget.Toolbar;
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;
        });
        // Set Toolbar as ActionBar
        Toolbar toolbar = findViewById(R.id.toolbar);
        setSupportActionBar(toolbar);
    }
    public boolean onCreateOptionsMenu(Menu menu)
    {
        MenuInflater mi=getMenuInflater();
        mi.inflate(R.menu.menu_main,menu);
        return true;
    }
    public boolean onOptionsItemSelected(MenuItem item)
    {
        if(item.getItemId()==R.id.newb)
        {
            Toast.makeText(this,"new Selected",Toast.LENGTH_SHORT).show();
            return true;
        }
        else if(item.getItemId()==R.id.search)
        {
            Toast.makeText(this,"search Selected",Toast.LENGTH_SHORT).show();
            return true;
        }
        else if(item.getItemId()==R.id.save)
        {
            Toast.makeText(this,"save Selected",Toast.LENGTH_SHORT).show();
            return true;
        }
        else if(item.getItemId()==R.id.delete)
        {
            Toast.makeText(this,"delete Selected",Toast.LENGTH_SHORT).show();
        }
    }
}
```

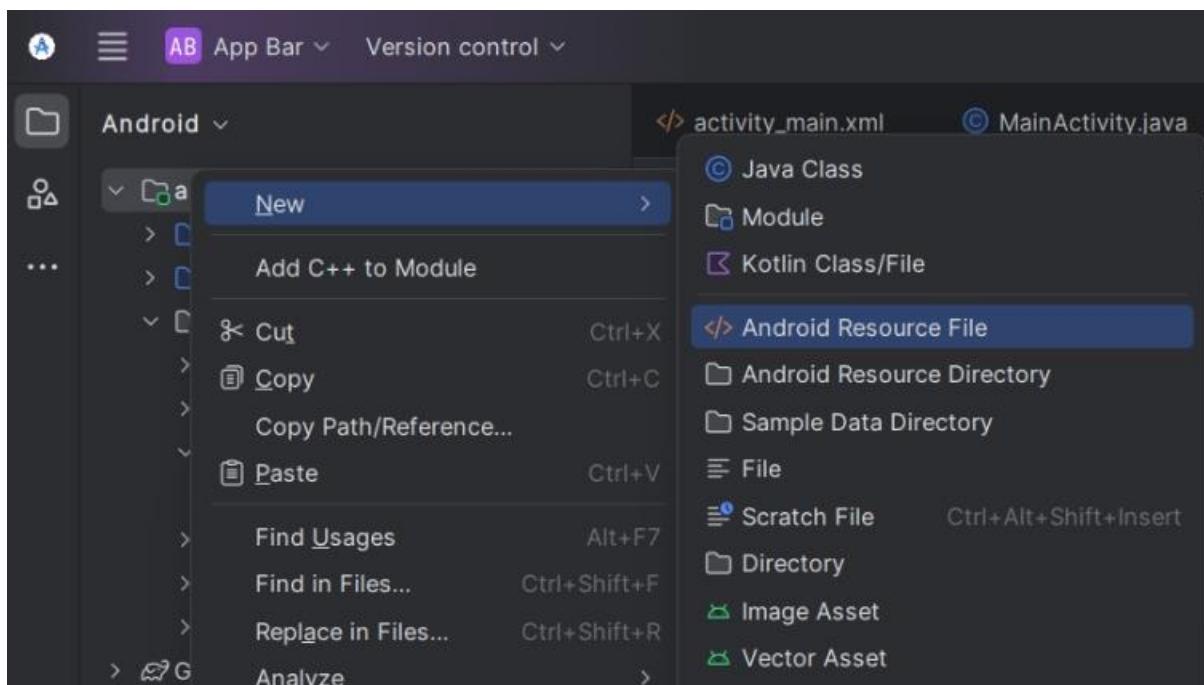
```

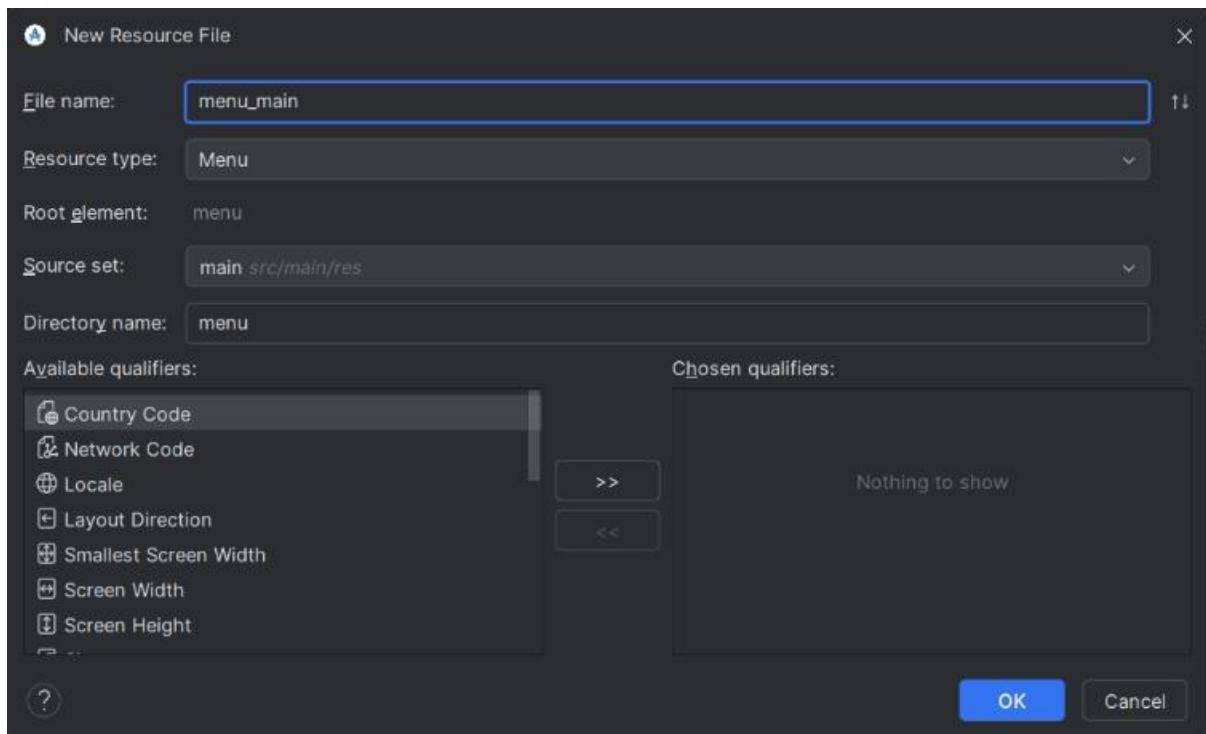
        return true;
    }
    else if(item.getItemId()==R.id.exit)
    {
        Toast.makeText(this,"exit Selected",Toast.LENGTH_SHORT).show();
        return true;
    }
    else if(item.getItemId()==R.id.share)
    {
        Toast.makeText(this,"share Selected",Toast.LENGTH_SHORT).show();
        return true;
    }
    return super.onOptionsItemSelected(item);
}
}

```

Create New xml file for menu.

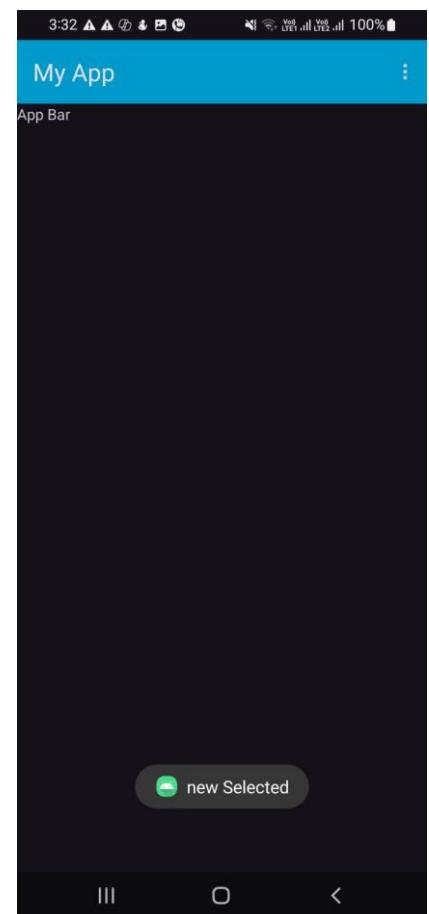
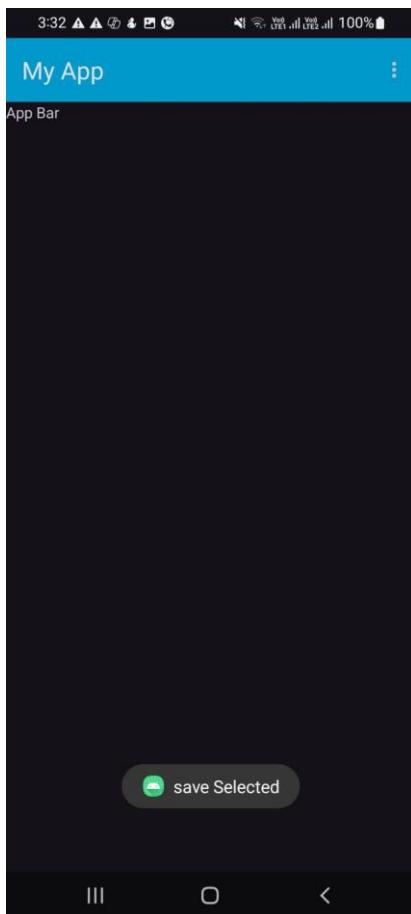
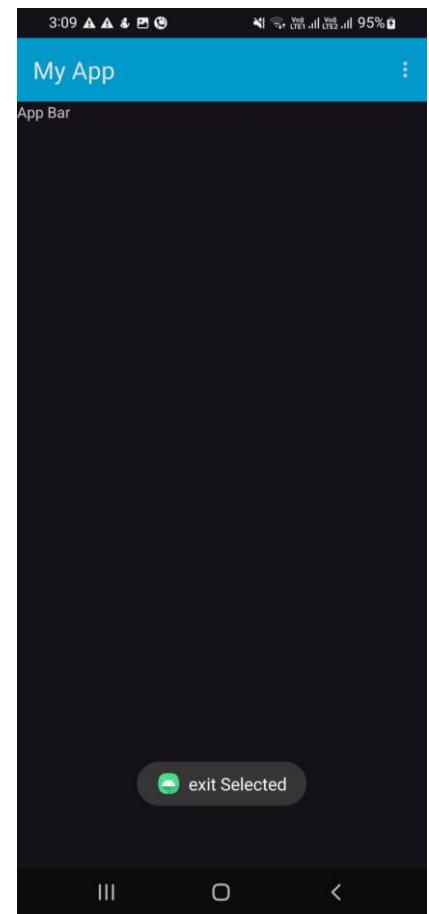
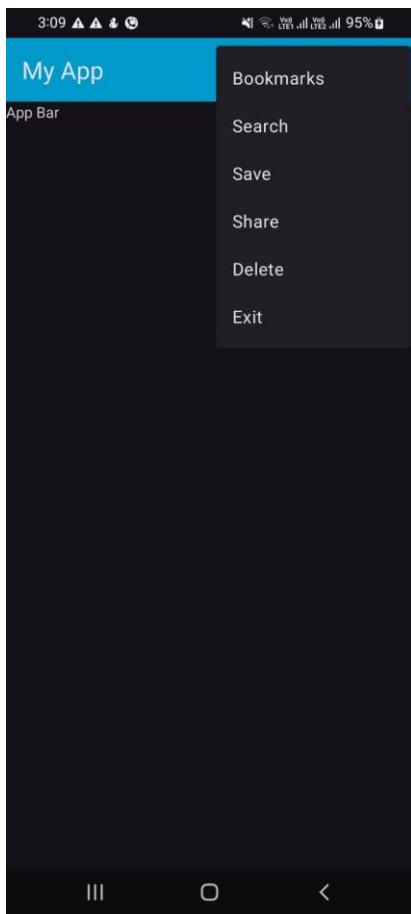
In java → New → Android Resource File





menu_main.xml

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



B- Alert dialog Box

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">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello Rohit"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</LinearLayout>
```

MainActivity.java

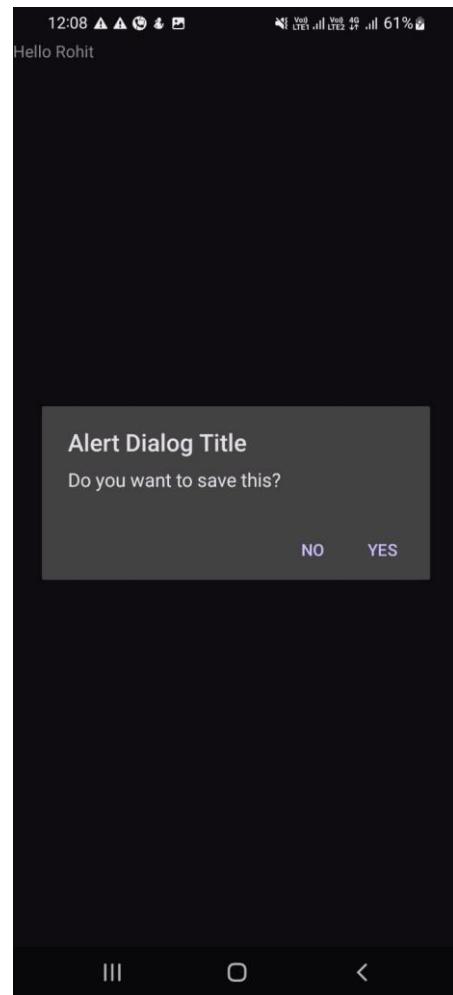
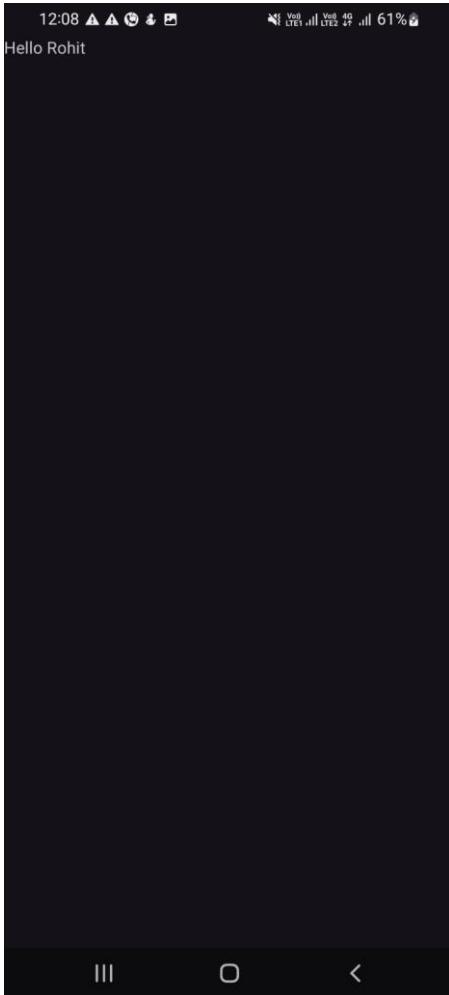
```
package com.example.alertdialogbox;

import android.os.Bundle;
import androidx.activity.EdgeToEdge;
import androidx.activity.OnBackPressedCallback;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;
import androidx.appcompat.app.AlertDialog;

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;
});
getOnBackPressedDispatcher().addCallback(this, new OnBackPressedCallback(true) {
    @Override
    public void handleOnBackPressed() {new AlertDialog.Builder(MainActivity.this)
        .setTitle("Alert Dialog Title")
        .setMessage("Do you want to save this?")
        .setCancelable(false)
        .setPositiveButton("YES", (dialog, which) -> {
            MainActivity.super.finish();
        })
        .setNegativeButton("NO", (dialog, which) -> {
            dialog.dismiss();
        })
        .show();
    }
});
}
});
```



Practical No :-6

A- Programming on intents

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">
    <EditText
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Type something"
        android:id="@+id/edittext1"/>
    <Button
        android:id="@+id/button1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Click"
        android:layout_below="@+id/edittext1"
        android:textSize="20sp" />
</RelativeLayout>
```

MainActivity.java

```
package com.example.programmingonintents;

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

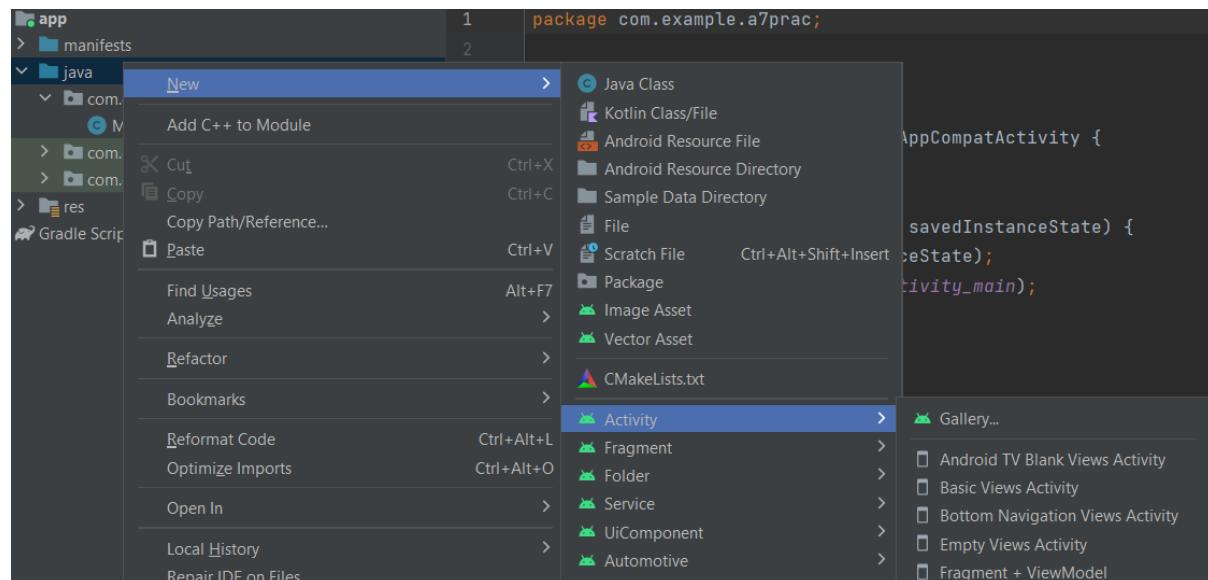
import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;
```

```

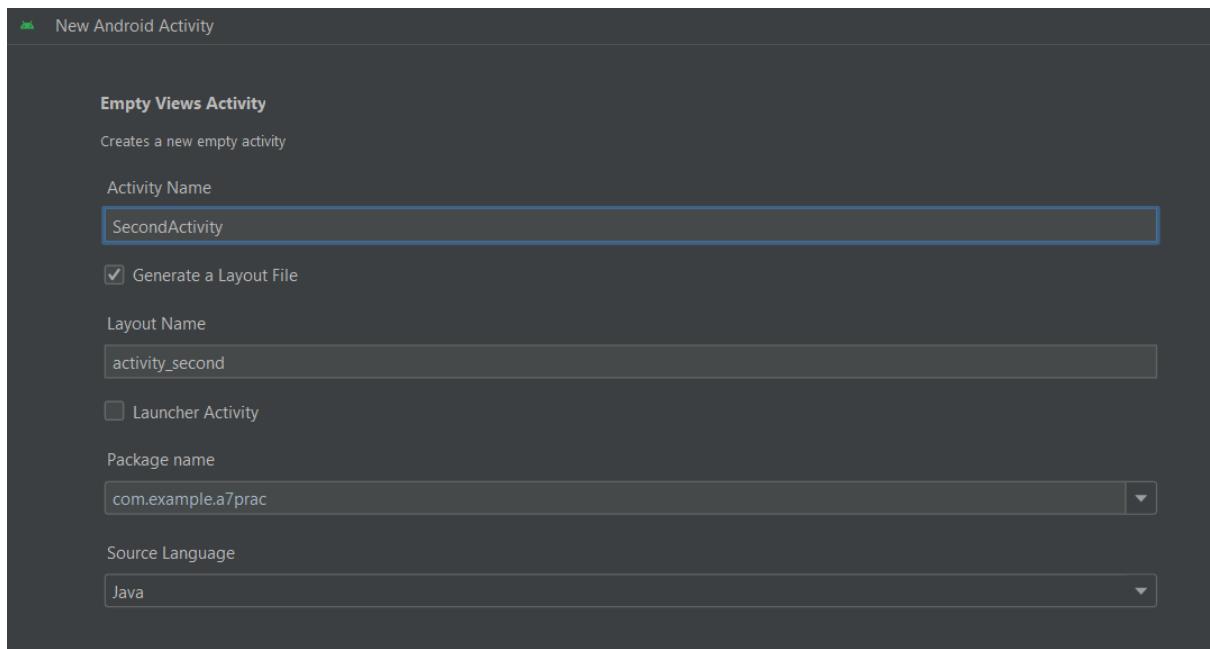
public class MainActivity extends AppCompatActivity {
    Button btn;
    EditText et;
    String st;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);
        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;
        });
        btn=findViewById(R.id.button1);
        et=findViewById(R.id.edittext1);
        btn.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent i=new Intent(MainActivity.this,SecondActivity.class);
                st=et.getText().toString();
                i.putExtra("Value",st);
                startActivity(i);
                finish();
            }
        });
    }
}

```

Create New Activity



→ In activity, select Empty Views Activity



activity_second.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=".SecondActivity">
    <TextView
        android:id="@+id/textView"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Value"
        android:textSize="30sp"
        android:gravity="center" />
</RelativeLayout>
```

SecondActivity.java

```
package com.example.programmingonintents;

import android.os.Bundle;
import android.widget.TextView;

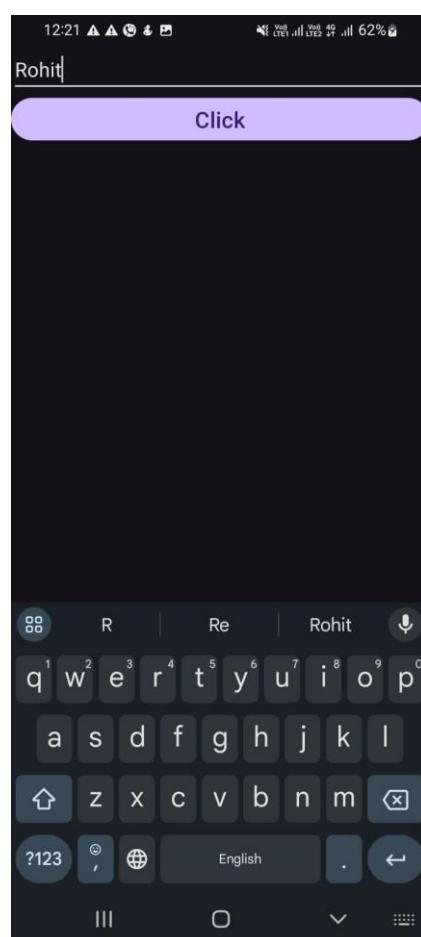
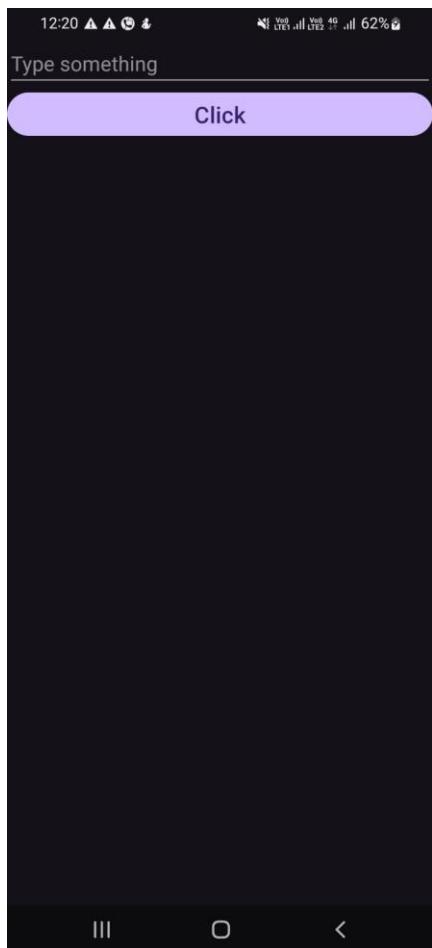
import androidx.activity.EdgeToEdge;
```

```

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

public class SecondActivity extends AppCompatActivity {
    TextView tv;
    String st;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_second);
        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;
        });
        tv=findViewById(R.id.textView);
        st=getIntent().getExtras().getString("Value");
        tv.setText(st);
    }
}

```



B- Using Events and Event Listeners

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"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/t1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:textAlignment="center"
        android:textSize="20dp"
        android:text="Login"
        />
    <TextView
        android:id="@+id/t2"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:textSize="20dp"
        android:text="User Name"/>
    <EditText
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:id="@+id/e1"/>
    <TextView
        android:id="@+id/t3"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:textSize="20dp"
        android:text="Password"/>
    <EditText
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:inputType="textPassword"
        android:id="@+id/e2"/>
    <Button
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:id="@+id/b1"
        android:text="sumbit"
        android:textSize="20dp"
```

```
    />
<Button
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:id="@+id/b2"
    android:text="reset"
    android:textSize="20dp"
/>
```

```
</LinearLayout>
```

MainActivity.java

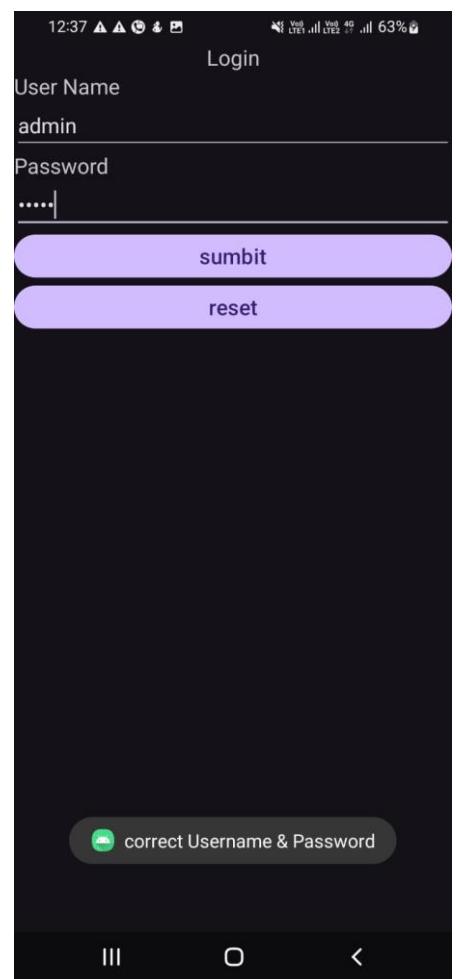
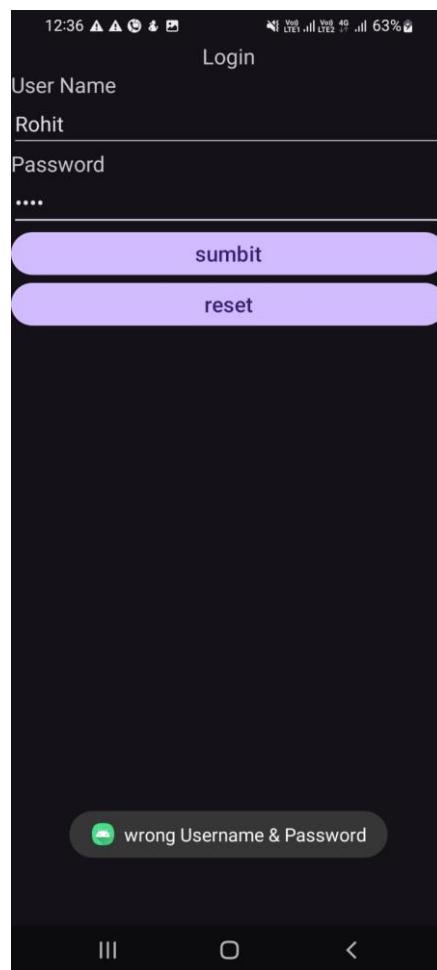
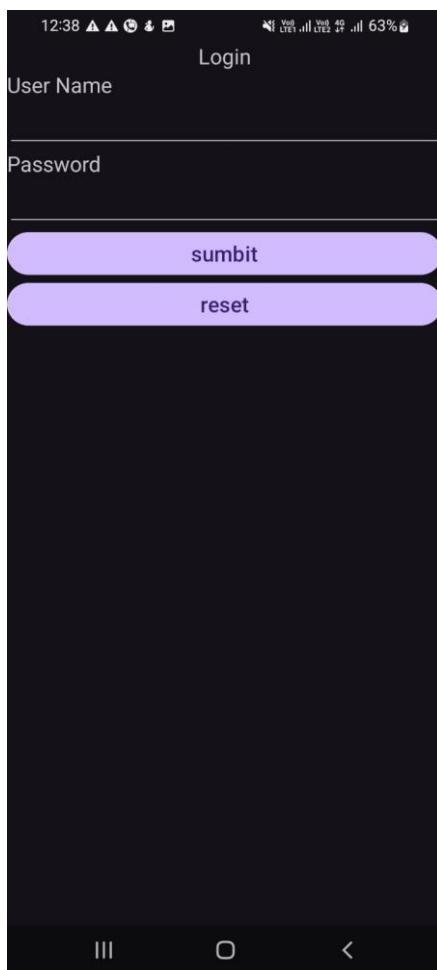
```
package com.example.usingeventsandeventlisteners;
import android.os.Bundle;

import androidx.activity.EdgeToEdge;
import android.widget.Button;
import android.view.View;
import android.widget.Toast;
import android.widget.EditText;

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 {
    Button submit,reset;
    EditText uname,pwd;
    String u,p;
    @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;
        });
        submit=(Button) findViewById(R.id.b1);
        reset=(Button) findViewById(R.id.b2);
        uname=(EditText) findViewById(R.id.e1);
        pwd=(EditText) findViewById(R.id.e2);
        submit.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                u=uname.getText().toString();
```

```
p=pwd.getText().toString();
if (u.equals("admin") && p.equals("12345")){
    Toast.makeText(getApplicationContext(),"correct Username &
Password",Toast.LENGTH_SHORT).show();
}else {
    Toast.makeText(getApplicationContext(),"wrong Username &
Password",Toast.LENGTH_SHORT).show();
}
});
reset.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        uname.setText("");
        pwd.setText("");
    }
});
}
}
```



Practical No :-7

A- Program on service

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">
    <Button
        android:id="@+id/start"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Start Service"
        android:onClick="startService"
        android:textSize="30sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"/>
    <Button
        android:id="@+id/stop"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Stop Service"
        android:onClick="stopService"
        android:textSize="30sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/start"/>
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```
package com.example.programsonservice;

import android.content.Intent;
```

```
import android.os.Bundle;
import android.view.View;
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;
        });
    }
    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);
    }
}
```

MyServices.java

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

```

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

```

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">

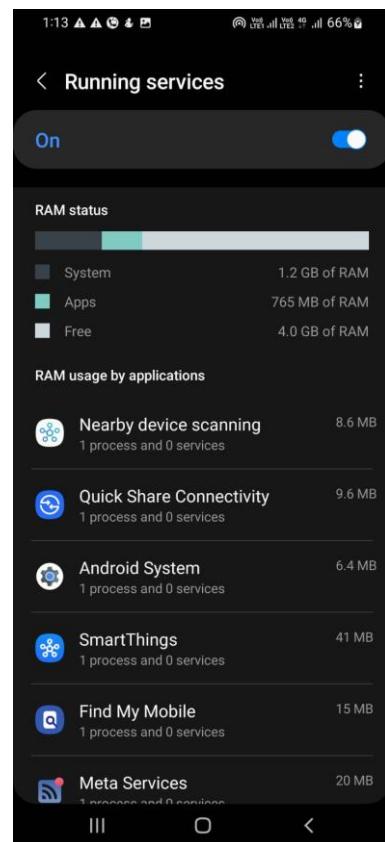
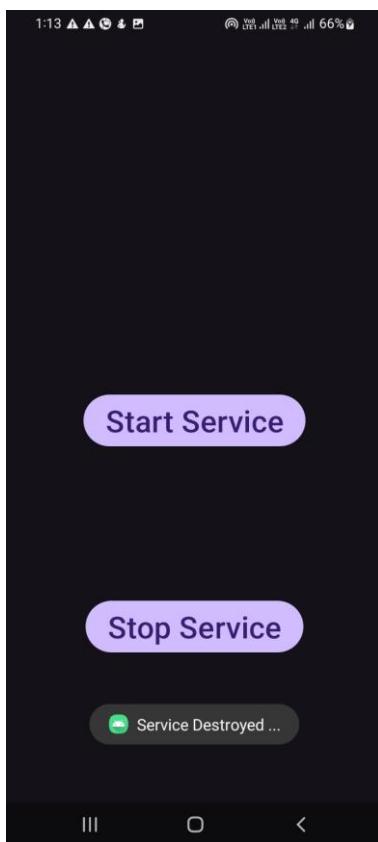
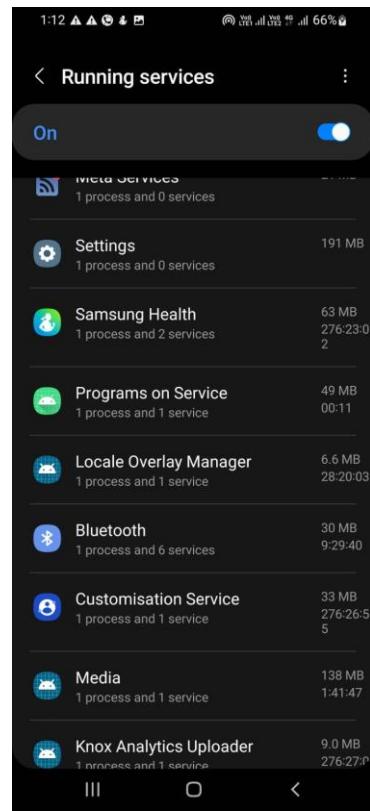
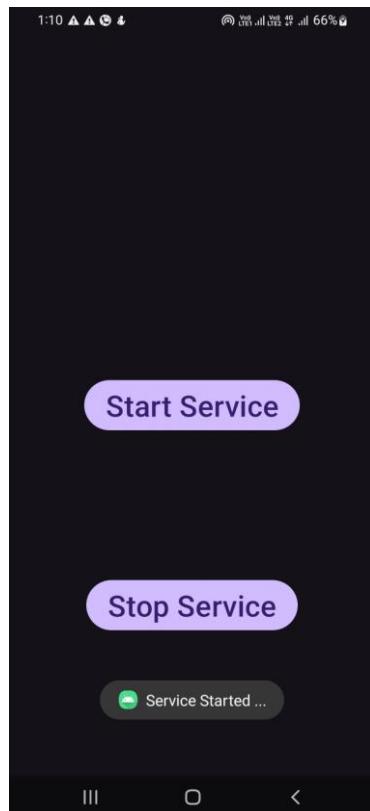
    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.ProgramOnService"
        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>
<service android:name=".MyServices" android:exported="false"/>
</application>

</manifest>

```



B- Program 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:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">

    <Button
        android:id="@+id/bt_noti"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerInParent="true"
        android:onClick="displayNoti"
        android:text="Notify"/>

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

MainActivity.java

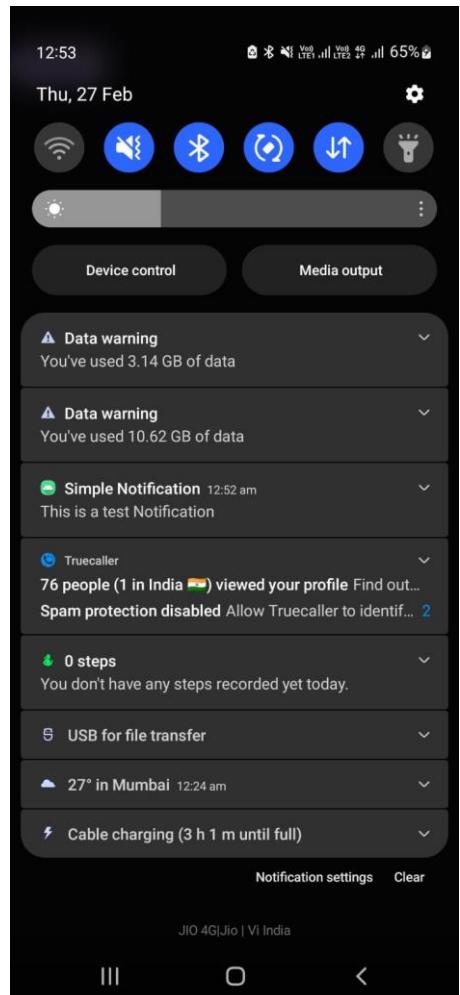
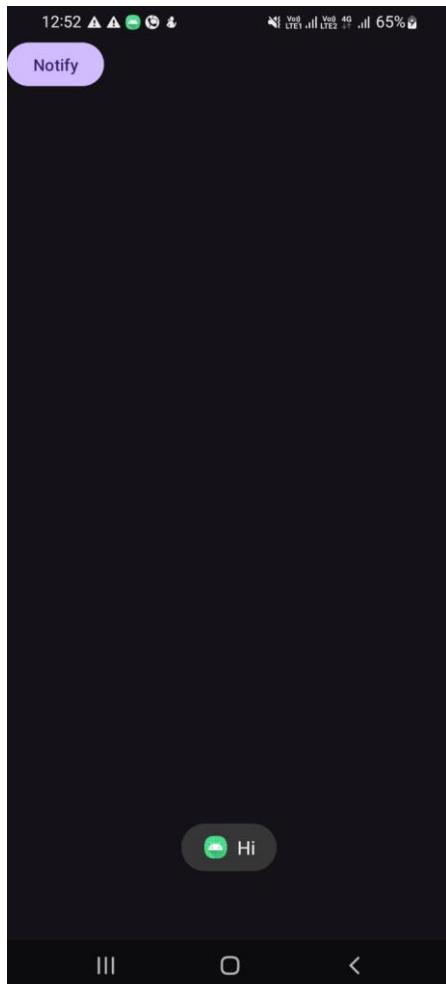
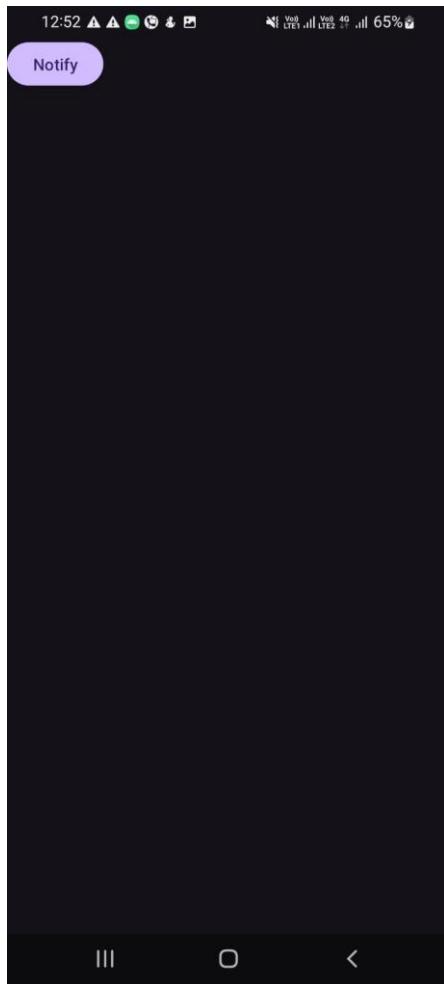
```
package com.example.programsonnotification;

import android.app.NotificationChannel;
import android.app.NotificationManager;
import android.os.Build;
import android.os.Bundle;
import android.view.View;
import android.widget.Toast;

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

public class MainActivity extends AppCompatActivity {
```

```
public final String Channel_ID="personal_noti";
public final int Notification_ID=001;
@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;
    });
}
public void displayNoti(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 Desc="This is Description";
        int imp= NotificationManager.IMPORTANCE_DEFAULT;
        NotificationChannel notificationChannel=new
            NotificationChannel(Channel_ID,name,imp);
        notificationChannel.setDescription(Desc);
        NotificationManager notificationManager= (NotificationManager)
            getSystemService(NOTIFICATION_SERVICE);
        notificationManager.createNotificationChannel(notificationChannel);
    }
}
}
```



Practical No :-9

A- Programming Using Threat

activity_main.xml

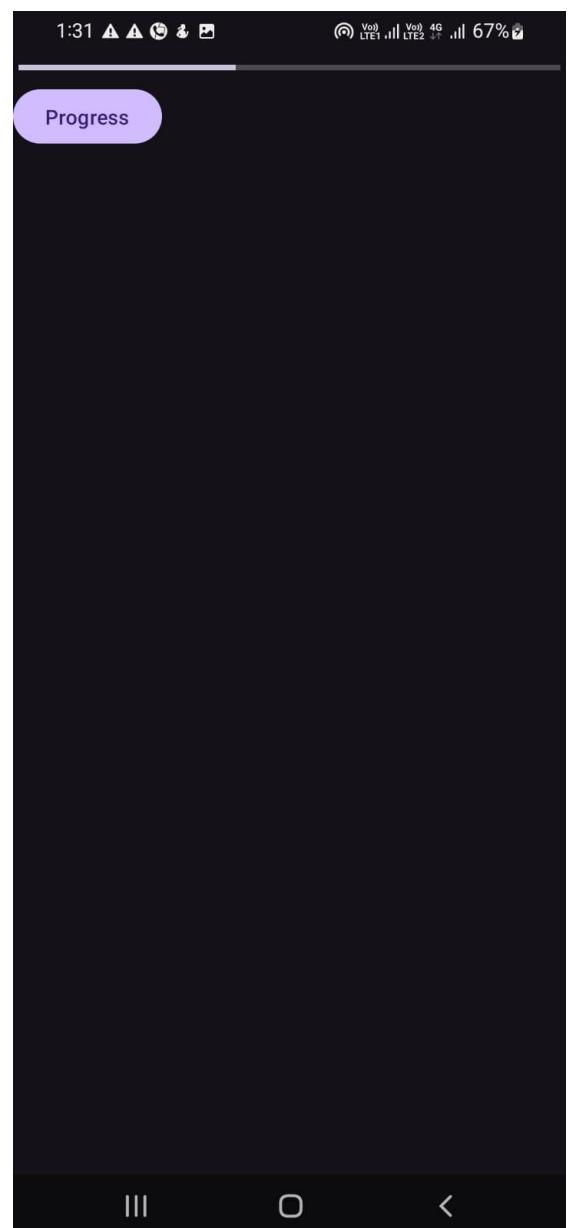
```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    tools:context=".MainActivity">
    <ProgressBar
        android:id="@+id/progress"
        style="@style/Base.Widget.AppCompat.ProgressBar.Horizontal"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:indeterminate="false"
        android:max="10"
        android:padding="4dp"/>
    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Progress"
        android:onClick="startProgress"/>
</LinearLayout>
```

MainActivity.java

```
package com.example.programmingusingthreat;

import android.os.Bundle;
import android.view.View;
import android.widget.ProgressBar;
import java.util.*;
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 ProgressBar bar;
    @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;
        });
        bar = findViewById(R.id.progress);
    }
    public void startProgress(View view){
        bar.setProgress(0);
        new Thread(new Task()).start();
    }
    private class Task implements Runnable {
        @Override
        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);
            }
        }
    }
}
```



B- Programming Handles

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"
    android:orientation="vertical"
    tools:context=".MainActivity">
    <TextView
        android:id="@+id/textView2"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Count"
        android:textSize="24sp" />
    <Button
        android:id="@+id/bStart"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:onClick="timer"
        android:text="Start timer Count"
        android:textSize="24sp" />
    <Button
        android:id="@+id/bNonStart"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:onClick="nonTimer"
        android:text="Start Non Timer Count"
        android:textSize="24sp" />
</LinearLayout>
```

MainActivity.java

```
package com.example.programminghandles;

import android.os.Bundle;
import android.os.Handler;
import android.os.Looper;
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;
    private Handler handler = new Handler(Looper.getMainLooper());
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);
        textView = findViewById(R.id.textView2);
        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;
        });
    }
    public void timer(View view) {
        stopLoop = 30; // Reset the counter
        handler.post(new Runnable() {
            @Override
            public void run() {
                if (stopLoop > 0) {
                    stopLoop--;
                    textView.setText("Time: " + stopLoop);
                    handler.postDelayed(this, 1000);
                }
            }
        });
    }
    public void nonTimer(View view) {
        new Thread(new Runnable() {
            @Override
            public void run() {
                for (int i = 0; i < 3; i++) {
                    final int finalI = i;
                    handler.post(new Runnable() {
                        @Override
```

```
public void run() {
    textView.setText("Time: " + final1);
}
});

try {
    Thread.sleep(1000);
} catch (InterruptedException e) {
    e.printStackTrace();
}
}

}).start();
}
}
```

