Advanced Mobile Programming Practical's

Practical 1: (Creating new project i.e. Hello world program)

Steps to create a project in android To create your new Android project, follow these steps:

Install the latest version of Android Studio.

- In the Welcome to Android Studio window, click Start a new Android Studio project.

If you have a project already opened, select File

- \> New > New Project. In the Choose your project window, select Empty Activity and click Next.

- In the Configure your project window, complete the following:

- 1. Enter "My First App" in the Name field.

 2. Enter "com.example.myfirstapp" in the Package name field.

 3. If you'd like to place the project in a different folder, change its Save location.

 4. Select either Java or Kotlin from the Language drop-down menu. Select the checkbox next to Use androidx.* artifacts.

- Leave the other options as they are.

Click Finish.

- After some processing time, the Android Studio main window appears

Note:

To Open Project Window

 select View > Tool Windows > Project

To Open MainActivity.java file

app > java > Package Name > MainActivity.java

 To Open Layout activity_main.xml file
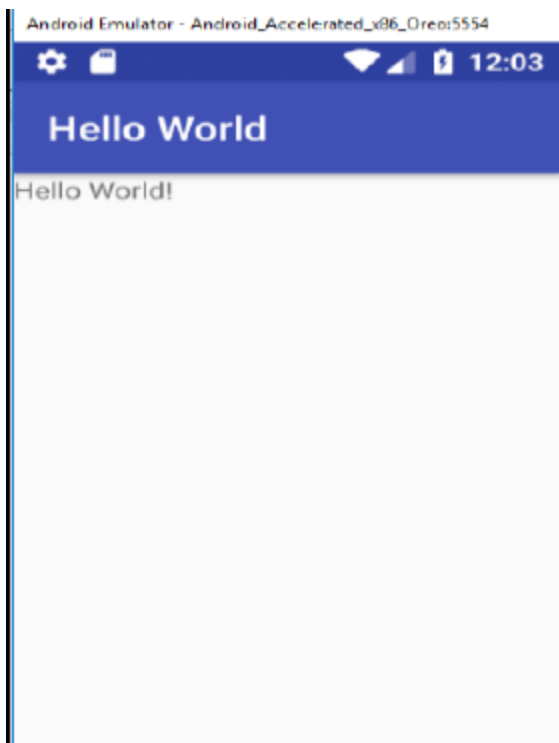
 app > res > layout > activity_main.xml

1. After the project is created, there are 2 files, MainActivity.java and activity_main.xml

2. Go to activity_main.xml and select Design View

3. In Design View, change the layout to LinearLayout(Vertical) select Add TextView, and change the text to "Hello World!"

4. Click on Run and select the AVD already created(if not created, first create the AVD)

5. Output screen should show "Hello World".

To create a new AVD:

1. Open the AVD Manager by clicking Tools > AVD Manager.

2. Click Create Virtual Device, at the bottom of the AVD Manager dialog. ...

3. Select a hardware profile, and then click Next.

4. Select the system image for a particular API level, and then click Next.

5. Change AVD properties as needed, and then click Finish.

Output:

Practical 2a. Programming Resources: Defining Color property

1. Create a new project and go to:

 ProjectName>App>src>main>res>values>colors.xml

2. Defining new color properties in colors.xml

Go to ProjectName->app->res->values->colors.xml

Colors.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <color name="purple_200">#FFBB86FC</color>
    <color name="purple_500">#FF6200EE</color>
    <color name="purple_700">#FF3700B3</color>
        <color name="teal_200">#FF03DAC5</color>
   <color name="teal_700">#FF018786</color>
    <color name="black">#FF000000</color>
   <color name="white">#FFFFFFFF</color>
   <color name="red">#FF0000</color>
  <color name="blue">#0000FF</color>
</resources>
```

Now go to activity_main.xml and type the following code:
Drag and drop LinearLayout(Vertical) From Layout tab in Palette window
- Drag and drop four TextView from Text tab in palette window
- The default Code of one TextView is as follows
```xml
  <TextView
        android:id="@+id/textView"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
/>
```
   Add this ->   android:background="@color/black"

Output:

Prac2

TextView

TextView

TextView

2b. Programming Resources: Defining Theme property

Styles.xml

```xml
<resources xmlns:tools="http://schemas.android.com/tools">
    <!-- Base application theme. -->
    <style name="Theme.Prac2"
parent="Theme.MaterialComponents.DayNight.DarkActionBar">
        <!-- Primary brand color. -->
        <item name="colorPrimary">@color/purple_500</item>
        <item name="colorPrimaryVariant">@color/purple_700</item>
        <item name="colorOnPrimary">@color/white</item>
        <!-- Secondary brand color. -->
        <item name="colorSecondary">@color/teal_200</item>
        <item name="colorSecondaryVariant">@color/teal_700</item>
        <item name="colorOnSecondary">@color/black</item>
        <!-- Status bar color. -->
        <item name="android:statusBarColor"
tools:targetApi="l">?attr/colorPrimaryVariant</item>
        <!-- Customize your theme here. -->
        <item name="android:background">#000000</item>
        <item name="android:textColor">#FFFFAA</item>
    </style>
</resources>
```

Output:

Prac2

TextView
TextView
TextView
TextView

2c. Programming Resources: Defining String property

Strings.xml

```xml
<resources>
    <string name="app_name">Prac2</string>
    <string name="Heading">Programming Resources</string>
    <string name="Description">
 Android is a mobile operating system developed by Google.
 It is based on a modified version of the Linux
 kernel and other open source software, and is
 designed primarily for touch screen mobile devices
 such as smart phones and tablets
</string>
</resources>
```

Activity.xml

```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">

    <LinearLayout
        android:id="@+id/linearLayout"
        android:layout_width="0dp"
        android:layout_height="0dp"
        android:layout_marginStart="1dp"
        android:layout_marginTop="1dp"
        android:layout_marginEnd="1dp"
        android:layout_marginBottom="1dp"
        android:orientation="vertical"
        android:visibility="visible"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="1.0"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="1.0">

        <TextView
            android:id="@+id/textView"
            android:layout_width="match_parent"
```

```xml
            android:layout_height="wrap_content"
            android:background="@color/black"
            android:text="@string/Heading" />

        <TextView
            android:id="@+id/textView2"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:background="@color/blue"
            android:text="@string/Description" />

        <TextView
            android:id="@+id/textView3"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:background="@color/red"
            android:text="TextView" />

        <TextView
            android:id="@+id/textView4"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:background="@color/white"
            android:text="TextView" />

        <ImageView
            android:id="@+id/imageView"
            android:layout_width="@dimen/textview_width"
            android:layout_height="@dimen/textview_height"
            app:srcCompat="@drawable/comedy" />
    </LinearLayout>
</androidx.constraintlayout.widget.ConstraintLayout>
```

Output:

Prac2

Programming Resources

Android is a mobile operating system developed by Google. It is based on a modified version of the Linux kernel and other open source software, and is designed primarily for touch screen mobile devices such as smart phones and tablets

TextView

TextView

2d. Programming Resources: Adding images and dimensions

Adding Images to Application created
- For adding a new image files, do the following:
- ProjectName>App>src>main>res>drawable>Right-click and paste the images that are copied

Add a new dim.xml file and write the following code in dimens.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<resources>
    <dimen name="textview_height">35dp</dimen>
    <dimen name="textview_width">135dp</dimen>
    <dimen name="font_size">26sp</dimen>
</resources>
```

Activity.xml

```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">

    <LinearLayout
        android:id="@+id/linearLayout"
        android:layout_width="0dp"
        android:layout_height="0dp"
        android:layout_marginStart="1dp"
        android:layout_marginTop="1dp"
        android:layout_marginEnd="1dp"
        android:layout_marginBottom="1dp"
        android:orientation="vertical"
        android:visibility="visible"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="1.0"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="1.0">

        <TextView
            android:id="@+id/textView"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:background="@color/black"
            android:text="@string/Heading" />

        <TextView
            android:id="@+id/textView2"
```

```xml
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:background="@color/blue"
        android:text="@string/Description" />

    <TextView
        android:id="@+id/textView3"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:background="@color/red"
        android:text="TextView" />

    <TextView
        android:id="@+id/textView4"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:background="@color/white"
        android:text="TextView" />

    <ImageView
        android:id="@+id/imageView"
        android:layout_width="@dimen/textview_width"
        android:layout_height="@dimen/textview_height"
        app:srcCompat="@drawable/comedy" />
  </LinearLayout>
</androidx.constraintlayout.widget.ConstraintLayout>
```

Output:

Prac2

Programming Resources

Android is a mobile operating system developed by Google. It is based on a modified version of the Linux kernel and other open source software, and is designed primarily for touch screen mobile devices such as smart phones and tablets

TextView

TextView

Practical 3a: Programming Activities and fragments: Activity Life Cycle

Main.java

package com.example.prac3;

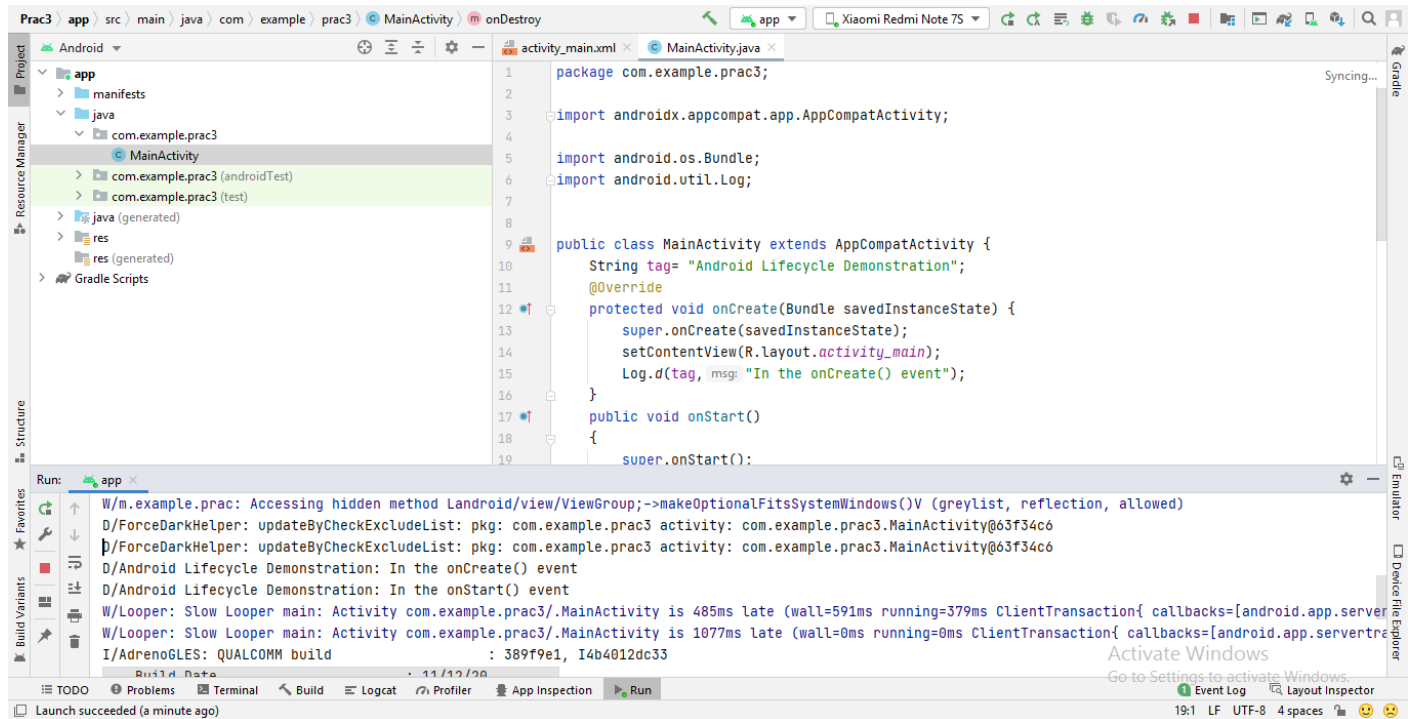import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.util.Log;

public class MainActivity extends AppCompatActivity {

String tag= "Android Lifecycle Demonstration";
   @Override
   protected void onCreate(Bundle savedInstanceState) {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
     Log.d(tag,"In the onCreate() event");
   }
public void onStart() {
super.onStart();
Log.d(tag,"In the onStart() event");
}
 public void onRestart() {
super.onRestart();
 Log.d(tag,"In the onRestart() event");
 }
public void onPause() {
 super.onPause();
 Log.d(tag,"In the onPause() event");
}
 public void onStop() {
super.onStop();
 Log.d(tag,"In the onStop() event");
} public void onDestroy() {
super.onDestroy();
 Log.d(tag,"In the onDestroy() event");
 }

}

Output:

3b. Programming Activities and fragments: Life Cycle of Fragments

FragmentLifeCycle.java

package com.example.prac3;

import android.os.Bundle;

import androidx.fragment.app.Fragment;

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

public class FragmentLifeCycle extends Fragment {

   String tag = "Life Cycle of Fragment";
   @Override
   public void onCreate(Bundle savedInstanceState) {
     super.onCreate(savedInstanceState);
     Log.d(tag,"In the onCreate() event");
   }
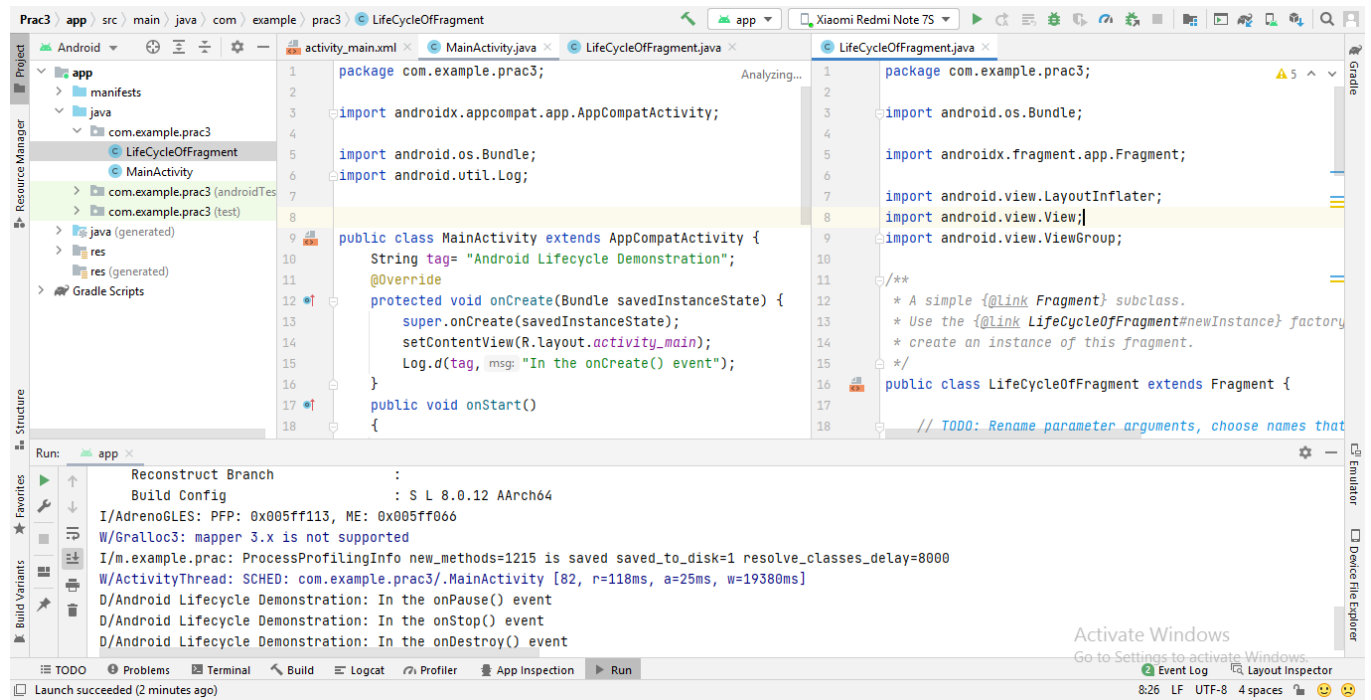
   @Override

```java
    public View onCreateView(LayoutInflater inflater, ViewGroup container,
                    Bundle savedInstanceState) {
        // Inflate the layout for this fragment
        return inflater.inflate(R.layout.fragment_life_cycle, container, false);

    }
    public void onStart()
    {
        super.onStart();
        Log.d(tag,"In the onStart() event");
    }
    public void onRestart()
    {
        Log.d(tag,"In the onRestart() event");
    }
    public void onPause()
    {
        super.onPause();
        Log.d(tag,"In the onPause() event");
    }
    public void onStop()
    {
        super.onStop();
        Log.d(tag,"In the onStop() event");
    }
    public void onDestroy()
    {
        super.onDestroy();
        Log.d(tag,"In the onDestroy() event");
    }

}
```

Output:

Practical 4a. Programs related to different Layouts: Linear Layout in Android

Activitymain.xml

```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"
    android:stretchColumns="1">

<Button
android:id = "@+id/btn"
android:layout_height="match_parent"
android:layout_width="match_parent"
/>

<TextView
    android:layout_height="match_parent"
    android:gravity="right"
    android:padding="3dip"
     />
<TextView
    android:layout_height="match_parent"
    android:gravity="right"
    android:padding="3dip"
     />
<TextView
    android:layout_height="match_parent"
    android:gravity="right"
    android:padding="3dip"
     />

</LinearLayout>
```
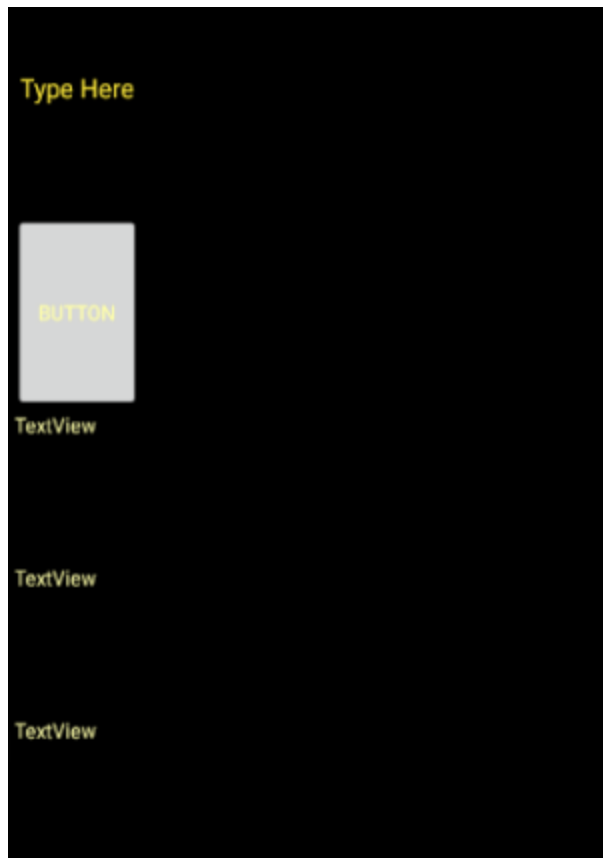
Output:

4b. Programs related to different Layouts: Relative Layout in Android

Activity_main.xml

```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"
    android:stretchColumns="1">


<TextView
        android:layout_height="match_parent"
        android:gravity="right"
        android:padding="3dip"
        />
<TextView
        android:layout_height="match_parent"
        android:gravity="right"
```

```xml
        android:padding="3dip"
        />
<TextView
        android:layout_height="match_parent"
        android:gravity="right"
        android:padding="3dip"
        />
<Button
android:id = "@+id/btn"
android:layout_height="match_parent"
android:layout_width="match_parent"
/>


</RelativeLayout>
```

Output:

Prac4

Enter Text Here

CLICK
HERE

4c. Programs related to different Layouts: Table Layout in Android

Activity_main.xml

```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:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
    android:stretchColumns="1">

    <TableRow>
      <TextView
        android:layout_width="225dp"
        android:layout_height="56dp"
        android:padding="3dip"
        android:text="Row1,Col1" />
      <TextView
        android:layout_height="match_parent"
        android:gravity="right"
        android:padding="3dip"
        android:text="Row1,Col2" />
    </TableRow>
    <TableRow>
    <TextView
      android:layout_width="242dp"
      android:layout_height="64dp"
      android:padding="3dip"
      android:text="Row2,Col1" />
    <TextView
      android:layout_height="match_parent"
      android:gravity="right"
      android:padding="3dip"
      android:text="Row2,Col2" />
    </TableRow>

</TableLayout>
```

Output:

Row1,Col1	Row1,Col2
Row2,Col1	Row2,Col2

Practical 5a. Programming UI elements: Demonstration of Application Bar

Activity.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">

    <include
        android:id="@+id/toolbar"
        layout="@layout/toolbar" />

</LinearLayout>
```

Toolbar.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.appcompat.widget.Toolbar
    xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:background="@color/design_default_color_primary_dark"
    android:elevation="4dp"
    >

</androidx.appcompat.widget.Toolbar>
```


Main.java

```
package com.example.practical5;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

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 tbar = findViewById(R.id.toolbar);
        setSupportActionBar(tbar);
```

```
    }
}
```

5b. Programming UI elements: Demonstration of UI Components(Calculator Program)

Activity.xml

```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"
    android:orientation="horizontal"
    android:stretchColumns="1">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:orientation="vertical">

        <EditText
            android:id="@+id/et1"
            android:layout_width="match_parent"
            android:layout_height="70dp"
            android:ems="10"
            android:inputType="textPersonName"
            android:text="Input1" />

        <EditText
            android:id="@+id/et2"
            android:layout_width="match_parent"
            android:layout_height="64dp"
            android:ems="10"
            android:inputType="textPersonName"
            android:text="Input2" />
        <Button
            android:id="@+id/btnAdd"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="Addition" />
        <Button
            android:id="@+id/btnSub"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="Subtraction" />
        <Button
            android:id="@+id/btnMult"
```

```xml
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Multiplication" />
    <Button
        android:id="@+id/btnDiv"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Division" />
    <Button
        android:id="@+id/btnClear"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text="Clear" />


    <TextView
        android:id="@+id/tv1"
        android:layout_width="match_parent"
        android:layout_height="63dp"
        android:text="Output"
        android:textColor="@android:color/background_dark"
        android:textSize="18sp"
        android:textStyle="bold"
        app:fontFamily="casual" />

    </LinearLayout>
</LinearLayout>
```

Main.java

```java
package com.example.prac5calculator;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;
import android.widget.*;
import static android.view.View.*;

public class MainActivity extends AppCompatActivity {
    EditText t1,t2;
    Button b1,b2,b3,b4,b5;
    TextView tv1;
    int n1=0,n2=0;
    String s1,s2;

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

```java
t1 = (EditText) findViewById(R.id.et1);
t2 = (EditText) findViewById(R.id.et2);
b1 = (Button) findViewById(R.id.btnAdd);
b2 = (Button) findViewById(R.id.btnSub);
b3 = (Button) findViewById(R.id.btnMult);
b4 = (Button) findViewById(R.id.btnDiv);
b5 = (Button) findViewById(R.id.btnClear);
tv1 = (TextView) findViewById(R.id.tv1);
b1.setOnClickListener(new OnClickListener() {
    @Override
    public void onClick(View v) {
        try {
            String s1 = t1.getText().toString();
            String s2 = t2.getText().toString();
            n1 = Integer.parseInt(s1);
            n2 = Integer.parseInt(s2);
            int sum = n1 + n2;
            tv1.setText("Addition ="+sum);
        }
        catch (NumberFormatException e)
        {
        }
    }
});
b2.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        try {
            String s1 = t1.getText().toString();
            String s2 = t2.getText().toString();
            n1 = Integer.parseInt(s2);
            n2 = Integer.parseInt(s1);
            int sub = n1 - n2;
            tv1.setText("Subtraction ="+sub);
        }
        catch (NumberFormatException e)
        {
        }
    }
});

b3.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        try {
            String s1 = t1.getText().toString();
            String s2 = t2.getText().toString();
            n1 = Integer.parseInt(s1);
            n2 = Integer.parseInt(s1);
            int m = n1 * n2;
```

```java
                    tv1.setText("Multiplication ="+m);
                }
                catch (NumberFormatException e)
                {
                }
            }
        });
        b4.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                try {
                    String s1 = t1.getText().toString();
                    String s2 = t2.getText().toString();
                    n1 = Integer.parseInt(s2);
                    n2 = Integer.parseInt(s1);
                    int d = n1 / n2;
                    tv1.setText("Division ="+d);
                }
                catch (NumberFormatException e)
                {
                }
            }
        });
        b5.setOnClickListener(new OnClickListener() {
            @Override
            public void onClick(View v) {
                t1.setText(" ");
                t2.setText(" ");
                tv1.setText(" ");
            }
        });


        }
}
```
Output:

Prac5Calculator

10

20

ADDITION

SUBTRACTION

MULTIPLICATION

DIVISION

CLEAR

Output

1	2	3	4	5	6	7	8	9	0
@	#	£	_	&	-	+	(	)	/
=\<	*	"	'	:	;	!	?	⌫

| ABC | , | 1 2 3 4 | English | . | ✓ |

Practical 6a. Programming menus, dialog: Creation of Menu

Menu.xml

```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="File" />
    <item android:id="@+id/opn" android:title="Open" />
    <item android:id="@+id/save" android:title="Save"/>
    <item android:id="@+id/saveas" android:title="Save As" />
    <item android:id="@+id/delete" android:title="Delete" />
    <item android:id="@+id/Exit" android:title="Close" />

</menu>
```

Main.java

```java
package com.example.prac6menu;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

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


public class MainActivity extends AppCompatActivity {

    public boolean onCreateOptionsMenu(Menu menu)
    {
        MenuInflater mi=getMenuInflater();
        mi.inflate(R.menu.menus,menu);
        return true;
    }
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
    public boolean onOptionsItemSelected(MenuItem item)
    {
        switch (item.getItemId())
        {
            case R.id.newb:
                Toast.makeText(this,"File Selected",Toast.LENGTH_SHORT).show();
                return true;
```

```java
            case R.id.opn:
                Toast.makeText(this,"Open Selected",Toast.LENGTH_SHORT).show();
                return true;
            case R.id.save:
                Toast.makeText(this,"Save Selected",Toast.LENGTH_SHORT).show();
                return true;
            case R.id.saveas:
                Toast.makeText(this,"Save As Selected",Toast.LENGTH_SHORT).show();
                return true;
            case R.id.delete:
                Toast.makeText(this,"Delete Selected",Toast.LENGTH_SHORT).show();
                return true;
            case R.id.Exit: Toast.makeText(this,"Exit Selected",Toast.LENGTH_SHORT).show();
                return true;
            default:
                Toast.makeText(this,"Default",Toast.LENGTH_SHORT).show();
                return super.onOptionsItemSelected(item);
        }
    }

    }
```

Output:

Prac6Menu

| File |
| Open |
| Save |
| Save As |
| Delete |
| Close |

Hello World!

6b. Programming menus, dialog: Creation of dialog

Activity.xml

```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"
    android:stretchColumns="1"
    >

    <Button android:layout_height="wrap_content"
        android:layout_width="match_parent"
        android:id="@+id/button_dialog"
        android:onClick="onClickDialog"
        android:text="Click to display an alert dialog"/>
    <Button android:layout_height="wrap_content"
        android:layout_width="match_parent"
        android:id="@+id/button_progressdialog"
        android:onClick="onClickProgressDialog"
        android:text="Click to display a progressdialog"/>
    <Button android:layout_height="wrap_content"
        android:layout_width="match_parent"
        android:id="@+id/button_datedialog"
        android:onClick="onClickDateDialog"
        android:text="Click to display a DatePicker dialog"/>
    <Button android:layout_height="wrap_content"
        android:layout_width="match_parent"
        android:id="@+id/button_timedialog"
        android:onClick="onClickTimeDialog"
        android:text="Click to display a TImePicker dialog"/>
    <TextView
        android:id="@+id/textView_date"
        android:layout_width="398dp"
        android:layout_height="wrap_content"
        android:text="TextView1"
        android:textSize="50dp" />
    <TextView
        android:id="@+id/textView_time"
        android:layout_width="400dp"
        android:layout_height="wrap_content"
        android:text="TextView2"
        android:textSize="50dp" />

</LinearLayout>
```
Main.java

```java
package com.example.prac6dialog;
```

```java
import androidx.appcompat.app.AppCompatActivity;
import android.app.AlertDialog;
import android.os.Bundle;

import android.app.DatePickerDialog;
import android.app.Dialog;
import android.app.ProgressDialog;
import android.app.TimePickerDialog;
import android.content.DialogInterface;
import android.view.View;
import android.widget.DatePicker;
import android.widget.TextView;
import android.widget.TimePicker;
import android.widget.Toast;

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 a simple Text");
        builder.setPositiveButton("OK", new DialogInterface.OnClickListener() {
            @Override public void onClick(DialogInterface dialog, int id)
            {
                Toast.makeText(getBaseContext(), "OK CLicked", Toast.LENGTH_SHORT).show();
            } });
        builder.setNegativeButton("Cancel", new DialogInterface.OnClickListener()
        {
            @Override public void onClick(DialogInterface dialog, int id)
            {
                Toast.makeText(getBaseContext(), "Cancel CLicked", Toast.LENGTH_SHORT).show();
            } });
        builder.setMultiChoiceItems(items, itemsChecked, new
                DialogInterface.OnMultiChoiceClickListener()
                {
                    @Override public void onClick(DialogInterface dialog, int id, boolean isChecked)
                    {
                        Toast.makeText(getBaseContext(), items[id] + (isChecked ? "checked!" : "unchecked!"),
                                Toast.LENGTH_SHORT).show();
                    } });
        AlertDialog dialog = builder.create(); builder.show();
```

```
    }

}
```

Output:

Prac6Dialog

CLICK TO DISPLAY AN ALERT DIALOG

CLICK TO DISPLAY A PROGRESSDIALOG

CLICK TO DISPLAY A DATEPICKER DIALOG

CLICK TO DISPLAY A TIMEPICKER DIALOG

TextView1

This is a dialog with a simple Text

☑ Android

☐ Security

☐ Cloud

CANCEL   OK

Androidchecked!

Practical 7. Program on Android Intent Class

Activity.xml
```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">

    <EditText
        android:id="@+id/txt1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="132dp"
        android:ems="10"
        android:hint="Enter Data"
        android:inputType="textPersonName" />
    <Button
        android:id="@+id/btn1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerInParent="true"
        android:text="Send" />

</RelativeLayout>
```

Activity_recieve.xml

```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=".DataReceive">

    <TextView
        android:id="@+id/tv1"
        android:layout_width="100dp"
        android:layout_height="50dp"
        android:layout_alignParentStart="true"
        android:layout_alignParentLeft="true"
        android:layout_alignParentTop="true"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_marginStart="152dp"
```

```
        android:layout_marginLeft="152dp"
        android:layout_marginTop="161dp"
        android:layout_marginEnd="132dp"
        android:layout_marginRight="132dp" />

</RelativeLayout>


Main.java
package com.example.prac7;

import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity {
    EditText t1;
    Button b1;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        t1=(EditText)findViewById(R.id.txt1);
        b1=(Button)findViewById(R.id.btn1);
        b1.setOnClickListener( new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String data=t1.getText().toString();
                Intent intent=new Intent(getApplicationContext(), DataReceive.class);
                intent.putExtra("data",data);
                startActivity(intent);
            }
        });

    }
}

Data_recieve.java

package com.example.prac7;

import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.widget.TextView;
public class DataReceive extends AppCompatActivity {
    TextView t1;
    @Override
```

```java
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_data_recieve);
        t1=(TextView)findViewById(R.id.tv1);
            Intent intent=getIntent();
            String data=intent.getStringExtra("data");
        t1.setText(data);
    }
}
```

Output:

Prac7

Your name is: Himanshu Rawat

Practical 8a. Programs on Services: Create a media API to play audio file

Activity.xml

```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">

    <Button
        android:id="@+id/btnPlay"
        android:layout_width="197dp"
        android:layout_height="75dp"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="87dp"
        android:layout_marginRight="87dp"
        android:layout_marginBottom="468dp"
        android:text="Play Audio"
        android:onClick="playAudio"
        />
    <Button
        android:id="@+id/btnStop"
        android:layout_width="208dp"
        android:layout_height="70dp"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="89dp"
        android:layout_marginRight="89dp"
        android:layout_marginBottom="356dp"
        android:text="Stop Audio"
        android:onClick="onPause"/>

    <ImageView
    android:id="@+id/imageView"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    app:srcCompat="@color/design_default_color_primary" />

    <ImageButton
        android:id="@+id/imageButton5"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
```

```
        android:layout_marginEnd="51dp"
        android:layout_marginRight="51dp"
        android:layout_marginBottom="118dp"
        android:visibility="invisible"
        app:srcCompat="@drawable/music"
        tools:visibility="invisible" />

</RelativeLayout>
```

Main.java

```java
package com.example.prac8music;

import androidx.appcompat.app.AppCompatActivity;
import android.media.MediaPlayer;
import android.os.Bundle;
import android.view.View;
import android.widget.ImageButton;
import android.widget.Toast;


public class MainActivity extends AppCompatActivity {
    MediaPlayer mediaPlayer;
    ImageButton ibtn;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        mediaPlayer = MediaPlayer.create(this,R.raw.music);
    }
    public void playAudio(View v)
    {
        ibtn = findViewById(R.id.imageButton5);
        ibtn.setVisibility(View.VISIBLE);
        mediaPlayer.start();
        Toast.makeText(this, "Music is playing, Connect Ear Phone to Listen the Ringtone",
            Toast.LENGTH_SHORT).show();
    }
    public void onPause(View v)
    {
        super.onPause();
        mediaPlayer.release();
        ibtn.setVisibility(View.INVISIBLE);
    }

}
```

Output:

Prac8music

PLAY AUDIO

STOP AUDIO

Music is playing, Connect Ear
Phone to Listen the Ringtone

8b. Program on Notification

Main.java

```java
package com.example.prac8notification;

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.view.View;
import android.widget.Button;
import java.nio.channels.Channel;


public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        if(Build.VERSION.SDK_INT>=Build.VERSION_CODES.O)
        {

            String description="This is description";
            int importance= NotificationManager.IMPORTANCE_DEFAULT;
            NotificationChannel notificationChannel=new NotificationChannel("My Notification","Simple
Notification",importance);
                    notificationChannel.setDescription(description);
            NotificationManager
notificationManager=(NotificationManager)getSystemService(NOTIFICATION_SERVICE);
            notificationManager.createNotificationChannel(notificationChannel);
        }
        NotificationCompat.Builder builder=new NotificationCompat.Builder(this,"My Notification");
        builder.setContentTitle("Notification from Himanshu");
        builder.setSmallIcon(R.drawable.ic_launcher_background);
        builder.setAutoCancel(true);
        builder.setContentText("Small Notification");
        NotificationManagerCompat manager = NotificationManagerCompat.from(this);
        manager.notify(999,builder.build());

    }

}
```
Output:

Today: 1017MB   Remaining: 9984GB

Prac8notification · now

Notification from Himanshu

Small Notification

Screen Recorder

Screen Recorder

Screen Recorder is working in the background

Android System

USB file transfer is on

Tap for more options.

Android System

USB debugging is on

Tap to turn off USB debugging

Practical 10. Programming threads: Create an android application to generate any random number using thread.

Activity.xml

```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">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:orientation="vertical">
        <Button
            android:id="@+id/btnRandom"
            android:layout_width="match_parent"
            android:layout_height="58dp"
            android:background="@color/design_default_color_primary_dark"
            android:text="Generate Random" />
        <TextView
            android:id="@+id/lbl1"
            android:layout_width="match_parent"
            android:layout_height="55dp"
            android:text="Output"
            android:textColor="@color/design_default_color_primary_dark"
            android:textSize="24sp"
            android:textStyle="bold" />
    </LinearLayout>

</RelativeLayout>
```

Main.java

```java
package com.example.prac10randomno;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {
    Button btn1;
    TextView tv1;
```

```java
    int i=0;
    int ran=0;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        btn1 = (Button) findViewById(R.id.btnRandom);
        tv1 = (TextView) findViewById(R.id.lbl1);

        btn1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                try {
                    int ran = (int) (Math.random() * 100);
                    tv1.setText("Number=" + ran);

                } catch (Exception ex) {

                }
            }});
    }
}
```

Output:

prac10RandomNo

GENERATE RANDOM

Number=47

Practical 11a. Programming Media API

Activity.xml

```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">

    <VideoView
        android:id="@+id/videoView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content" />
    <Button
        android:id="@+id/btnPlay"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentRight="true"
        android:layout_alignParentBottom="true"
        android:layout_marginEnd="151dp"
        android:layout_marginRight="151dp"
        android:layout_marginBottom="274dp"
        android:onClick="playVideo"
        android:text="Play Video" />


</RelativeLayout>
```

Main.java

```java
package com.example.prac11media;

import androidx.appcompat.app.AppCompatActivity;
import android.media.MediaPlayer;
import android.net.Uri;
import android.os.Bundle;
import android.os.Environment;
import android.util.Log;
import android.media.MediaPlayer;
import android.net.Uri;
import android.os.Bundle;
import android.os.Environment;
import android.util.Log;
import android.view.View;
import android.widget.Button;
import android.widget.MediaController;
```

```java
import android.widget.VideoView;


public class MainActivity extends AppCompatActivity {
    VideoView videoview;
    Button btn;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
    public void playVideo(View view)
    {
        videoview = (VideoView) findViewById(R.id.videoView);
        try {

            MediaController mediacontroller = new MediaController(
                    MainActivity.this);
            mediacontroller.setAnchorView(videoview);

            Uri uri = Uri.parse("android.resource://" + getPackageName() + "/" + R.raw.video);
            videoview.setMediaController(mediacontroller);
            videoview.setVideoURI(uri);
        } catch (Exception e) {
            Log.e("Error", e.getMessage());
            e.printStackTrace();
        }
        videoview.requestFocus();
        videoview.setOnPreparedListener(new MediaPlayer.OnPreparedListener() {

            public void onPrepared(MediaPlayer mp) {
                videoview.start();
            }
        });

    }
}
```

Output:

prac11media

PLAY VIDEO

Practical 11b. Programming Telephone API

Activity.xml

```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">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:orientation="vertical">
        <EditText
            android:hint="Enter Phone Number"
            android:id="@+id/phNumber"
            android:layout_width="fill_parent"
            android:layout_height="81dp"
            android:ems="5" />
        <Button
            android:id="@+id/dialPhNumber"
            android:layout_width="fill_parent"
            android:layout_height="45dp"
            android:text="Call Number" />
    </LinearLayout>

</RelativeLayout>
```

Main.java

```java
package com.example.prac11telephoneapi;

import androidx.appcompat.app.AppCompatActivity;

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

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
```

```
    setContentView(R.layout.activity_main);
    Button dialPhNumber = (Button) findViewById(R.id.dialPhNumber);
    dialPhNumber.setOnClickListener(new View.OnClickListener() {
        public void onClick(View view) {
            Toast.makeText(getApplicationContext(),"Mobile is
Calling",Toast.LENGTH_SHORT).show();
            try {
                EditText phNumber = (EditText) findViewById(R.id.phNumber);
                Intent implicit1 = new Intent(Intent.ACTION_CALL, Uri.parse("tel:" +
                    phNumber.getText().toString()));
                startActivity(implicit1);
                Toast.makeText(getApplicationContext(),"Mobile is
Calling",Toast.LENGTH_SHORT).show();
            }
            catch (SecurityException e)
            {}
        }
    });

  }

}
```

Output:

prac11telephoneApi

8856015678

CALL NUMBER

Mobile is Calling