TOLANI COLLEGE OF COMMERCE

(Affiliated to University of Mumbai)

MUMBAI-MAHARASHTRA-400093

DEPARTMENT OF INFORMATION TECHNOLOGY

CERTIFICATE

This is to certify that, **Mr. Vivekkumar S. Kumhar** Seat No. **22**, studying in **Bachelor of Science Information Technology** has satisfactorily completed the Practical in the subject of **Advanced Mobile Programming** as prescribed by University of Mumbai, during the academic year 2022 - 2023.

Internal Examiner   Co-ordinator

External Examiner

Date: College Seal

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| Sr. No	Practical	Title	Date	Sign
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PRACTICAL 1

<u>Aim:-</u>

Introduction to Android, Introduction to Android Studio IDE, Application Fundamentals: Creating a Project, Android Components, Activities, Services, Content Providers, Broadcast Receivers, Interface overview, Creating Android Virtual device, USB debugging mode, Android Application Overview. Simple "Hello World" program.
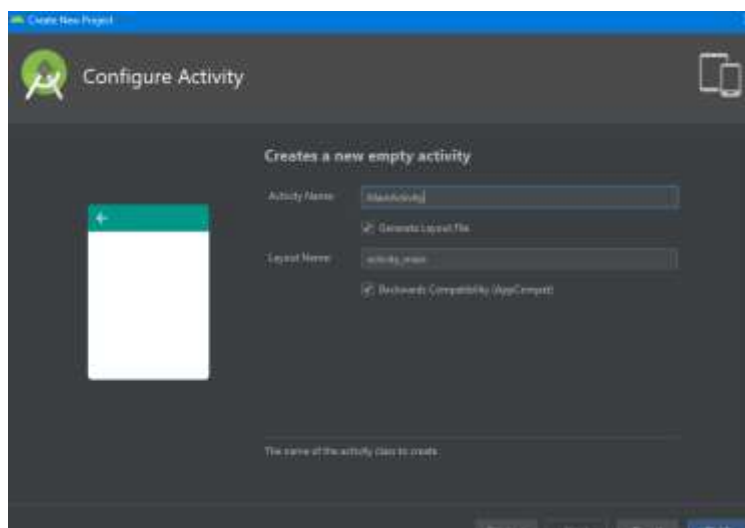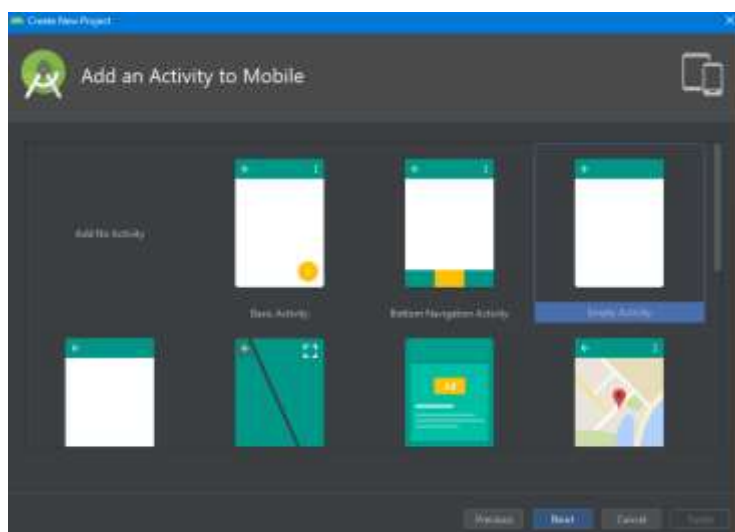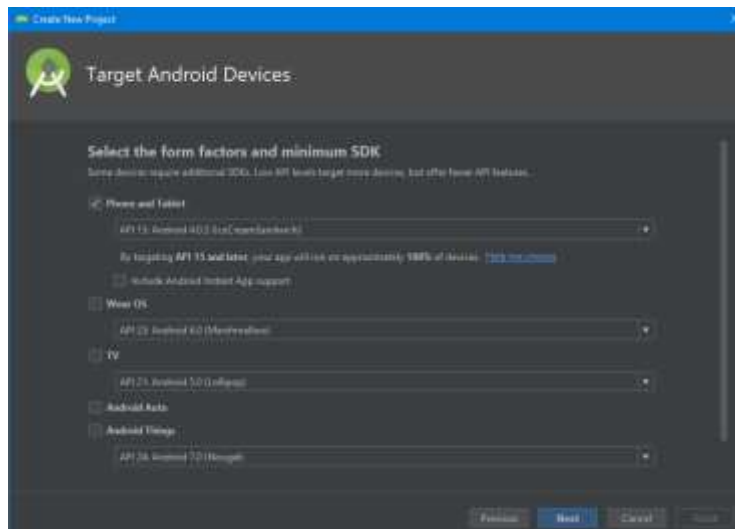
<u>Description:-</u>

Android Studio is the official integrated development environment for Google's Android operating system, built on JetBrains' IntelliJ IDEA software and designed specifically for Android development. It is available for download on Windows, macOS and Linux based operating systems

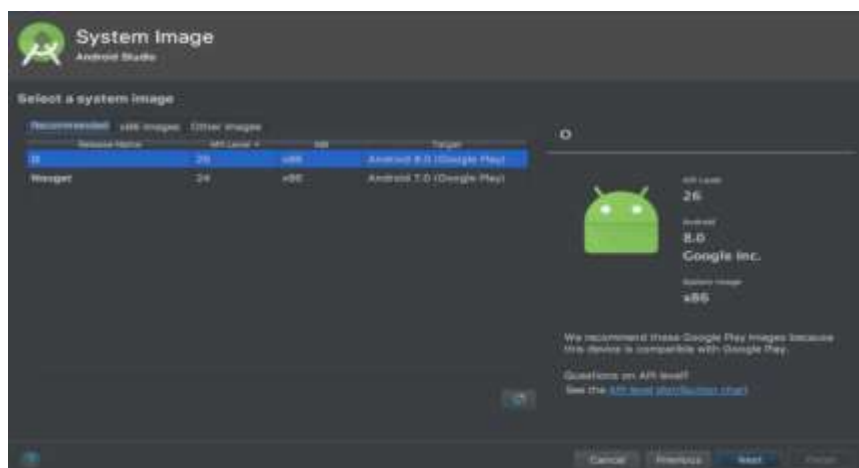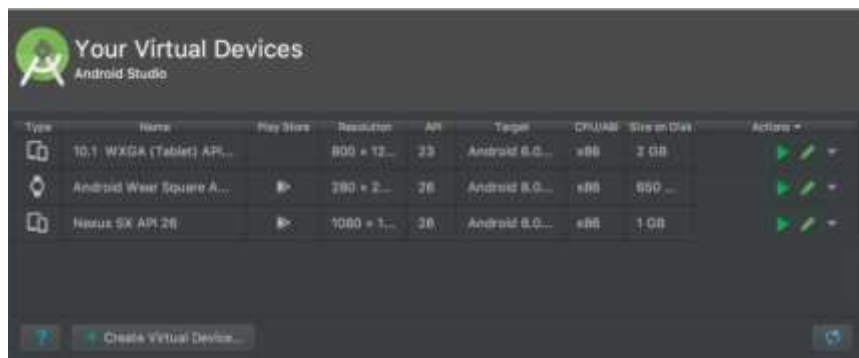## <u>Solution:-</u>

Creating a project:
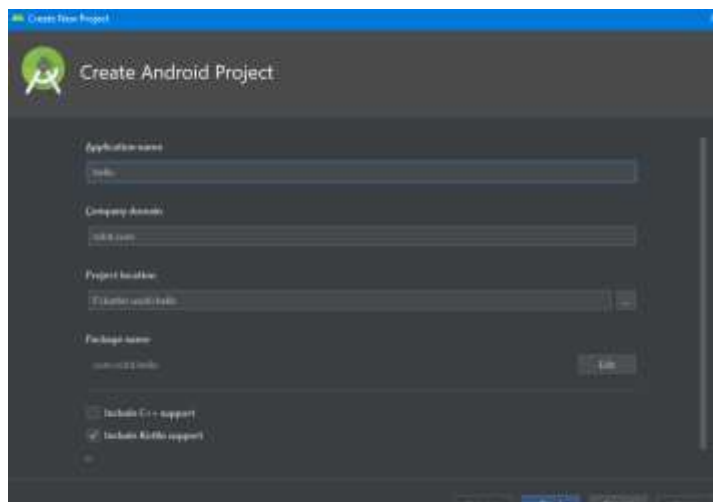
Create and manage virtual devices:

To open the AVD Manager, do one of the following:

- Select Tools > AVD Manager.
- Click AVD Manager AVD Manager icon in the toolbar.

Activity_Main.Kt

package com.bscit.hello

import android.support.v7.app.AppCompatActivity
import android.os.Bundle

class MainActivity : AppCompatActivity() {

override fun onCreate(savedInstanceState: Bundle?) {
super.onCreate(savedInstanceState)
setContentView(R.layout.*activity_main*)
   }
}

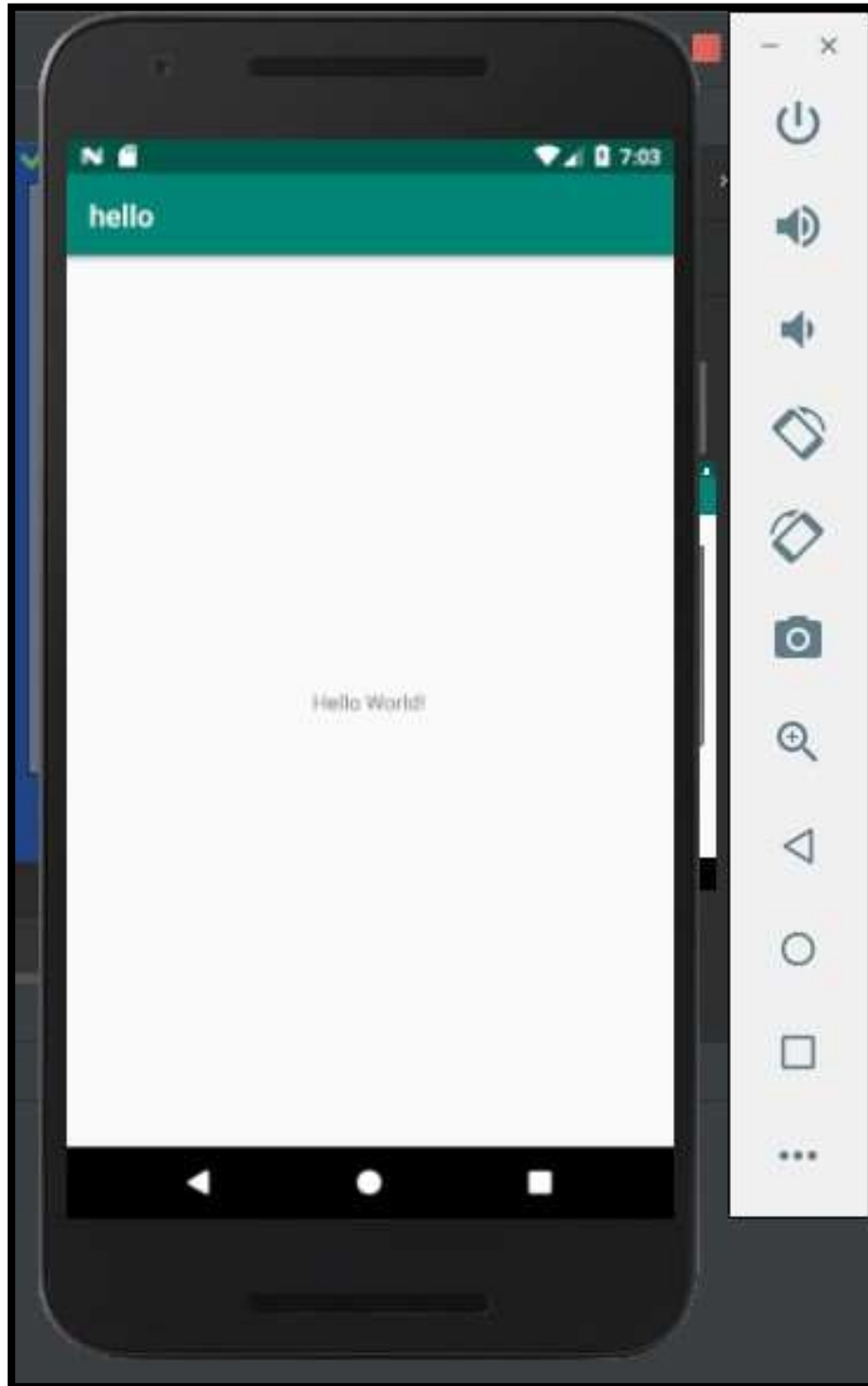### Activity_Main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.ConstraintLayout
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: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_constraintLeft_toLeftOf="parent"
app:layout_constraintRight_toRightOf="parent"
app:layout_constraintTop_toTopOf="parent"/>
```

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

Output:-

Practical 2

Aim: Programming Android Resources: Colour, Theme, String,Dimension, Image

Description: Android Studio helps you add new resources and alternative resources in several ways, depending on the type of resource you want to add.

Solution:

activity_main.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:background="@drawable/abc"
tools:context=".MainActivity">


<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"

android:layout_marginLeft="120dp"
android:hint="@string/mystring"

android:textSize="30dp"
android:textColorHint="@color/tx"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintLeft_toLeftOf="parent"
app:layout_constraintRight_toRightOf="parent"
app:layout_constraintTop_toTopOf="parent"/>

<ImageView
android:layout_width="match_parent"
android:layout_height="wrap_content"
app:srcCompat="@mipmap/ic_launcher"
tools:layout_editor_absoluteY="0dp" tools:layout_editor_absoluteX="3dp"
android:id="@+id/imageView"
tools:ignore="MissingConstraints" android:layout_alignParentStart="true"
android:layout_alignParentTop="true" android:layout_marginTop="143dp"
android:layout_alignParentLeft="true"/>
```

4

</*LinearLayout*>

strings.xml

<**resources**>
<**string name="app_name"**>My Application</**string**>
<**string name="mystring"**>"WELCOME"</**string**>
</**resources**>

color.xml

<*?***xml version="1.0" encoding="utf-8"***?*>
<**resources**>
<**color name="colorPrimary"**>#008577</**color**>
<**color name="colorPrimaryDark"**>#00574B</**color**>
<**color name="colorAccent"**>#D81B60</**color**>
<**color name="tx"**>#FFFFFF</**color**>
</**resources**>

MainActivity.kt

package com.example.gkaud.myapplication

import android.support.v7.app.AppCompatActivity
import android.os.Bundle

class MainActivity : AppCompatActivity() {

override fun onCreate(savedInstanceState: Bundle?) {
super.onCreate(savedInstanceState)
setContentView(R.layout.*activity_main*)
   }
}

Output:-

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Practical 3

Aim: Programming Activities and fragments: Activity Life Cycle, Life Cycle of fragments.

Description:

A fragment is an independent Android component which can be used by an activity. A fragment encapsulates functionality so that it is easier to reuse within activities and layouts.

Solution:

activity_main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.ConstraintLayoutxmlns: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:textSize="90dp"
android:text="Welcome"
android:textColor="@color/colorPrimary"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintLeft_toLeftOf="parent"
app:layout_constraintRight_toRightOf="parent"
app:layout_constraintTop_toTopOf="parent" />

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

MainActivity.java

```java
package com.example.myapplication;

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

public class MainActivityextends Activity {
    String msg= "Android : ";
```

4

```
@Override
public void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
Log.d(msg, "The onCreate() event");
    }
@Override
protected void onStart() {
super.onStart();
Log.d(msg, "The onStart() event");
    }


@Override
protected void onResume() {
super.onResume();
Log.d(msg, "The onResume() event");
    }


@Override
protected void onPause() {
super.onPause();
Log.d(msg, "The onPause() event");
    }


@Override
protected void onStop() {
super.onStop();
Log.d(msg, "The onStop() event");
    }


@Override
public void onDestroy() {
super.onDestroy();
Log.d(msg, "The onDestroy() event");
    }
}
```

Output: -

4

```
4 15:23:35.044 27442-27451/com.example.myapplication I/zygote64: Increasing code cache
4 15:23:35.050 27442-27442/com.example.myapplication D/HwRTBlurUtils: check blur style
4 15:23:35.050 27442-27442/com.example.myapplication D/Android :: The onCreate() event
4 15:23:35.052 27442-27442/com.example.myapplication D/Android :: The onStart() event
4 15:23:35.053 27442-27442/com.example.myapplication D/ActivityThread: add activity cli
4 15:23:35.058 27442-27442/com.example.myapplication D/Android :: The onResume() event
4 15:23:35.064 27442-27442/com.example.myapplication I/HwSecImmHelper: mSecurityInputMe
```

```
5:23:35.158 27442-27484/com.example.myapplication E/vndksupport: Could not load vendor/
5:23:54.551 27442-27442/com.example.myapplication W/InputMethodManager: startInputReaso
5:23:54.568 27442-27442/com.example.myapplication D/Android :: The onPause() event
5:23:54.626 27442-27442/com.example.myapplication V/ActivityThread: Finishing stop of A
5:23:54.629 27442-27442/com.example.myapplication D/Android :: The onStop() event
5:23:59.965 27442-27442/com.example.myapplication V/ActivityThread: Handle window Activ
```

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Practical 4

Aim: Programs related to different Layouts: Linear, Relative,Table.

Description:

A layout defines the structure for a user interface in your app, such as in an activity. All elements in the layout are built using a hierarchy of View and ViewGroup objects. A View usually draws something the user can see and interact with. Whereas a ViewGroup is an invisible container that defines the layout structure for View and other ViewGroup objects.

Solution:

Relative Layout and Linear Layout: -

activity_main.xml

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

<RelativeLayout
android:layout_width="match_parent"
android:layout_height="match_parent"
tools:layout_editor_absoluteX="16dp"
tools:layout_editor_absoluteY="19dp">

<TextView
android:id="@+id/Submit"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="TextView" />


<EditText
android:id="@+id/Username"
android:layout_width="wrap_content"
android:layout_height="48dp"
android:layout_marginLeft="50dp"
android:layout_marginTop="100dp"
android:ems="10"
```

```
android:text="Name"
/>

<EditText
android:id="@+id/Password"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginTop="20dp"
android:layout_below="@id/Username"
android:ems="10"
android:inputType="textPassword"
android:text="Password"
android:layout_marginLeft="50dp"
/>

<Button
android:id="@+id/bt1"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Button"
android:layout_marginLeft="90dp"
android:layout_below="@id/Password"
android:layout_marginTop="20dp"
tools:layout_editor_absoluteX="137dp"
tools:layout_editor_absoluteY="363dp" />


</RelativeLayout>

</LinearLayout>
```

Output: -

4
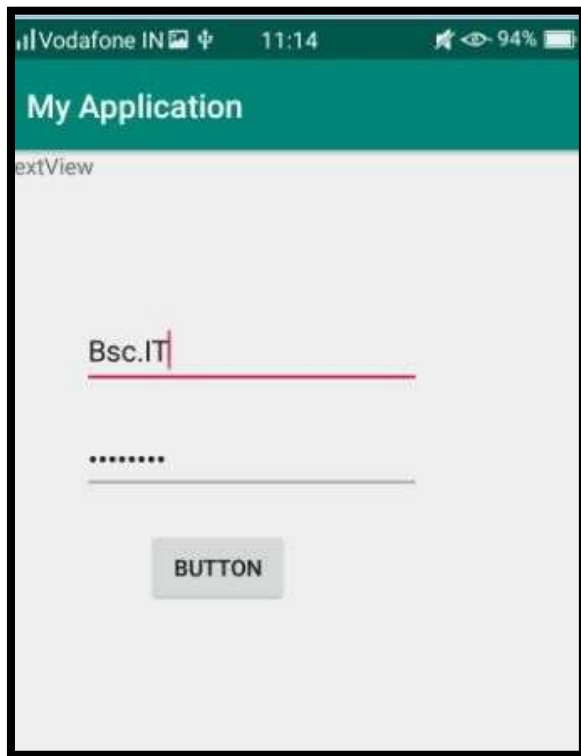
Table Layout

## **activity_main.xml: -**

```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"
tools:context=".MainActivity">
<TableLayoutandroid:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginLeft="50dp"
android:layout_marginTop="150dp">
<TableRow>
<Button
android:id="@+id/btn1"
android:text="1"
android:layout_gravity="center"
/>
<Button
android:id="@+id/btn2"
android:text="2"
android:layout_gravity="center"
```

```
/>
<Button
android:id="@+id/btn3"
android:text="3"
android:layout_gravity="center"
/>
</TableRow>
<TableRow>
<Button
android:id="@+id/btn4"
android:text="4"
android:layout_gravity="center"
/>
<Button
android:id="@+id/btn5"
android:text="5"
android:layout_gravity="center"
/><Button
android:id="@+id/btn6"
android:text="6"
android:layout_gravity="center"
/>
</TableRow>
<TableRow>
<Button
android:id="@+id/btn7"
android:text="7"
android:layout_gravity="center"
/>
<Button
android:id="@+id/btn8"
android:text="8"
android:layout_gravity="center"
/><Button
android:id="@+id/btn9"
android:text="9"
android:layout_gravity="center"
/>
</TableRow>
</TableLayout>
</LinearLayout>
```

Output:

4

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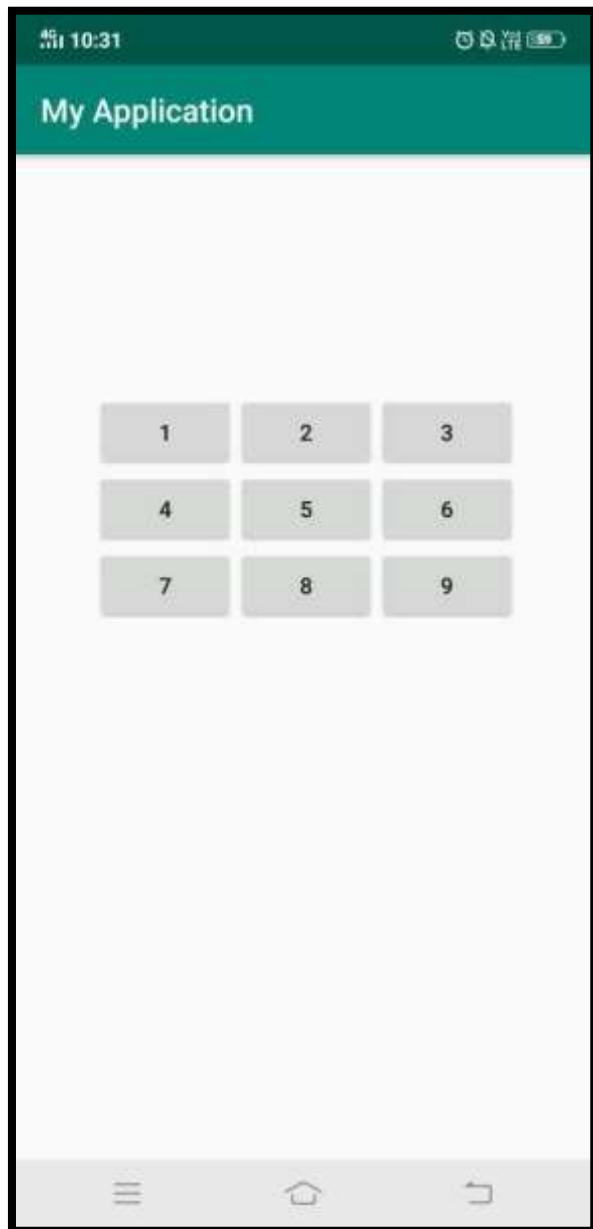
PRACTICAL 5

Aim: Programming UI elements: AppBar, Fragments, UI Components

Description:

Your app's user interface is everything that the user can see and interact with. Android provides a variety of pre-built UI components such as structured layout objects and UI controls that allow you to build the graphical user interface for your app. Android also provides other UI modules for special interfaces such as dialogs, notifications, and menus.

Solution:

MainActivity.kt:

```
package bscit.technobeat

import android.content.Intent
import android.support.v7.app.AppCompatActivity
import android.os.Bundle
import kotlinx.android.synthetic.main.activity_login.*
import kotlinx.android.synthetic.main.activity_main.*
import kotlinx.android.synthetic.main.activity_register.*
import rohit.technobeat.R.id.login
import rohit.technobeat.R.id.newaccount

class MainActivity : AppCompatActivity() {

override fun onCreate(savedInstanceState: Bundle?) {
super.onCreate(savedInstanceState)
setContentView(R.layout.activity_main)
login.setOnClickListener{
valintent = Intent(this, LoginActivity::class.java)
// start your next activity
startActivity(intent)
}

newaccount.setOnClickListener{
valintent = Intent(this, RegisterActivity::class.java)
// start your next activity
startActivity(intent)
}


}
}
```

activity_main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<LinearLayoutxmlns: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_horizontal"
android:orientation="vertical"
android:paddingBottom="@dimen/activity_vertical_margin"
android:paddingLeft="@dimen/activity_horizontal_margin"
android:paddingRight="@dimen/activity_horizontal_margin"
android:paddingTop="@dimen/activity_vertical_margin"
android:background="@drawable/home"
tools:context=".MainActivity">

<ScrollView
android:id="@+id/login_form"
android:layout_width="match_parent"
android:layout_height="match_parent">
<LinearLayout
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:orientation="vertical"
android:gravity="center">


<android.support.v7.widget.AppCompatTextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginTop="210dp"
android:alpha="0.7"
android:text="TECHNOBEAT"
android:textColor="#000000"
android:textSize="33dp"
android:textStyle="bold"
tools:layout_marginLeft="85dp" />


<Button
android:id="@+id/login"
        style="?android:textAppearanceSmall"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_marginTop="16dp"
android:text="Login"
android:background="@drawable/round_button"
android:alpha="0.8"
android:textStyle="bold" />
<Button
```

4

```
android:id="@+id/newaccount"
        style="?android:textAppearanceSmall"
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:layout_marginTop="16dp"
android:text="REGISTER"
android:background="@drawable/round_button"
android:alpha="0.8"
android:textStyle="bold" />

</LinearLayout>
</ScrollView>
</LinearLayout>
```

Output:-

PRACTICAL 6

Aim:Programming menus, dialog, dialog fragments

Description:

A dialog is a small window that prompts the user to make a decision or enter additional information. A dialog does not fill the screen and is normally used for modal events that require users to take an action before they can proceed.
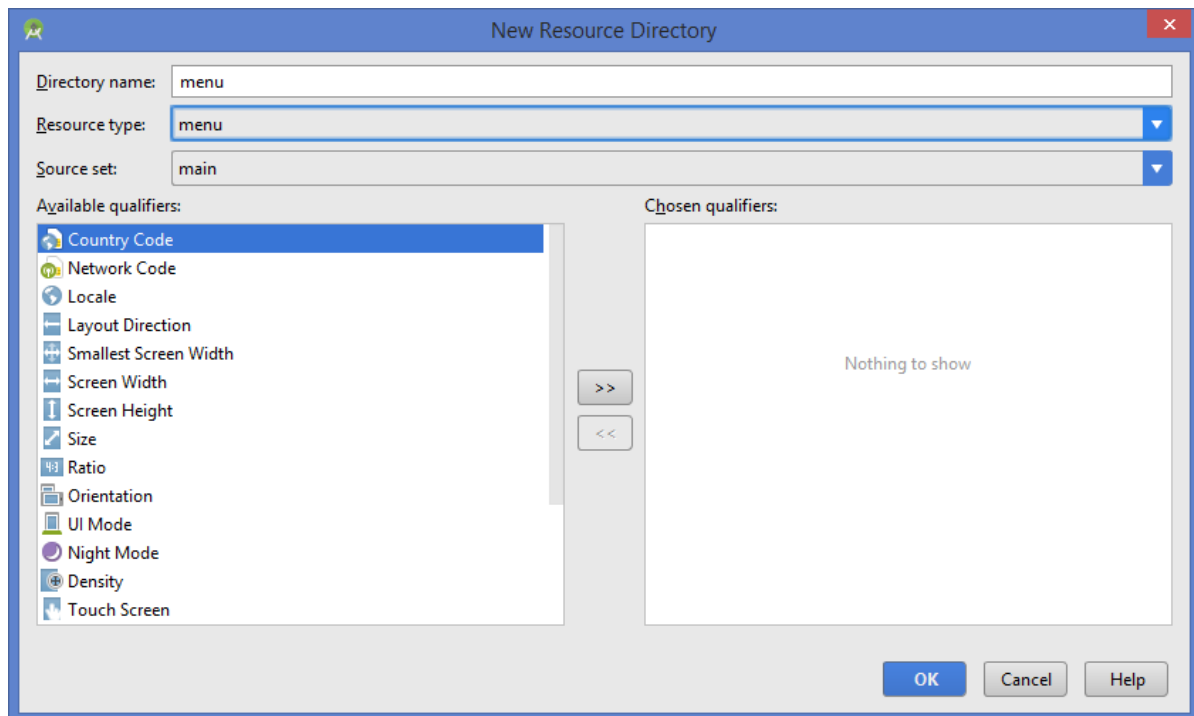
Solution:

Menu.xml

To define the menu_file.xml file, first create a menu directory under res folder. This is done by right clicking on **res --> new --> Android resource directory**.

Name: Vivekkumar   **Roll No: 22**
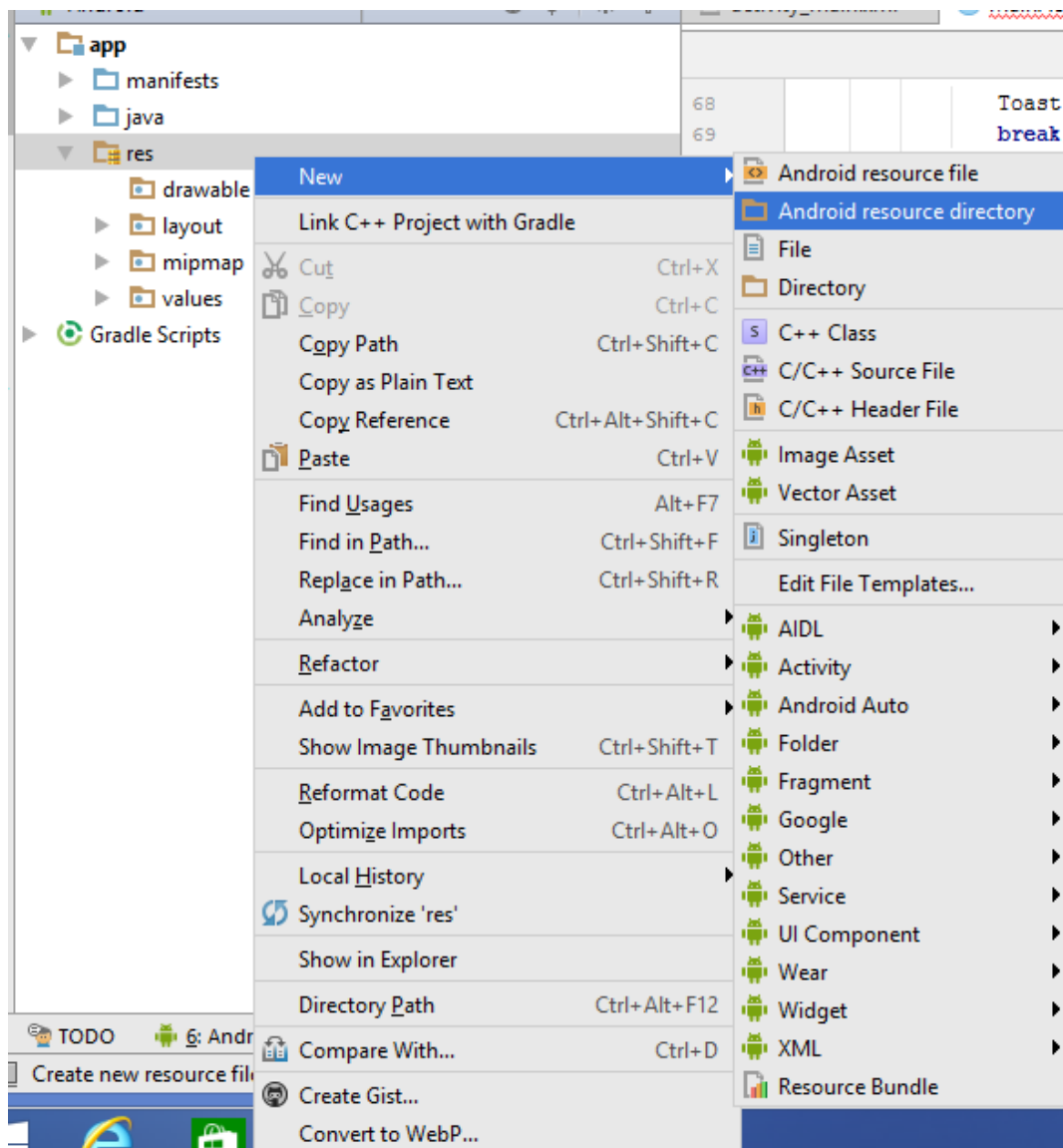
Then a new window will appear. Type menu in the directory name and choose menu in the Resource type. Then, click on OK.

A new menu directory would be made under res directory. Add menu_file.xml file in menu directory by right clicking on **menu --> New --> Menu resource file**.

Name: Vivekkumar   **Roll No: 22**
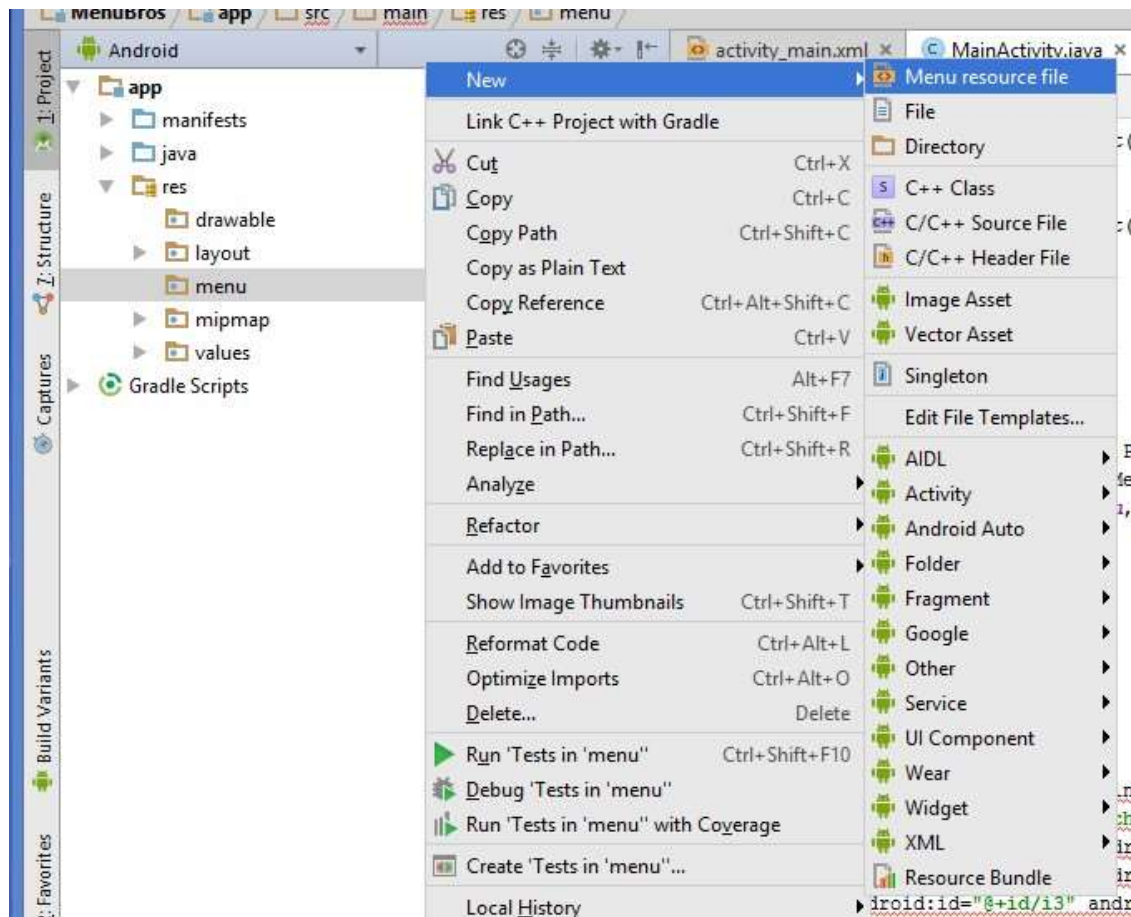
Give the name as **menu_file.xml** and click on Ok. The **menu_file.xml** file contains the following tags:

- **<menu>**

  It defines a Menu, which is a container for menu items. A <menu> element must be the root node for the file and can hold one or more <item> and <group> elements.

- **<item>**

  It creates a MenuItem, which represents a single item in a menu. This element may contain a nested <menu> element in order to create a submenu.

- **<group>**

  It is an optional, invisible container for <item> elements. It allows you to categorize menu items so they share properties such as active state and visibility.

MainActivity.java

```java
public class MainActivity extends AppCompatActivity {

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

    @Override
    public booleanonCreateOptionsMenu(Menu menu) {
MenuInflaterinflater = getMenuInflater();
inflater.inflate(R.menu.menu_file, menu);
        return true;
    }

    @Override
    public booleanonOptionsItemSelected(MenuItem item) {
        //Handle item selection
        switch (item.getItemId()) {
            case R.id.i1:
                //perform any action;
                            Toast.makeText(this, "Menu item is selected",
Toast.LENGTH_SHORT).show()
                return true;
            case R.id.a:
                //perform any action;
Toast.makeText(this, "Menu submenu a is selected", Toast.LENGTH_SHORT).show()
                return true;
            case R.id.b:
                //perform any action;
Toast.makeText(this, "Menu sub menu b is selected", Toast.LENGTH_SHORT).show()
                return true;
            default:
                return super.onOptionsItemSelected(item);
        }
    }
}
```
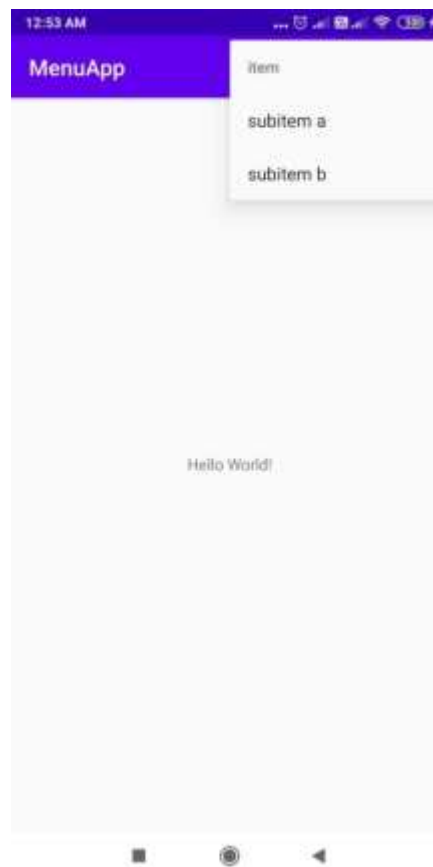
menu_file.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android">
<item android:id="@+id/i1"
android:title="item"
android:icon="@drawable/flower1" >

<!-- "item" submenu -->
```

```
<menu>
<item android:id="@+id/a"
android:title="subitem a"
android:icon="@drawable/flower1"/>
<item android:id="@+id/b"
android:title="subitem b"
android:icon="@drawable/flower2" />
</menu>
</item>

</menu>
```

Output:

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Alert Dialog

<?**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:layout_width="match_parent"
android:layout_height="match_parent"
android:id="@+id/mylayout"
tools:context=".MainActivity">

<**Button**
android:layout_marginTop="100dp"

android:text="Button"
android:layout_width="wrap_content"
android:layout_height="wrap_content" android:id="@+id/button"
android:layout_weight="1"/>
</**LinearLayout**>

MainActivity.kt

```kotlin
package com.example.alertapp
import android.graphics.Color
import android.support.v7.app.AppCompatActivity
import android.os.Bundle
import android.support.v7.app.AlertDialog
import android.widget.*
import kotlinx.android.synthetic.main.activity_main.*

class MainActivity : AppCompatActivity() {

override fun onCreate(savedInstanceState: Bundle?) {
super.onCreate(savedInstanceState)
setContentView(R.layout.activity_main)

// Set a click listener for button widget
button.setOnClickListener{
// Initialize a new instance of
val builder = AlertDialog.Builder(this@MainActivity)

// Set the alert dialog title
builder.setTitle("App background color")

// Display a message on alert dialog
builder.setMessage("Are you want to set the app background color to RED?")

// Set a positive button and its click listener on alert dialog
builder.setPositiveButton("YES"){dialog, which ->
// Do something when user press the positive button
Toast.makeText(applicationContext,"Ok, we change the app
background.",Toast.LENGTH_SHORT).show()

// Change the app background color
mylayout.setBackgroundColor(Color.RED)
}

// Display a negative button on alert dialog
builder.setNegativeButton("No"){dialog,which->
Toast.makeText(applicationContext,"You are not agree.",Toast.LENGTH_SHORT).show()
mylayout.setBackgroundColor(Color.WHITE)
}

// Display a neutral button on alert dialog
builder.setNeutralButton("Cancel"){_,_ ->
Toast.makeText(applicationContext,"You cancelled the
dialog.",Toast.LENGTH_SHORT).show()
}

// Finally, make the alert dialog using builder
val dialog: AlertDialog = builder.create()
```
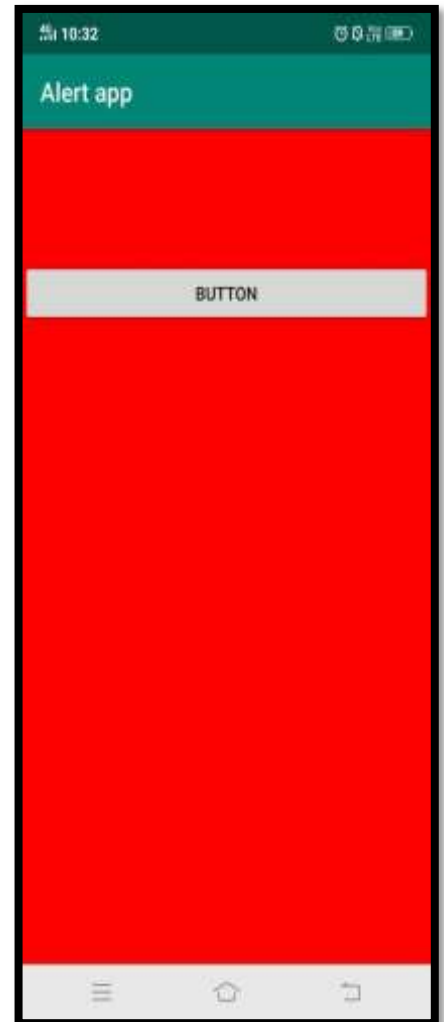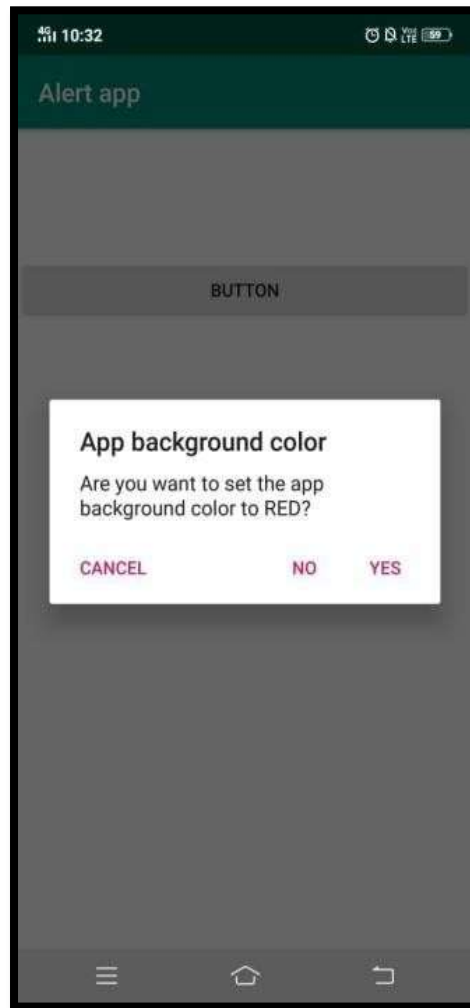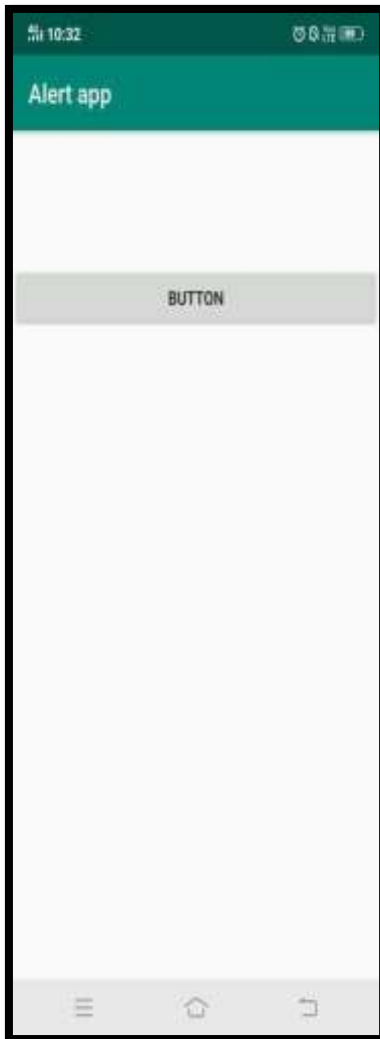
```
// Display the alert dialog on app interface
dialog.show()
}
}
}
```

Output:

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Practical 7

Aim: Programs on Intents, Events, Listeners and Adapters: The Android Intent Class, Using Events and Event Listeners

Description:

Events are a useful way to collect data about a user's interaction with interactive components of Applications. Like button presses or screen touch etc. The Android framework maintains an event queue as first-in, first-out (FIFO) basis. You can capture these events in your program and take appropriate action as per requirements.

Solution:

INTENTS

MainActivity.java

```java
package com.example.intentapp;

import androidx.appcompat.app.AppCompatActivity;

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

public class MainActivityextends AppCompatActivity {

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

public void showntext(View view)
    {
EditText ed=(EditText)findViewById(R.id.text1);
        String msg=ed.getText().toString();
        Intent in=new Intent(this,newpage.class);
in.putExtra("my key", msg);
startActivity(in);
    }
}
```

activity_main.xml

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

<EditText
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:hint="Enter value"
android:id="@+id/text1"/>

<Button
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:id="@+id/btn"
android:text="click"
android:onClick="showntext"/>
</LinearLayout>
```

Add a new layout resource file

newpage_layout.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
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">

<TextView
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="New Text"
android:id="@+id/text2"
android:textSize="20dp"
tools:ignore="MissingConstraints" />

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

Add a new empty activity
newpage.java
```java
package com.example.intentapp;
```

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```
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.TextView;

public class newpageextends AppCompatActivity {

    @Override
protected void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_newpage);
TextView tv1=(TextView)findViewById(R.id.text2);
        String myval=getIntent().getExtras().getString("my key");
        tv1.setText("Value=" +myval);
    }
}
```

Output:

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