BCS6B15 Programming Laboratory IV

Android Programming

B. Sc. Computer Science Programme

University of Calicut

Operating System :	**Ubuntu 16.04 / Windows 7/ 8/ 10**
IDE :	**Android Studio 3.5.2**
Compile With:	**API 22: Android 5.1 X Lollipop Version**
Package:	**com.example**

CONTENTS

1. Hello World

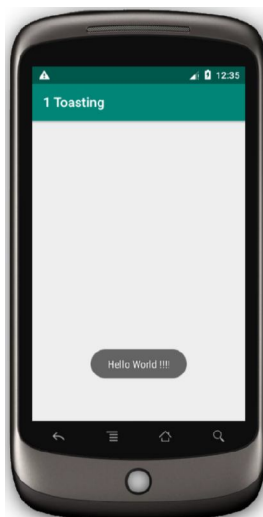**Aim: Write a Program to Toast Hello World**

MainActivity.java

```java
package com.example.lab1toasting;
import android.app.Activity;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity
{
    @Override
    protected void onResume()
    {
        Toast.makeText(getApplicationContext(),"Hello World !!!!",Toast.LENGTH_LONG).show();
        super.onResume();
    }
}
```

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"
    android:orientation="vertical"
    tools:context=".MainActivity">
</LinearLayout>
```

Screenshot

2. Addition

Aim: Write a Program to add two numbers

MainActivity.java

```java
package com.example.lab2addition;
import androidx.appcompat.app.AppCompatActivity;
import android.content.DialogInterface;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
public class MainActivity extends AppCompatActivity
{
    EditText n1,n2;
    Button b1;
    TextView res;
    int a,b,sum;
    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        n1=(EditText)(findViewById(R.id.txtnum1));
        n2=(EditText)(findViewById(R.id.txtnum2));
        res=(TextView)(findViewById(R.id.txtResult));
        b1=(Button)(findViewById(R.id.btnAdd));
        b1.setOnClickListener(new View.OnClickListener()
        {
            @Override
            public void onClick(View v)
            {
                if(n1.length()>0 && n2.length()>0)
                {
                    a=Integer.parseInt(n1.getText().toString());
                    b=Integer.parseInt(n2.getText().toString());
                    sum=a+b;
                    res.setText("Sum is "+sum);
                }
                else
                    res.setText("Input the Numbers...");
            }
        });
    }

}
```
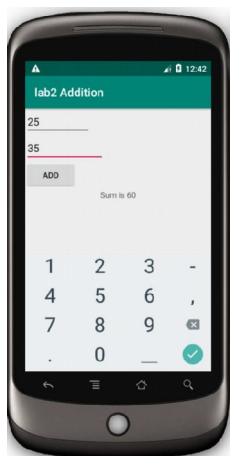
activity_main.xml

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

    <EditText
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/txtnum1"
        android:hint="First Number"
        android:inputType="number"/>
    <EditText
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/txtnum2"
        android:hint="Second Number"
        android:inputType="number"/>
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/btnAdd"
        android:text="ADD"/>
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/txtResult"
        android:layout_gravity="center"/>
</LinearLayout>
```

Screenshot

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4. Alert Box

Aim: Write a Program to play an alert box with OK and cancel

MainActivity.java

```java
package com.example.lab4alertbox;

import androidx.appcompat.app.AlertDialog;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class MainActivity extends AppCompatActivity
{
    Button b;

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

        b.setOnClickListener(new View.OnClickListener()
        {
          @Override
          public void onClick(View v)
          {
            AlertDialog.Builder builder=new AlertDialog.Builder(MainActivity.this);
            builder.setCancelable(true);
            builder.setMessage("This is an Alert Box");
            builder.setPositiveButton("OK",null);
            builder.setNeutralButton("Cancel",null);
            AlertDialog myAlert=builder.create();
            myAlert.show();
          }
        });
    }
}
```
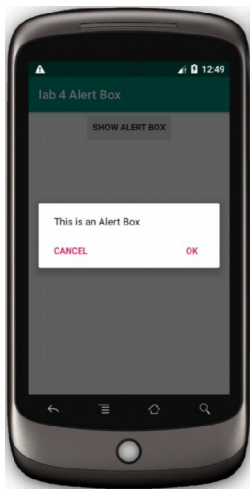
activity_main.xml

```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">
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/btnAlert"
        android:layout_centerHorizontal="true"
        android:text="Show Alert Box"/>
</RelativeLayout>
```

Screenshot

5. Context Menu

Aim: Write a Program to create menu with three menu items

MainActivity.java

```java
package com.example.lab5menu;
import android.app.Activity;
import android.os.Bundle;
import android.view.ContextMenu;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.view.ContextMenu.ContextMenuInfo;
import android.widget.LinearLayout;
import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity
{
    LinearLayout ll;
    @Override
    public void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        ll=(LinearLayout) findViewById(R.id.linearlayout);
        ll.setOnCreateContextMenuListener(this);
    }
    @Override
    public void onCreateContextMenu(ContextMenu menu, View v,ContextMenuInfo menuInfo)
        {
                super.onCreateContextMenu(menu, v, menuInfo);
                menu.add(0,0,0,"item 1");
                menu.add(0,1,1,"item 2");
                menu.add(0,2,2,"item 3");
        }
        @Override
        public boolean onContextItemSelected(MenuItem item)
        {
                super.onContextItemSelected(item);
                Toast.makeText(this, item.getTitle(), Toast.LENGTH_SHORT).show();
                return true;
        }
}
```

activity_main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
android:layout_width="fill_parent"
android:layout_height="fill_parent"
android:orientation="vertical"
android:id="@+id/linearlayout">
  <TextView
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:layout_marginTop="20dp"
       android:text="Long press on'Menu' to get options..."/>
  <TextView
      android:id="@+id/textView2"
      android:layout_width="wrap_content"
      android:layout_height="wrap_content"
      android:text="Menu"
      android:layout_marginTop="30dp"
      android:layout_marginLeft="20dp"
      android:textAppearance="?android:attr/textAppearanceLarge"></TextView>
</LinearLayout>
```

Screenshot

6. Radio Button

Aim: Write a Program to implement Radio Button Control

MainActivity.java

```java
package com.example.lab6radiobutton;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.RadioButton;
import android.widget.RadioGroup;
import android.widget.TextView;
public class MainActivity extends AppCompatActivity
{
    RadioButton rm,rf;
    RadioGroup rg;
    TextView t;

    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        rm=(RadioButton)findViewById(R.id.rdMale);
        rf=(RadioButton)findViewById(R.id.rdFemale);
        t=(TextView)findViewById(R.id.txtGender);
        rg=(RadioGroup)findViewById(R.id.rdGender);
        rg.setOnCheckedChangeListener(new RadioGroup.OnCheckedChangeListener()
        {
            @Override
            public void onCheckedChanged(RadioGroup group, int checkedId)
            {
                if (rm.isChecked())
                    t.setText("You are a Man");
                if (rf.isChecked())
                    t.setText("You are a Woman");
            }
        });
    }
}
```

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"
```

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

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Select Your Gender"/>

    <RadioGroup
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/rdGender">

        <RadioButton
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:id="@+id/rdMale"
            android:text="Male"/>

        <RadioButton
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:id="@+id/rdFemale"
            android:text="Female"/>

    </RadioGroup>

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

</LinearLayout>
```

Screenshot

7. Spinner

Aim: Write a Program to spin four items

MainActivity.java

```java
package com.example.lab7spinner;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.ArrayAdapter;
import android.widget.Spinner;
public class MainActivity extends AppCompatActivity
{
    Spinner spin;
    private String[] spinArray;
    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        spin=(Spinner) findViewById(R.id.myspin);
        this.spinArray=new String[]{"Java","Python","PHP","Perl"};
        ArrayAdapter<String> adapter=new
ArrayAdapter<String>(this,android.R.layout.simple_spinner_item,spinArray);
        spin.setAdapter(adapter);
    }
}
```
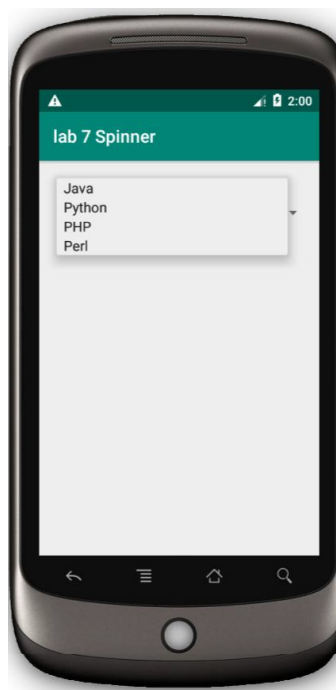
activity_main.xml

```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:orientation="vertical"
    android:layout_height="match_parent"
    android:paddingTop="20dp"
    android:paddingHorizontal="20dp"
    tools:context=".MainActivity">
    <Spinner
        android:id="@+id/myspin"
        android:layout_width="match_parent"
        android:layout_height="80sp"
        android:layout_gravity="center_horizontal"
        android:spinnerMode="dropdown" />
</LinearLayout>
```

Screenshot

9. Check Box

Aim: Write a Program to implement CheckBox Control

MainActivity.java

```java
package com.example.lab9checkbox;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.CheckBox;
import android.widget.TextView;
public class MainActivity extends AppCompatActivity
{
    CheckBox mw,mr,ew,er;
    Button b;
    TextView res;
    String Summary;

    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        mr=(CheckBox)findViewById(R.id.chkMalRead);
        mw=(CheckBox)findViewById(R.id.chkMalWrite);
        er=(CheckBox)findViewById(R.id.chkEngRead);
        ew=(CheckBox)findViewById(R.id.chkEngWrite);
        res=(TextView)findViewById(R.id.res);
        b=(Button)findViewById(R.id.btn) ;
        b.setOnClickListener(new View.OnClickListener()
        {
            @Override
            public void onClick(View v)
            {
                Summary="";
                if (mr.isChecked())
                    Summary+="Read Malayalam,";
                if (mw.isChecked())
                    Summary+="write malayalam,";
                if (er.isChecked())
                    Summary+="Read English,";
                if (ew.isChecked())
                    Summary+="Write English";
                if (Summary.length()<10)
                    res.setText("You are an illitrate!!");
                else
```

```
                res.setText("You can "+Summary);
            }
        });
}
}
```

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"
    tools:context=".MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Malayalam"/>

    <CheckBox
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/chkMalRead"
        android:text="Read"/>
    <CheckBox
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/chkMalWrite"
        android:text="Write"/>
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="English"/>
    <CheckBox
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/chkEngRead"
        android:text="Read"/>
    <CheckBox
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/chkEngWrite"
        android:text="Write"/>
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
```
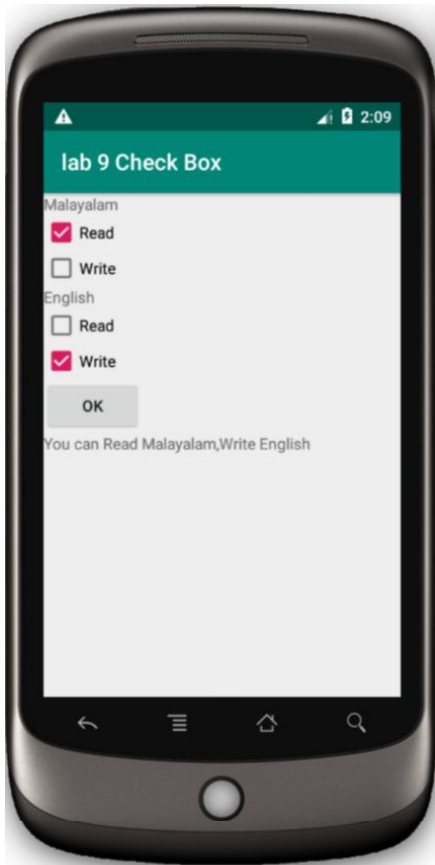
```
        android:id="@+id/btn"
        android:text="OK"/>
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/res"/>
</LinearLayout>
```

Screenshot

12. Image View

Aim: Write a Program to display image from a directory

MainActivity.java

```java
package com.example.lab12imageview;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.database.Cursor;
import android.graphics.Bitmap;
import android.graphics.BitmapFactory;
import android.net.Uri;
import android.os.Bundle;
import android.provider.MediaStore;
import android.view.View;
import android.widget.Button;
import android.widget.ImageView;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity
{
    ImageView img,img1;
    Button bt;
    @Override
    protected void onCreate(Bundle savedInstanceSatae)
    {
        super.onCreate(savedInstanceSatae);
        setContentView(R.layout.activity_main);
        img=findViewById(R.id.img_id );
    }
}
```

activity_main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<LinearLayoyt
    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">
    <ImageView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/img_id"
        android:src="@drawable/ic_launcher">
    </ImageView>
```

</LinearLayout>

Screenshot

13. ListView

Aim: Write a Program to display items in a list

MainActivity.java

```java
package com.example.lab13listview;

import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.ArrayAdapter;
import android.widget.ListView;
import android.widget.TextView;
import android.widget.Toast;

import androidx.appcompat.app.AppCompatActivity;


public class MainActivity extends AppCompatActivity
{
  ListView lv;
  String[] DAYS = new String[]{"Sunday", "Monday", "Tuesday", "Wednesday", "Thursday", "Friday", "Saturday"};

   @Override
   protected void onCreate(Bundle savedInstanceState)
   {
      super.onCreate(savedInstanceState);
      setContentView(R.layout.activity_main);
      lv=(ListView) findViewById(R.id.lst);
      ArrayAdapter<String> adapter=new
ArrayAdapter<String>(this,android.R.layout.simple_list_item_1,DAYS);
      lv.setAdapter(adapter);
      lv.setOnItemClickListener(new AdapterView.OnItemClickListener()
      {
         @Override
         public void onItemClick(AdapterView<?> adapterView, View view, int i, long l)
         {
            Toast.makeText(getApplicationContext(),"Selected Item: "+((TextView)
view).getText(),Toast.LENGTH_SHORT).show();
         }
      });
   }
}
```
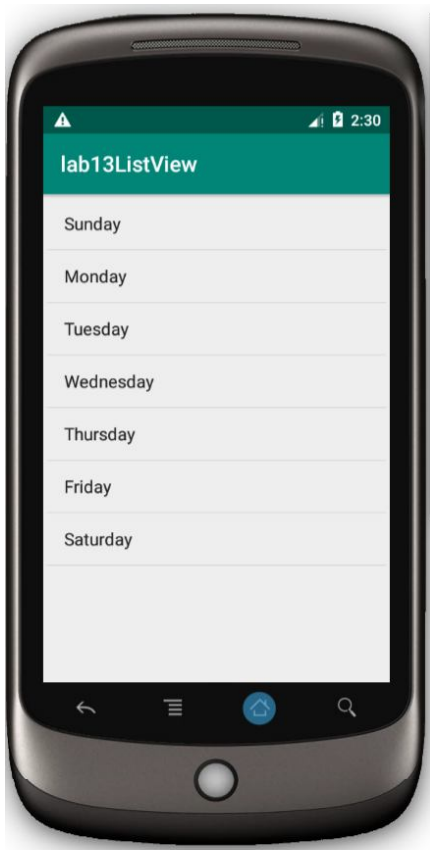
activity_main.xml

```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"
    android:orientation="vertical"
    android:padding="3dp"
    tools:context=".MainActivity">

  <ListView
      android:layout_width="match_parent"
      android:layout_height="match_parent"
      android:id="@+id/lst"/>

</LinearLayout>
```

Screenshot

14. Text View

Aim: Write a Program to fetch data from EditText and Display it in TextView

MainActivity.java

```java
package com.example.lab14textview;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;

import org.w3c.dom.Text;

public class MainActivity extends AppCompatActivity
{
    EditText e;
    Button b;
    TextView t;
    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        b=(Button)findViewById(R.id.bt);
        t=(TextView)findViewById(R.id.txt);
        b.setOnClickListener(new View.OnClickListener()
        {
            @Override
            public void onClick(View v)
            {
                e=(EditText)findViewById(R.id.inp);
                t.setText(e.getText().toString());
            }
        });
    }
}
```

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"
    tools:context=".MainActivity">

<EditText
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:id="@+id/inp"
    android:layout_marginTop="10dp"
    android:hint="Enter your Name...."/>

<Button
    android:id="@+id/bt"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:hint="OK"
    tools:layout_editor_absoluteX="0dp"
    tools:layout_editor_absoluteY="63dp" />

<TextView
    android:id="@+id/txt"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:gravity="center"
    android:layout_marginLeft="50dp"
    android:textSize="20dp"
    android:layout_marginTop="75dp"
     />

</LinearLayout>
```
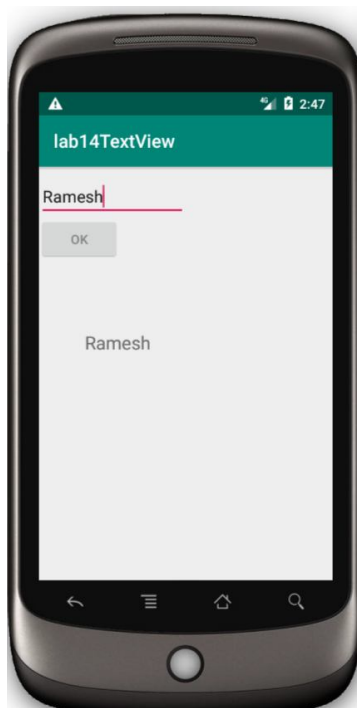
Screenshot

15. Multiplication Table

Aim: Write a Program to Tdisplay Multiplication Table of a given number

MainActivity.java

```java
package com.example.lab15multiplicationtable;
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;
import android.widget.TextView;
public class MainActivity extends AppCompatActivity implements View.OnClickListener
{
    EditText e;
    Button b;
    TextView t;
    int ans=0;
    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        e=(EditText)findViewById(R.id.no);
        b=(Button)findViewById(R.id.bt);
        t=(TextView)findViewById(R.id.txt);
        b.setOnClickListener(this);
    }
    public void onClick(View v)
    {
        switch (v.getId())
        {
            case R.id.bt:
                StringBuffer sb= new StringBuffer();
                int res;
                String fs=e.getText().toString();
                int n= Integer.parseInt(fs);
                for (int i=1;i<=10;i++)
                {
                    ans=(i*n);
                    sb.append(i +"X"+n+"="+ans+"\n\n");
                }
                t.setText(sb);
                break;
        }   }
}
```
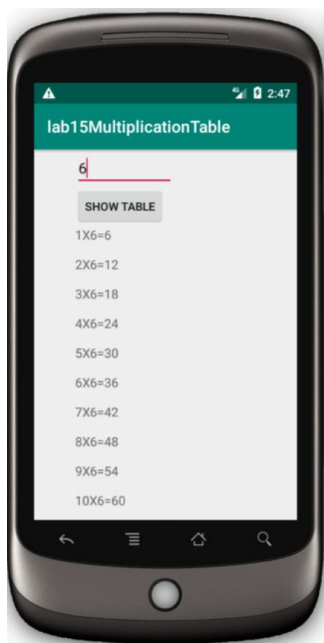
activity_main.xml

```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"
    tools:context=".MainActivity">
    <EditText
        android:layout_width="120dp"
        android:layout_marginLeft="50dp"
        android:layout_height="wrap_content"
        android:inputType="number"
        android:hint="Enter Number"
        android:id="@+id/no"/>
    <Button
        android:id="@+id/bt"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="50dp"
        android:text="SHOW TABLE" />
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="50dp"
        android:textSize="15dp"
        android:id="@+id/txt"/>
</LinearLayout>
```

Screenshot

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16. IP Address

Aim: Write a Program to get IP Address of the device

MainActivity.java

```java
package com.example.lab16ipaddress;

import androidx.appcompat.app.AppCompatActivity;

import android.content.DialogInterface;
import android.net.wifi.WifiManager;
import android.os.Bundle;
import android.text.format.Formatter;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity
{
    Button b;
    TextView t;
    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        b=(Button)findViewById(R.id.btn);
        b.setOnClickListener(new View.OnClickListener()
        {
            @Override
            public void onClick(View v)
            {
                t=(TextView)findViewById(R.id.txt);
                WifiManager
wm=(WifiManager)getApplicationContext().getSystemService(WIFI_SERVICE);
                String ip;
                ip= Formatter.formatIpAddress(wm.getConnectionInfo().getIpAddress());
                t.setText("IP Address :"+ip);

            }
        });
    }
}
```

activity_main.xml

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

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```xml
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <Button
        android:id="@+id/btn"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="95dp"
        android:layout_marginTop="90dp"
        android:text="Get IP Address" />

    <TextView
        android:id="@+id/txt"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="95dp" />

</LinearLayout>
```

AndroidManifest.xml

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

Screenshot

17. Background Colour

Aim: Write a Program to change Background colour of an activity

MainActivity.java

```java
package com.example.lab17bgcolor;
import androidx.appcompat.app.AppCompatActivity;
import android.graphics.Color;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.LinearLayout;
public class MainActivity extends AppCompatActivity
{
    Button b;
    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        final LinearLayout l1=(LinearLayout)findViewById(R.id.r1);
        b=(Button)findViewById(R.id.btn);
        b.setOnClickListener(new View.OnClickListener()
        {
            @Override
            public void onClick(View v)         {
                l1.setBackgroundColor(Color.DKGRAY);
            }
        });
    }}
```

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:id="@+id/r1"
    tools:context=".MainActivity">
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/btn"
        android:text="Change Background"/>
```

</LinearLayout>

Screenshot

18. Background Image

Aim: Write a Program to change background image of an activity

MainActivity.java

```java
package com.example.lab18bgimage;
import androidx.appcompat.app.AppCompatActivity;
import android.graphics.Color;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.LinearLayout;
public class MainActivity extends AppCompatActivity
{
    Button b;
    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        final LinearLayout l1=(LinearLayout)findViewById(R.id.r1);
        b=(Button)findViewById(R.id.btn);
        b.setOnClickListener(new View.OnClickListener()
        {
            @Override
            public void onClick(View v)         {
                l1.setBackgroundResource(R.drawable.ic_launcher);
            }
        });
    }}
```

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:id="@+id/r1"
    android:backgroundTintMode="src_over"
    tools:context=".MainActivity">
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/btn"
        android:text="Change Background"/>
```
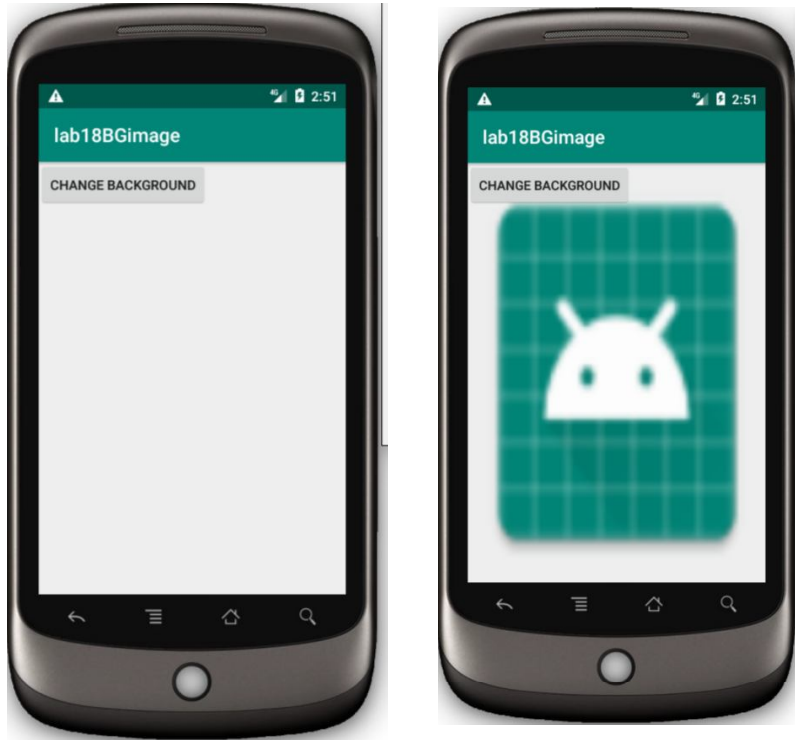
</LinearLayout>

Screenshot

20. Explicit Intent

Aim: Write a Program to start another activity from your activity

MainActivity.java

```java
package com.example.lab20intent;

import androidx.appcompat.app.AppCompatActivity;

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

public class MainActivity extends AppCompatActivity
{
    Button b;
    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        b=(Button)findViewById(R.id.btn);
        b.setOnClickListener(new View.OnClickListener()
        {
            @Override
            public void onClick(View v)
            {
                Intent i=new Intent(MainActivity.this,MainActivity1.class);
                startActivity(i);
            }
        });
    }
}
```

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

```
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="20dp"
        android:text="This is First Activity"/>
    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="GOTO NEXT"
        android:id="@+id/btn"/>
</LinearLayout>
```

MainActivity1.java

```java
package com.example.lab20intent;

import androidx.appcompat.app.AppCompatActivity;

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

public class MainActivity1 extends AppCompatActivity
{

    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main1);

    }
}
```

activity_main1.xml

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

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="This is Second Activity"/>

</LinearLayout>
```

AndroidManifest.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.lab20intent">

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/AppTheme">
        <activity android:name=".MainActivity">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
        <activity android:name=".MainActivity1"
            android:label="@string/app_name"></activity>
    </application>

</manifest>
```

Screenshot