PRACTICAL - 1

AIM: Introduction to Android and Create "Custom Message" application. That will display "Custom Message" in the middle of the screen in the Black color with the Yellow background.

CODE:

// customMessage.java

```java
package com.example.dell.pra1_17it040;

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

public class customMessage extends AppCompatActivity {

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

// custom_message.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<android.support.constraint.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=".customMessage"
    android:background="#34a1ea">


    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World"
        android:textSize="35sp"
        android:textColor="#fff"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

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

OUTPUT:
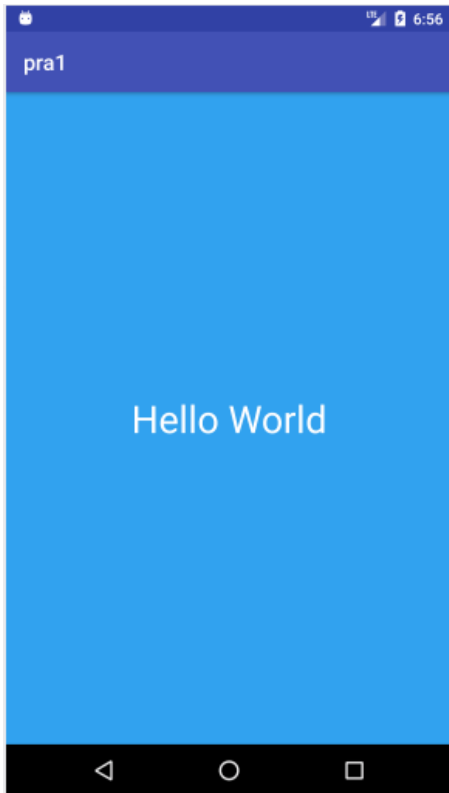
Basically This is a basic application which contain a string "Hello World" and background color is blue.

LEARNING OUTCOME:

We learn Basic about android studio and make a simple application using this.

PRACTICAL 2

AIM: Create an android application to calculate sum of two numbers and gives result in Toast Message.

CODE:

// sum.java

```java
package com.example.dell.pra2;

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.text.TextUtils;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;

public class sum extends AppCompatActivity {

    EditText mNum1, mNum2;
    Button mAdd;
    float num1,num2,sum;

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

        mNum1 = findViewById(R.id.num1Et);
        mNum2 = findViewById(R.id.num2Et);
        mAdd = findViewById(R.id.addBtn);

        mAdd.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                if (TextUtils.isEmpty(mNum1.getText().toString()) &&
                        TextUtils.isEmpty(mNum2.getText().toString())){
                    Toast.makeText(sum.this, "Please enter number...",
Toast.LENGTH_SHORT).show();
                }else {
                    num1 = Float.parseFloat(mNum1.getText().toString().trim());
                    num2 = Float.parseFloat(mNum2.getText().toString().trim());
                    sum = num1+num2;
                    Toast.makeText(sum.this, "Sum = "+sum, Toast.LENGTH_LONG).show();
                }
            }
        });

    }
}
```

// activity_sum.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=".sum">
```

```xml
    <EditText
        android:id="@+id/num1Et"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginBottom="10dp"
        android:layout_marginLeft="10dp"
        android:layout_marginRight="10dp"
        android:layout_marginTop="100dp"
        android:hint="Enter Number 1"
        android:inputType="numberDecimal"
        android:textSize="20sp" />


    <EditText
        android:id="@+id/num2Et"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="10dp"
        android:hint="Enter Number 2"
        android:inputType="numberDecimal"
        android:textSize="20sp" />

    <Button
        android:id="@+id/addBtn"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginLeft="120dp"
        android:layout_marginRight="120dp"
        android:background="@color/colorPrimary"
        android:text="ADD"
        android:textSize="18sp"
        android:layout_marginTop="25dp"
        android:textColor="#fff" />

</LinearLayout>
```
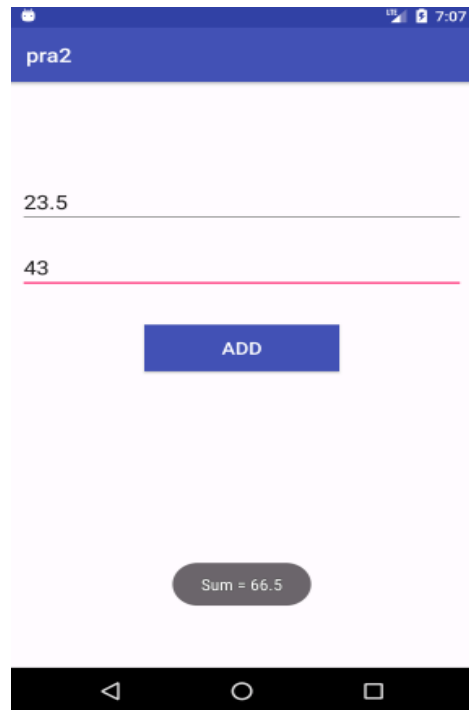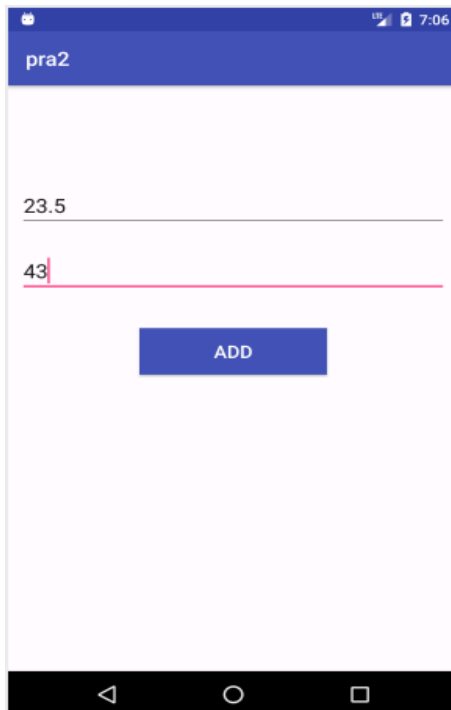
OUTPUT:

So In This application when we enter two numbers in text field and then after click on submit button it will shows the addition of two numbers as a toast message.

LEARNING OUTCOME:

In this practical we learn how to display toast message in application and also how to use button and edittext.

PRACTICAL - 3

AIM: Create an application that will display Toast (Message) on specific interval of time.

CODE:

// MainActivity.java

```java
package com.example.dell.pra3;

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.Chronometer;
import android.widget.TextView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    Chronometer c;
    int i=0;
    int duration=10;
    TextView tv;

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

        c=(Chronometer)findViewById(R.id.cnm);
        tv=(TextView)findViewById(R.id.tv);
        c.start();
        c.setOnChronometerTickListener(new Chronometer.OnChronometerTickListener() {
            @Override
            public void onChronometerTick(Chronometer arg0) {

                tv.setText("Meaasge will be displayed after " + (duration - (i + 1)) + "
seconds");
                i++;
                if (i >= duration)
                {
                    Toast.makeText(getApplicationContext(),"Message"+(i/10),
Toast.LENGTH_LONG).show();
                    duration=duration+10;
                }

            }
        });
    }
}
```

// 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:background="#35c7c2">

    <TextView
        android:textColor="#fff"
        android:id="@+id/tv"
        android:layout_width="match_parent"
```

```
        android:layout_height="wrap_content"
        android:textSize="20sp"
        android:textAppearance="@android:style/TextAppearance.DeviceDefault.Medium" />

    <Chronometer
        android:textColor="#fff"
        android:textSize="20sp"
        android:id="@+id/cnm"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_centerVertical="true"
        android:format="Timer : %s"/>

</RelativeLayout>
```

OUTPUT:
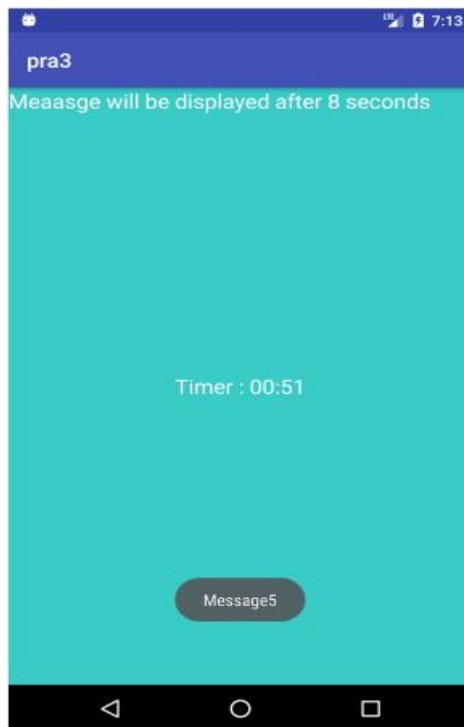
Here we have selected the timer of 50 seconds so the toast will display for 50 seconds and the interval we use is 5 seconds.

LEARNING OUTCOME:

In this practical we learn how to display toast message in specific interval of time.

PRACTICAL - 4

AIM: Create a temperature converter Application. (Fahrenheit-Celsius)**.**

CODE:

// MainActivity.java

```java
package com.example.dell.pra4;

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.RadioButton;
import android.widget.Toast;
import android.widget.ToggleButton;

public class MainActivity extends AppCompatActivity {

    Button b1;
    EditText et;
    Float a;

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

        et=(EditText) findViewById(R.id.editText);
        b1=(Button) findViewById(R.id.button);
        final RadioButton tb=(RadioButton)findViewById(R.id.cb);
        RadioButton fb=(RadioButton)findViewById(R.id.fb);

        b1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {

                if(et.getText().toString().isEmpty())
                {
                    Toast.makeText(MainActivity.this,"Please enter the
temperature",Toast.LENGTH_SHORT).show();
                }

                else if(tb.isChecked())
                {
                    a=Float.parseFloat(String.valueOf(et.getText()));
                    Float b=a*9/5+32;
                    String r=String.format("%.02f", b);
                    Toast.makeText(MainActivity.this,r+"°F",Toast.LENGTH_SHORT).show();
                }

                else
                {
                    a=Float.parseFloat(String.valueOf(et.getText()));
                    Float b=a-32;
                    Float c=b*5/9;
                    String r=String.format("%.02f", c);
                    Toast.makeText(MainActivity.this,r+"°C",Toast.LENGTH_SHORT).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">

    <RadioGroup
        android:id="@+id/radioGroup1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_centerVertical="true">

        <RadioButton
            android:id="@+id/cb"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:checked="true"
            android:text="Celcius to Fahrenhiet" />

        <RadioButton
            android:id="@+id/fb"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Fahrenhiet to Celcius" />
    </RadioGroup>

    <EditText
        android:id="@+id/editText"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="56dp"
        android:ems="10"
        android:hint="Give the temperature"
        android:inputType="numberDecimal|numberSigned" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignLeft="@+id/radioGroup1"
        android:layout_alignStart="@+id/radioGroup1"
        android:layout_below="@+id/radioGroup1"
        android:layout_marginTop="42dp"
        android:text="Convert" />

</RelativeLayout>
```
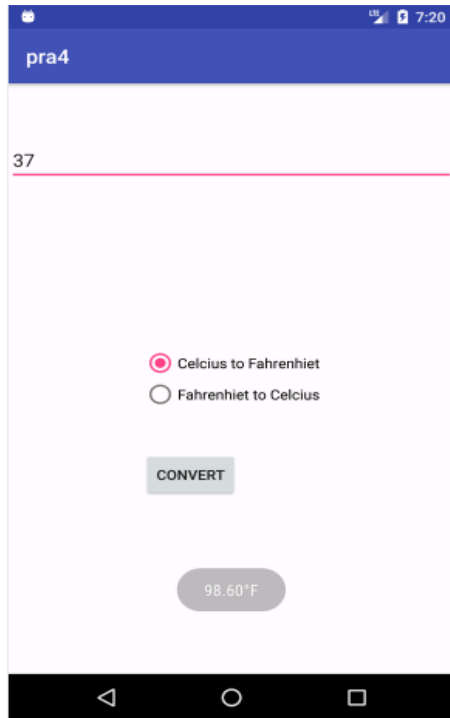
OUTPUT:

LEARNING OUTCOME:

We learn how to take temperature input from user and convert it into desired unit using button.We also learn how to take hint into Edit Text.

PRACTICAL - 5

AIM: Create a login application with following features:

1. Successful Login message in TextView with Green background if Username & password is correct

2. Failure message in TextView with Red background if Username or password is incorrect.

3. Disable Login Button after three wrong login attempts.

4. Close application if user selects Cancel Button.

CODE:

// MainActivity.java

```java
package com.example.dell.pra5;

import android.graphics.Color;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    private EditText etLogin, etPassword;
    private Button login, cancel;
    TextView textView;
    int count;

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

        etLogin=findViewById(R.id.etEmail);
        etPassword=findViewById(R.id.etPassword);
        login=findViewById(R.id.btLogin);
        cancel=findViewById(R.id.btCancel);
        textView=findViewById(R.id.tvSuccess);


        etLogin=findViewById(R.id.etEmail);
        etPassword=findViewById(R.id.etPassword);
        login=findViewById(R.id.btLogin);
        cancel=findViewById(R.id.btCancel);
        textView=findViewById(R.id.tvSuccess);


        login.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                if(etLogin.getText().toString().isEmpty()){
                    Toast.makeText(MainActivity.this, "enter email",
Toast.LENGTH_SHORT).show();
                }
                else if(etPassword.getText().toString().isEmpty()){
                    Toast.makeText(MainActivity.this, "enter password",
Toast.LENGTH_SHORT).show();
                }
                else {
                    if ((etLogin.getText().toString().equals("abhi")||
etLogin.getText().toString().equals("ak")) && etPassword.getText().toString().equals("1234")){
                        textView.setText("Successful");
```

```java
                    textView.setBackgroundColor(Color.parseColor("#00FF00"));
                }
                else {
                    textView.setText("Login failed");
                    textView.setBackgroundColor(Color.parseColor("#FF0000"));
                    count++;
                    if(count>=3){
                        login.setEnabled(false);
                    }
                }
            }
        }
    });

    cancel.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            finish();
            moveTaskToBack(true);
        }
    });

    }
}
```

// 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: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">

    <ScrollView
        android:layout_width="match_parent"
        android:layout_height="match_parent">

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

            <ImageView
                android:id="@+id/imageView2"
                android:layout_width="170dp"
                android:layout_height="170dp"
                android:layout_gravity="center"
                android:layout_marginTop="30dp"
                app:srcCompat="@drawable/login" />

            <EditText
                android:id="@+id/etEmail"
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:layout_marginLeft="20dp"
                android:layout_marginTop="20dp"
                android:layout_marginRight="20dp"
                android:ems="10"
                android:hint="Email.."
                android:inputType="textPersonName"
                android:textSize="18sp"
                android:textStyle="bold" />

            <EditText
```

```xml
                    android:id="@+id/etPassword"
                    android:layout_width="match_parent"
                    android:layout_height="wrap_content"
                    android:layout_marginLeft="20dp"
                    android:layout_marginTop="20dp"
                    android:layout_marginRight="20dp"
                    android:ems="10"
                    android:hint="password"
                    android:inputType="textPassword"
                    android:textSize="18sp"
                    android:textStyle="bold" />

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

                <Button
                        android:id="@+id/btLogin"
                        android:layout_width="wrap_content"
                        android:layout_height="wrap_content"
                        android:layout_marginLeft="20dp"
                        android:layout_marginTop="20dp"
                        android:layout_marginRight="7dp"
                        android:layout_weight="1"
                        android:background="#00CCFF"
                        android:text="Login" />

                <Button
                        android:id="@+id/btCancel"
                        android:layout_width="wrap_content"
                        android:layout_height="wrap_content"
                        android:layout_marginLeft="7dp"
                        android:layout_marginTop="20dp"
                        android:layout_marginRight="20dp"
                        android:layout_weight="1"
                        android:background="#00CCFF"
                        android:text="Cancel" />
            </LinearLayout>

            <TextView
                    android:id="@+id/tvSuccess"
                    android:layout_width="match_parent"
                    android:layout_height="30dp"
                    android:layout_marginLeft="40dp"
                    android:layout_marginTop="30dp"
                    android:layout_marginRight="40dp"
                    android:gravity="center"
                    android:textSize="18sp"
                    android:textStyle="bold" />
        </LinearLayout>
    </ScrollView>

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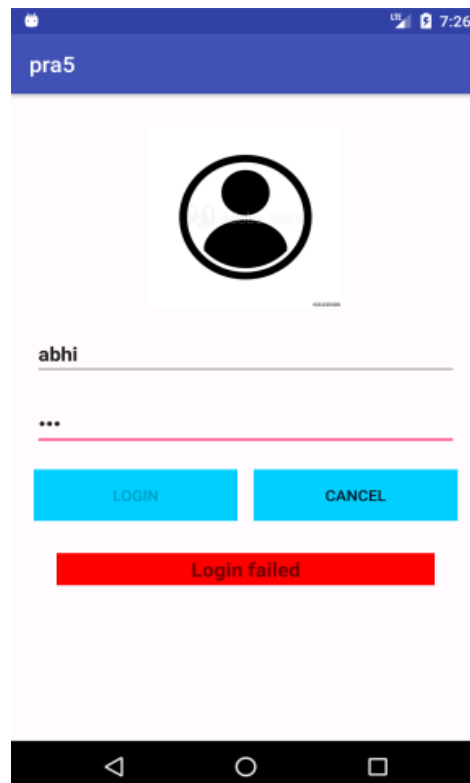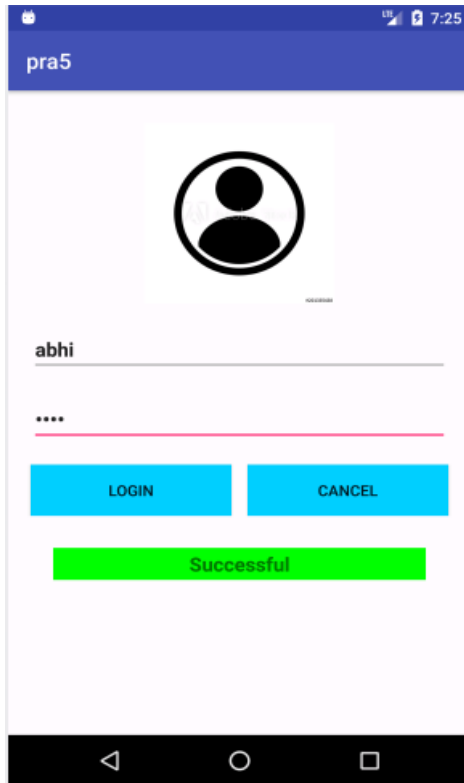
OUTPUT:

LEARNING OUTCOME:

In this Practical we learn how to create textview,button,toast message.we also learn how to disable button after some Login attempts.

PRACTICAL - 6

AIM: Create an application which turns ON or OFF Torch/Flashlight of Camera.

CODE:

// MainActivity.java

```java
package com.example.dell.pra6;

import android.annotation.TargetApi;
import android.content.Context;
import android.content.DialogInterface;
import android.content.pm.PackageManager;
import android.hardware.camera2.CameraAccessException;
import android.hardware.camera2.CameraManager;
import android.os.Build;
import android.os.Bundle;
import android.support.annotation.RequiresApi;
import android.support.v7.app.AlertDialog;
import android.support.v7.app.AppCompatActivity;
import android.widget.CompoundButton;
import android.widget.ToggleButton;

public class MainActivity extends AppCompatActivity {

    private CameraManager mCameraManager;
    private String mCameraId;
    private ToggleButton toggleButton;

    @RequiresApi(api = Build.VERSION_CODES.LOLLIPOP)
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        boolean isFlashAvailable = getApplicationContext().getPackageManager()
                .hasSystemFeature(PackageManager.FEATURE_CAMERA_FLASH);

        if (!isFlashAvailable) {
            showNoFlashError();
        }


        mCameraManager = (CameraManager) getSystemService(Context.CAMERA_SERVICE);

        try {
            mCameraId = mCameraManager.getCameraIdList()[0];
        } catch (CameraAccessException e) {
            e.printStackTrace();
        }

        toggleButton = findViewById(R.id.toggleButton);

        toggleButton.setOnCheckedChangeListener(new CompoundButton.OnCheckedChangeListener() {
            @RequiresApi(api = Build.VERSION_CODES.M)
            @Override
            public void onCheckedChanged(CompoundButton buttonView, boolean isChecked) {
                switchFlashLight(isChecked);
            }
        });

    }

    public void showNoFlashError() {
        AlertDialog alert = new AlertDialog.Builder(this)
                .create();
        alert.setTitle("Oops!");
```

```java
        alert.setMessage("Flash not available in this device...");
        alert.setButton(DialogInterface.BUTTON_POSITIVE, "OK", new
DialogInterface.OnClickListener() {
            public void onClick(DialogInterface dialog, int which) {
                finish();
            }
        });
        alert.show();
    }

    @RequiresApi(api = Build.VERSION_CODES.M)
    public void switchFlashLight(boolean status) {

        try {

            mCameraManager.setTorchMode(mCameraId, status);

        } catch (CameraAccessException e) {
            e.printStackTrace();
        }


    }
}
```

// 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: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">

    <ToggleButton
        android:id="@+id/toggleButton"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="ToggleButton"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

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

//AndroidManifest.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.dell.pra6">

    <uses-permission android:name="android.permission.FLASHLIGHT" />
    <uses-permission android:name="android.permission.CAMERA"/>
    <uses-feature android:name="android.hardware.camera.flash" />

    <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">
```
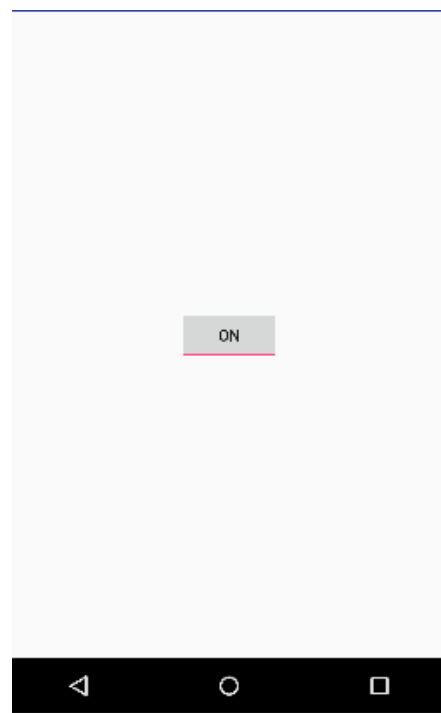
```xml
        <intent-filter>
            <action android:name="android.intent.action.MAIN" />

            <category android:name="android.intent.category.LAUNCHER" />
        </intent-filter>
    </activity>
</application>

</manifest>
```

OUTPUT:

LEARNING OUTCOME:

Working with Androidmanifest.xml file and giving permission.

PRACTICAL - 7

AIM: Create an application that will change color of the screen, based on selected options from the menu.

CODE:

// MainActivity.java

```java
package com.example.dell.pra7;

import android.graphics.Color;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.widget.RelativeLayout;

public class MainActivity extends AppCompatActivity {

    RelativeLayout mLayout;

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

        mLayout = findViewById(R.id.mainLayout);
    }

    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        getMenuInflater().inflate(R.menu.menu_main, menu);
        return true;
    }

    @Override
    public boolean onOptionsItemSelected(MenuItem item) {
        switch (item.getItemId()){
            case R.id.red:
                mLayout.setBackgroundColor(Color.RED);
                break;
            case R.id.blue:
                mLayout.setBackgroundColor(Color.BLUE);
                break;
            case R.id.green:
                mLayout.setBackgroundColor(Color.GREEN);
                break;
            default:
                    break;
        }
        return true;
    }
}
```

// activity_main.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:id="@+id/mainLayout"
    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:layout_centerInParent="true"
        android:text="Hello World!"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

</RelativeLayout>
```
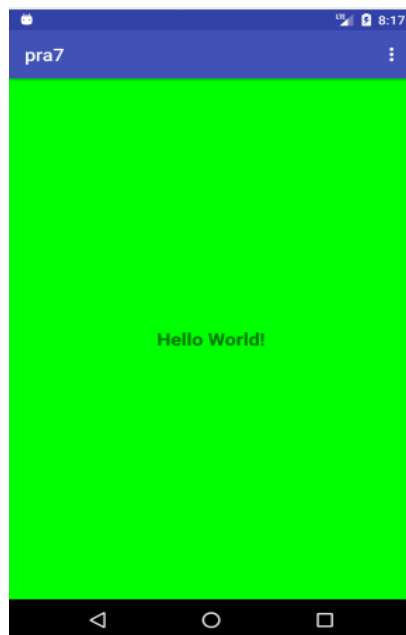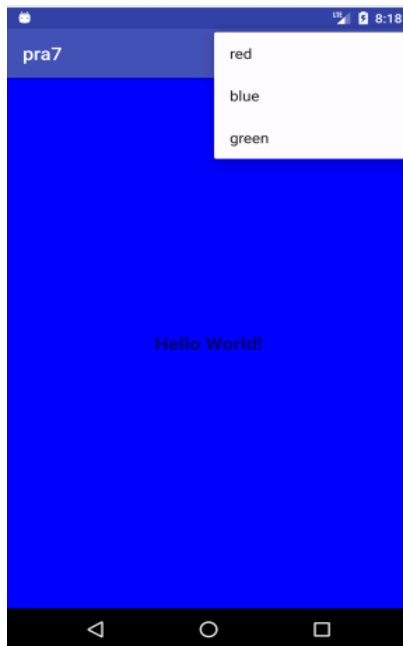
//menu_main.xml

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

OUTPUT:

LEARNING OUTCOME:

Working with Androidmanifest.xml file and giving permission.

PRACTICAL - 8

AIM: Create an application with the help of fragment.

CODE:

// MainActivity.java

```java
package com.example.dell.pra8;

import android.app.Fragment;
import android.app.FragmentManager;
import android.app.FragmentTransaction;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;

import com.example.dell.pra8.fragments.fragentTwo;
import com.example.dell.pra8.fragments.fragmentOne;


public class MainActivity extends AppCompatActivity {

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

    public void selectFrag(View view) {
        Fragment fr;

        if(view == findViewById(R.id.button2)) {
            fr = new fragentTwo();

        }else {
            fr = new fragmentOne();
        }

        FragmentManager fm = getFragmentManager();
        FragmentTransaction fragmentTransaction = fm.beginTransaction();
        fragmentTransaction.replace(R.id.fragment_place, fr);
        fragmentTransaction.commit();

    }
}
```

// 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">
    <Button
        android:id="@+id/button1"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:text="Fragment No.1"
        android:onClick="selectFrag" />

    <Button
        android:id="@+id/button2"
        android:layout_width="fill_parent"
```

```xml
            android:layout_height="wrap_content"
            android:onClick="selectFrag"
            android:text="Fragment No.2" />

    <fragment
            android:name="com.example.dell.pra8.fragments.fragmentOne"
            android:id="@+id/fragment_place"
            android:layout_width="match_parent"
            android:layout_height="match_parent"/>

</LinearLayout>
```

//fragment_one.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical" android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#4333">

    <TextView
        android:id="@+id/textView1"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_weight="1"
        android:text="This is fragment No.1"
        android:gravity="center"
        android:textSize="25sp"
        android:textStyle="bold" />

</LinearLayout>
```

//fragment_two.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical" android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#1fa">

    <TextView
        android:id="@+id/textView2"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:text="This is fragment No.2"
        android:gravity="center"
        android:textSize="25sp"
        android:textStyle="bold" />

</LinearLayout>
```

//fragmentOne.java

```java
package com.example.dell.pra8.fragments;

import android.app.Fragment;
import android.os.Bundle;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;

import com.example.dell.pra8.R;

public class fragmentOne extends Fragment {
    @Override
    public View onCreateView(LayoutInflater inflater,
```

```
                              ViewGroup container, Bundle savedInstanceState) {

        //Inflate the layout for this fragment

        return inflater.inflate(
                R.layout.fragment_one, container, false);
    }
}
```

//fragmentTwo.java

```java
package com.example.dell.pra8.fragments;

import android.os.Bundle;
import android.support.annotation.NonNull;
import android.support.annotation.Nullable;
import android.app.Fragment;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;

import com.example.dell.pra8.R;

public class fragentTwo extends Fragment{
    @Override
    public View onCreateView(LayoutInflater inflater,
                          ViewGroup container, Bundle savedInstanceState) {

        // Inflate the layout for this fragment

        return inflater.inflate(
                R.layout.fragment_two, container, false);
    }
}
```

OUTPUT:

LEARNING OUTCOME:

We can load multiple fragments in one activity.

PRACTICAL - 9

AIM: Create an application with the help of web view.

CODE:

// MainActivity.java

```java
package com.example.dell.pra9;

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.KeyEvent;
import android.view.View;
import android.webkit.WebSettings;
import android.webkit.WebView;
import android.widget.Button;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity {

    EditText mUrl;
    Button mSearch;
    WebView mywebview;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        mUrl = findViewById(R.id.Url);
        mSearch = findViewById(R.id.search);

        mywebview = findViewById(R.id.webView);
        mywebview.loadUrl("https://www.google.com/");

        mSearch.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                mywebview.getSettings().setLoadsImagesAutomatically(true);
                mywebview.getSettings().setJavaScriptEnabled(true);
                mywebview.setScrollBarStyle(View.SCROLLBARS_INSIDE_OVERLAY);
                mywebview.loadUrl(mUrl.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">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content">

        <EditText
```

```xml
        android:id="@+id/Url"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="15" />

    <Button
        android:id="@+id/search"
        android:layout_width="0dp"
        android:layout_height="wrap_content"
        android:layout_weight="4"
        android:text="Search" />
</LinearLayout>

<WebView
    android:id="@+id/webView"
    android:layout_width="match_parent"
    android:layout_height="523dp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintLeft_toLeftOf="parent"
    app:layout_constraintRight_toRightOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/Url" />


</LinearLayout>
```

//AndroidManifest.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.dell.pra9">

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

</manifest>
```
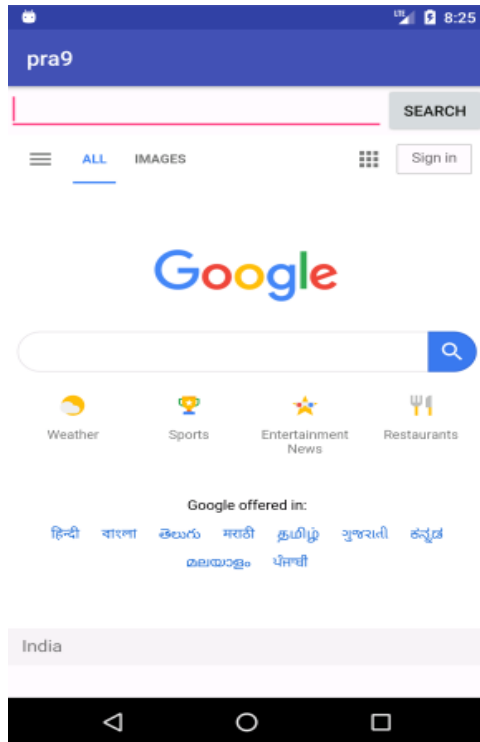
OUTPUT:

LEARNING OUTCOME:

In this practical we learnt How to use Web view in Application to load any webpage. We also learn some methods like load url which is used to load webpage.

Practical – 10

Aim: - Create an application with the help of database.

AndroidManifest.xml

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

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

    <application
        android:allowBackup="true"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        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>
    </application>

</manifest>
```

ContactAdd.java

```java
package com.example.android.contactadd;

import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import java.util.ArrayList;

import android.app.Activity;
import android.content.ContentProviderOperation;
import android.content.Intent;
import android.content.OperationApplicationException;
import android.os.Bundle;
import android.os.RemoteException;
import android.provider.ContactsContract;
import android.provider.ContactsContract.CommonDataKinds;
import android.provider.ContactsContract.CommonDataKinds.Email;
import android.provider.ContactsContract.CommonDataKinds.Phone;
import android.provider.ContactsContract.CommonDataKinds.StructuredName;
import android.provider.ContactsContract.RawContacts;
import android.view.Menu;
import android.view.View;
import android.view.View.OnClickListener;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
```

```java
public class MainActivity extends AppCompatActivity {

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

        // Creating a button click listener for the "Add Contact" button
        OnClickListener addClickListener = new OnClickListener() {

            @Override
            public void onClick(View v) {
                // Getting reference to Name EditText
                EditText etName = (EditText) findViewById(R.id.et_name);

                // Getting reference to Mobile EditText
                EditText etMobile = (EditText) findViewById(R.id.et_mobile_phone);

                // Getting reference to HomePhone EditText
                EditText etHomePhone = (EditText) findViewById(R.id.et_home_phone);

                // Getting reference to HomeEmail EditText
                EditText etHomeEmail = (EditText) findViewById(R.id.et_home_email);

                // Getting reference to WorkEmail EditText
                EditText etWorkEmail = (EditText) findViewById(R.id.et_work_email);

                ArrayList<ContentProviderOperation> ops =
                        new ArrayList<ContentProviderOperation>();

                int rawContactID = ops.size();

                // Adding insert operation to operations list
                // to insert a new raw contact in the table ContactsContract.RawContacts

ops.add(ContentProviderOperation.newInsert(ContactsContract.RawContacts.CONTENT_URI)
                        .withValue(ContactsContract.RawContacts.ACCOUNT_TYPE, null)
                        .withValue(RawContacts.ACCOUNT_NAME, null)
                        .build());

                // Adding insert operation to operations list
                // to insert display name in the table ContactsContract.Data

ops.add(ContentProviderOperation.newInsert(ContactsContract.Data.CONTENT_URI)
                        .withValueBackReference(ContactsContract.Data.RAW_CONTACT_ID,
rawContactID)
                        .withValue(ContactsContract.Data.MIMETYPE,
StructuredName.CONTENT_ITEM_TYPE)
                        .withValue(StructuredName.DISPLAY_NAME, etName.getText().toString())
                        .build());

                // Adding insert operation to operations list
                // to insert Mobile Number in the table ContactsContract.Data

ops.add(ContentProviderOperation.newInsert(ContactsContract.Data.CONTENT_URI)
                        .withValueBackReference(ContactsContract.Data.RAW_CONTACT_ID,
rawContactID)
                        .withValue(ContactsContract.Data.MIMETYPE, Phone.CONTENT_ITEM_TYPE)
                        .withValue(Phone.NUMBER, etMobile.getText().toString())
                        .withValue(Phone.TYPE, CommonDataKinds.Phone.TYPE_MOBILE)
                        .build());
```

```java
            // Adding insert operation to operations list
            // to  insert Home Phone Number in the table ContactsContract.Data

ops.add(ContentProviderOperation.newInsert(ContactsContract.Data.CONTENT_URI)
                    .withValueBackReference(ContactsContract.Data.RAW_CONTACT_ID,
rawContactID)
                    .withValue(ContactsContract.Data.MIMETYPE, Phone.CONTENT_ITEM_TYPE)
                    .withValue(Phone.NUMBER, etHomePhone.getText().toString())
                    .withValue(Phone.TYPE, Phone.TYPE_HOME)
                    .build());

            // Adding insert operation to operations list
            // to insert Home Email in the table ContactsContract.Data

ops.add(ContentProviderOperation.newInsert(ContactsContract.Data.CONTENT_URI)
                    .withValueBackReference(ContactsContract.Data.RAW_CONTACT_ID,
rawContactID)
                    .withValue(ContactsContract.Data.MIMETYPE, Email.CONTENT_ITEM_TYPE)
                    .withValue(Email.ADDRESS, etHomeEmail.getText().toString())
                    .withValue(Email.TYPE, Email.TYPE_HOME)
                    .build());

            // Adding insert operation to operations list
            // to insert Work Email in the table ContactsContract.Data

ops.add(ContentProviderOperation.newInsert(ContactsContract.Data.CONTENT_URI)
                    .withValueBackReference(ContactsContract.Data.RAW_CONTACT_ID,
rawContactID)
                    .withValue(ContactsContract.Data.MIMETYPE, Email.CONTENT_ITEM_TYPE)
                    .withValue(Email.ADDRESS, etWorkEmail.getText().toString())
                    .withValue(Email.TYPE, Email.TYPE_WORK)
                    .build());

        try{
            // Executing all the insert operations as a single database transaction
            getContentResolver().applyBatch(ContactsContract.AUTHORITY, ops);
            Toast.makeText(getBaseContext(), "Contact is successfully added",
Toast.LENGTH_SHORT).show();
        }catch (RemoteException e) {
            e.printStackTrace();
        }catch (OperationApplicationException e) {
            e.printStackTrace();
        }
    }
};

    // Creating a button click listener for the "Add Contact" button
    OnClickListener contactsClickListener = new OnClickListener() {

        @Override
        public void onClick(View v) {
            // Creating an intent to open Android's Contacts List
            Intent contacts = new
Intent(Intent.ACTION_VIEW,ContactsContract.Contacts.CONTENT_URI);

            // Starting the activity
            startActivity(contacts);
        }
    };
```

```java
        // Getting reference to "Add Contact" button
        Button btnAdd = (Button) findViewById(R.id.btn_add);

        // Getting reference to "Contacts List" button
        Button btnContacts = (Button) findViewById(R.id.btn_contacts);

        // Setting click listener for the "Add Contact" button
        btnAdd.setOnClickListener(addClickListener);

        // Setting click listener for the "List Contacts" button
        btnContacts.setOnClickListener(contactsClickListener);
    }
    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        getMenuInflater().inflate(R.menu.activity_main, menu);
        return true;
    }
}


}
```

Layout.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:id="@+id/activity_main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context="com.example.android.contactadd.MainActivity">

    <EditText
        android:id="@+id/et_name"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:inputType="text"
        android:hint="@string/hnt_et_name" />

    <EditText
        android:id="@+id/et_mobile_phone"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:layout_below="@id/et_name"
        android:inputType="phone"
        android:hint="@string/hnt_et_mobile_phone" />

    <EditText
        android:id="@+id/et_home_phone"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:layout_below="@id/et_mobile_phone"
        android:inputType="phone"
        android:hint="@string/hnt_et_home_phone" />

    <EditText
        android:id="@+id/et_work_email"
```

```
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:layout_below="@id/et_home_phone"
        android:inputType="textEmailAddress"
        android:hint="@string/hnt_et_work_email" />

    <EditText
        android:id="@+id/et_home_email"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:layout_below="@id/et_work_email"
        android:inputType="textEmailAddress"
        android:hint="@string/hnt_et_home_email" />

    <Button
        android:id="@+id/btn_add"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:layout_below="@id/et_home_email"
        android:text="@string/str_btn_add" />

    <Button
        android:id="@+id/btn_contacts"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:layout_below="@id/btn_add"
        android:text="@string/str_btn_contacts" />
</RelativeLayout>
```
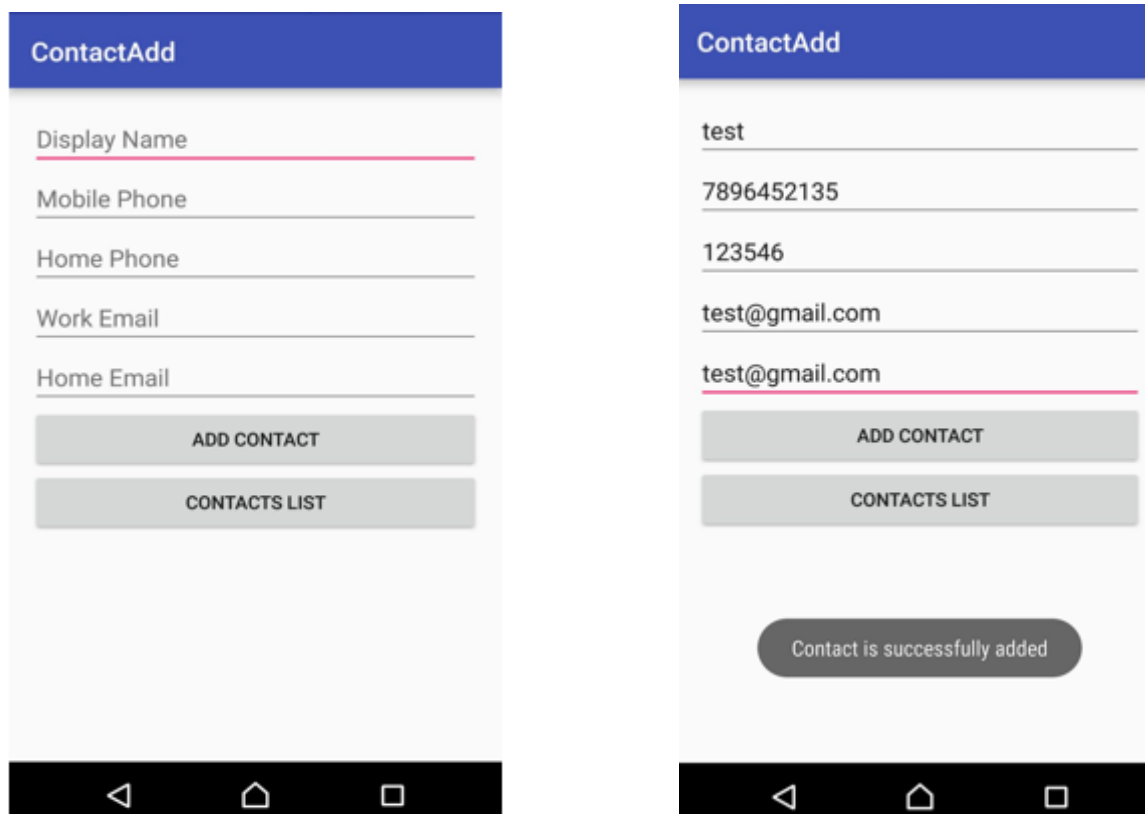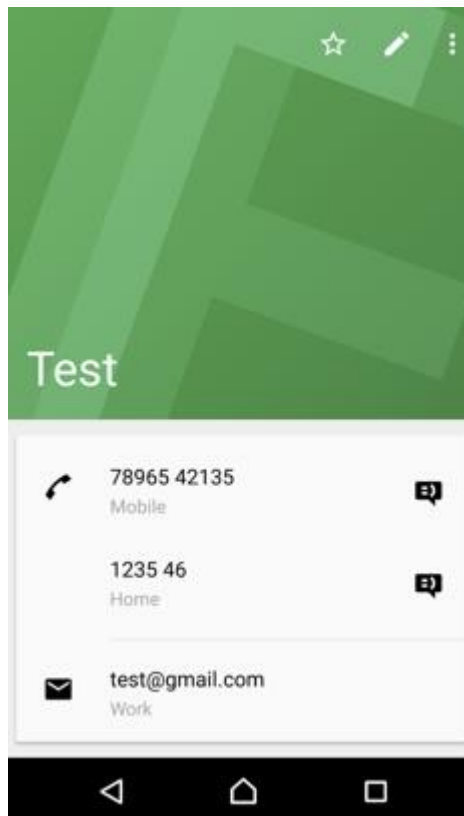
Output: -

Practical - 11

Aim: Creating an application that provides Single Sign-on (SSO) with Chrome Custom Tabs via the AppAuth library, and optionally push managed configuration to provide a user login hint.

Code:

AndroidManifest.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.pra11">
    <uses-permission android:name="android.permission.INTERNET" />
    <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=".Main2Activity"></activity>
        <activity android:name=".MainActivity">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>
</manifest>
```

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">

    <com.google.android.gms.common.SignInButton
        android:id="@+id/sign_in_button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_centerHorizontal="true"
        android:layout_centerVertical="true"
        />

</RelativeLayout>
```

Activity_main2.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=".Main2Activity">
    <LinearLayout
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:orientation="vertical"
        android:layout_centerHorizontal="true"
        android:layout_centerVertical="true">

        <ImageView
            android:layout_width="80dp"
            android:layout_height="80dp"
            android:background="@drawable/ic_person_black_24dp"
            android:layout_gravity="center"
            android:id="@+id/photo"
            android:outlineSpotShadowColor="@color/colorPrimary"
            />
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:id="@+id/name"
            android:text="Name: NAME HERE"
            android:textSize="18sp"
            android:textColor="@color/colorPrimary"
            android:layout_gravity="center"/>
        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:id="@+id/email"
            android:text="Email: EMAIL HERE"
            android:textSize="18sp"
            android:textColor="@color/colorPrimary"
            android:layout_gravity="center"/>

    </LinearLayout>

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/log_out"
        android:text="Sign out"
        android:layout_centerHorizontal="true"
        android:layout_alignParentBottom="true"
        android:layout_marginBottom="20dp"
        android:background="@drawable/btn_shap"
        android:textColor="#fff"/>
</RelativeLayout>
```

MainActivity.java

```java
package com.example.pra11;

import android.content.Intent;
import android.os.Bundle;
```

```java
import android.util.Log;
import android.view.View;
import android.widget.Toast;

import com.google.android.gms.auth.api.signin.GoogleSignIn;
import com.google.android.gms.auth.api.signin.GoogleSignInAccount;
import com.google.android.gms.auth.api.signin.GoogleSignInClient;
import com.google.android.gms.auth.api.signin.GoogleSignInOptions;
import com.google.android.gms.common.SignInButton;
import com.google.android.gms.common.api.ApiException;
import com.google.android.gms.tasks.Task;

import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {
    int RC_SIGN_IN = 0;
    SignInButton signInButton;
    GoogleSignInClient mGoogleSignInClient;

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

        //Initializing Views
        signInButton = findViewById(R.id.sign_in_button);

        // Configure sign-in to request the user's ID, email address, and basic
        // profile. ID and basic profile are included in DEFAULT_SIGN_IN.
        GoogleSignInOptions gso = new
GoogleSignInOptions.Builder(GoogleSignInOptions.DEFAULT_SIGN_IN)
                .requestEmail()
                .build();

        // Build a GoogleSignInClient with the options specified by gso.
        mGoogleSignInClient = GoogleSignIn.getClient(this, gso);

        signInButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                signIn();
            }
        });
    }

    private void signIn() {
        Intent signInIntent = mGoogleSignInClient.getSignInIntent();
        startActivityForResult(signInIntent, RC_SIGN_IN);
    }

    @Override
    public void onActivityResult(int requestCode, int resultCode, Intent data) {
        super.onActivityResult(requestCode, resultCode, data);

        // Result returned from launching the Intent from
GoogleSignInClient.getSignInIntent(...);
        if (requestCode == RC_SIGN_IN) {
            // The Task returned from this call is always completed, no need to attach
            // a listener.
            Task<GoogleSignInAccount> task =
GoogleSignIn.getSignedInAccountFromIntent(data);
```

```java
                    handleSignInResult(task);
            }
        }

    private void handleSignInResult(Task<GoogleSignInAccount> completedTask) {
        try {
            GoogleSignInAccount account = completedTask.getResult(ApiException.class);
            // Signed in successfully, show authenticated UI.
            startActivity(new Intent(MainActivity.this, Main2Activity.class));
        } catch (ApiException e) {
            // The ApiException status code indicates the detailed failure reason.
            // Please refer to the GoogleSignInStatusCodes class reference for more
information.
            Log.w("Google Sign In Error", "signInResult:failed code=" + e.getStatusCode());
            Toast.makeText(MainActivity.this, "Failed", Toast.LENGTH_LONG).show();
        }
    }

    @Override
    protected void onStart() {
        // Check for existing Google Sign In account, if the user is already signed in
        // the GoogleSignInAccount will be non-null.
        GoogleSignInAccount account = GoogleSignIn.getLastSignedInAccount(this);
        if(account != null) {
            startActivity(new Intent(MainActivity.this, Main2Activity.class));
        }
        super.onStart();
    }
}
```

Main2Activity.java

```java
package com.example.pra11;

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

import com.bumptech.glide.Glide;
import com.google.android.gms.auth.api.signin.GoogleSignIn;
import com.google.android.gms.auth.api.signin.GoogleSignInAccount;
import com.google.android.gms.auth.api.signin.GoogleSignInClient;
import com.google.android.gms.auth.api.signin.GoogleSignInOptions;
import com.google.android.gms.tasks.OnCompleteListener;
import com.google.android.gms.tasks.Task;

import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;

public class Main2Activity extends AppCompatActivity {
    GoogleSignInClient mGoogleSignInClient;
    Button sign_out;
    TextView nameTV;
    TextView emailTV;
```

```java
    ImageView photoIV;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main2);

        sign_out = findViewById(R.id.log_out);
        nameTV = findViewById(R.id.name);
        emailTV = findViewById(R.id.email);
        photoIV = findViewById(R.id.photo);

        // Configure sign-in to request the user's ID, email address, and basic
        // profile. ID and basic profile are included in DEFAULT_SIGN_IN.
        GoogleSignInOptions gso = new
GoogleSignInOptions.Builder(GoogleSignInOptions.DEFAULT_SIGN_IN)
                .requestEmail()
                .build();

        // Build a GoogleSignInClient with the options specified by gso.
        mGoogleSignInClient = GoogleSignIn.getClient(this, gso);

        GoogleSignInAccount acct = GoogleSignIn.getLastSignedInAccount(Main2Activity.this);
        if (acct != null) {
            String personName = acct.getDisplayName();
            String personGivenName = acct.getGivenName();
            String personFamilyName = acct.getFamilyName();
            String personEmail = acct.getEmail();
            String personId = acct.getId();
            Uri personPhoto = acct.getPhotoUrl();

            nameTV.setText("Name: "+personName);
            emailTV.setText("Email: "+personEmail);
            Glide.with(this).load(personPhoto).into(photoIV);
        }

        sign_out.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                signOut();
            }
        });
    }

    private void signOut() {
        mGoogleSignInClient.signOut()
                .addOnCompleteListener(this, new OnCompleteListener<Void>() {
                    @Override
                    public void onComplete(@NonNull Task<Void> task) {
                        Toast.makeText(Main2Activity.this,"Successfully signed
out",Toast.LENGTH_SHORT).show();
                        startActivity(new Intent(Main2Activity.this, MainActivity.class));
                        finish();
                    }
                });
    }
}
```
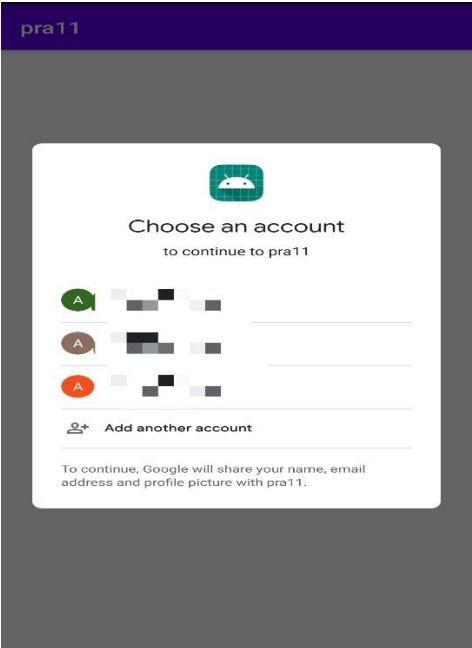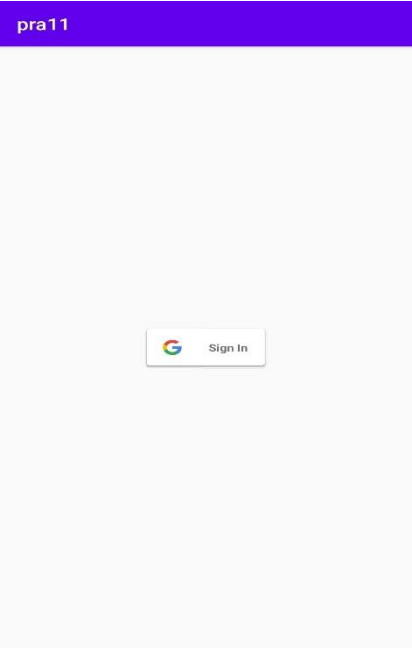
Output:

Practical - 12

Aim: Create an application to handle support voice interaction.

Code:

AndroidManifest.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.pra12">

    <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>
    </application>

</manifest>
```

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">

    <TextView
        android:id="@+id/speechtotext"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="197dp"
        android:text=""
        android:textSize="23dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <ImageView
```

```xml
        android:id="@+id/btnSpeech"
        android:layout_width="98dp"
        android:layout_height="96dp"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="413dp"
        app:srcCompat="@drawable/mic"
        android:onClick="getSpeechInput" />


</RelativeLayout>
```

MainActivity.java

```java
package com.example.pra12;

import android.content.Intent;
import android.os.Bundle;
import android.speech.RecognizerIntent;
import android.support.annotation.Nullable;
import android.support.v7.app.AppCompatActivity;
import android.view.View;
import android.widget.TextView;
import android.widget.Toast;

import java.util.ArrayList;
import java.util.Locale;

public class MainActivity extends AppCompatActivity {
    private TextView speechtotxt;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        speechtotxt = (TextView)findViewById(R.id.speechtotext);
    }

    public void getSpeechInput(View view) {

        Intent intent = new Intent(RecognizerIntent.ACTION_RECOGNIZE_SPEECH);
        intent.putExtra(RecognizerIntent.EXTRA_LANGUAGE_MODEL,
RecognizerIntent.LANGUAGE_MODEL_FREE_FORM);
        intent.putExtra(RecognizerIntent.EXTRA_LANGUAGE, Locale.ENGLISH);
        if (intent.resolveActivity(getPackageManager()) != null) {
            startActivityForResult(intent, 10);
        }else {
            Toast.makeText(this,"Device don't support",Toast.LENGTH_LONG).show();
        }
    }

    @Override
    protected void onActivityResult(int requestCode, int resultCode, @Nullable Intent data)
{
        super.onActivityResult(requestCode, resultCode, data);

        switch (requestCode){
            case 10:
```
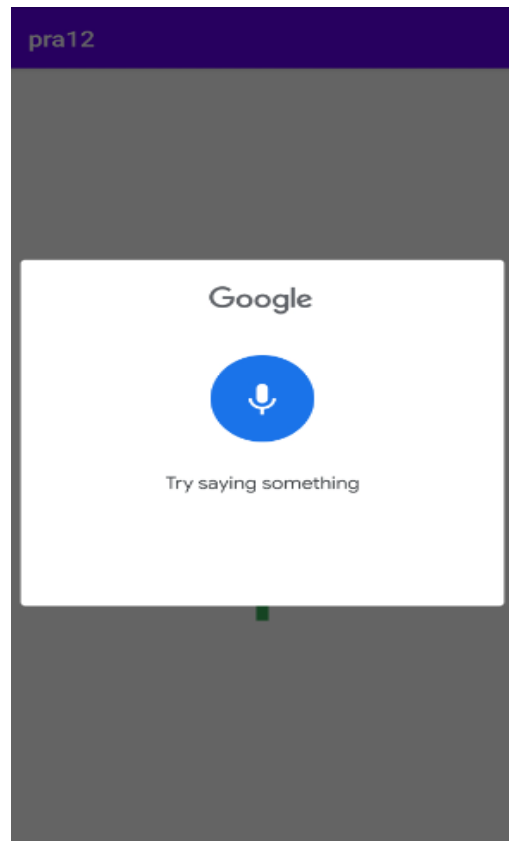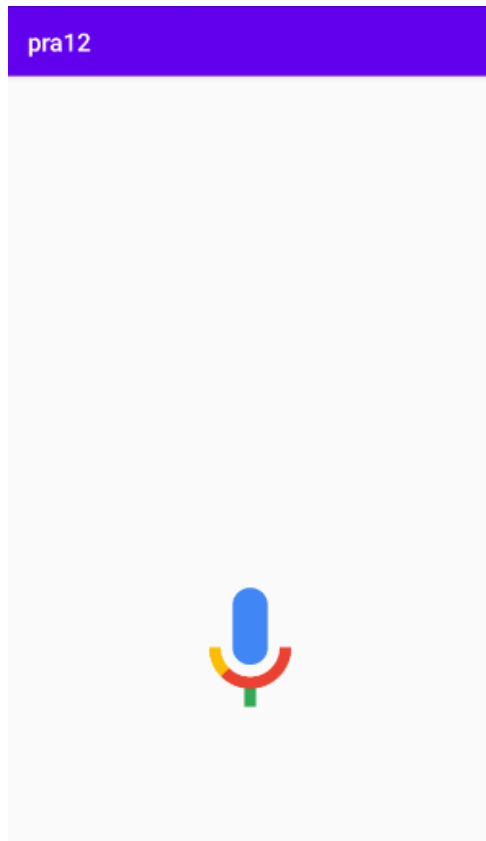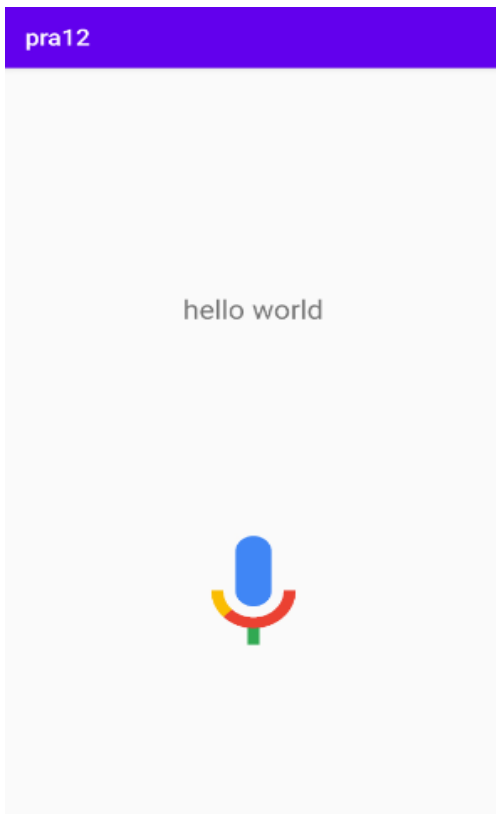
```
        if(resultCode == RESULT_OK && data != null){
            ArrayList<String> result =
data.getStringArrayListExtra(RecognizerIntent.EXTRA_RESULTS);
            speechtotxt.setText(result.get(0));
        }
        break;
    }
  }
}
```

Output:

Practical 13

Aim: Create an application to play video using the YouTube API in PIP mode.

Code:

AndroidManifest.xml

```xml
<?xml version="1.0" encoding="utf-8"?>
<manifest xmlns:android="http://schemas.android.com/apk/res/android"
    package="com.example.pra13">

    <uses-permission android:name="android.permission.WRITE_INTERNAL_STORAGE"></uses-permission>
    <uses-permission android:name="android.permission.READ_EXTERNAL_STORAGE"></uses-permission>
    <uses-permission android:name="android.permission.WRITE_EXTERNAL_STORAGE"></uses-permission>
    <uses-permission android:name="android.permission.READ_INTERNAL_STORAGE"></uses-permission>

    <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"
            android:supportsPictureInPicture="true">
            <intent-filter>
                <action android:name="android.intent.action.MAIN" />

                <category android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>

</manifest>
```

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">

    <VideoView
        android:id="@+id/videoView1"
        android:layout_width="fill_parent"
        android:layout_height="fill_parent"
        android:layout_marginTop="100dp"
        android:layout_alignParentLeft="true"
```

```
                android:layout_centerVertical="true" />

        <Button
            android:id="@+id/pip_button"
            android:gravity="center"
            android:layout_marginTop="50dp"
            android:layout_marginLeft="140dp"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="PIP" />
</RelativeLayout>
```

MainActivity.java

```java
package com.example.pra13;

import android.app.PictureInPictureParams;
import android.graphics.Point;
import android.net.Uri;
import android.os.Build;
import android.os.Bundle;
import android.support.annotation.RequiresApi;
import android.support.v7.app.AppCompatActivity;
import android.util.Rational;
import android.view.Display;
import android.view.View;
import android.widget.Button;
import android.widget.MediaController;
import android.widget.VideoView;

public class MainActivity extends AppCompatActivity {

    Button b;
    String path = "android.resource://com.example.pra13/"+R.raw.demo_video;

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

        VideoView videoView =(VideoView)findViewById(R.id.videoView1);
        b = findViewById(R.id.pip_button);
        //Creating MediaController
        MediaController mediaController= new MediaController(this);
        mediaController.setAnchorView(videoView);
        //specify the location of media file
        //Setting MediaController and URI, then starting the videoView
        videoView.setMediaController(mediaController);
        videoView.setVideoURI(Uri.parse(path));
        videoView.requestFocus();
        videoView.start();
        b.setOnClickListener(new View.OnClickListener() {
            @RequiresApi(api = Build.VERSION_CODES.LOLLIPOP)
            @Override
            public void onClick(View view) {
                Display d = getWindowManager().getDefaultDisplay();
                Point p = new Point();
                d.getSize(p);
                int width = p.x;
```
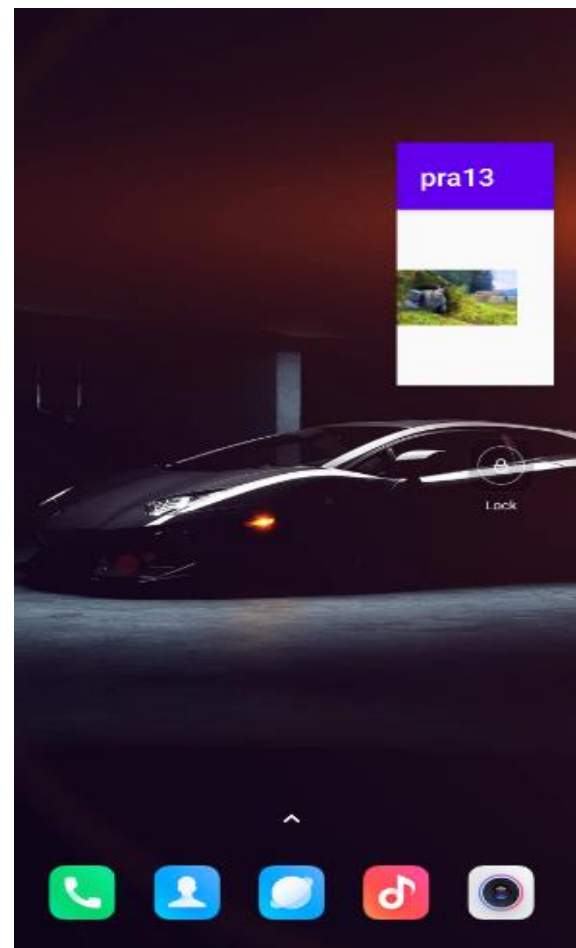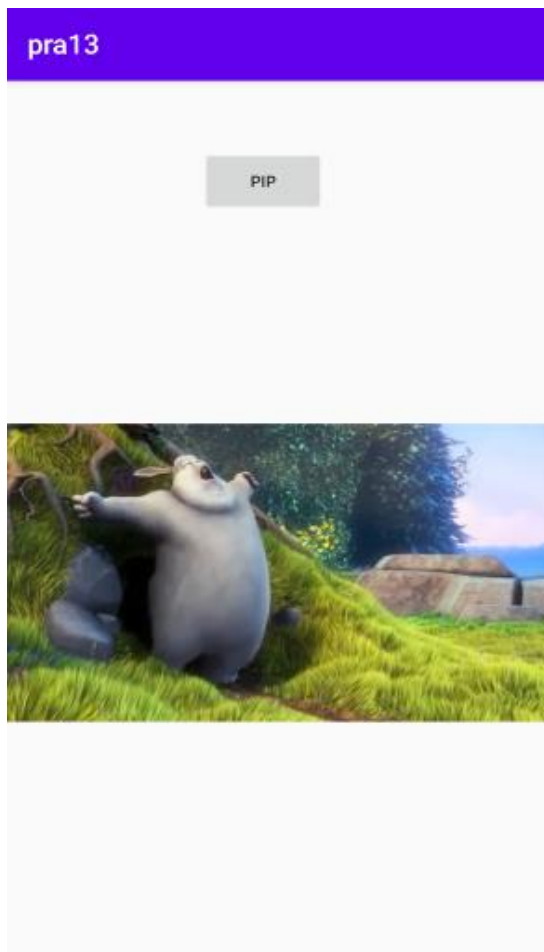
```java
        int height = p.y;
        Rational ratio = new Rational(width,height);
        PictureInPictureParams.Builder pip_Builder = null;
        if (android.os.Build.VERSION.SDK_INT >= android.os.Build.VERSION_CODES.O) {
            pip_Builder = new PictureInPictureParams.Builder();
            pip_Builder.setAspectRatio(ratio).build();
            enterPictureInPictureMode(pip_Builder.build());

        }
    }
});
    }
}
```

Output:

Practical 14

Aim: Create an application that uses the end-to-end process of training a machine learning model that can recognize handwritten characters images with TensorFlow and deploy it to an Android app.

Code:

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="16dp"
    tools:context=".MainActivity">

    <TableLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content">

        <TextView
            style="@style/ResultText"
            android:text="@string/prediction"/>

        <TextView
            android:id="@+id/tv_prediction"
            style="@style/ResultText"
            android:textSize="24sp"
            android:textColor="@android:color/black"
            android:text="@string/empty"
            tools:text="1"/>

        <TableRow>

            <TextView
                style="@style/ResultText"
                android:text="@string/probability"/>

            <TextView
                style="@style/ResultText"
                android:text="@string/timecost"/>

        </TableRow>

        <TableRow>

            <TextView
                android:id="@+id/tv_probability"
                style="@style/ResultText"
                android:textColor="@android:color/black"
                android:text="@string/empty"
                tools:text="0.9"/>


            <TextView
                android:id="@+id/tv_timecost"
                style="@style/ResultText"
```

```xml
                    android:textColor="@android:color/black"
                    android:text="@string/empty"
                    tools:text="10ms"/>

        </TableRow>

    </TableLayout>

    <com.nex3z.fingerpaintview.FingerPaintView
        android:id="@+id/fpv_paint"
        android:layout_width="200dp"
        android:layout_height="200dp"
        android:layout_gravity="center"
        android:layout_marginTop="16dp"
        android:foreground="@drawable/shape_rect_border"/>

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="16dp"
        android:orientation="horizontal">

        <Button
            android:id="@+id/btn_detect"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="@string/detect"/>

        <Button
            android:id="@+id/btn_clear"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="@string/clear"/>
    </LinearLayout>
</LinearLayout>
```

MainActivity.java

```java
package com.example.practical14;

import android.graphics.Bitmap;
import android.os.Bundle;

import android.util.Log;
import android.widget.TextView;
import android.widget.Toast;

import com.nex3z.fingerpaintview.FingerPaintView;


import java.io.IOException;

import androidx.appcompat.app.AppCompatActivity;
import butterknife.BindView;
import butterknife.ButterKnife;
import butterknife.OnClick;
```

```java
public class MainActivity extends AppCompatActivity {
    private static final String LOG_TAG = "lele";

    @BindView(R.id.fpv_paint) FingerPaintView mFpvPaint;
    @BindView(R.id.tv_prediction) TextView mTvPrediction;
    @BindView(R.id.tv_probability) TextView mTvProbability;
    @BindView(R.id.tv_timecost) TextView mTvTimeCost;

    private Classifier mClassifier;

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

    @OnClick(R.id.btn_detect)
    void onDetectClick() {
        if (mClassifier == null) {
            Log.e(LOG_TAG, "onDetectClick(): Classifier is not initialized");
            return;
        } else if (mFpvPaint.isEmpty()) {
            Toast.makeText(this, R.string.please_write_a_digit, Toast.LENGTH_SHORT).show();
            return;
        }

        Bitmap image = mFpvPaint.exportToBitmap(
                Classifier.IMG_WIDTH, Classifier.IMG_HEIGHT);
        Result result = mClassifier.classify(image);
        renderResult(result);
    }

    @OnClick(R.id.btn_clear)
    void onClearClick() {
        mFpvPaint.clear();
        mTvPrediction.setText(R.string.empty);
        mTvProbability.setText(R.string.empty);
        mTvTimeCost.setText(R.string.empty);
    }

    private void init() {
        try {
            mClassifier = new Classifier(MainActivity.this);
        } catch (IOException e) {
            Toast.makeText(this, e.getMessage().toString(), Toast.LENGTH_LONG).show();
            Log.e(LOG_TAG, "init(): Failed to create Classifier", e);
        }
    }

    private void renderResult(Result result) {
        mTvPrediction.setText(String.valueOf(result.getNumber()));
        mTvProbability.setText(String.valueOf(result.getProbability()));
        mTvTimeCost.setText(String.format(getString(R.string.timecost_value),
                result.getTimeCost()));
    }

}
```

Classifier.java

```java
package com.example.practical14;

import android.app.Activity;
import android.content.res.AssetFileDescriptor;
import android.graphics.Bitmap;
import android.os.SystemClock;
import android.util.Log;

import org.tensorflow.lite.Interpreter;

import java.io.FileInputStream;
import java.io.IOException;
import java.nio.ByteBuffer;
import java.nio.ByteOrder;
import java.nio.MappedByteBuffer;
import java.nio.channels.FileChannel;
import java.util.Arrays;

public class Classifier {
    private static final String LOG_TAG = Classifier.class.getSimpleName();

    private static final String MODEL_NAME = "mnist.tflite";

    private static final int BATCH_SIZE = 1;
    public static final int IMG_HEIGHT = 28;
    public static final int IMG_WIDTH = 28;
    private static final int NUM_CHANNEL = 1;
    private static final int NUM_CLASSES = 10;

    private final Interpreter.Options options = new Interpreter.Options();
    private final Interpreter mInterpreter;
    private final ByteBuffer mImageData;
    private final int[] mImagePixels = new int[IMG_HEIGHT * IMG_WIDTH];
    private final float[][] mResult = new float[1][NUM_CLASSES];

    public Classifier(MainActivity activity) throws IOException {
        mInterpreter = new Interpreter(loadModelFile(activity), options);
        mImageData = ByteBuffer.allocateDirect(
                4 * BATCH_SIZE * IMG_HEIGHT * IMG_WIDTH * NUM_CHANNEL);
        mImageData.order(ByteOrder.nativeOrder());
    }

    public Result classify(Bitmap bitmap) {
        convertBitmapToByteBuffer(bitmap);
        long startTime = SystemClock.uptimeMillis();
        mInterpreter.run(mImageData, mResult);
        long endTime = SystemClock.uptimeMillis();
        long timeCost = endTime - startTime;
        Log.v(LOG_TAG, "classify(): result = " + Arrays.toString(mResult[0])
                + ", timeCost = " + timeCost);
        return new Result(mResult[0], timeCost);
    }

    private MappedByteBuffer loadModelFile(Activity activity) throws IOException {
        AssetFileDescriptor fileDescriptor = activity.getAssets().openFd(MODEL_NAME);
        FileInputStream inputStream = new
FileInputStream(fileDescriptor.getFileDescriptor());
```

```java
        FileChannel fileChannel = inputStream.getChannel();
        long startOffset = fileDescriptor.getStartOffset();
        long declaredLength = fileDescriptor.getDeclaredLength();
        return fileChannel.map(FileChannel.MapMode.READ_ONLY, startOffset, declaredLength);
    }

    private void convertBitmapToByteBuffer(Bitmap bitmap) {
        if (mImageData == null) {
            return;
        }
        mImageData.rewind();

        bitmap.getPixels(mImagePixels, 0, bitmap.getWidth(), 0, 0,
                bitmap.getWidth(), bitmap.getHeight());

        int pixel = 0;
        for (int i = 0; i < IMG_WIDTH; ++i) {
            for (int j = 0; j < IMG_HEIGHT; ++j) {
                int value = mImagePixels[pixel++];
                mImageData.putFloat(convertPixel(value));
            }
        }
    }

    private static float convertPixel(int color) {
        return (255 - (((color >> 16) & 0xFF) * 0.299f
                + ((color >> 8) & 0xFF) * 0.587f
                + (color & 0xFF) * 0.114f)) / 255.0f;
    }
}
```

Result.java

```java
package com.example.practical14;

public class Result {

    private final int mNumber;
    private final float mProbability;
    private final long mTimeCost;

    public Result(float[] probs, long timeCost) {
        mNumber = argmax(probs);
        mProbability = probs[mNumber];
        mTimeCost = timeCost;
    }

    public int getNumber() {
        return mNumber;
    }

    public float getProbability() {
        return mProbability;
    }

    public long getTimeCost() {
        return mTimeCost;
    }
```

```java
    private static int argmax(float[] probs) {
        int maxIdx = -1;
        float maxProb = 0.0f;
        for (int i = 0; i < probs.length; i++) {
            if (probs[i] > maxProb) {
                maxProb = probs[i];
                maxIdx = i;
            }
        }
        return maxIdx;
    }
}
```

OUTPUT: