

1. Create an android app to illustrate activity life cycle.

activity_main.xml

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

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World!"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

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

MainActivity.java

```
package com.example.hellosai;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.util.Log;

public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Log.d("tag", "My APP has created.");
    }
    @Override
    protected void onStart() {
        super.onStart();
        Log.d("tag", "My APP has started.");
    }
    @Override
    protected void onRestart() {
        super.onRestart();
        Log.d("tag", "My APP has restarted.");
    }
    @Override
    protected void onPause() {
        super.onPause();
        Log.d("tag", "My APP has paused.");
    }
    @Override
    protected void onResume() {
        super.onResume();
        Log.d("tag", "My APP has resumed.");
    }
    @Override
    protected void onDestroy() {
        super.onDestroy();
        Log.d("tag", "My APP has destroyed.");
    }
}
```

Output

App opened:

My APP has created.

My APP has started.

My APP has resumed.

App Minimized:

My APP has paused.

App reopened from recent apps:

My APP has restarted.

My APP has started.

My APP has resumed.

App removed from recent apps:

My APP has paused.

My APP has destroyed.

2.1. Create an android app to visit a specified web page (Use Implicit Intent)

activity_main.xml

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

    <EditText
        android:id="@+id/tf"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:hint="@string/enter_uri"
        android:inputType="textUri"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.497"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.376" />

    <Button
        android:id="@+id/go_button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/go"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/tf"
        app:layout_constraintVertical_bias="0.158" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```
package com.example.implicitintent;

import androidx.appcompat.app.AppCompatActivity;

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

public class MainActivity extends AppCompatActivity {

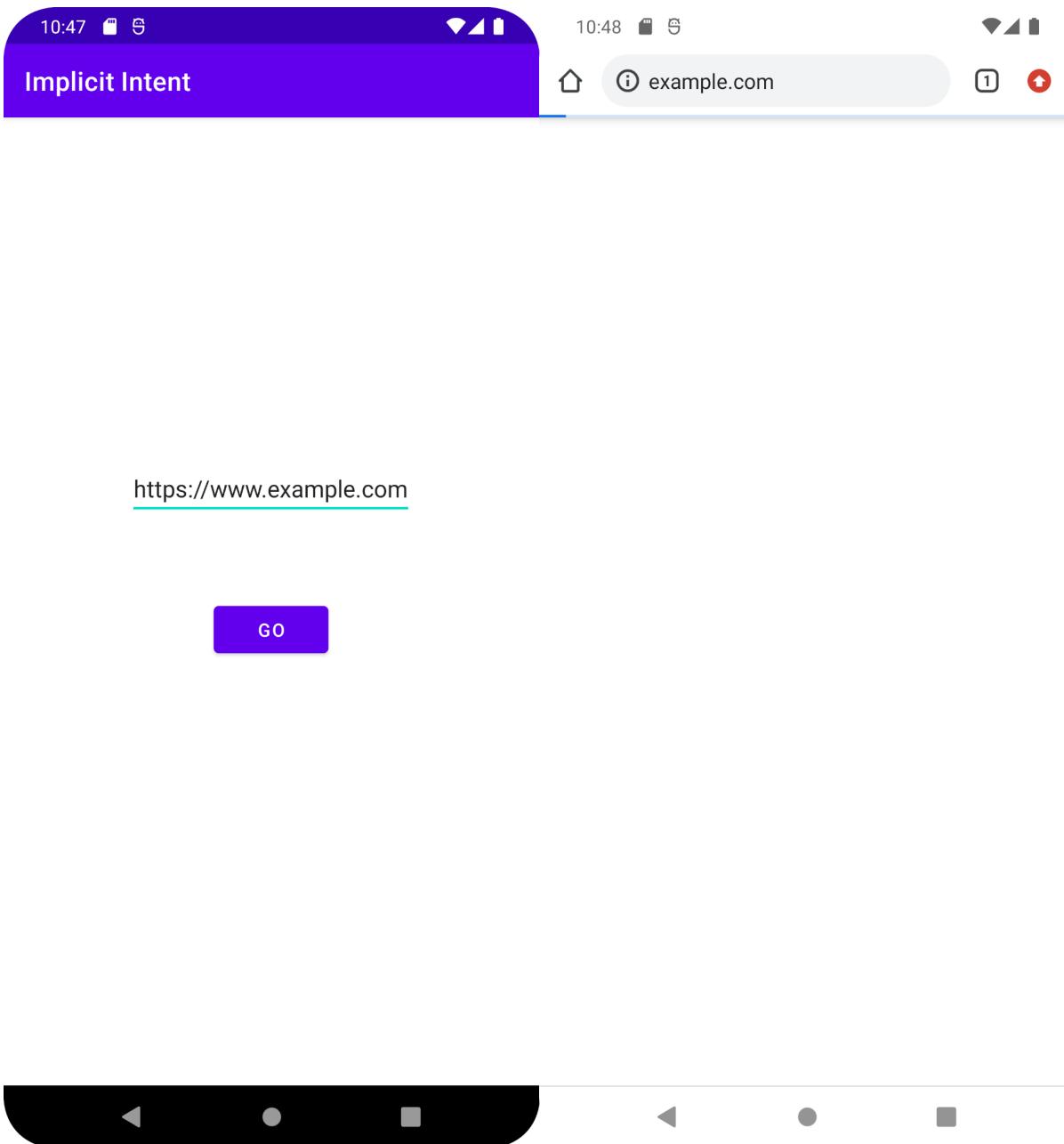
    Button b;
    EditText et;

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

        b = findViewById(R.id.go_button);
        et = findViewById(R.id.tf);

        b.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                String text = et.getText().toString();
                Intent i = new Intent(Intent.ACTION_VIEW, Uri.parse(text));
                startActivity(i);
            }
        });
    }
}
```

Output



2.2. Create an android app to navigate between activities(Use Explicit Intent)

activity_main.xml

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

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="69dp"
        android:layout_marginTop="150dp"
        android:layout_marginEnd="69dp"
        android:layout_marginBottom="150dp"
        android:text="Welcome, this is my first page"
        android:textColor="#FF5722"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toTopOf="@+id/button"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="93dp"
        android:layout_marginEnd="93dp"
        android:layout_marginBottom="342dp"
        android:backgroundTint="#009688"
        android:onClick="callSecond"
        android:text="Go to the second page"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="1.0"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

activity_second.xml

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

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="54dp"
        android:layout_marginTop="150dp"
        android:layout_marginEnd="55dp"
        android:layout_marginBottom="150dp"
        android:text="Welcome, this is my second page"
        android:textColor="#009688"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toTopOf="@+id/button"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="102dp"
        android:layout_marginEnd="102dp"
        android:layout_marginBottom="356dp"
        android:backgroundTint="#F44336"
        android:onClick="callFirst"
        android:text="Go to the first page"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```
package com.example.explicitintent;

import androidx.appcompat.app.AppCompatActivity;

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

public class MainActivity extends AppCompatActivity {

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

    public void callSecond(View view) {
        Intent i = new Intent(getApplicationContext(), SecondActivity.class);
        i.putExtra("rno", 1270);
        i.putExtra("name", "sai");
        startActivity(i);
    }
}
```

SecondActivity.java

```
package com.example.explicitintent;

import androidx.appcompat.app.AppCompatActivity;

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

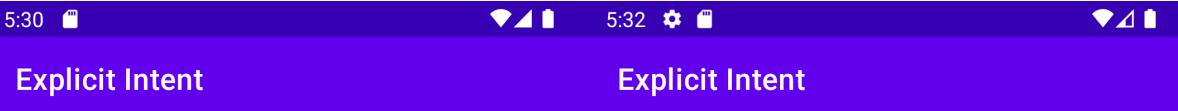
public class SecondActivity extends AppCompatActivity {

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

        Bundle bundle = getIntent().getExtras();
        int rno = bundle.getInt("rno");
        String name = bundle.getString("name");
        Toast.makeText(getApplicationContext(),"Roll No: " + rno + " Name: " + name,
        Toast.LENGTH_LONG).show();
    }

    public void callFirst(View view) {
        Intent i = new Intent(getApplicationContext(),MainActivity.class);
        startActivity(i);
    }
}
```

Output



Welcome, this is my first page

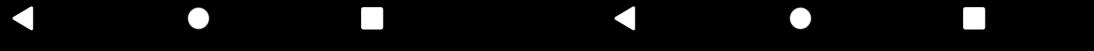
Welcome, this is my second page

GO TO THE SECOND PAGE

GO TO THE FIRST PAGE



Roll No: 1270 Name: sai



3.1. Create an android app to perform mathematical operations (+, -, *, /, %) (Use Buttons, EditText & Toast)

activity_main.xml

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

    <EditText
        android:id="@+id/num1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="10dp"
        android:layout_marginTop="150dp"
        android:layout_marginEnd="100dp"
        android:ems="10"
        android:hint="Enter Value 1"
        android:inputType="textPersonName"
        app:layout_constraintBottom_toTopOf="@+id/num2"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <EditText
        android:id="@+id/num2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="100dp"
        android:layout_marginTop="50dp"
        android:ems="10"
        android:hint="Enter Value 2"
        android:inputType="textPersonName"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/num1" />

    <Button
        android:id="@+id/p"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="20dp"
        android:layout_marginTop="72dp"
        android:layout_marginEnd="30dp"
        android:layout_marginBottom="30dp"
        android:backgroundTint="#E91E63"
        android:onClick="add"
        android:text="+"
        android:textSize="20sp"
        app:layout_constraintBottom_toTopOf="@+id/d"
        app:layout_constraintEnd_toStartOf="@+id/s"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/num2" />

    <Button
        android:id="@+id/md"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
```

```
    android:layout_marginEnd="120dp"
    android:layout_marginBottom="243dp"
    android:backgroundTint="#E91E63"
    android:onClick="modulo"
    android:text="%"
    android:textSize="20sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toEndOf="@+id/d"
    app:layout_constraintTop_toBottomOf="@+id/s" />
```

```
<Button
    android:id="@+id/m"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="72dp"
    android:layout_marginEnd="20dp"
    android:backgroundTint="#E91E63"
    android:onClick="mul"
    android:text "*"
    android:textSize="20sp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toEndOf="@+id/s"
    app:layout_constraintTop_toBottomOf="@+id/num2" />
```

```
<Button
    android:id="@+id/d"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="115dp"
    android:layout_marginEnd="30dp"
    android:layout_marginBottom="243dp"
    android:backgroundTint="#E91E63"
    android:onClick="div"
    android:text "/"
    android:textSize="20sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toStartOf="@+id/md"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/p" />
```

```
<Button
    android:id="@+id/s"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="72dp"
    android:layout_marginEnd="30dp"
    android:layout_marginBottom="30dp"
    android:backgroundTint="#E91E63"
    android:onClick="sub"
    android:text "-"
    android:textSize="20sp"
    app:layout_constraintBottom_toTopOf="@+id/md"
    app:layout_constraintEnd_toStartOf="@+id/m"
    app:layout_constraintStart_toEndOf="@+id/p"
    app:layout_constraintTop_toBottomOf="@+id/num2" />
```

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

MainActivity.java

```
package com.example.calculator;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.EditText;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
    EditText t1, t2;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        t1 = findViewById(R.id.num1);
        t2 = findViewById(R.id.num2);
    }
    public void add(View view) {
        int a = Integer.parseInt(t1.getText().toString()), b = Integer.parseInt(t2.getText().toString()),
res = a+b;
        Toast.makeText(getApplicationContext(), a + " + " + b + " = " + res, Toast.LENGTH_LONG).show();
    }
    public void sub(View view) {
        int a = Integer.parseInt(t1.getText().toString()), b = Integer.parseInt(t2.getText().toString()),
res = a-b;
        Toast.makeText(getApplicationContext(), a + " - " + b + " = " + res, Toast.LENGTH_LONG).show();
    }
    public void mul(View view) {
        int a = Integer.parseInt(t1.getText().toString()), b = Integer.parseInt(t2.getText().toString()),
res = a*b;
        Toast.makeText(getApplicationContext(), a + " * " + b + " = " + res, Toast.LENGTH_LONG).show();
    }
    public void div(View view) {
        float a = Integer.parseInt(t1.getText().toString()), b = Integer.parseInt(t2.getText().toString()),
res = a/b;
        Toast.makeText(getApplicationContext(), a + " / " + b + " = " + res, Toast.LENGTH_LONG).show();
    }
    public void modulo(View view) {
        int a = Integer.parseInt(t1.getText().toString()), b = Integer.parseInt(t2.getText().toString()),
res = a%b;
        Toast.makeText(getApplicationContext(), a + " % " + b + " = " + res, Toast.LENGTH_LONG).show();
    }
}
```

Output

5:51 ☰ 🔋

5:51 ☰ 🔋

5:51 ☰ 🔋

calculator

calculator

10

10

4

4

+

-

*

+

-

*

/

%

/

%



10 - 4 = 6



10.0 / 4.0 = 2.5



3.2. Create an android app to display text in bold, italic, and normal style with left, right and centre alignments (Use Radio Button, CheckBox controls)

activity_main.xml

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

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="136dp"
        android:layout_marginTop="95dp"
        android:layout_marginEnd="137dp"
        android:text="FONTS TEST"
        android:textColor="#9C27B0"
        android:textSize="24sp"
        app:layout_constraintBottom_toTopOf="@+id/c1"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <CheckBox
        android:id="@+id/c1"
        android:layout_width="140dp"
        android:layout_height="wrap_content"
        android:layout_marginStart="50dp"
        android:layout_marginEnd="5dp"
        android:layout_marginTop="65dp"
        android:layout_marginBottom="5dp"
        android:text="BOLD"
        android:textSize="18sp"
        app:layout_constraintBottom_toTopOf="@+id/c2"
        app:layout_constraintEnd_toStartOf="@+id/rg"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView" />

    <CheckBox
        android:id="@+id/c2"
        android:layout_width="140dp"
        android:layout_height="wrap_content"
        android:layout_marginStart="50dp"
        android:layout_marginEnd="5dp"
        android:layout_marginTop="5dp"
        android:layout_marginBottom="5dp"
        android:text="ITALIC"
        android:textSize="18sp"
        app:layout_constraintBottom_toTopOf="@+id/c3"
        app:layout_constraintEnd_toStartOf="@+id/rg"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/c1" />

    <CheckBox
        android:id="@+id/c3"
        android:layout_width="140dp"
        android:layout_height="wrap_content"
        android:layout_marginStart="50dp"
        android:layout_marginEnd="5dp"
        android:layout_marginTop="5dp"
        android:layout_marginBottom="5dp"
        android:text="NORMAL"
        android:textSize="18sp"
        app:layout_constraintBottom_toTopOf="@+id/rg"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/c2" />
```

```
        android:layout_width="140dp"
        android:layout_height="wrap_content"
        android:layout_marginStart="50dp"
        android:layout_marginEnd="5dp"
        android:layout_marginTop="5dp"
        android:layout_marginBottom="65dp"
        android:text="NORMAL"
        android:textSize="18sp"
        app:layout_constraintBottom_toTopOf="@+id/button"
        app:layout_constraintEnd_toStartOf="@+id/rg"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/c2" />

<Button
    android:id="@+id/button"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginStart="152dp"
    android:layout_marginEnd="152dp"
    android:layout_marginBottom="65dp"
    android:onClick="show"
    android:text="SUBMIT"
    android:textSize="18sp"
    app:layout_constraintBottom_toTopOf="@+id/tv1"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/c3" />

<TextView
    android:id="@+id/tv1"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginBottom="10dp"
    android:textSize="18sp"
    app:layout_constraintBottom_toTopOf="@+id/tv2"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/button" />

<TextView
    android:id="@+id/tv2"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="10dp"
    android:layout_marginBottom="10dp"
    android:textSize="18sp"
    app:layout_constraintBottom_toTopOf="@+id/tv3"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/tv1" />

<TextView
    android:id="@+id/tv3"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="10dp"
    android:layout_marginBottom="109dp"
    android:textSize="18sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
```

```
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/tv2" />

<RadioGroup
    android:id="@+id/rg"
    android:layout_width="140dp"
    android:layout_height="wrap_content"
    android:layout_marginTop="65dp"
    android:layout_marginBottom="65dp"
    app:layout_constraintBottom_toTopOf="@+id/button"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toEndOf="@+id/c2"
    app:layout_constraintTop_toBottomOf="@+id/textView">

    <RadioButton
        android:id="@+id/r1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginBottom="5dp"
        android:text="LEFT"
        android:textSize="18sp" />

    <RadioButton
        android:id="@+id/r2"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="5dp"
        android:layout_marginBottom="5dp"
        android:text="CENTER"
        android:textSize="18sp" />

    <RadioButton
        android:id="@+id/r3"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="5dp"
        android:text="RIGHT"
        android:textSize="18sp" />
</RadioGroup>

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

MainActivity.java

```
package com.example.fonttest;

import androidx.appcompat.app.AppCompatActivity;

import android.graphics.Typeface;
import android.os.Bundle;
import android.view.Gravity;
import android.view.View;
import android.widget.CheckBox;
import android.widget.RadioButton;
import android.widget.RadioGroup;
import android.widget.TextView;

import org.w3c.dom.Text;

public class MainActivity extends AppCompatActivity {

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

    public void show(View view) {
        RadioGroup rg = (RadioGroup) findViewById(R.id.rg);
        String value = ((RadioButton) findViewById(rg.getCheckedRadioButtonId())).getText().toString();
        CheckBox c1 = (CheckBox) findViewById(R.id.c1);
        CheckBox c2 = (CheckBox) findViewById(R.id.c2);
        CheckBox c3 = (CheckBox) findViewById(R.id.c3);
        TextView t1 = (TextView) findViewById(R.id.tv1);
        TextView t2 = (TextView) findViewById(R.id.tv2);
        TextView t3 = (TextView) findViewById(R.id.tv3);
        if(c1.isChecked()) {
            t1.setText("BOLD");
            t1.setTypeface(Typeface.defaultFromStyle(Typeface.BOLD));
            if(value.equals("LEFT"))
                t1.setGravity(Gravity.LEFT);
            else if(value.equals("CENTER"))
                t1.setGravity(Gravity.CENTER);
            else
                t1.setGravity(Gravity.RIGHT);
        }
        else
            t1.setText("");
        if(c2.isChecked()) {
            t2.setText("ITALIC");
            t2.setTypeface(Typeface.defaultFromStyle(Typeface.ITALIC));
            if(value.equals("LEFT"))
                t2.setGravity(Gravity.LEFT);
            else if(value.equals("CENTER"))
                t2.setGravity(Gravity.CENTER);
            else
                t2.setGravity(Gravity.RIGHT);
        }
        else
            t2.setText("");
        if(c3.isChecked()) {
            t3.setText("NORMAL");
            if(value.equals("LEFT"))
                t3.setGravity(Gravity.LEFT);
            else if(value.equals("CENTER"))
                t3.setGravity(Gravity.CENTER);
            else
                t3.setGravity(Gravity.RIGHT);
        }
    }
}
```

```
        t3.setGravity(Gravity.LEFT);  
    else if(value.equals("CENTER"))  
        t3.setGravity(Gravity.CENTER);  
    else  
        t3.setGravity(Gravity.RIGHT);  
    }  
    else  
        t3.setText("");  
    }  
}
```

3:31 ☰ 📟

3:33 ☰ 📟

3:33 ☰ 📟

FontTest

FontTest

FONTS TEST

FONTS TEST

 BOLD LEFT BOLD LEFT ITALIC CENTER ITALIC CENTER NORMAL RIGHT NORMAL RIGHT

SUBMIT

SUBMIT

BOLD

ITALIC

ITALIC

NORMAL

NORMAL



4.1. Create an android app to display name of the country from the list (Use spinner control)

activity_main.xml

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

    <Spinner
        android:id="@+id/spinner"
        android:layout_width="200dp"
        android:layout_height="wrap_content"
        android:layout_marginStart="106dp"
        android:layout_marginTop="341dp"
        android:layout_marginEnd="106dp"
        android:layout_marginBottom="342dp"
        android:minHeight="48dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="1.0"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

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

MainActivity.java

```
package com.example.spinnner;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.ArrayAdapter;
import android.widget.Spinner;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity implements AdapterView.OnItemSelectedListener {
    String countries[] = {"Australia", "Bulgaria", "China", "Denmark", "India"};
    Spinner sp;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        sp = (Spinner) findViewById(R.id.spinner);
        ArrayAdapter aa = new ArrayAdapter(this, android.R.layout.simple_spinner_item, countries);
        aa.setDropDownViewResource(android.R.layout.simple_spinner_dropdown_item);
        sp.setAdapter(aa);
        sp.setOnItemSelectedListener(this);
    }

    @Override
    public void onItemSelected(AdapterView<?> adapterView, View view, int i, long l) {
        Toast.makeText(getApplicationContext(), countries[i], Toast.LENGTH_LONG).show();
    }

    @Override
    public void onNothingSelected(AdapterView<?> adapterView) {
    }
}
```

7:01 ◻ ◻ ◻

7:02 ◻ ◻ ◻

◻ ◻ ◻

Spinner

Spinner

Australia



Bulgaria

China

Denmark

India

India



India



4.2. Create an android app to calculate age of a person (Use Date Picker control)

activity_main.xml

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

    <DatePicker
        android:id="@+id/dp"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="50dp"
        android:layout_marginBottom="50dp"
        app:layout_constraintBottom_toTopOf="@+id/b"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <Button
        android:id="@+id/b"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="20dp"
        android:text="Calculate"
        app:layout_constraintBottom_toTopOf="@+id/tv"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/dp" />

    <TextView
        android:id="@+id/tv"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="SELECT D.O.B."
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/b" />

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

MainActivity.java

```
package com.android_project.datepicker;

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

import java.util.Calendar;

public class MainActivity extends AppCompatActivity {

    Button b;
    DatePicker dp;
    TextView tv;

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

        b = (Button) findViewById(R.id.b);
        dp = (DatePicker) findViewById(R.id.dp);
        tv = (TextView) findViewById(R.id.tv);

        Calendar c = Calendar.getInstance();

        int yr = c.get(Calendar.YEAR);

        b.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                int birth_yr = dp.getYear();
                tv.setText("Age: "+(yr - birth_yr));
            }
        });
    }
}
```

Output

Date Picker

Date Picker

2023

Sun, Jan 1

2001

Wed, Mar 14

<

January 2023

>

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

<

March 2001

>

S	M	T	W	T	F	S
						1
						2
						3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

CALCULATE

CALCULATE

SELECT D.O.B.

Age: 22

4.3. Create an android app design login control and validate login details.

activity_main.xml

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

    <EditText
        android:id="@+id/et_uname"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="150dp"
        android:layout_marginBottom="25dp"
        android:hint="Enter Username"
        android:inputType="text"
        app:layout_constraintBottom_toTopOf="@+id/et_pwd"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <EditText
        android:id="@+id/et_pwd"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="25dp"
        android:hint="Enter Password"
        android:inputType="textPassword"
        app:layout_constraintBottom_toTopOf="@+id/b"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/et_uname" />

    <Button
        android:id="@+id/b"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="25dp"
        android:layout_marginBottom="393dp"
        android:text="Login"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/et_pwd" />

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

activity_home.xml

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

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Welcome, You are Successfully Logged In."
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

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

HomeActivity.java

```
package com.android_project.logincontrol;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

public class HomeActivity extends AppCompatActivity {

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

MainActivity.java

```
package com.android_project.logincontrol;

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.Toast;

public class MainActivity extends AppCompatActivity {

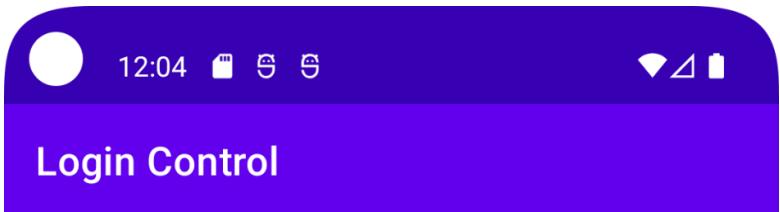
    Button b;
    EditText et_uname, et_pwd;
    String uname = "sai", pwd = "1234";

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

        b = (Button) findViewById(R.id.b);
        et_uname = (EditText) findViewById(R.id.et_uname);
        et_pwd = (EditText) findViewById(R.id.et_pwd);

        b.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String input_uname = et_uname.getText().toString();
                String input_pwd = et_pwd.getText().toString();

                if(input_uname.equals(uname) && input_pwd.equals(pwd)){
                    Toast.makeText(getApplicationContext(), "Login Success", Toast.LENGTH_SHORT).show();
                    Intent i = new Intent(getApplicationContext(), HomeActivity.class);
                    startActivity(i);
                }
                else{
                    Toast.makeText(getApplicationContext(), "Login Failed", Toast.LENGTH_LONG).show();
                }
            }
        });
    }
}
```



raju

....

LOGIN



Login Failed

12:05



12:05



Login Control

Login Control

sai

....

LOGIN

Welcome, You are Successfully Logged In.



Login Success

5.1. Create an android app to demonstrate Alert Dialog.

activity_main.xml

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

    <Button
        android:id="@+id/b"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Close App"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

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

MainActivity.java

```
package com.android_project.alertdialog;

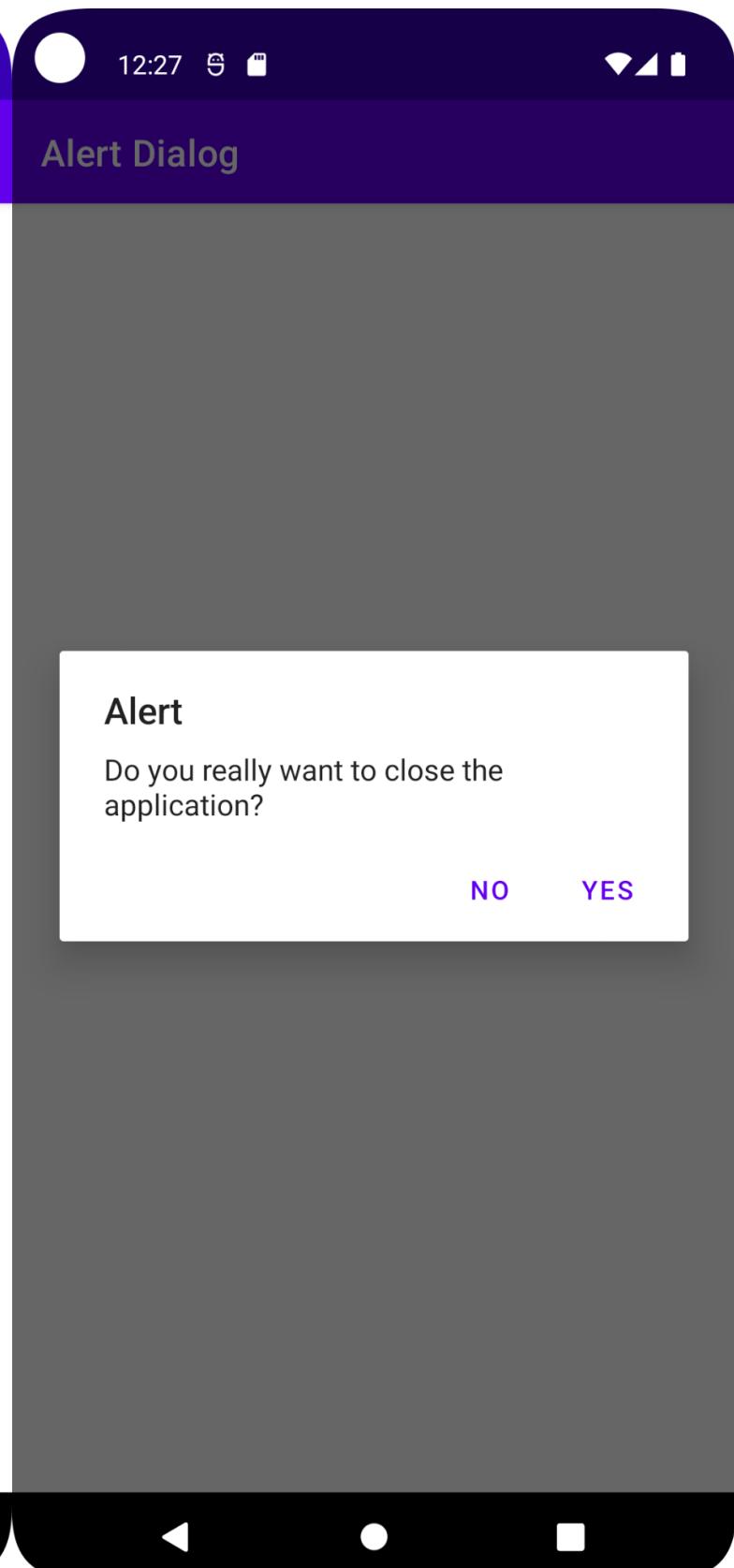
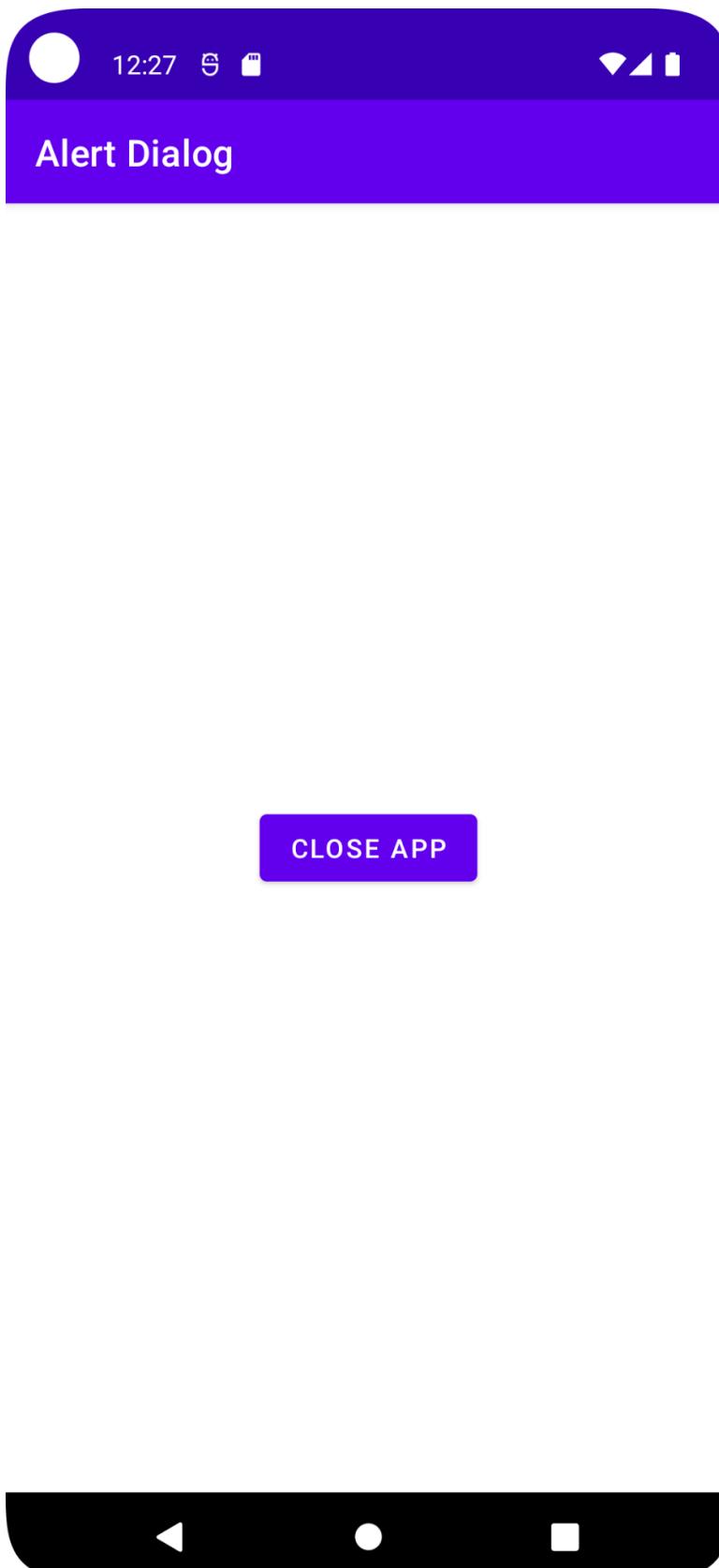
import androidx.appcompat.app.AppCompatActivity;

import android.app.AlertDialog;
import android.content.DialogInterface;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class MainActivity extends AppCompatActivity {

    Button b;
    AlertDialog.Builder ad;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        b = (Button) findViewById(R.id.b);
        ad = new AlertDialog.Builder(this);
        b.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                ad.setMessage("Do you really want to close the application?");
                ad.setCancelable(true);
                ad.setPositiveButton("Yes", new DialogInterface.OnClickListener() {
                    @Override
                    public void onClick(DialogInterface dialog, int which) {
                        finish();
                    }
                });
                ad.setNegativeButton("No", new DialogInterface.OnClickListener() {
                    @Override
                    public void onClick(DialogInterface dialog, int which) {

                    }
                });
                AlertDialog a = ad.create();
                a.setTitle("Alert");
                a.show();
            }
        });
    }
}
```



5.2. Create an android app to demonstrate iVeb View control.

activity_main.xml

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

    <WebView
        android:id="@+id/wv"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

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

MainActivity.java

```
package com.android_project.webview;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.webkit.WebView;

public class MainActivity extends AppCompatActivity {

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

        WebView wv = (WebView) findViewById(R.id.wv);
        String data = "<html> <body bgcolor='lavender'> <h1> Hello World </h1> </body> </html>";
        wv.loadData(data, "text/html", "utf-8");
    }
}
```



6.1. Create an android app to show Analog and Digital clocks.

activity_main.xml

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

    <AnalogClock
        android:id="@+id/ac"
        android:layout_width="200dp"
        android:layout_height="200dp"
        app:layout_constraintBottom_toTopOf="@+id/b"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <DigitalClock
        android:id="@+id/dc"
        android:layout_width="200dp"
        android:layout_height="200dp"
        android:textAlignment="center"
        app:layout_constraintBottom_toTopOf="@+id/b"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        tools:ignore="TextContrastCheck" />

    <Button
        android:id="@+id/b"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/ac"
        tools:ignore="SpeakableTextPresentCheck" />

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

MainActivity.java

```
package com.android_project.analogdigitalclock;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.View;
import android.widget.AnalogClock;
import android.widget.Button;
import android.widget.DigitalClock;

public class MainActivity extends AppCompatActivity {

    AnalogClock a;
    DigitalClock d;
    Button b;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        a=(AnalogClock) findViewById(R.id.ac);
        d=(DigitalClock) findViewById(R.id.dc);
        b=(Button) findViewById(R.id.b);
        show();
    }

    public void show(){
        d.setVisibility(View.INVISIBLE);
        b.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                a.setVisibility(View.INVISIBLE);
                d.setVisibility(View.VISIBLE);
                b.setText("Show Analog");
                b.setOnClickListener(new View.OnClickListener() {
                    @Override
                    public void onClick(View v) {
                        a.setVisibility(View.VISIBLE);
                        show();
                        b.setText("Show Digital");
                    }
                });
            }
        });
    }
}
```



Analog&Digital Clock

Analog&Digital Clock



2:38 PM

SHOW DIGITAL

SHOW ANALOG



6.2. Create an android app to illustrate a progress bar, seek bar.

activity_main.xml

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

    <ProgressBar
        android:id="@+id/pb"
        style="?android:attr/progressBarStyle"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="150dp"
        android:layout_marginBottom="50dp"
        app:layout_constraintBottom_toTopOf="@+id/tv"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.404" />

    <TextView
        android:id="@+id/tv"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textSize="34sp"
        app:layout_constraintBottom_toTopOf="@+id/b"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/pb" />

    <Button
        android:id="@+id/b"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="50dp"
        android:text="@string/start_progress_bar"
        app:layout_constraintBottom_toTopOf="@+id/sb"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.498"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/tv" />

    <SeekBar
        android:id="@+id/sb"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="150dp"
        app:layout_constraintBottom_toTopOf="@+id/tv2"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.407"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/b" />
```

```
<TextView  
    android:id="@+id/tv2"  
    android:layout_width="wrap_content"  
    android:layout_height="wrap_content"  
    android:layout_marginTop="50dp"  
    android:textSize="34sp"  
    app:layout_constraintBottom_toBottomOf="parent"  
    app:layout_constraintEnd_toEndOf="parent"  
    app:layout_constraintHorizontal_bias="0.495"  
    app:layout_constraintStart_toStartOf="parent"  
    app:layout_constraintTop_toBottomOf="@+id/sb" />
```

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

MainActivity.java

```
package com.android_project.progressbarseekbar;

import androidx.appcompat.app.AppCompatActivity;

import android.annotation.SuppressLint;
import android.os.Bundle;
import android.os.Handler;
import android.view.View;
import android.widget.Button;
import android.widget.ProgressBar;
import android.widget.SeekBar;
import android.widget.TextView;

public class MainActivity extends AppCompatActivity {

    int i = 0;

    Handler handler = new Handler();
    ProgressBar pb;
    SeekBar sb;
    TextView tv,tv2;

    @SuppressLint("SetTextI18n")
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        pb = (ProgressBar) findViewById(R.id.pb);
        tv = (TextView) findViewById(R.id.tv);
        Button b = (Button) findViewById(R.id.b);

        b.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                i = pb.getProgress();
                new Thread(new Runnable() {
                    public void run() {
                        while (i < 100) {
                            i += 1;
                            // Update the progress bar and display the current value in text view
                            handler.post(new Runnable() {
                                public void run() {
                                    pb.setProgress(i);
                                    tv.setText(i+"/"+pb.getMax());
                                }
                            });
                        }
                    }
                });
                try {
                    // Sleep for 100 milliseconds to show the progress slowly.
                    Thread.sleep(100);
                } catch (InterruptedException e) {
                    e.printStackTrace();
                }
            }
        }).start();
    }
}
```

```
sb = (SeekBar) findViewById(R.id.sb);
tv2 = (TextView) findViewById(R.id.tv2);

tv.setText(sb.getProgress() + "/" + sb.getMax());
sb.setOnSeekBarChangeListener(new SeekBar.OnSeekBarChangeListener() {
    int p = 0;
    @Override
    public void onProgressChanged(SeekBar seekBar, int progress, boolean fromUser) {
        p = progress;
    }

    @Override
    public void onStartTrackingTouch(SeekBar seekBar) {
    }

    @Override
    public void onStopTrackingTouch(SeekBar seekBar) {
        tv2.setText(p + "/" + seekBar.getMax());
    }
}) ;
}
```



Progress Bar & Seek Bar

Progress Bar & Seek Bar



24/100

73/100

START PROGRESS BAR

START PROGRESS BAR



49/100



7.1. Create an android app to demonstrate list fragment.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <fragment
        android:layout_height="match_parent"
        android:layout_width="350px"
        class="com.android_project.listfragment.MenuFragment"
        android:id="@+id/f1"/>
    <fragment
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        class="com.android_project.listfragment.DetailFragment"
        android:id="@+id/f2"/>
</LinearLayout>
```

fragment_menu.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">
    <ListView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:id="@+id/list" />
</LinearLayout>
```

fragment_detail.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">

    <TextView
        android:id="@+id/item"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginLeft="200px"
        android:layout_marginTop="200px"
        android:textColor="#CD5C5C" />

    <TextView
        android:id="@+id/price"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginLeft="200px"
        android:textColor="#6495ED" />
</LinearLayout>
```

MainActivity.java

```
package com.android_project.listfragment;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

public class MainActivity extends AppCompatActivity {

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

MenuFragment.java

```
package com.android_project.listfragment;

import android.app.ListFragment;
import android.os.Bundle;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.ArrayAdapter;
import android.widget.ListView;
public class MenuFragment extends ListFragment {
    String[] items = new String[] { "Tea", "Coffee", "Milk", "Juice", "Green Tea" };
    String[] prices = new String[]{"Rs 10", "Rs 15", "Rs 20", "Rs 30", "Rs 10"};
    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container, Bundle savedInstanceState) {
        View view = inflater.inflate(R.layout.fragment_menu, container, false);
        ArrayAdapter<String> adapter = new ArrayAdapter<String>(getActivity(),
android.R.layout.simple_list_item_1, items);
        setListAdapter(adapter);
        return view;
    }
    @Override
    public void onListItemClick(ListView l, View v, int position, long id) {
        DetailFragment txt = (DetailFragment)getFragmentManager().findFragmentById(R.id.f2);
        txt.change("Item: "+ items[position], "Price: "+ prices[position]);
        getListView().setSelector(android.R.color.holo_orange_dark);
    }
}
```

DetailFragment.java

```
package com.android_project.listfragment;

import android.app.Fragment;
import android.os.Bundle;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;
import android.widget.TextView;
public class DetailFragment extends Fragment {
    TextView item, price;
    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container, Bundle savedInstanceState) {
        View view = inflater.inflate(R.layout.fragment_detail, container, false);
        item = (TextView) view.findViewById(R.id.item);
        price = (TextView) view.findViewById(R.id.price);
        return view;
    }
    public void change(String items, String prices) {
        item.setText(items);
        price.setText(prices);
    }
}
```



List Fragment

Tea

Coffee

Milk

Juice

Green Tea

List Fragment

Tea

Coffee

Item: Coffee

Price: Rs 15

Milk

Juice

Green Tea

7.2. Create an android app to demonstrate dialog fragment.

activity_main.xml

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

    <FrameLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:orientation="horizontal"
        android:textAlignment="gravity"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent">

        <Button
            android:id="@+id/b"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_marginStart="100dp"
            android:layout_marginTop="100dp"
            android:text="Open Dialog Fragment" />

    </FrameLayout>

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

fragment_my_dialog.xml

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:layout_height="match_parent"
    android:layout_width="match_parent">

    <LinearLayout
        android:layout_width="300dp"
        android:layout_height="300dp"
        android:orientation="vertical"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent">

        <TextView
            android:layout_width="match_parent"
            android:layout_height="match_parent"
            android:background="#C6FF00"
            android:gravity="center"
            android:text="You are looking at a Dialog Fragment"
            android:textAlignment="gravity"
            android:textSize="20sp" />

    </LinearLayout>

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

MainActivity.java

```
package com.android_project.dialogfragment;

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.b);

        b.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                MyDialogFragment mdf = new MyDialogFragment();
                mdf.show(getSupportFragmentManager(), "MyFragment");
            }
        });
    }
}
```

MyDialogFragment.java

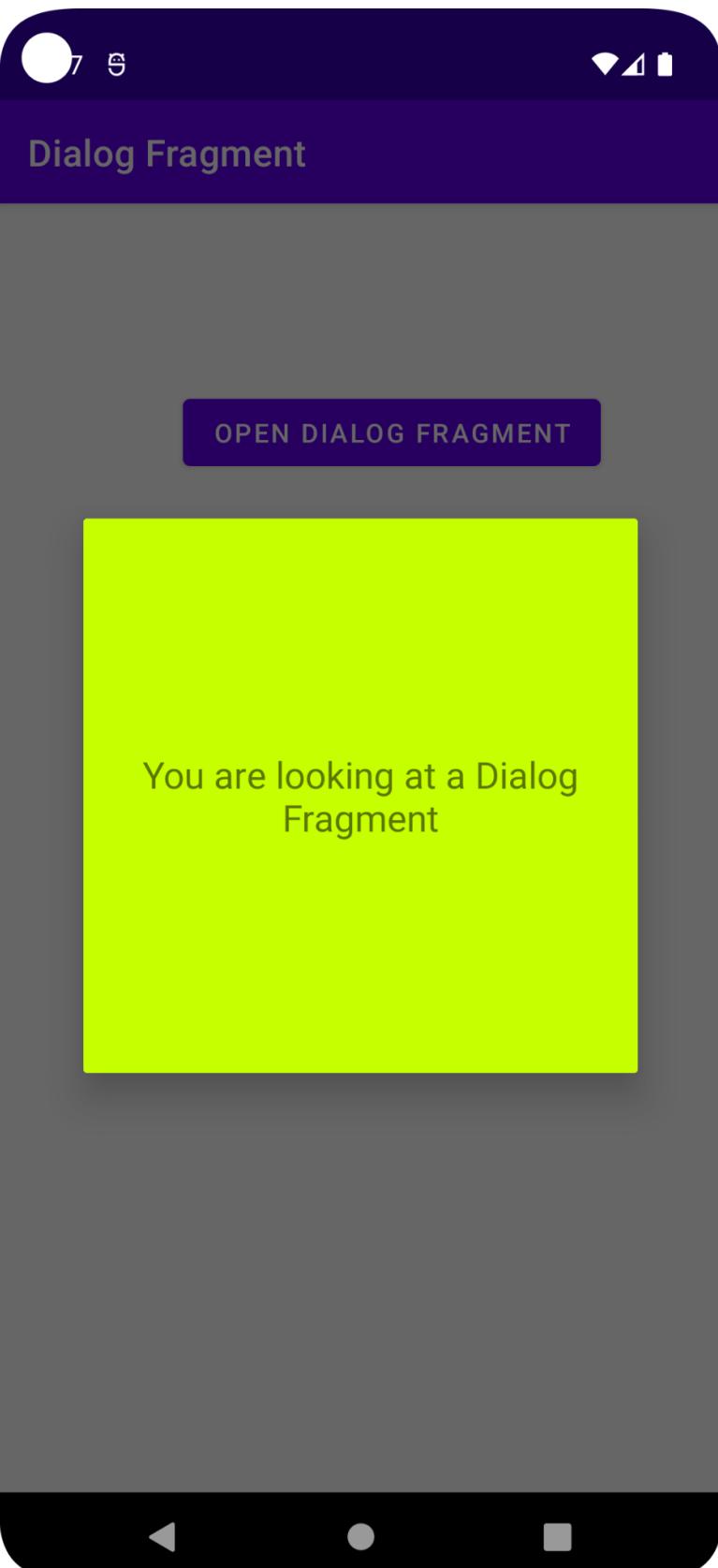
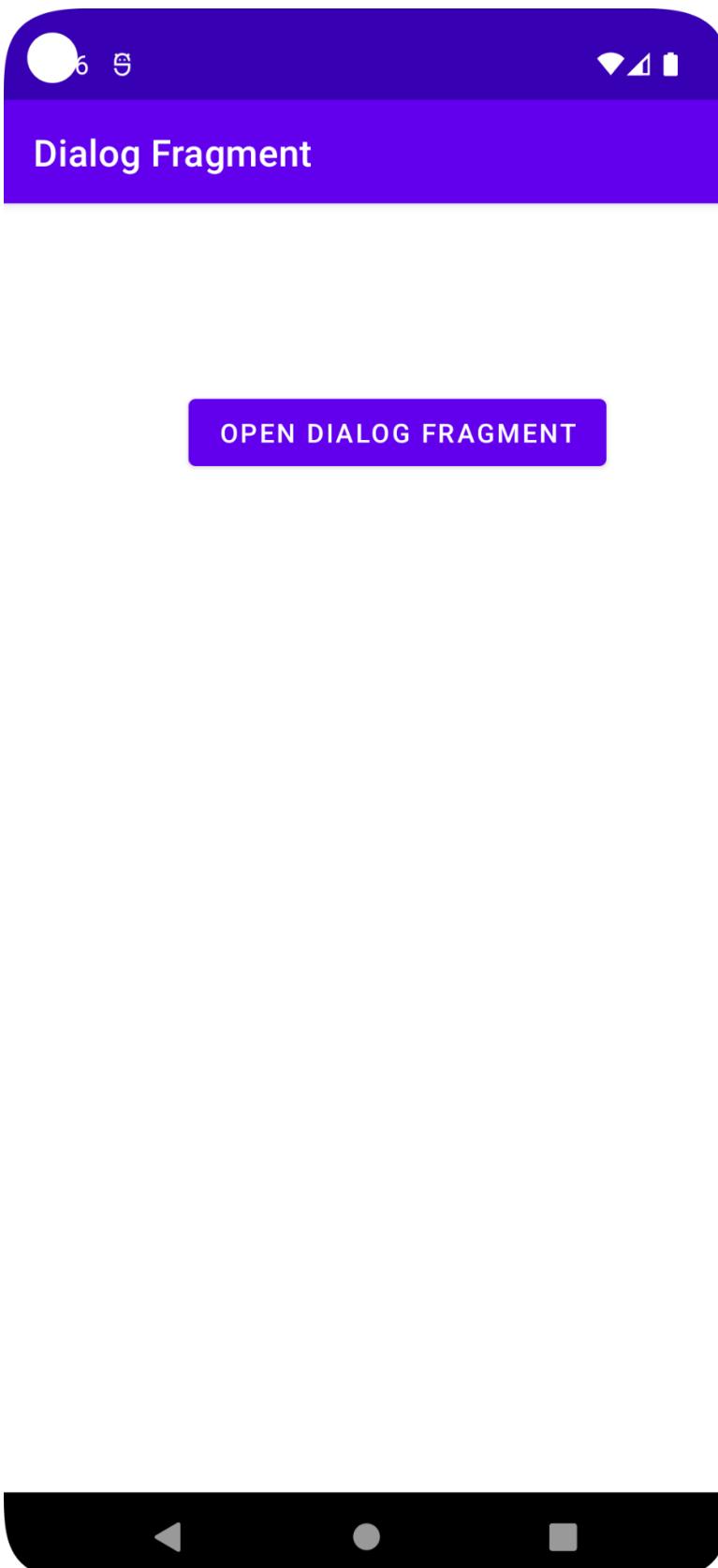
```
package com.android_project.dialogfragment;

import android.os.Bundle;

import androidx.fragment.app.DialogFragment;
import android.view.LayoutInflater;
import android.view.View;
import android.view.ViewGroup;

public class MyDialogFragment extends DialogFragment {

    @Override
    public View onCreateView(LayoutInflater inflater, ViewGroup container, Bundle savedInstanceState) {
        super.onCreateView(inflater, container, savedInstanceState);
        return inflater.inflate(R.layout.fragment_my_dialog, container, false);
    }
}
```



8.1. Create an android app to demonstrate option menu, handling listeners.

activity_main.java

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

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

menu_options.xml

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

    <item android:id="@+id/search_item"
          android:title="Search" />
    <item android:id="@+id/upload_item"
          android:title="Upload" />
    <item android:id="@+id/copy_item"
          android:title="Copy" />
    <item android:id="@+id/paste_item"
          android:title="Paste" />
    <item android:id="@+id/print_item"
          android:title="Print" />
    <item android:id="@+id/share_item"
          android:title="Share" />
    <item android:id="@+id/bookmark_item"
          android:title="BookMark" />
    <item android:id="@+id/s1"
          android:title="Settings" />
    <item android:id="@+id/h1"
          android:title="History" />

</menu>
```

MainActivity.java

```
package com.android_project.optionmenu;

import androidx.appcompat.app.AppCompatActivity;

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

public class MainActivity extends AppCompatActivity {

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

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

    public boolean onOptionsItemSelected(MenuItem item) {
        Toast.makeText(this, "Selected Item: "+item.getTitle(), Toast.LENGTH_SHORT).show();

        switch (item.getItemId()) {
            case R.id.search_item:
                // do your code
                return true;
            case R.id.upload_item:
                // do your code
                return true;
            case R.id.copy_item:
                // do your code
                return true;
            case R.id.print_item:
                // do your code
                return true;
            case R.id.share_item:
                // do your code
                return true;
            case R.id.bookmark_item:
                // do your code
                return true;
            case R.id.s1:
                // do your code
                return true;
            default:
                return super.onOptionsItemSelected(item);
        }
    }
}
```



Option Menu

Search

Upload

Copy

Paste

Print

Share

BookMark

Settings

History

Option Menu



Selected Item: Share



8.2. Create an android app to scroll list of images and display details of images (name, size etc.) using Image Switcher control.

activity_main.xml

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

    <ImageSwitcher
        android:id="@+id/is"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_alignParentStart="true" />

    <TextSwitcher
        android:id="@+id/ts"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:padding="10dp" />

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentEnd="true"
        android:layout_alignParentBottom="true"
        android:layout_margin="10dp"
        android:text="Switch Image"
        android:onClick="onSwitch" />

</RelativeLayout>
```

MainActivity.java

```
package com.android_project.imageswitcher;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.Gravity;
import android.view.View;
import android.widget.ImageSwitcher;
import android.widget.ImageView;
import android.widget.TextSwitcher;
import android.widget.TextView;
import android.widget.ViewSwitcher;

public class MainActivity extends AppCompatActivity {

    private static final String[] names = {"Pink flower", "Yellow flower"};
    private static final int[] images = {R.drawable.pink_flower, R.drawable.yellow_flower};
    private int position = 0;
    private ImageSwitcher is;
    private TextSwitcher ts;

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

        is = (ImageSwitcher) findViewById(R.id.is);
        is.setFactory(new ViewSwitcher.ViewFactory() {
            @Override
            public View makeView() {
                ImageView iv = new ImageView(MainActivity.this);
                return iv;
            }
        });

        ts = (TextSwitcher) findViewById(R.id.ts);
        ts.setFactory(new ViewSwitcher.ViewFactory() {
            @Override
            public View makeView() {
                TextView tv = new TextView(MainActivity.this);
                tv.setGravity(Gravity.CENTER);
                return tv;
            }
        });
        ts.setInAnimation(this, android.R.anim.fade_in);
        ts.setOutAnimation(this, android.R.anim.fade_out);

        is.setInAnimation(this, android.R.anim.slide_in_left);
        is.setOutAnimation(this, android.R.anim.slide_out_right);
        onSwitch(null);
    }

    public void onSwitch(View view) {
        ts.setText(names[position]);
        is.setBackgroundResource(images[position]);
        position = (position + 1) % names.length;
    }
}
```



Image Switcher

Pink flower



SWITCH IMAGE



Image Switcher

Yellow flower



SWITCH IMAGE



8.3. Create android app to demonstrate animation

layout/activity_main.xml

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

    <ImageView
        android:id="@+id/iv"
        android:layout_width="match_parent"
        android:layout_height="416dp"
        android:src="@drawable/image" />

    <Button
        android:id="@+id/b_fadein"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@id/iv"
        android:layout_alignParentStart="true"
        android:layout_marginTop="50dp"
        android:text="Fade In" />

    <Button
        android:id="@+id/b_slidedown"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_below="@id/iv"
        android:layout_alignParentEnd="true"
        android:layout_marginTop="50dp"
        android:text="Slide Down" />

</RelativeLayout>
```

anim/animation_fade_in.xml

```
<?xml version="1.0" encoding="utf-8"?>
<set xmlns:android="http://schemas.android.com/apk/res/android"
    android:interpolator="@android:anim/linear_interpolator">

    <alpha
        android:duration="5000"
        android:fromAlpha="1.0"
        android:toAlpha="0.1" />

</set>
```

anim/animation_slide_down.xml

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

    <scale
        android:duration="1000"
        android:fromXScale="1.0"
        android:fromYScale="0.0"
        android:toXScale="1.0"
        android:toYScale="1.0" />

</set>
```

MainActivity.java

```
package com.android_project.animations;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;
import android.view.View;
import android.view.animation.Animation;
import android.view.animation.AnimationUtils;
import android.widget.Button;
import android.widget.ImageView;

public class MainActivity extends AppCompatActivity {

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

        ImageView iv;
        Button b_fadein,b_slidedown;
        b_fadein = (Button) findViewById(R.id.b_fadein);
        b_slidedown = (Button) findViewById(R.id.b_slidedown);
        iv = (ImageView) findViewById(R.id.iv);

        b_fadein.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Animation a_fadein = AnimationUtils.loadAnimation(getApplicationContext(),
R.anim.animation_fade_in);
                iv.startAnimation(a_fadein);
            }
        });

        b_slidedown.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Animation a_slidedown = AnimationUtils.loadAnimation(getApplicationContext(),
R.anim.animation_slide_down);
                iv.startAnimation(a_slidedown);
            }
        });
    }
}
```



Animations

Animations



FADE IN

SLIDE DOWN

FADE IN

SLIDE DOWN



8



Animations



FADE IN

SLIDE DOWN



Slide down Animation (Image slides from top, ss clicked in middle)

9.1. Create an android app to demonstrate sending e-mail.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:gravity="right|end"
    android:orientation="vertical"
    tools:context=".MainActivity">

    <EditText
        android:id="@+id/recipient"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Recipient"
        android:inputType="textEmailAddress" />

    <EditText
        android:id="@+id/subject"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Subject" />

    <EditText
        android:id="@+id/message"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:gravity="start"
        android:hint="Enter Message here"
        android:minHeight="150dp" />

    <Button
        android:id="@+id/b"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:gravity="right"
        android:text="Send Email" />

</LinearLayout>
```

AndroidManifest.xml

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

MainActivity.java

```
package com.android_project.email;

import androidx.appcompat.app.AppCompatActivity;

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

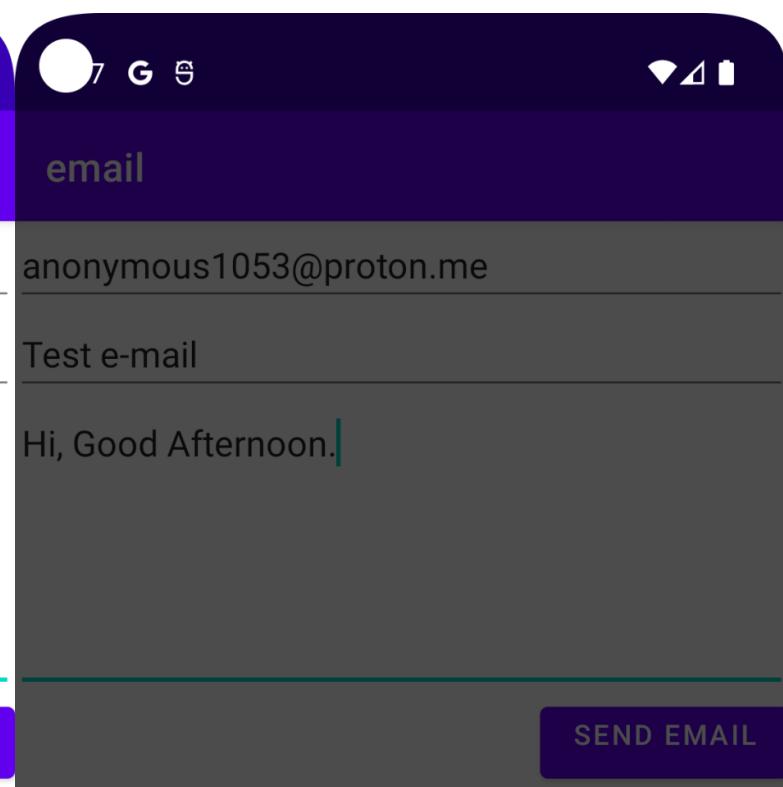
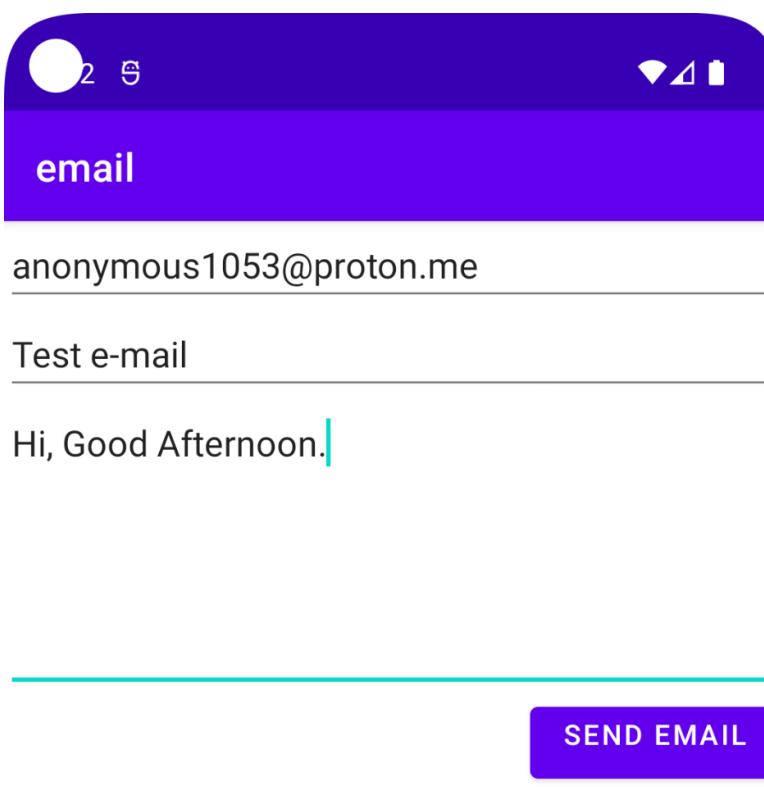
public class MainActivity extends AppCompatActivity {

    EditText et_to, et_subject, et_message;
    Button b;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        et_to = (EditText) findViewById(R.id.recipient);
        et_subject = (EditText) findViewById(R.id.subject);
        et_message = (EditText) findViewById(R.id.message);
        b = (Button) findViewById(R.id.b);
        b.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String re= et_to.getText().toString().trim();
                String su= et_subject.getText().toString().trim();
                String me= et_message.getText().toString().trim();
                sendEmail(re,su,me);
            }
        });
    }

    private void sendEmail(String re, String su, String me) {
        Intent i=new Intent(Intent.ACTION_SEND);
        i.setData(Uri.parse("Mail to"));
        i.setType("text/plain");
        i.putExtra(Intent.EXTRA_EMAIL,new String[]{re});
        i.putExtra(Intent.EXTRA_SUBJECT,su);
        i.putExtra(Intent.EXTRA_TEXT,me);
        try{
            startActivity(Intent.createChooser(i, "choose an email client"));
        }
        catch(Exception e){
            Toast.makeText(this,e.getMessage(), Toast.LENGTH_SHORT).show();
        }
    }
}
```

Output



3:22 G S



← Compose



From chs10503@gmail.com

To A Anonymous1053



Test e-mail

Hi, Good Afternoon



9.2. Create an android app to demonstrate sending SMS.

activity_main.xml

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

    <EditText
        android:id="@+id/phone"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:inputType="phone"
        android:maxLength="10"
        android:padding="15dp"
        android:hint="Enter Mobile Number"/>

    <EditText
        android:id="@+id/message"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:inputType="textMultiLine"
        android:minLines="5"
        android:padding="15dp"
        android:gravity="top"
        android:hint="Enter Message"/>

    <Button
        android:id="@+id/send"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_margin="30dp"
        android:text="Send SMS" />

</LinearLayout>
```

AndroidManifest.xml

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

MainActivity.java

```
package com.android_project.sms;

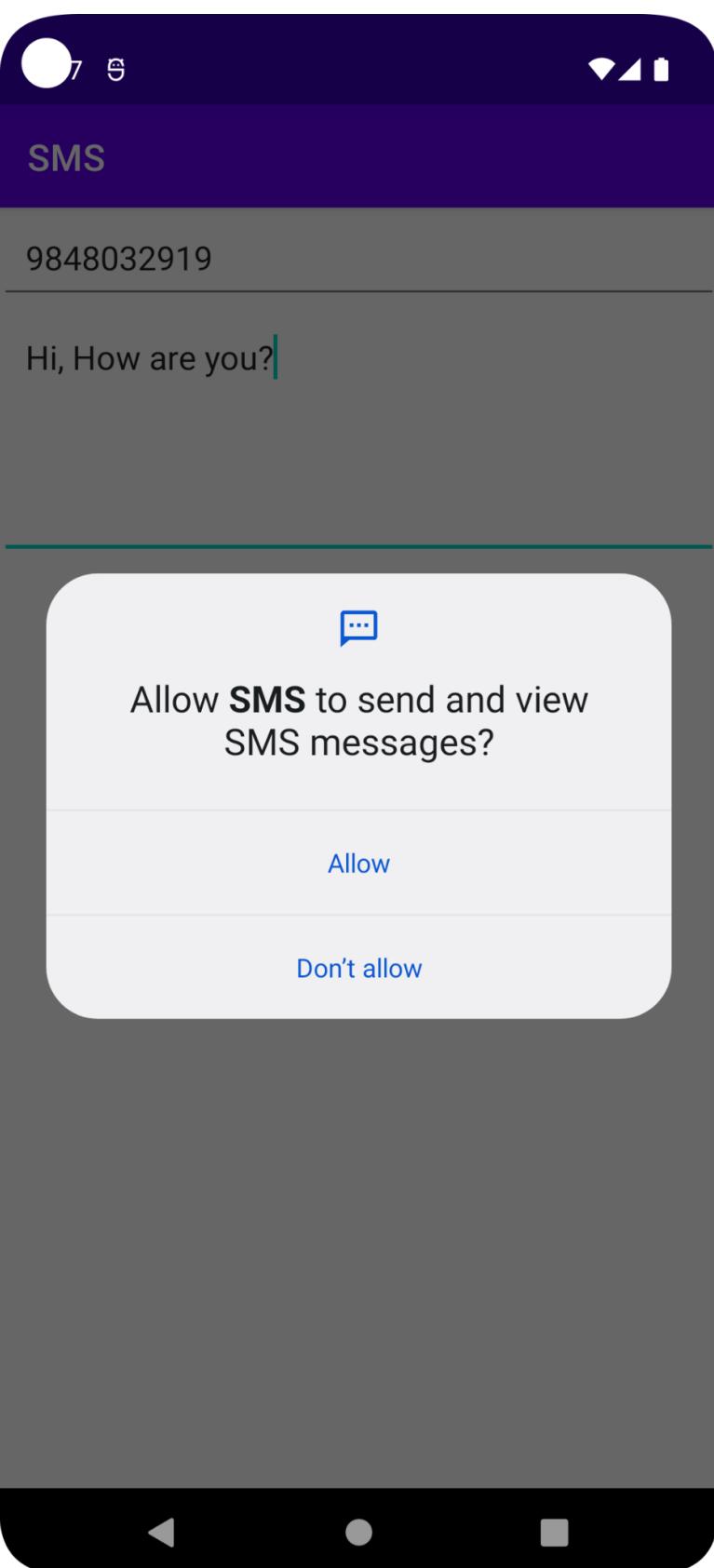
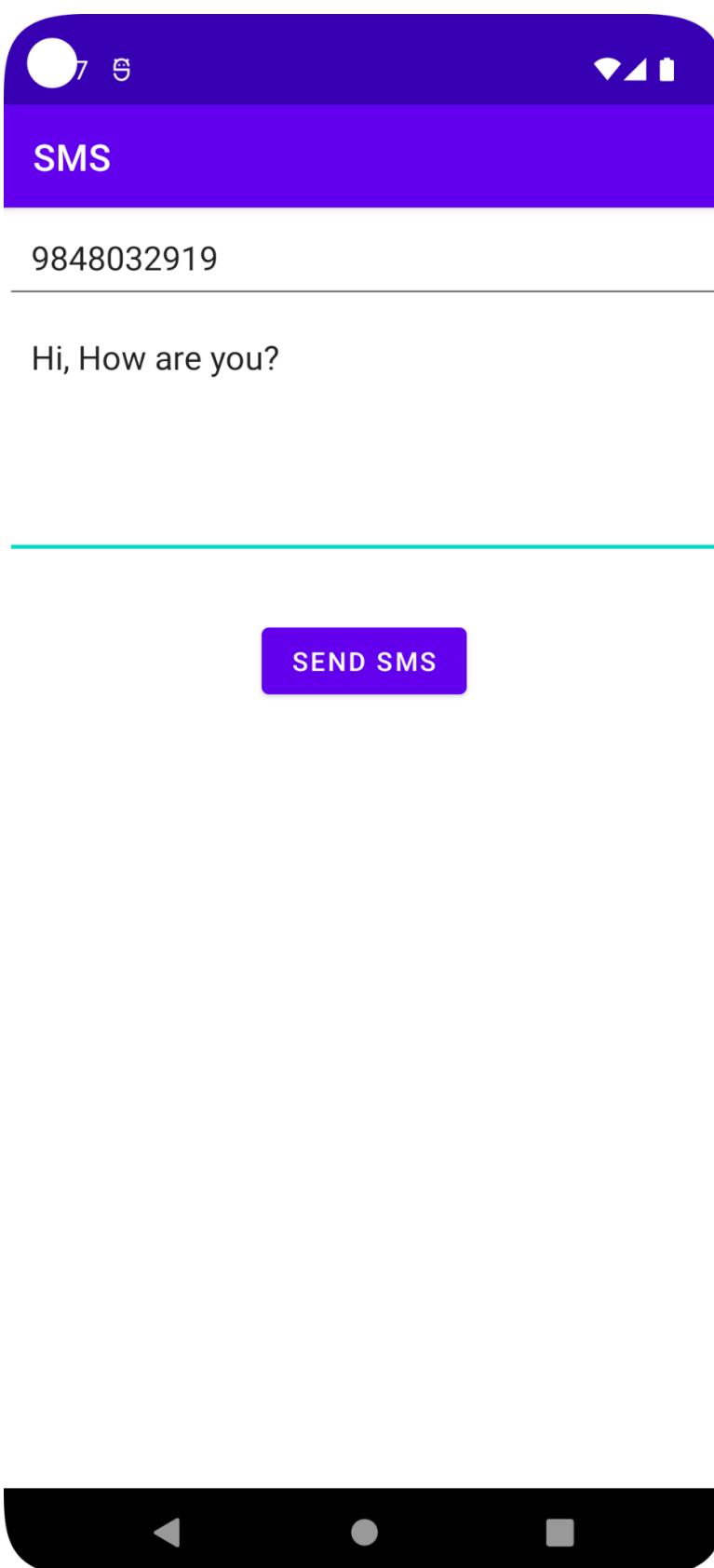
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import androidx.core.content.ContextCompat;
import android.Manifest;
import android.content.pm.PackageManager;
import android.os.Bundle;
import android.telephony.SmsManager;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {

    EditText et1,et2;
    Button b;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        et1=findViewById(R.id.phone);
        et2=findViewById(R.id.message);
        b=findViewById(R.id.send);
        b.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                if (ContextCompat.checkSelfPermission(MainActivity.this, Manifest.permission.SEND_SMS) ==
PackageManager.PERMISSION_GRANTED)
                    sendMessage();
                else
                    ActivityCompat.requestPermissions(MainActivity.this, new
String[]{Manifest.permission.SEND_SMS}, 100);
            }
        });
    }

    public void sendMessage() {
        String mobile = et1.getText().toString().trim();
        String sms = et2.getText().toString().trim();
        if ((!mobile.equals("")) && (!sms.equals("")))
        {
            SmsManager sm = SmsManager.getDefault();
            sm.sendTextMessage(mobile,null,sms,null,null);
            Toast.makeText(this, "Message sent successfully", Toast.LENGTH_SHORT).show();
        }
        else
            Toast.makeText(getApplicationContext(),"Enter Mobile Number and
Message",Toast.LENGTH_LONG).show();
    }

    @Override
    public void onRequestPermissionsResult(int requestCode, String[] permissions,int[] grantResults) {
        super.onRequestPermissionsResult(requestCode, permissions, grantResults);
        if(requestCode==100&&grantResults.length>0&&grantResults[0]== PackageManager.PERMISSION_GRANTED)
            sendMessage();
        else
            Toast.makeText(getApplicationContext(),"permission denied",Toast.LENGTH_SHORT).show();
    }
}
```



8 9



SMS

9848032919

Hi, How are you?

SEND SMS



Message sent successfully



9.3. Create an android app to demonstrate text-to-speech and speech-to-text conversion.

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:layout_margin="30dp"
    tools:context=".MainActivity">

    <EditText
        android:id="@+id/et"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginBottom="20dp"
        android:hint="Enter any sentence"
        android:gravity="center"
        android:textSize="16dp"/>

    <Button
        android:id="@+id/b"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Say it"
        android:layout_gravity="center"/>

    <ImageView
        android:id="@+id/iv"
        android:layout_width="192dp"
        android:layout_height="47dp"
        android:layout_alignParentTop="true"
        android:layout_alignParentEnd="true"
        android:layout_marginTop="204dp"
        android:src="@drawable/mic"
        android:layout_gravity="center"/>

    <TextView
        android:id="@+id/tv"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_alignParentTop="true"
        android:layout_alignParentEnd="true"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="44dp"
        android:padding="10dp"
        android:text="here is text"
        android:textSize="30sp"
        app:layout_constraintEnd_toEndOf="@+id/iv_mic"
        app:layout_constraintHorizontal_bias="0.489"
        app:layout_constraintTop_toBottomOf="@+id/iv_mic" />

</LinearLayout>
```

MainActivity.java

```
package com.android_project.texttospeechspeechtotext;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.os.Bundle;
import android.speech.RecognizerIntent;
import android.speech.tts.TextToSpeech;
import android.util.Log;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.ImageView;
import android.widget.TextView;
import android.widget.Toast;

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

public class MainActivity extends AppCompatActivity {
    Button b;
    EditText et;
    private ImageView iv;
    private TextView tv;
    TextToSpeech tts;
    private static final int REQUEST_CODE_SPEECH_INPUT = 1;

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

        b = findViewById(R.id.b);
        et = findViewById(R.id.et);
        iv = findViewById(R.id.iv);
        tv = findViewById(R.id.tv);

        tts = new TextToSpeech(getApplicationContext(), new TextToSpeech.OnInitListener() {
            @Override
            public void onInit(int i) {
                if (i == TextToSpeech.SUCCESS)
                    tts.setLanguage(Locale.US);
                else
                    Log.e("tts", "failed");
            }
        });

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

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

```
        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.getDefault());
        intent.putExtra(RecognizerIntent.EXTRA_PROMPT, "Speak to text");

        try {
            startActivityForResult(intent, REQUEST_CODE_SPEECH_INPUT);
        }
        catch (Exception e) {
            Toast.makeText(MainActivity.this, " " + e.getMessage(), Toast.LENGTH_SHORT).show();
        }
    }
});
```

```
@Override
protected void onActivityResult(int requestCode, int resultCode, Intent data)
{
    super.onActivityResult(requestCode, resultCode, data);
    if (requestCode == REQUEST_CODE_SPEECH_INPUT) {
        if (resultCode == RESULT_OK && data != null) {
            ArrayList<String> result = data.getStringArrayListExtra(RecognizerIntent.EXTRA_RESULTS);
            tv.setText(Objects.requireNonNull(result).get(0));
        }
    }
}

public void speak() {
    String text1 = et.getText().toString();
    tts.speak(text1, TextToSpeech.QUEUE_FLUSH, null);
}
```

3:39 ⚡



3:39 ⚡



Text to Speech & Spe...

Enter any sentence

SAY IT

Text to Speech & Spe...

Hello this is text to speech

SAY IT



here is text

hello this is
speech to text



10.1. Create an android app to show details phone contacts, implement calling, receiving features.

activity_main.xml

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

    <EditText
        android:id="@+id/mobile"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="250dp"
        android:layout_marginBottom="50dp"
        android:autofillHints=""
        android:hint="Enter Mobile Number"
        android:textAlignment="center"
        app:layout_constraintBottom_toTopOf="@+id/b"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        tools:ignore="TouchTargetSizeCheck,TextContrastCheck" />

    <Button
        android:id="@+id/b"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="388dp"
        android:text="Call"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/mobile" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

AndroidManifest.xml

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

MainActivity.java

```
package com.android_project.phonecall;

import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;

import android.Manifest;
import android.content.Intent;
import android.content.pm.PackageManager;
import android.net.Uri;
import android.os.Build;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity {
    Button b;
    EditText mobile_number;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        mobile_number = findViewById(R.id.mobile);
        b = findViewById(R.id.b);
        b.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                callPhoneNumber();
            }
        });
    }

    public void callPhoneNumber() {
        try {
            if (Build.VERSION.SDK_INT > 22) {
                if (ActivityCompat.checkSelfPermission(this, Manifest.permission.CALL_PHONE) != PackageManager.PERMISSION_GRANTED) {
                    ActivityCompat.requestPermissions(MainActivity.this, new String[]{Manifest.permission.CALL_PHONE}, 101);
                    return;
                }
            }
            Intent callIntent = new Intent(Intent.ACTION_CALL);
            callIntent.setData(Uri.parse("tel:" + mobile_number.getText().toString()));
            startActivity(callIntent);
        }
        catch (Exception e) { e.printStackTrace(); }
    }
}
```

Phone Call

+919848032919

CALL

Phone Call



Allow **Phone Call** to make and
manage phone calls?

Allow

Don't allow



Calling...

+91 98480 32919

India



10.2. Create an android app to demonstrate camera.

activity_main.xml

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

    <ImageView
        android:id="@+id/iv"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="100dp"
        android:layout_marginBottom="100dp"
        app:layout_constraintBottom_toTopOf="@+id/b"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        tools:srcCompat="@tools:sample/avatars" />

    <Button
        android:id="@+id/b"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="455dp"
        android:text="Capture"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/iv" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```
package com.example.camera;

import androidx.appcompat.app.AppCompatActivity;

import android.content.Intent;
import android.graphics.Bitmap;
import android.os.Bundle;
import android.util.Log;
import android.view.View;
import android.widget.Button;
import android.widget.ImageView;
import android.widget.Toast;

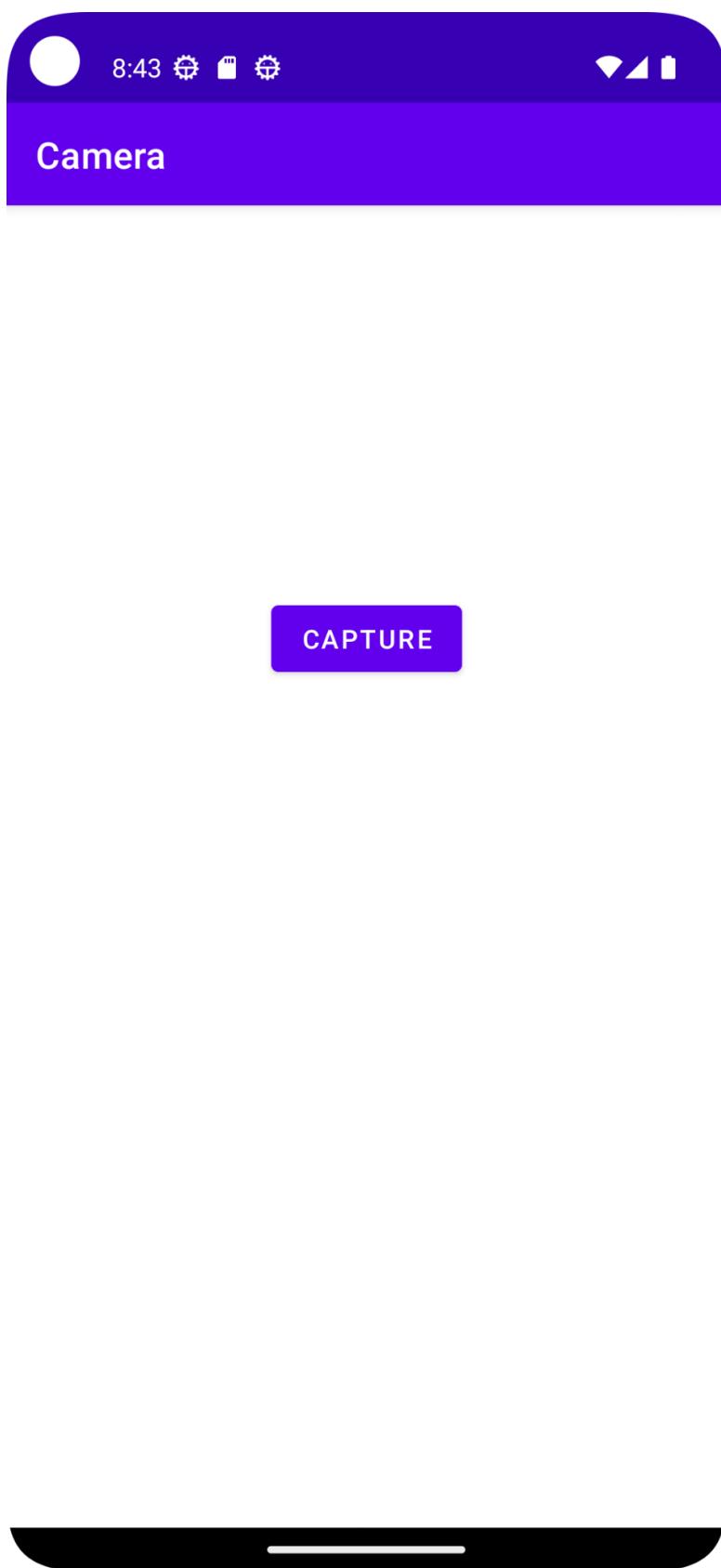
public class MainActivity extends AppCompatActivity {

    private static final int CAMERA_REQUEST = 1888;
    Button b;
    ImageView iv;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        iv = findViewById(R.id.iv);
        b = findViewById(R.id.b);
        b.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent cameraIntent = new Intent(android.provider.MediaStore.ACTION_IMAGE_CAPTURE);
                startActivityForResult(cameraIntent, CAMERA_REQUEST);
            }
        });
    }

    protected void onActivityResult(int requestCode, int resultCode, Intent data) {
        super.onActivityResult(requestCode, resultCode, data);
        if (requestCode == CAMERA_REQUEST) {
            Bitmap photo = (Bitmap) data.getExtras().get("data");
            iv.setImageBitmap(photo);
        }
    }
}
```

Output



8:44



Camera



CAPTURE

11.1. Create an android app to demonstrate media player.

res/layout > activity_main.xml

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

    <Button
        android:id="@+id/b_play"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="50dp"
        android:onClick="music"
        android:text="Play"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toStartOf="@+id/b_pause"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <Button
        android:id="@+id/b_pause"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:onClick="music"
        android:text="Pause"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toStartOf="@+id/b_stop"
        app:layout_constraintStart_toEndOf="@+id/b_play"
        app:layout_constraintTop_toTopOf="parent" />

    <Button
        android:id="@+id/b_stop"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginEnd="50dp"
        android:onClick="music"
        android:text="Stop"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toEndOf="@+id/b_pause"
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

res/raw > song.mp3

MainActivity.java

```
package com.example.mediaplayer;

import androidx.appcompat.app.AppCompatActivity;

import android.media.MediaPlayer;
import android.os.Bundle;
import android.view.View;

public class MainActivity extends AppCompatActivity {
    MediaPlayer mp;

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

    public void music(View v) {
        switch (v.getId()) {
            case R.id.b_play:
                if (mp == null)
                    mp = MediaPlayer.create(this, R.raw.song);
                mp.setOnCompletionListener(new MediaPlayer.OnCompletionListener() {
                    @Override
                    public void onCompletion(MediaPlayer mp) {
                        stopMusic();
                    }
                });
                mp.start();
                break;
            case R.id.b_pause:
                if (mp != null)
                    mp.pause();
                break;
            case R.id.b_stop:
                if (mp != null) {
                    mp.stop();
                    stopMusic();
                }
                break;
        }
    }

    public void stopMusic() {
        mp.release();
        mp = null;
    }

    public void onStop() {
        super.onStop();
        stopMusic();
    }
}
```

Output



Media Player

PLAY

PAUSE

STOP



11.2. Create an android app to demonstrate JSON Parser.

12.1. Create an android app to store details of students in SQLite and display the details.

activity_main.xml

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

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="50dp"
        android:layout_y="20dp"
        android:text="Student Details"
        android:textSize="30sp" />

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="20dp"
        android:layout_y="110dp"
        android:text="Enter Rollno:"
        android:textSize="20sp" />

    <EditText
        android:id="@+id/Rollno"
        android:layout_width="150dp"
        android:layout_height="wrap_content"
        android:layout_x="175dp"
        android:layout_y="100dp"
        android:textSize="20sp"
        tools:ignore="SpeakableTextPresentCheck" />

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="20dp"
        android:layout_y="160dp"
        android:text="Enter Name:"
        android:textSize="20sp" />

    <EditText
        android:id="@+id/Name"
        android:layout_width="150dp"
        android:layout_height="wrap_content"
        android:layout_x="175dp"
        android:layout_y="150dp"
        android:inputType="text"
        android:textSize="20sp"
        tools:ignore="SpeakableTextPresentCheck" />

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_x="20dp"
        android:layout_y="210dp"
        android:text="Enter Marks:"
        android:textSize="20sp" />
```

```
<EditText  
    android:id="@+id/Marks"  
    android:layout_width="150dp"  
    android:layout_height="wrap_content"  
    android:layout_x="175dp"  
    android:layout_y="200dp"  
    android:inputType="number"  
    android:textSize="20sp"  
    tools:ignore="SpeakableTextPresentCheck" />  
  
<Button android:id="@+id/Insert"  
    android:layout_width="150dp"  
    android:layout_height="wrap_content"  
    android:layout_x="25dp"  
    android:layout_y="300dp"  
    android:text="Insert"  
    android:textSize="20dp" />  
  
<Button  
    android:id="@+id/Delete"  
    android:layout_width="150dp"  
    android:layout_height="wrap_content"  
    android:layout_x="200dp"  
    android:layout_y="300dp"  
    android:text="Delete"  
    android:textSize="20dp" />  
  
<Button  
    android:id="@+id/Update"  
    android:layout_width="150dp"  
    android:layout_height="wrap_content"  
    android:layout_x="25dp"  
    android:layout_y="400dp"  
    android:text="Update"  
    android:textSize="20dp" />  
  
<Button  
    android:id="@+id/View"  
    android:layout_width="150dp"  
    android:layout_height="wrap_content"  
    android:layout_x="200dp"  
    android:layout_y="400dp"  
    android:text="View"  
    android:textSize="20dp" />  
  
<Button  
    android:id="@+id/ViewAll"  
    android:layout_width="200dp"  
    android:layout_height="wrap_content"  
    android:layout_x="100dp"  
    android:layout_y="500dp"  
    android:text="View All"  
    android:textSize="20dp" />  
  
</AbsoluteLayout>
```

MainActivity.java

```
package com.android_project.sqlitedatabase;

import androidx.appcompat.app.AlertDialog;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Context;
import android.database.Cursor;
import android.database.sqlite.SQLiteDatabase;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;

public class MainActivity extends AppCompatActivity implements android.view.View.OnClickListener {

    EditText Rollno,Name,Marks;
    Button Insert,Delete,Update,View,ViewAll;
    SQLiteDatabase db;

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

        Rollno= findViewById(R.id.Rollno);
        Name= findViewById(R.id.Name);
        Marks= findViewById(R.id.Marks);
        Insert= findViewById(R.id.Insert);
        Delete= findViewById(R.id.Delete);
        Update= findViewById(R.id.Update);
        View= findViewById(R.id.View);
        ViewAll= findViewById(R.id.ViewAll);
        Insert.setOnClickListener(this);
        Delete.setOnClickListener(this);
        Update.setOnClickListener(this);
        View.setOnClickListener(this);
        ViewAll.setOnClickListener(this);

        // Creating database and table
        db=openOrCreateDatabase("StudentDB", Context.MODE_PRIVATE, null);
        db.execSQL("CREATE TABLE IF NOT EXISTS student(rollno VARCHAR,name VARCHAR,marks VARCHAR);");
    }

    public void onClick(View view) {
        // Inserting a record to the Student table
        if(view==Insert) {
            // Checking for empty fields
            if(Rollno.getText().toString().trim().length()==0 ||
Name.getText().toString().trim().length()==0 || Marks.getText().toString().trim().length()==0) {
                showMessage("Error", "Please enter all values");
                return;
            }
            db.execSQL("INSERT INTO student VALUES('"+Rollno.getText()+"','"+Name.getText()+
"', '"+Marks.getText()+"');");
            showMessage("Success", "Record added");
            clearText();
        }
    }
}
```

```
// Deleting a record from the Student table
if(view==Delete) {
    // Checking for empty roll number
    if(Rollno.getText().toString().trim().length()==0) {
        showMessage("Error", "Please enter Rollno");
        return;
    }
    Cursor c=db.rawQuery("SELECT * FROM student WHERE rollno='"+Rollno.getText()+"'", null);
    if(c.moveToFirst()) {
        db.execSQL("DELETE FROM student WHERE rollno='"+Rollno.getText()+"'");
        showMessage("Success", "Record Deleted");
    }
    else
        showMessage("Error", "Invalid Rollno");
    clearText();
}

// Updating a record in the Student table
if(view==Update) {
    // Checking for empty roll number
    if(Rollno.getText().toString().trim().length()==0) {
        showMessage("Error", "Please enter Rollno");
        return;
    }
    Cursor c=db.rawQuery("SELECT * FROM student WHERE rollno='"+Rollno.getText()+"'", null);
    if(c.moveToFirst()) {
        db.execSQL("UPDATE student SET name='"+ Name.getText() + "',marks='"+ Marks.getText() +
" WHERE rollno='"+Rollno.getText()+"'");
        showMessage("Success", "Record Modified");
    }
    else
        showMessage("Error", "Invalid Rollno");
    clearText();
}

// Display a record from the Student table
if(view==View) {
    // Checking for empty roll number
    if(Rollno.getText().toString().trim().length()==0) {
        showMessage("Error", "Please enter Rollno");
        return;
    }
    Cursor c=db.rawQuery("SELECT * FROM student WHERE rollno='"+Rollno.getText()+"'", null);
    if(c.moveToFirst()) {
        Name.setText(c.getString(1));
        Marks.setText(c.getString(2));
    }
    else {
        showMessage("Error", "Invalid Rollno");
        clearText();
    }
}
```

```
// Displaying all the records
if(view==ViewAll) {
    Cursor c=db.rawQuery("SELECT * FROM student", null);
    if(c.getCount()==0) {
        showMessage("Error", "No records found");
        return;
    }
    StringBuffer buffer=new StringBuffer();
    while(c.moveToNext()) {
        buffer.append("Rollno: "+c.getString(0)+"\n");
        buffer.append("Name: "+c.getString(1)+"\n");
        buffer.append("Marks: "+c.getString(2)+"\n\n");
    }
    showMessage("Student Details", buffer.toString());
}
}

public void showMessage(String title,String message) {
    AlertDialog.Builder builder=new AlertDialog.Builder(this);
    builder.setCancelable(true);
    builder.setTitle(title);
    builder.setMessage(message);
    builder.show();
}

public void clearText() {
    Rollno.setText("");
    Name.setText("");
    Marks.setText("");
    Rollno.requestFocus();
}
}
```

SQLite Database

Student Details

Enter Rollno:

Enter Name:

Enter Marks:

INSERT

DELETE

UPDATE

VIEW

VIEW ALL

SQLite Database

Student Details

Enter Rollno:

Enter Name:

Enter Marks:

INSERT

DELETE

Success

Record added

UPDATE

VIEW

VIEW ALL

1

2

3

-

4

5

6

[]

7

8

9

[x]

,

0

.

✓

INSERT

SQLite Database

Student Details

Enter Rollno:

Enter Name:

Enter Marks:

INSERT

DELETE

Success

Record Deleted

UPDATE

VIEW

VIEW ALL

SQLite Database

Student Details

Enter Rollno:

Enter Name:

Enter Marks:

Student Details

Rollno: 0500

Name: miller

Marks: 56

Rollno: 0400

Name: karen

Marks: 94

VIEW ALL

DELETE

VIEW ALL