# List of MAD LAB Programs:

1. To develop a simple Android application to display “Hello world!!”
2. To develop a simple Android application to raise a Toast on button click.
3. To develop a simple Android application to change font size and color of text view.
4. To develop a simple Android application to change image on click.
5. To develop a simple Android application to change Background on click.
6. To develop a simple Android application to Calculate Simple and Compound Interest.
7. To develop a simple Android application to Calculate roots of a Quadratic equation.
8. To develop a simple Android application to convert temperature between degree Celsius and Fahrenheit.
9. To develop a simple Android application to validate Login form with Toast.
10. To develop a simple Android application to validate Login form with navigation.
11. To develop a simple Android application to send message from one page to other.
12. To develop a simple Android application to Navigate from one page to other.
13. To develop a simple Android application to demonstrate the use of layout manager – Design ID Card.
14. To develop a simple Android application that draws basic graphical primitives on the screen – Draw Smiley
15. To develop a simple Android application that sends an Email.
16. To develop a simple Android application that sends a SMS.
17. To develop a simple Android application that sends a Native Notification.
18. To develop a simple Android application that converts Text to Speech.
19. To develop a simple Android application that displays GPS Location.
20. To develop a simple Android application for Calculator.
21. To develop a simple Android application that implements Multi threading.
22. To develop a simple Android application that makes use of Databases.
23. To develop a simple Android application that creates an alert Dialogue upon receiving a message.
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25. To develop a simple Android application that creates Alarm Clock.
26. To develop a simple Android application that makes use of RSS Feed.

EXPERIMENT NO.: 1

Aim: To develop a simple Android application to display “Hello world!!”

1. Open android studio and select new android project by clicking Filemenu→ New →New Project.
2. Choose the project as Empty Views Activity and click Next.
3. Give project name (Start with a capital letter) as **Helloworld**
4. Choose the language as Java.
5. Choose the required android version (Minimum SDK) and select finish.
6. Go to package explorer in the left hand side and select the project.
7. Under the project, Go to res folder and select layout.
8. Double click the activity_main.xml file and design the layout for the page.
9. Select MainActivity.java file and type the program.
10. Now go to activity_main.xml and right click & select run as option and select run configuration OR select the virtual device and click on run icon.
11. Android output will be displayed on the android emulator.

Both activity_main.xml and MainActivity.java files together make our application work. The activity_main.xml is responsible for the layout (Front end User Interface) of the application. And the file MainActivity is responsible for the actions and the performance of the application (back end).

Code:

**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:id="@+id/main"
    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!"
        android:textColor="#E61F1F"
        android:textSize="48sp"
        android:textStyle="bold"
        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.helloworld;

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

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

public class MainActivity extends AppCompatActivity {

    Button b ;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });
}
}
```

**OUTPUT ON EMULATOR:**

EXPERIMENT NO.: 2

Aim: To develop a simple Android application to raise a Toast on button click.

1. Open android studio and select new android project by clicking Filemenu→ New →New Project.
2. Choose the project as Empty Views Activity and click Next.
3. Give project name (Start with a capital letter) as **RaiseToast**
4. Choose the language as Java.
5. Choose the required android version (Minimum SDK) and select finish.
6. Go to package explorer in the left hand side and select the project.
7. Under the project, Go to res folder and select layout.
8. Double click the activity_main.xml file and design the layout for the page.
9. Select MainActivity.java file and type the program.
10. Now go to activity_main.xml and right click & select run as option and select run configuration OR select the virtual device and click on run icon.
11. Android output will be displayed on the android emulator.

Both activity_main.xml and MainActivity.java files together make our application work. The activity_main.xml is responsible for the layout (Front end User Interface) of the application. And the file MainActivity is responsible for the actions and the performance of the application (back end).

Code:

**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:id="@+id/main"
    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:text="Raise Toast"
        android:textColor="#E61F1F"
        android:textSize="48sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
```

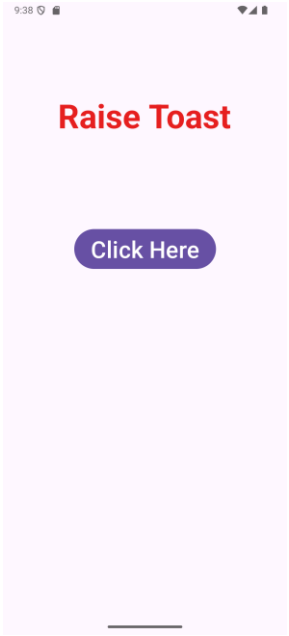
```
        app:layout_constraintHorizontal_bias="0.496"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.134" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="300dp"
        android:text="Click Here"
        android:textSize="34sp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

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

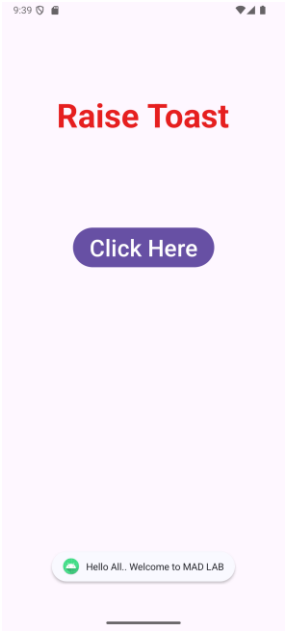
MainActivity.java

```
package com.example.raisetoast;

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

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

public class MainActivity extends AppCompatActivity {

    Button b ;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
```

```
        });

        b = (Button) findViewById(R.id.button);
        b.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {

                Toast.makeText(getBaseContext(),"Hello All..
Welcome to MAD LAB", Toast.LENGTH_LONG).show();

            }
        });
    }
}
```

**OUTPUT ON EMULATOR:**



EXPERIMENT NO.: 3

Aim: To develop a simple Android application to change font size and color of Text Veiw

1. Open android studio and select new android project by clicking Filemenu→ New →New Project.
2. Choose the project as Empty Views Activity and click Next.
3. Give project name (Start with a capital letter) as **GUIfontcolor**
4. Choose the language as Java.
5. Choose the required android version (Minimum SDK) and select finish.
6. Go to package explorer in the left hand side and select the project.
7. Under the project, Go to res folder and select layout.
8. Double click the activity_main.xml file and design the layout for the page.
9. Select MainActivity.java file and type the program.
10. Now go to activity_main.xml and right click & select run as option and select run configuration OR select the virtual device and click on run icon.
11. Android output will be displayed on the android emulator.

Both activity_main.xml and MainActivity.java files together make our application work. The activity_main.xml is responsible for the layout (Front end User Interface) of the application. And the file MainActivity is responsible for the actions and the performance of the application (back end).

Code:

**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:id="@+id/main"
    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:text="MVSREC ITD"
        android:textColor="#E61F1F"
        android:textSize="48sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
```

```
        app:layout_constraintHorizontal_bias="0.496"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.236" />

    <Button
        android:id="@+id/col"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="300dp"
        android:text="Change Color"
        android:textSize="34sp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <Button
        android:id="@+id/font"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="408dp"
        android:text="Change Font"
        android:textSize="34sp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

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

MainActivity.java

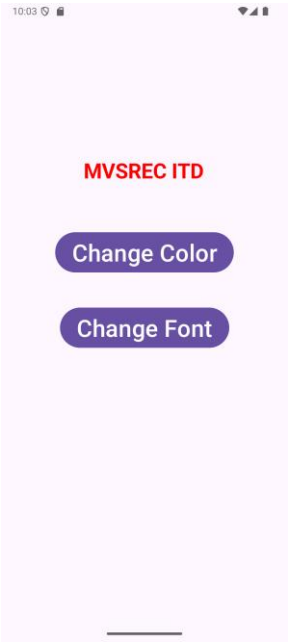
```
package com.example.guifontcolor;


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

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

public class MainActivity extends AppCompatActivity {

    TextView t1;
```

```
    Button c,f;
    int i=1;
    float font = 30;

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

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });

        t1 = (TextView) findViewById(R.id.textView);
        c = (Button) findViewById(R.id.col);
        f = (Button) findViewById(R.id.font);

        c.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                switch (i)
                {
          case 1: t1.setTextColor(Color.parseColor("#0000FF"));
                  i++; break;
          case 2: t1.setTextColor(Color.parseColor("#00FF00"));
                  i++; break;
          case 3: t1.setTextColor(Color.parseColor("#FF0000"));
                  i++; break;
          case 4: t1.setTextColor(Color.parseColor("#00FFFF"));
                  i++; break;
          case 5: t1.setTextColor(Color.parseColor("#0FF0FF"));
                  i++; break;
                }
                if(i==6) i=1;
            }
        });

        f.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                t1.setTextSize(font);
                font = font+5;
                if(font==50) font=30;
```

```
                }
            });
        }
}
```

**OUTPUT ON EMULATOR:**





EXPERIMENT NO.: 4

Aim: To develop a simple Android application to change image on click

1. Open android studio and select new android project by clicking Filemenu→ New →New Project.
2. Choose the project as Empty Views Activity and click Next.
3. Give project name (Start with a capital letter) as **ChangeImages**
4. Choose the language as Java.
5. Choose the required android version (Minimum SDK) and select finish.
6. Go to package explorer in the left hand side and select the project.
7. Under the project, res folder, drawable folder add jpg or png images.
8. Under the project, Go to res folder and select layout.
9. Double click the activity_main.xml file and design the layout for the page.
10. Select MainActivity.java file and type the program.
11. Now go to activity_main.xml and right click & select run as option and select run configuration OR select the virtual device and click on run icon.
12. Android output will be displayed on the android emulator.

Both activity_main.xml and MainActivity.java files together make our application work. The activity_main.xml is responsible for the layout (Front end User Interface) of the application. And the file MainActivity is responsible for the actions and the performance of the application (back end).

Code:

**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:id="@+id/main"
    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:text="Cartoon Show"
        android:textColor="#E61F1F"
        android:textSize="48sp"
        android:textStyle="bold"
```

```
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.496"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.079" />

    <Button
        android:id="@+id/img"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="520dp"
        android:text="Change Image"
        android:textSize="34sp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.496"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <ImageView
        android:id="@+id/imageView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="72dp"
        android:layout_marginEnd="34dp"
        app:layout_constraintEnd_toEndOf="@+id/textView"
        app:layout_constraintTop_toBottomOf="@+id/textView"
        app:srcCompat="@drawable/c1" />

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

MainActivity.java

```
package com.example.changeimage;

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

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

public class MainActivity extends AppCompatActivity {

    Button b;
```

```
    ImageView iv;
    boolean flag = true;
    int img[] = {
R.drawable.c1,R.drawable.c2,R.drawable.c3,R.drawable.c4};
    int i=0;

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

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });

        b = (Button) findViewById(R.id.img);
        iv = (ImageView) findViewById(R.id.imageView);

        b.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                iv.setImageResource(img[i]);
                i++;
                if(i==4) i=0;
            }
        });

    }
}
```

**OUTPUT ON EMULATOR:**

10:41

Cartoon Show

Change Image

10:42

Cartoon Show

Change Image

10:42

Cartoon Show

Change Image

EXPERIMENT NO.: 5

Aim: To develop a simple Android application to Change background on click.

1. Open android studio and select new android project by clicking Filemenu→ New →New Project.
2. Choose the project as Empty Views Activity and click Next.
3. Give project name (Start with a capital letter) as **Backgroundchange**
4. Choose the language as Java.
5. Choose the required android version (Minimum SDK) and select finish.
6. Go to package explorer in the left hand side and select the project.
7. Under the project, Go to res folder and select layout.
8. Double click the activity_main.xml file and design the layout for the page.
9. Select MainActivity.java file and type the program.
10. Under res folder → values → colors.xml add red and green color.
11. Under res folder → drawable, add one jpeg image for background.
12. Now go to activity_main.xml and right click & select run as option and select run configuration OR select the virtual device and click on run icon.
13. Android output will be displayed on the android emulator.

Both activity_main.xml and MainActivity.java files together make our application work. The activity_main.xml is responsible for the layout (Front end User Interface) of the application. And the file MainActivity is responsible for the actions and the performance of the application (back end).

Code:

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

    <LinearLayout
        android:id="@+id/ll"
        android:layout_width="wrap_content"
        android:layout_height="0dp"
        android:orientation="vertical"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintStart_toStartOf="parent"
```

```
        app:layout_constraintTop_toTopOf="parent">

        <TextView
            android:id="@+id/textView2"
            android:layout_width="401dp"
            android:layout_height="wrap_content"
            android:layout_marginTop="100dp"
            android:layout_marginBottom="100dp"
            android:text="Change Background"
            android:textAlignment="center"
            android:textColor="#FF9800"
            android:textSize="48sp"
            android:textStyle="bold" />

        <Button
            android:id="@+id/red"
            android:layout_width="120dp"
            android:layout_height="wrap_content"
            android:layout_marginLeft="140dp"
            android:layout_marginBottom="50dp"
            android:text="RED"
            android:textColor="#E60F16"
            android:textSize="34sp"
            android:textStyle="bold" />

        <Button
            android:id="@+id/green"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_marginLeft="120dp"
            android:layout_marginBottom="50dp"
            android:text="GREEN"
            android:textColor="#1CCE23"
            android:textSize="34sp" />

        <Button
            android:id="@+id/img"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_marginLeft="130dp"
            android:text="Image"
            android:textColor="#FFC107"
            android:textSize="34sp" />
    </LinearLayout>
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

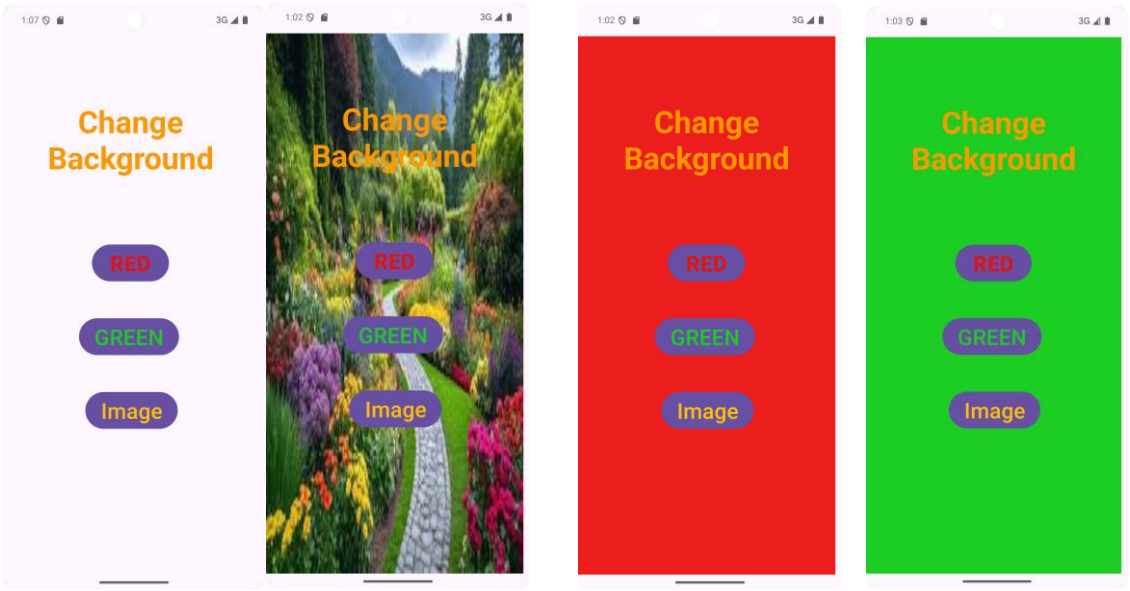
```
package com.example. backgroundchange;

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

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

public class MainActivity extends AppCompatActivity {
Button red,green,img;
LinearLayout ll;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });

        red = (Button) findViewById(R.id.red);
        green = (Button) findViewById(R.id.green);
        img = (Button) findViewById(R.id.img);
        ll = (LinearLayout)findViewById(R.id.ll);

        red.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
              ll.setBackgroundResource(R.color.RED);
            }
        });

        green.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                ll.setBackgroundResource(R.color.GREEN);
            }
        });
```

```
        img.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                ll.setBackgroundResource(R.drawable.background);
            }
        });

    }
}
```

**colors.xml**

```
<color name="RED">#EB1D1D</color>
<color name="GREEN">#1CCE23</color>
```

**OUTPUT ON EMULATOR:**



EXPERIMENT NO.: 6

Aim: To develop a simple Android application to Calculate Simple and Compound Interest.

1. Open android studio and select new android project by clicking Filemenu→ New →New Project.
2. Choose the project as Empty Views Activity and click Next.
3. Give project name (Start with a capital letter) as **Interestcalculator**
4. Choose the language as Java.
5. Choose the required android version (Minimum SDK) and select finish.
6. Go to package explorer in the left hand side and select the project.
7. Under the project, Go to res folder and select layout.
8. Double click the activity_main.xml file and design the layout for the page.
9. Select MainActivity.java file and type the program.
10. Now go to activity_main.xml and right click & select run as option and select run configuration OR select the virtual device and click on run icon.
11. Android output will be displayed on the android emulator.

Both activity_main.xml and MainActivity.java files together make our application work. The activity_main.xml is responsible for the layout (Front end User Interface) of the application. And the file MainActivity is responsible for the actions and the performance of the application (back end).

Code:

**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:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#F4F6E5"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/textView3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Interest Calculator"
        android:textColor="#D207F4"
        android:textSize="48sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
```

```
        app:layout_constraintHorizontal_bias="0.454"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.038" />

    <EditText
        android:id="@+id/p"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="20dp"
        android:ems="10"
        android:hint="Enter Principal Amount"
        android:inputType="text"
        android:textSize="24sp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.518"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView3" />

    <EditText
        android:id="@+id/r"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="23dp"
        android:ems="10"
        android:hint="Enter rate of Interest"
        android:inputType="text"
        android:textSize="24sp"
        app:layout_constraintStart_toStartOf="@+id/p"
        app:layout_constraintTop_toBottomOf="@+id/p" />

    <EditText
        android:id="@+id/t"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="4dp"
        android:layout_marginBottom="44dp"
        android:ems="10"
        android:hint="Enter time period"
        android:inputType="text"
        android:textSize="24sp"
        app:layout_constraintBottom_toTopOf="@+id/t1"
        app:layout_constraintStart_toStartOf="@+id/t1" />

    <TextView
        android:id="@+id/t1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="64dp"
```

```
        android:layout_marginTop="164dp"
        android:layout_marginBottom="166dp"
        android:text="Interest:"
        android:textSize="34sp"
        app:layout_constraintBottom_toBottomOf="@+id/si"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/p"
        app:layout_constraintVertical_bias="1.0" />

    <TextView
        android:id="@+id/t2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="44dp"
        android:text="Total Amount:"
        android:textSize="34sp"
        app:layout_constraintStart_toStartOf="@+id/t1"
        app:layout_constraintTop_toBottomOf="@+id/t1" />

    <Button
        android:id="@+id/si"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginEnd="21dp"
        android:layout_marginBottom="23dp"
        android:text="Simple Interest"
        android:textSize="24sp"
        app:layout_constraintBottom_toTopOf="@+id/ci"
        app:layout_constraintEnd_toEndOf="@+id/ci" />

    <Button
        android:id="@+id/ci"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginEnd="65dp"
        android:layout_marginBottom="83dp"
        android:text="Compound Interest"
        android:textSize="24sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent" />

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

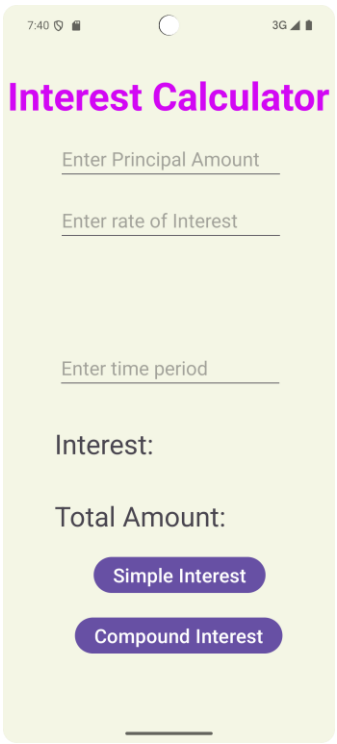
MainActivity.java

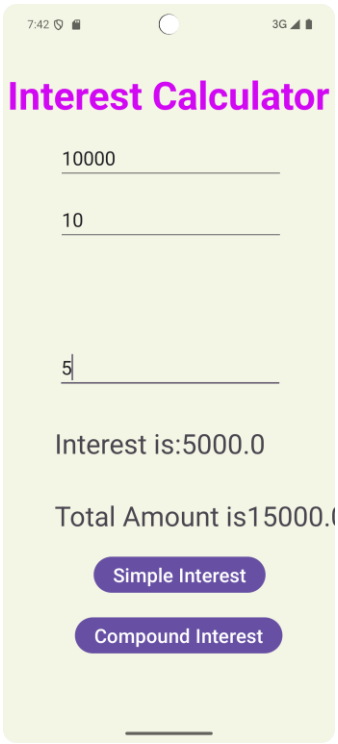
```
package com.example.interestcalculator;

import android.os.Bundle;
import android.view.View;
```

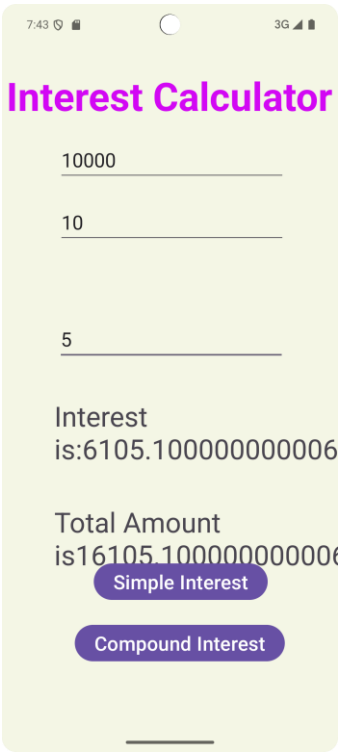
```
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

public class MainActivity extends AppCompatActivity {

    EditText p, t, r;
    TextView t1,t2;
    Button s, c;
    int p1, r1, time;
    float s1, c1, tot;

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

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });

        p = (EditText) findViewById(R.id.p);
        r = (EditText) findViewById(R.id.r);
        t = (EditText) findViewById(R.id.t);

        t1 = (TextView) findViewById(R.id.t1);
        t2 = (TextView) findViewById(R.id.t2);

        s = (Button) findViewById(R.id.si);
        c = (Button) findViewById(R.id.ci);

        s.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                p1 =Integer.parseInt(p.getText().toString());
                r1 =Integer.parseInt(r.getText().toString());
```

```
                time =Integer.parseInt(t.getText().toString());

                s1 = (p1*r1*time)/100;
                tot = p1+s1;

                t1.setText("Interest is:"+String.valueOf(s1));
               t2.setText("Total Amount
is"+String.valueOf(tot));
                }
        });

        c.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                p1 =Integer.parseInt(p.getText().toString());
                r1 =Integer.parseInt(r.getText().toString());
                time =Integer.parseInt(t.getText().toString());

        double total = p1*Math.pow(1 + (double) r1 /100, time);
        double c2 = total - p1;

        t1.setText("Interest is:"+String.valueOf(c2));
        t2.setText("Total Amount is"+String.valueOf(total));
            }
        });
    }
}
```

**OUTPUT ON EMULATOR:**



EXPERIMENT NO.: 7

Aim: To develop a simple Android application to Calculate roots of a Quadratic equation.

1. Open android studio and select new android project by clicking Filemenu→ New →New Project.
2. Choose the project as Empty Views Activity and click Next.
3. Give project name (Start with a capital letter) as **Quadraticroots**
4. Choose the language as Java.
5. Choose the required android version (Minimum SDK) and select finish.
6. Go to package explorer in the left hand side and select the project.
7. Under the project, Go to res folder and select layout.
8. Double click the activity_main.xml file and design the layout for the page.
9. Select MainActivity.java file and type the program.
10. Now go to activity_main.xml and right click & select run as option and select run configuration OR select the virtual device and click on run icon.
11. Android output will be displayed on the android emulator.

Both activity_main.xml and MainActivity.java files together make our application work. The activity_main.xml is responsible for the layout (Front end User Interface) of the application. And the file MainActivity is responsible for the actions and the performance of the application (back end).

Code:

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

    <TextView
        android:id="@+id/textView4"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Quadratic Roots"
        android:textColor="#D91E1E"
        android:textSize="48sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
```

```
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.056" />

    <EditText
        android:id="@+id/a"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="33dp"
        android:layout_marginEnd="21dp"
        android:ems="10"
        android:hint="Enter Value of a"
        android:inputType="text"
        android:textSize="24sp"
        app:layout_constraintEnd_toEndOf="@+id/textView4"
        app:layout_constraintTop_toBottomOf="@+id/textView4" />

    <EditText
        android:id="@+id/b"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="37dp"
        android:ems="10"
        android:hint="Enter Value of B"
        android:inputType="text"
        android:textSize="24sp"
        app:layout_constraintEnd_toEndOf="@+id/a"
        app:layout_constraintStart_toStartOf="@+id/a"
        app:layout_constraintTop_toBottomOf="@+id/a" />

    <EditText
        android:id="@+id/c"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="35dp"
        android:ems="10"
        android:hint="Enter Value of c"
        android:inputType="text"
        android:textSize="24sp"
        app:layout_constraintStart_toStartOf="@+id/b"
        app:layout_constraintTop_toBottomOf="@+id/b" />

    <TextView
        android:id="@+id/r1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="10dp"
        android:layout_marginTop="25dp"
        android:text="Root 1:"
```

```
        android:textSize="24sp"
        app:layout_constraintStart_toStartOf="@+id/c"
        app:layout_constraintTop_toBottomOf="@+id/c" />

    <TextView
        android:id="@+id/r2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="29dp"
        android:text="Root 2:"
        android:textSize="24sp"
        app:layout_constraintStart_toStartOf="@+id/r1"
        app:layout_constraintTop_toBottomOf="@+id/r1" />

    <TextView
        android:id="@+id/type"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="32dp"
        android:text="Roots are: "
        android:textSize="24sp"
        app:layout_constraintStart_toStartOf="@+id/r2"
        app:layout_constraintTop_toBottomOf="@+id/r2" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="51dp"
        android:layout_marginBottom="87dp"
        android:text="Calculate Quad Roots"
        android:textSize="24sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintStart_toStartOf="parent" />

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

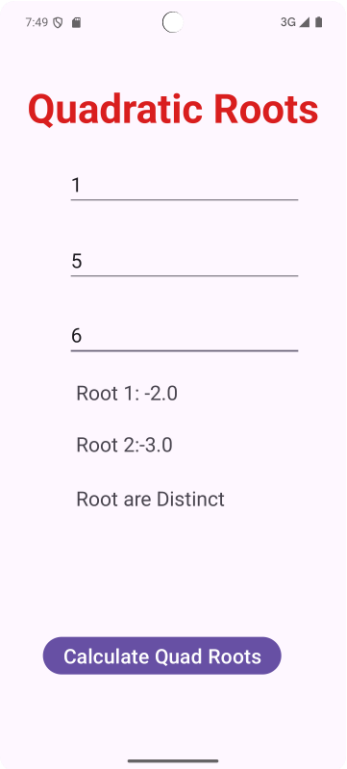
MainActivity.java

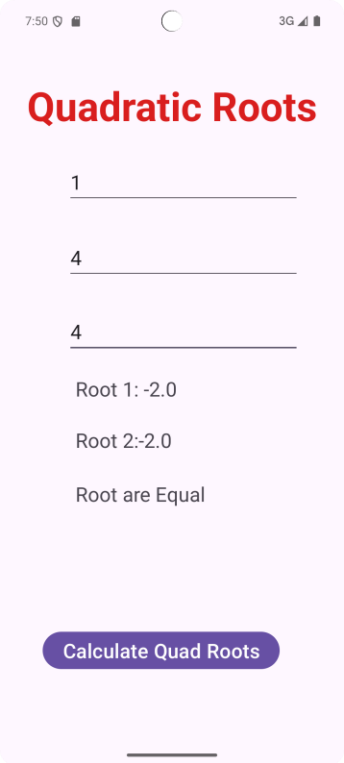
```
package com.example.quadraticroots;

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

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
```

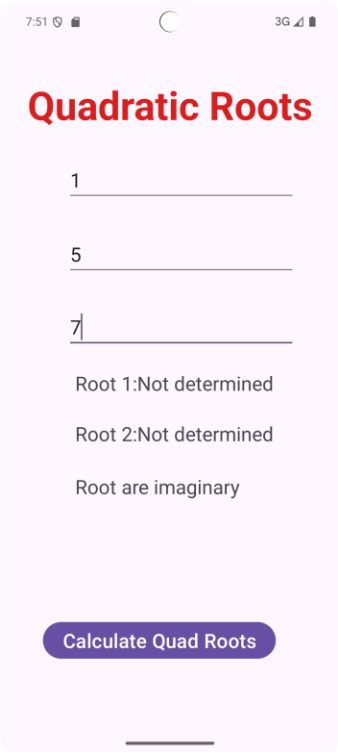
```
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

public class MainActivity extends AppCompatActivity {

    EditText a,b,c;
    TextView r1,r2,type;
    Button button;

    int a1,b1,c1;
    double root1,root2;

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

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });

        a = (EditText) findViewById(R.id.a);
        b = (EditText) findViewById(R.id.b);
        c = (EditText) findViewById(R.id.c);

        r1 = (TextView) findViewById(R.id.r1);
        r2 = (TextView) findViewById(R.id.r2);
        type = (TextView) findViewById(R.id.type);

        button = (Button) findViewById(R.id.button);

        button.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {

   a1 = Integer.parseInt(a.getText().toString());
   b1 = Integer.parseInt(b.getText().toString());
   c1 = Integer.parseInt(c.getText().toString());

   double d = (b1*b1)-(4*a1*c1);

                if (d<0)
```

```
                {
            r1.setText("Root 1:Not determined");
            r2.setText("Root 2:Not determined ");
            type.setText("Root are imaginary ");
                }
                else {

             root1 = (-b1 + Math.sqrt(d)) / 2 * a1;
             root2 = (-b1 - Math.sqrt(d)) / 2 * a1;

    r1.setText("Root 1: " + String.valueOf(root1));
    r2.setText("Root 2:" + String.valueOf(root2));

                    if (root1==root2)
                  type.setText("Root are Equal");
                    else
                type.setText("Root are Distinct");
                }
            }
        });

    }
}
```

**OUTPUT ON EMULATOR:**



EXPERIMENT NO.: 8

Aim: To develop a simple Android application to convert temperature between degree Celsius and Fahrenheit.

1. Open android studio and select new android project by clicking Filemenu→ New →New Project.
2. Choose the project as Empty Views Activity and click Next.
3. Give project name (Start with a capital letter) as **TemperatureConvert**
4. Choose the language as Java.
5. Choose the required android version (Minimum SDK) and select finish.
6. Go to package explorer in the left hand side and select the project.
7. Under the project, Go to res folder and select layout.
8. Double click the activity_main.xml file and design the layout for the page.
9. Select MainActivity.java file and type the program.
10. Now go to activity_main.xml and right click & select run as option and select run configuration OR select the virtual device and click on run icon.
11. Android output will be displayed on the android emulator.

Both activity_main.xml and MainActivity.java files together make our application work. The activity_main.xml is responsible for the layout (Front end User Interface) of the application. And the file MainActivity is responsible for the actions and the performance of the application (back end).

Code:

**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:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#C8EBD5"
    tools:context=".MainActivity">

    <TextView
        android:id="@+id/textView3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="45dp"
        android:layout_marginBottom="53dp"
        android:background="#FFEB3B"
        android:text="Temperature Convertor"
        android:textColor="#DE0C0C"
```

```
        android:textSize="34sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toTopOf="@+id/t"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.066" />

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="41dp"
        android:layout_marginEnd="14dp"
        android:text="Enter Temperature"
        android:textSize="24sp"
        app:layout_constraintBaseline_toBaselineOf="@+id/t"
        app:layout_constraintEnd_toStartOf="@+id/t"
        app:layout_constraintStart_toStartOf="parent" />

    <EditText
        android:id="@+id/t"
        android:layout_width="0dp"
        android:layout_height="0dp"
        android:layout_marginEnd="39dp"
        android:layout_marginBottom="45dp"
        android:ems="10"
        android:inputType="text"
        android:textSize="24sp"
        app:layout_constraintBottom_toTopOf="@+id/res"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toEndOf="@+id/textView"
        app:layout_constraintTop_toBottomOf="@+id/textView3" />

    <TextView
        android:id="@+id/res"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="41dp"
        android:layout_marginBottom="64dp"
        android:text="Result:"
        android:textSize="24sp"
        app:layout_constraintBottom_toTopOf="@+id/radioGroup"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/t" />

    <RadioGroup
        android:id="@+id/radioGroup"
        android:layout_width="wrap_content"
```

```
        android:layout_height="wrap_content"
        android:layout_marginStart="33dp"
        android:layout_marginBottom="81dp"
        app:layout_constraintBottom_toTopOf="@+id/con"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/res">

        <RadioButton
            android:id="@+id/cf"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="Deg Celsius to Farhenheit"
            android:textSize="20sp" />

        <RadioButton
            android:id="@+id/fc"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="Farehenheit to Deg Celcius"
            android:textSize="20sp" />

    </RadioGroup>

    <Button
        android:id="@+id/con"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginEnd="41dp"
        android:layout_marginBottom="174dp"
        android:text="Convert"
        android:textSize="24sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="@+id/radioGroup"
        app:layout_constraintTop_toBottomOf="@+id/radioGroup" />

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

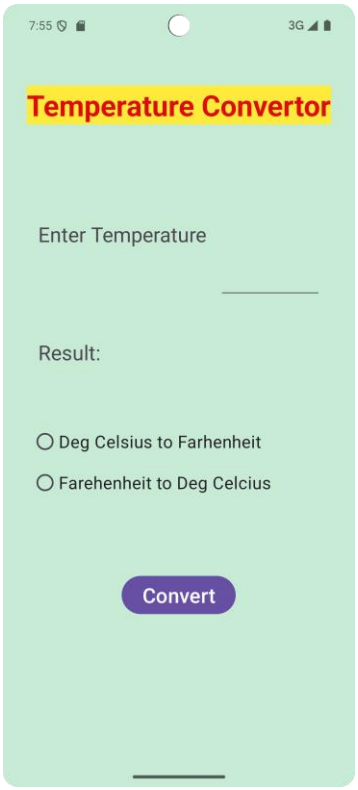
MainActivity.java

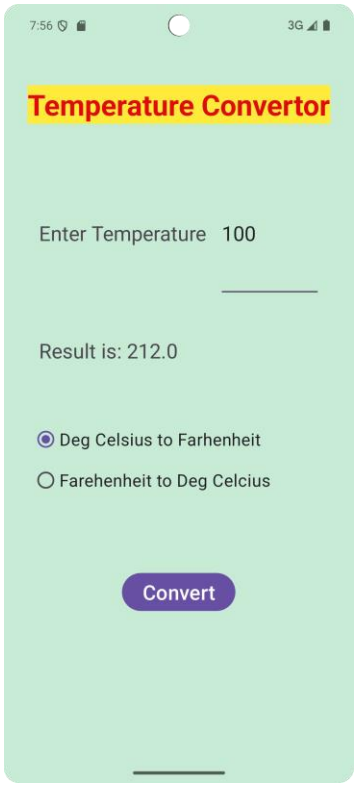
```
package com.example.temperatureconvert;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.RadioButton;
import android.widget.TextView;

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
```

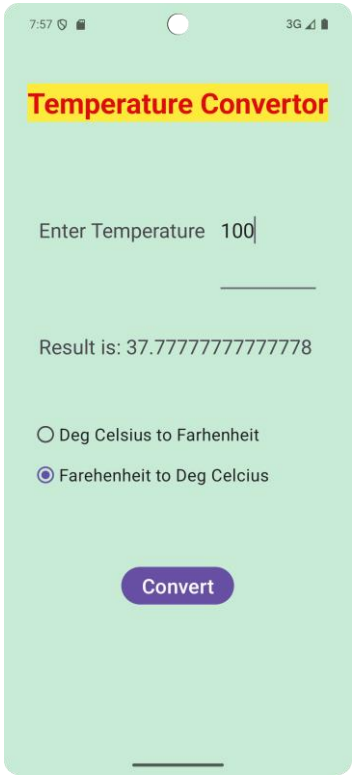
```
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

public class MainActivity extends AppCompatActivity {

    EditText temp;
    TextView res;
    RadioButton cf,fc;
    Button con;

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

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });

        temp = (EditText) findViewById(R.id.t);

        res = (TextView) findViewById(R.id.res);

        cf = (RadioButton) findViewById(R.id.cf);
        fc = (RadioButton) findViewById(R.id.fc);

        con = (Button) findViewById(R.id.con);

        con.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                double r=0;
                int t =
Integer.parseInt(temp.getText().toString());
                if(cf.isChecked())
                {
                    r = (double) (t*9)/5 + 32;
                }
                if(fc.isChecked())
                {
                    r = (double) (t-32)*5/9;
                }
```

```
                    res.setText("Result is: "+String.valueOf(r));
                }
            });
        }
}
```

**OUTPUT ON EMULATOR:**



EXPERIMENT NO.: 9

Aim: To develop a simple Android application to validate Login form with Toast.

1. Open android studio and select new android project by clicking Filemenu→ New →New Project.
2. Choose the project as Empty Views Activity and click Next.
3. Give project name (Start with a capital letter) as **LoginValidation**
4. Choose the language as Java.
5. Choose the required android version (Minimum SDK) and select finish.
6. Go to package explorer in the left hand side and select the project.
7. Under the project, Go to res folder and select layout.
8. Double click the activity_main.xml file and design the layout for the page.
9. Select MainActivity.java file and type the program.
10. Now go to activity_main.xml and right click & select run as option and select run configuration OR select the virtual device and click on run icon.
11. Android output will be displayed on the android emulator.

Both activity_main.xml and MainActivity.java files together make our application work. The activity_main.xml is responsible for the layout (Front end User Interface) of the application. And the file MainActivity is responsible for the actions and the performance of the application (back end).

Code:

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

    <TextView
        android:id="@+id/textView3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Login Form"
        android:textColor="#E61616"
        android:textSize="48sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
```

```
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.052" />

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="16dp"
        android:layout_marginTop="148dp"
        android:layout_marginEnd="30dp"
        android:layout_marginBottom="48dp"
        android:text="Enter Username:"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toTopOf="@+id/textView2"
        app:layout_constraintEnd_toStartOf="@+id/un"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <EditText
        android:id="@+id/un"
        android:layout_width="0dp"
        android:layout_height="0dp"
        android:layout_marginTop="148dp"
        android:layout_marginEnd="31dp"
        android:layout_marginBottom="28dp"
        android:ems="10"
        android:inputType="text"
        android:textSize="24sp"
        app:layout_constraintBottom_toTopOf="@+id/pwd"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toEndOf="@+id/textView"
        app:layout_constraintTop_toTopOf="parent" />

    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="15dp"
        android:layout_marginEnd="34dp"
        android:layout_marginBottom="118dp"
        android:text="Enter Password:"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toTopOf="@+id/button"
        app:layout_constraintEnd_toStartOf="@+id/pwd"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView" />
```

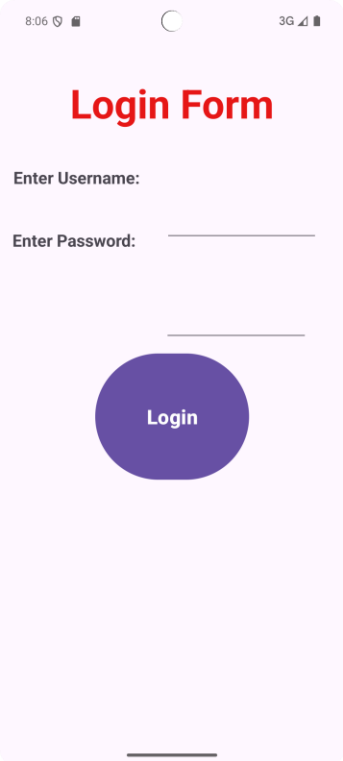
```
    <EditText
        android:id="@+id/pwd"
        android:layout_width="0dp"
        android:layout_height="0dp"
        android:layout_marginEnd="43dp"
        android:layout_marginBottom="481dp"
        android:ems="10"
        android:inputType="textPassword"
        android:textSize="24sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toEndOf="@+id/textView2"
        app:layout_constraintTop_toBottomOf="@+id/un" />

    <Button
        android:id="@+id/button"
        android:layout_width="184dp"
        android:layout_height="0dp"
        android:layout_marginBottom="313dp"
        android:text="Login"
        android:textColorLink="#E21C1C"
        android:textSize="24sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView2" />

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

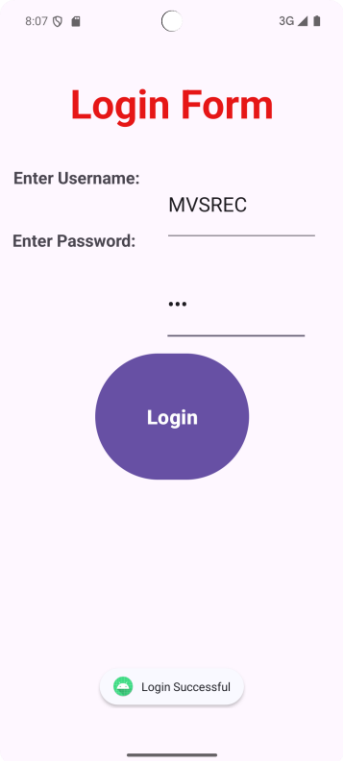
MainActivity.java

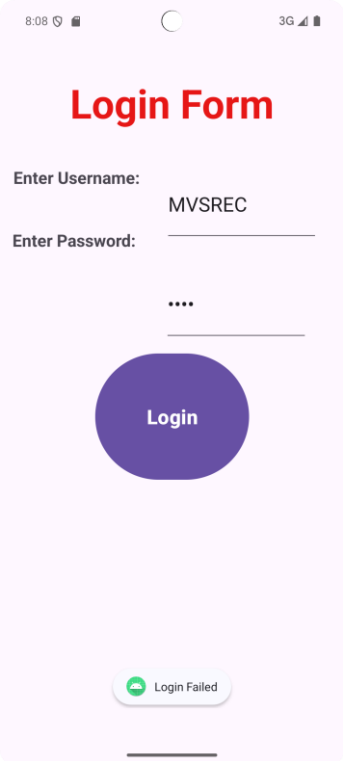
```
package com.example.loginvalidation;


import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;
```

```
public class MainActivity extends AppCompatActivity {

    EditText un,pwd;
    Button login;
    String user, pass;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });

        un = (EditText) findViewById(R.id.un);
        pwd = (EditText) findViewById(R.id.pwd);

        login = (Button) findViewById(R.id.button);

        login.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {

                user = un.getText().toString();
                pass = pwd.getText().toString();

                if (user.equals("MVSREC") && pass.equals("itd"))
                {
                    Toast.makeText(MainActivity.this, "Login
Successful", Toast.LENGTH_LONG).show();

                }
                else
                {
                    Toast.makeText(MainActivity.this, "Login
Failed", Toast.LENGTH_LONG).show();
                }
            }
        });


    }
}
```

**OUTPUT ON EMULATOR:**



EXPERIMENT NO.: 10

Aim: To develop a simple Android application to validate Login form with navigation.

1. Open android studio and select new android project by clicking Filemenu→ New →New Project.
2. Choose the project as Empty Views Activity and click Next.
3. Give project name (Start with a capital letter) as **LoginwithNavigation**
4. Choose the language as Java.
5. Choose the required android version (Minimum SDK) and select finish.
6. Go to package explorer in the left hand side and select the project.
7. To add a new activity file, Go to Menu at top left corner, Filemenu → new →activity →empty views activity.
8. A new activity xml file, a java file will be added and new activity will be added to Andriod Manifest.xml file
9. Add two activity files, success.xml and failure.xml and also Success.java and Failure.java.
10. Under the project, Go to res folder and select layout.
11. Double click the activity_main.xml file and design the layout for the page.
12. Select MainActivity.java file and type the program.
13. Now go to activity_main.xml and right click & select run as option and select run configuration OR select the virtual device and click on run icon.
14. Android output will be displayed on the android emulator.

Both activity_main.xml and MainActivity.java files together make our application work. The activity_main.xml is responsible for the layout (Front end User Interface) of the application. And the file MainActivity is responsible for the actions and the performance of the application (back end).

Code:

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

    <TextView
        android:id="@+id/textView3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
```

```
        android:text="Login Form"
        android:textColor="#E61616"
        android:textSize="48sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.052" />

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="16dp"
        android:layout_marginTop="148dp"
        android:layout_marginEnd="30dp"
        android:layout_marginBottom="48dp"
        android:text="Enter Username:"
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toTopOf="@+id/textView2"
        app:layout_constraintEnd_toStartOf="@+id/un"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <EditText
        android:id="@+id/un"
        android:layout_width="0dp"
        android:layout_height="0dp"
        android:layout_marginTop="148dp"
        android:layout_marginEnd="31dp"
        android:layout_marginBottom="28dp"
        android:ems="10"
        android:inputType="text"
        android:textSize="24sp"
        app:layout_constraintBottom_toTopOf="@+id/pwd"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toEndOf="@+id/textView"
        app:layout_constraintTop_toTopOf="parent" />

    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="15dp"
        android:layout_marginEnd="34dp"
        android:layout_marginBottom="118dp"
        android:text="Enter Password:"
```

```
        android:textSize="20sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toTopOf="@+id/button"
        app:layout_constraintEnd_toStartOf="@+id/pwd"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView" />

    <EditText
        android:id="@+id/pwd"
        android:layout_width="0dp"
        android:layout_height="0dp"
        android:layout_marginEnd="43dp"
        android:layout_marginBottom="481dp"
        android:ems="10"
        android:inputType="textPassword"
        android:textSize="24sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toEndOf="@+id/textView2"
        app:layout_constraintTop_toBottomOf="@+id/un" />

    <Button
        android:id="@+id/button"
        android:layout_width="184dp"
        android:layout_height="0dp"
        android:layout_marginBottom="313dp"
        android:text="Login"
        android:textColorLink="#E21C1C"
        android:textSize="24sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView2" />

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

success.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:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#B4EBF2"
    tools:context=".Success">
```

```
    <TextView
        android:id="@+id/textView5"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Login Sucessfull"
        android:textColor="#E91E63"
        android:textSize="34sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.496"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <TextView
        android:id="@+id/textView4"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="185dp"
        android:text="Home Page"
        android:textColor="#E91616"
        android:textSize="34sp"
        android:textStyle="bold"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

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

failure.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:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#EFE7B2"
    tools:context=".Failure">

    <TextView
        android:id="@+id/textView6"
```

```
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Login Failed"
        android:textColor="#F44336"
        android:textSize="34sp"
        android:textStyle="bold"
        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="0.206" />

    <Button
        android:id="@+id/button2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="297dp"
        android:text="Try Login Again"
        android:textSize="24sp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

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

MainActivity.java

```
package com.example.loginnavigation;

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

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

public class MainActivity extends AppCompatActivity {

    EditText un,pwd;
    Button login;
```

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

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });

        un = (EditText) findViewById(R.id.un);
        pwd = (EditText) findViewById(R.id.pwd);
        login = (Button) findViewById(R.id.button);


        login.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                String user = un.getText().toString();
                String pass = pwd.getText().toString();

                if(user.equals("MVSREC") && pass.equals("itd"))
                {
        Intent i = new Intent(getBaseContext(), Success.class);
                    startActivity(i);
                }
                else {
           Intent i = new Intent(getBaseContext(), Failure.class);
                    startActivity(i);
                }
            }
        });
    }
}
```

Success.java

```
package com.example.loginnavigation;


import android.os.Bundle;

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
```

```
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

public class Success extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.sucess);

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });
    }
}
```

**Failure.java**

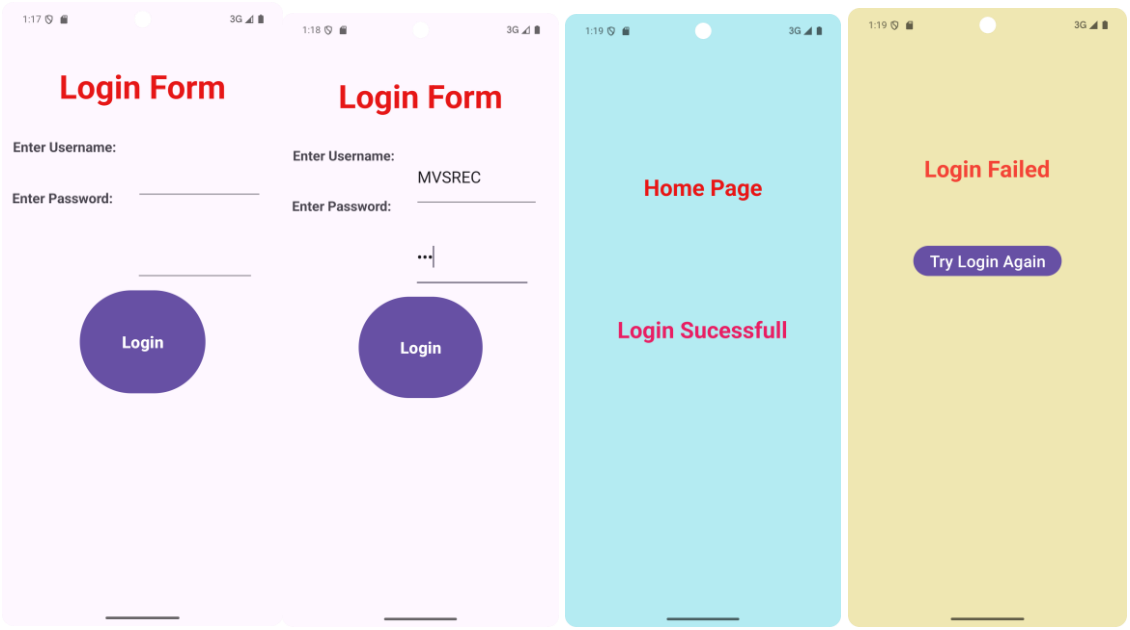
```
package com.example.loginnavigation;


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

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

public class Failure extends AppCompatActivity {
Button b;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.failure);

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
```

```
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });

        b = (Button) findViewById(R.id.button2);
        b.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
   Intent i = new Intent(getBaseContext(), MainActivity.class);
                startActivity(i);
            }
        });
    }
}
```

**AndroidManifest.xml**

```
<activity android:name=".Failure"></activity>
<activity android:name=".Success"></activity>
```

**OUTPUT ON EMULATOR:**



EXPERIMENT NO.: 11

Aim: To develop a simple Android application to send message from one page to other.

1. Open android studio and select new android project by clicking Filemenu→ New →New Project.
2. Choose the project as Empty Views Activity and click Next.
3. Give project name (Start with a capital letter) as **SendMessage**
4. Choose the language as Java.
5. Choose the required android version (Minimum SDK) and select finish.
6. To add a new activity file, go to Menu at top left corner, Filemenu → new →activity →empty views activity.
7. A new activity xml file, a java file will be added and new activity will be added to Andriod Manifest.xml file
8. One activity file, second.xml and Second.java will be added.
9. Go to package explorer in the left hand side and select the project.
10. Under the project, Go to res folder and select layout.
11. Double click the activity_main.xml file and design the layout for the page.
12. Select MainActivity.java file and type the program.
13. Now go to activity_main.xml and right click & select run as option and select run configuration OR select the virtual device and click on run icon.
14. Android output will be displayed on the android emulator.

Both activity_main.xml and MainActivity.java files together make our application work. The activity_main.xml is responsible for the layout (Front end User Interface) of the application. And the file MainActivity is responsible for the actions and the performance of the application (back end).

Code:

**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:id="@+id/main"
    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:text="Send Message"
        android:textColor="#E91E63"
        android:textSize="34sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.142" />

    <EditText
        android:id="@+id/msg"
        android:layout_width="252dp"
        android:layout_height="0dp"
        android:layout_marginTop="239dp"
        android:layout_marginBottom="86dp"
        android:ems="10"
        android:inputType="text"
        android:textSize="24sp"
        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_marginBottom="271dp"
        android:text="Send Message"
        android:textSize="24sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/msg" />

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

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:id="@+id/main"
    android:layout_width="match_parent"
```

```
    android:layout_height="match_parent"
    tools:context=".Second">

    <TextView
        android:id="@+id/textView3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Second Page"
        android:textColor="#9C27B0"
        android:textSize="34sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.538"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.15" />

    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="269dp"
        android:text="Message is:"
        android:textColor="#E91A1A"
        android:textSize="24sp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

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

MainActivity.java

```
package com.example.sendmessage;

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

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

public class MainActivity extends AppCompatActivity {
```

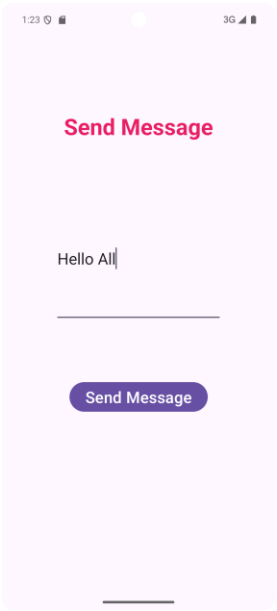
```
    EditText m;
    Button b;

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

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });

        m = (EditText) findViewById(R.id.msg);
        b = (Button) findViewById(R.id.button);

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

                String message = m.getText().toString();
         Intent i = new Intent(getBaseContext(), Second.class);
                i.putExtra("key",message);
                startActivity(i);
                            }
        });
    }
}
```

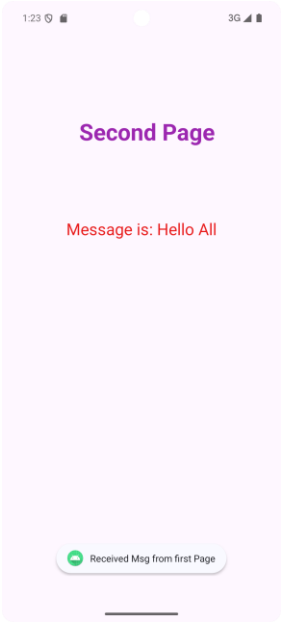
**Second.java**

```
package com.example.sendmessage;

import android.content.Intent;
import android.os.Bundle;
import android.widget.TextView;
import android.widget.Toast;

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;
```

```
public class Second extends AppCompatActivity {

    TextView t;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.second);

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });

        t = (TextView)findViewById(R.id.textView2);
        Intent i = getIntent();
        String msg = i.getStringExtra("key");
        t.setText("Message is: "+msg);
        Toast.makeText(getBaseContext(),"Received Msg from first
Page",1).show();

    }
}
```

**OUTPUT ON EMULATOR:**



EXPERIMENT NO.: 12

Aim: To develop a simple Android application to Navigate from one page to other.

1. Open android studio and select new android project by clicking Filemenu→ New →New Project.
2. Choose the project as Empty Views Activity and click Next.
3. Give project name (Start with a capital letter) as **Navigation**
4. Choose the language as Java.
5. Choose the required android version (Minimum SDK) and select finish.
6. To add a new activity file, go to Menu at top left corner, Filemenu → new →activity →empty views activity.
7. A new activity xml file, a java file will be added and new activity will be added to Andriod Manifest.xml file
8. Add two activity files, secondpage.xml and thirdpage.xml and also Secondpage.java and Thirdpage.java.
9. Go to package explorer in the left hand side and select the project.
10. Under the project, Go to res folder and select layout.
11. Double click the activity_main.xml file and design the layout for the page.
12. Select MainActivity.java file and type the program.
13. Now go to activity_main.xml and right click & select run as option and select run configuration OR select the virtual device and click on run icon.
14. Android output will be displayed on the android emulator.

Both activity_main.xml and MainActivity.java files together make our application work. The activity_main.xml is responsible for the layout (Front end User Interface) of the application. And the file MainActivity is responsible for the actions and the performance of the application (back end).

Code:

**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:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#D7EDBD"
    tools:context=".MainActivity">

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

```
        android:layout_height="wrap_content"
        android:text="Home Page"
        android:textColor="#0C9AD9"
        android:textSize="34sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.589"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.084" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="311dp"
        android:layout_marginEnd="81dp"
        android:layout_marginBottom="310dp"
        android:text="Second Page"
        android:textSize="24sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toTopOf="@+id/textView" />

    <Button
        android:id="@+id/button2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="11dp"
        android:layout_marginTop="31dp"
        android:text="Third Page"
        android:textSize="24sp"
        app:layout_constraintStart_toStartOf="@+id/button"
        app:layout_constraintTop_toBottomOf="@+id/button" />

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

activity_secondpage.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:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#C4ADED"
```

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

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Second Page"
        android:textColor="#9C27B0"
        android:textSize="34sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.589"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.084" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="311dp"
        android:layout_marginEnd="81dp"
        android:layout_marginBottom="310dp"
        android:text="Home Page"
        android:textSize="24sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toTopOf="@+id/textView" />

    <Button
        android:id="@+id/button2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="11dp"
        android:layout_marginTop="31dp"
        android:text="Third Page"
        android:textSize="24sp"
        app:layout_constraintStart_toStartOf="@+id/button"
        app:layout_constraintTop_toBottomOf="@+id/button" />

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

activity_thirdpage.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:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#EDBFB0"
    tools:context=".Thirdpage">

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Third Page"
        android:textColor="#EF3F08"
        android:textSize="34sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.589"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.084" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="311dp"
        android:layout_marginEnd="81dp"
        android:layout_marginBottom="310dp"
        android:text="Home Page"
        android:textSize="24sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toTopOf="@+id/textView" />

    <Button
        android:id="@+id/button2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="11dp"
        android:layout_marginTop="32dp"
        android:text="Second Page"
        android:textSize="24sp"
        app:layout_constraintStart_toStartOf="@+id/button"
        app:layout_constraintTop_toBottomOf="@+id/button" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

MainActivity.java

```
package com.example.navigation123;

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

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

public class MainActivity extends AppCompatActivity {

    Button b1,b2;

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

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });

        b1 = (Button) findViewById(R.id.button);
        b2 = (Button) findViewById(R.id.button2);

        b1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
     Intent i = new Intent(getBaseContext(), Secondpage.class);
                startActivity(i);
            }
        });

        b2.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
     Intent i = new Intent(getBaseContext(), Thirdpage.class);
            startActivity(i);
```

```
            }
        });
    }
}
```

Secondpage.java

```
package com.example.navigation123;

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

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

public class Secondpage extends AppCompatActivity {
Button b1,b2;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_secondpage);

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });

        b1 = (Button) findViewById(R.id.button);
        b2 = (Button) findViewById(R.id.button2);

        b1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
   Intent i = new Intent(getBaseContext(),MainActivity.class);
                startActivity(i);
            }
        });

        b2.setOnClickListener(new View.OnClickListener() {
```

```
            @Override
            public void onClick(View view)Intent i = new
Intent(getBaseContext(), Thirdpage.class);
                startActivity(i);
            }
        });
    }
}
```

Thirdpage.java

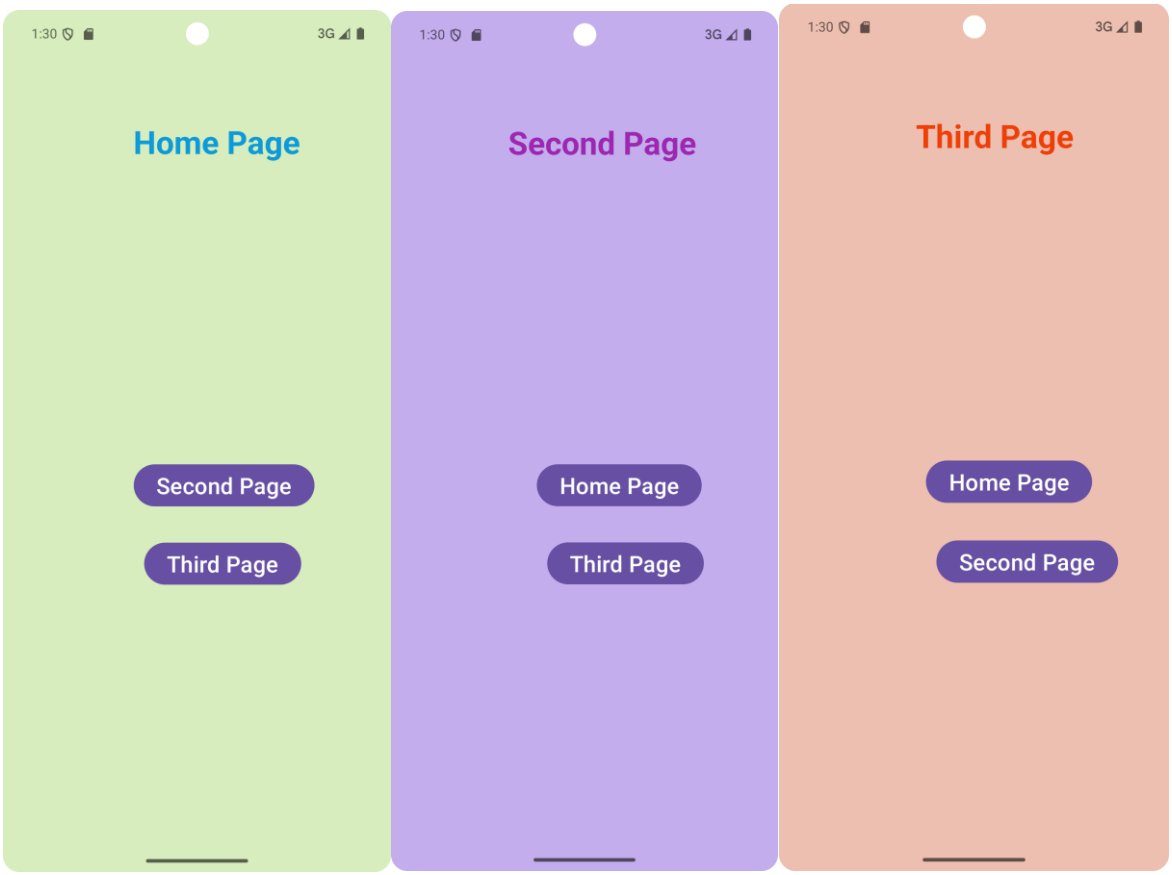
```
package com.example.navigation123;

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

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

public class Thirdpage extends AppCompatActivity {

    Button b1,b2;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_thirdpage);

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });
        b1 = (Button) findViewById(R.id.button);
        b2 = (Button) findViewById(R.id.button2);

        b1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
   Intent i = new Intent(getBaseContext(), MainActivity.class);
                startActivity(i);
```

```
            }
        });

        b2.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
   Intent i = new Intent(getBaseContext(), Secondpage.class);
                startActivity(i);
            }
        });

    }
}
```

AndroidManifest.xml

```
<activity
    android:name=".Thirdpage"
    android:exported="false" />
<activity
    android:name=".Secondpage"
    android:exported="false" />
```

OUTPUT



EXPERIMENT NO.: 13

Aim: To develop a simple Android application to demonstrate the use of Layoutmanager – Design your ID Card.

1. Open android studio and select new android project by clicking Filemenu→ New →New Project.
2. Choose the project as Empty Views Activity and click Next.
3. Give project name (Start with a capital letter) as **IDCard**
4. Choose the language as Java.
5. Choose the required android version (Minimum SDK) and select finish.
6. Go to package explorer in the left hand side and select the project.
7. Under the project, Go to res folder and select layout.
8. Double click the activity_main.xml file and design the layout for the page.
9. Select MainActivity.java file and type the program.
10. Now go to activity_main.xml and right click & select run as option and select run configuration OR select the virtual device and click on run icon.
11. Android output will be displayed on the android emulator.

Both activity_main.xml and MainActivity.java files together make our application work. The activity_main.xml is responsible for the layout (Front end User Interface) of the application. And the file MainActivity is responsible for the actions and the performance of the application (back end).

Code:

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

    <TextView
        android:id="@+id/textView3"
        android:layout_width="414dp"
        android:layout_height="157dp"
        android:background="#1C3C9B"
        android:text="MVSR"
        android:textAlignment="center"
```

```
        android:textColor="#FFEBEE"
        android:textSize="34sp"
        android:textStyle="bold"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        tools:layout_editor_absoluteY="-3dp" />

    <TextView
        android:id="@+id/textView4"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="ENGINEERING COLLEGE"
        android:textColor="#FFEBEE"
        android:textSize="28sp"
        android:textStyle="bold"
        tools:layout_editor_absoluteX="61dp"
        tools:layout_editor_absoluteY="45dp" />

    <TextView
        android:id="@+id/textView5"
        android:layout_width="166dp"
        android:layout_height="21dp"
        android:background="#FFEBEE"
        android:text="UGC AUTONOMOUS"
        android:textAlignment="center"
        android:textColor="#ED0A0A"
        android:textSize="16sp"
        android:textStyle="bold"
        tools:layout_editor_absoluteX="128dp"
        tools:layout_editor_absoluteY="83dp" />

    <TextView
        android:id="@+id/textView7"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="(Sponsored by Matrusri Education
Society,Estd.1980)"
        android:textColor="#FFEBEE"
        android:textSize="14sp"
        android:textStyle="normal"
        tools:layout_editor_absoluteX="26dp"
        tools:layout_editor_absoluteY="107dp" />

    <TextView
        android:id="@+id/textView8"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Affiliated to Osmania University"
        android:textAlignment="center"
```

```
        android:textColor="#FFEBEE"
        tools:layout_editor_absoluteX="98dp"
        tools:layout_editor_absoluteY="126dp" />

    <TextView
        android:id="@+id/textView9"
        android:layout_width="418dp"
        android:layout_height="99dp"
        android:background="#1C3C9B"
        android:text="NADERGUL VILLAGE,BALAPUR
MANDAL(NEW),SAROORNAGAR"
        android:textAlignment="center"
        android:textColor="#FFEBEE"
        tools:layout_editor_absoluteX="-4dp"
        tools:layout_editor_absoluteY="635dp" />

    <TextView
        android:id="@+id/textView10"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="MANDAL(OLD)HYDERABAD-501510 TELANGANA"
        android:textColor="#FFEBEE"
        tools:layout_editor_absoluteX="57dp"
        tools:layout_editor_absoluteY="658dp" />

    <TextView
        android:id="@+id/textView11"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="WEBSITE:mvsrec.edu.in"
        android:textColor="#FFEBEE"
        tools:layout_editor_absoluteX="131dp"
        tools:layout_editor_absoluteY="684dp" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="IDENTITY CARD"
        tools:layout_editor_absoluteX="130dp"
        tools:layout_editor_absoluteY="182dp" />

    <ImageView
        android:id="@+id/imageView"
        android:layout_width="175dp"
        android:layout_height="183dp"
        app:srcCompat="@drawable/mvsr"
        tools:layout_editor_absoluteX="118dp"
        tools:layout_editor_absoluteY="238dp" />
```

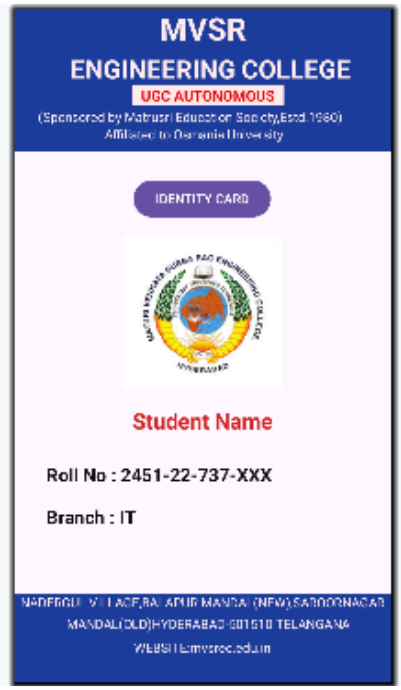
```
    <TextView
        android:id="@+id/textView12"
        android:layout_width="193dp"
        android:layout_height="27dp"
        android:text="Student Name"
        android:textAlignment="center"
        android:textColor="#D32525"
        android:textSize="24sp"
        android:textStyle="bold"
        tools:layout_editor_absoluteX="109dp"
        tools:layout_editor_absoluteY="431dp" />

    <TextView
        android:id="@+id/textView13"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Roll No : 2451-22-737-XXX"
        android:textColor="#101010"
        android:textSize="20sp"
        android:textStyle="bold"
        tools:layout_editor_absoluteX="35dp"
        tools:layout_editor_absoluteY="492dp" />

    <TextView
        android:id="@+id/textView14"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Branch : IT"
        android:textColor="#0F0E0E"
        android:textSize="20sp"
        android:textStyle="bold"
        tools:layout_editor_absoluteX="35dp"
        tools:layout_editor_absoluteY="538dp" />

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

MainActivity.java

```
package com.example.idcard;

import android.os.Bundle;

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;
```

```
public class MainActivity extends AppCompatActivity {

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

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });
    }
}
```

**OUTPUT ON EMULATOR:**



EXPERIMENT NO.: 14

Aim: To develop a simple Android application that draws basic graphical primitives on the screen

1. Open android studio and select new android project by clicking Filemenu→ New →New Project.
2. Choose the project as Empty Views Activity and click Next.
3. Give project name (Start with a capital letter) as **DrawGraphics**
4. Choose the language as Java.
5. Choose the required android version (Minimum SDK) and select finish.
6. Go to package explorer in the left hand side and select the project.
7. Under the project, Go to res folder and select layout.
8. Double click the activity_main.xml file and design the layout for the page.
9. Select MainActivity.java file and type the program.
10. Now go to activity_main.xml and right click & select run as option and select run configuration OR select the virtual device and click on run icon.
11. Android output will be displayed on the android emulator.

Both activity_main.xml and MainActivity.java files together make our application work. The activity_main.xml is responsible for the layout (Front end User Interface) of the application. And the file MainActivity is responsible for the actions and the performance of the application (back end).

Code:

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

    <ImageView
        android:id="@+id/imageView"
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintStart_toStartOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

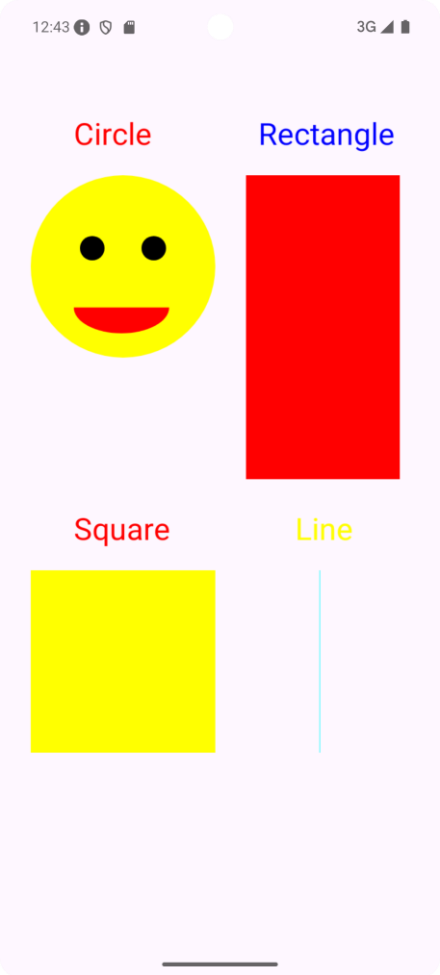
**MainActivity.java**

```
package com.example.graphics;

import android.graphics.Bitmap;
```

```
import android.graphics.Canvas;
import android.graphics.Color;
import android.graphics.Paint;
import android.graphics.drawable.BitmapDrawable;
import android.os.Bundle;
import android.widget.ImageView;

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

public class MainActivity extends AppCompatActivity {

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

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });
        Bitmap bg = Bitmap.createBitmap(720, 1280,
                Bitmap.Config.ARGB_8888);
//Setting the Bitmap as background for the ImageView
        ImageView i = (ImageView) findViewById(R.id.imageView);
        i.setBackgroundDrawable(new BitmapDrawable(bg));
//Creating the Canvas Object
        Canvas canvas = new Canvas(bg);
//Creating the Paint Object and set its color & TextSize
        Paint paint = new Paint();
        paint.setColor(Color.BLUE);
        paint.setTextSize(50);
//To draw a Rectangle
        canvas.drawText("Rectangle", 420, 150, paint);
        paint.setColor(Color.RED);
        canvas.drawRect(400, 200, 650, 700, paint);
//To draw a Circle
        canvas.drawText("Circle", 120, 150, paint);
        paint.setColor(Color.YELLOW);
        canvas.drawCircle(200, 350, 150, paint);
        paint.setColor(Color.BLACK);
```

```
        canvas.drawCircle(150, 320, 20, paint);

        paint.setColor(Color.BLACK);
        canvas.drawCircle(250, 320, 20, paint);

        paint.setColor(Color.RED);
        canvas.drawArc(120, 375, 275,460,0,180,false, paint);


//To draw a Square
        canvas.drawText("Square", 120, 800, paint);
        paint.setColor(Color.YELLOW);
        canvas.drawRect(50, 850, 350, 1150, paint);
//To draw a Line
        canvas.drawText("Line", 480, 800, paint);
        paint.setColor(Color.CYAN);
        canvas.drawLine(520, 850, 520, 1150, paint);

    }
}
```

**OUTPUT ON EMULATOR:**



EXPERIMENT NO.: 15

Aim: To develop a simple Android application to send an Email.

1. Open android studio and select new android project by clicking Filemenu→ New →New Project.
2. Choose the project as Empty Views Activity and click Next.
3. Give project name (Start with a capital letter) as **SendEmail**
4. Choose the language as Java.
5. Choose the required android version (Minimum SDK) and select finish.
6. Go to package explorer in the left hand side and select the project.
7. Under the project, Go to res folder and select layout.
8. Double click the activity_main.xml file and design the layout for the page.
9. Select MainActivity.java file and type the program.
10. Now go to activity_main.xml and right click & select run as option and select run configuration OR select the virtual device and click on run icon.
11. Android output will be displayed on the android emulator.

Both activity_main.xml and MainActivity.java files together make our application work. The activity_main.xml is responsible for the layout (Front end User Interface) of the application. And the file MainActivity is responsible for the actions and the performance of the application (back end).

Code:

**activity_main.xml**

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:id="@+id/main"
    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_marginTop="69dp"
        android:layout_marginBottom="53dp"
```

```
        android:fontFamily="cursive"
        android:text="Send Email"
        android:textColor="#E91E63"
        android:textSize="48sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toTopOf="@+id/email"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="46dp"
        android:layout_marginEnd="86dp"
        android:text="To"
        android:textSize="24sp"
        android:textStyle="bold"
        app:layout_constraintBaseline_toBaselineOf="@+id/email"
        app:layout_constraintEnd_toStartOf="@+id/email"
        app:layout_constraintStart_toStartOf="parent" />

    <TextView
        android:id="@+id/textView3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="46dp"
        android:layout_marginTop="13dp"
        android:layout_marginEnd="37dp"
        android:text="Subject"
        android:textSize="24sp"
        android:textStyle="bold"
        app:layout_constraintEnd_toStartOf="@+id/sub"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="@+id/sub" />

    <EditText
        android:id="@+id/sub"
        android:layout_width="0dp"
        android:layout_height="0dp"
        android:layout_marginEnd="35dp"
        android:layout_marginBottom="44dp"
        android:ems="10"
        android:inputType="text"
        android:textSize="24sp"
        app:layout_constraintBottom_toTopOf="@+id/body"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toEndOf="@+id/textView3"
```

```
        app:layout_constraintTop_toBottomOf="@+id/email" />

    <TextView
        android:id="@+id/textView4"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="46dp"
        android:layout_marginTop="13dp"
        android:layout_marginEnd="59dp"
        android:text="Body"
        android:textSize="24sp"
        android:textStyle="bold"
        app:layout_constraintEnd_toStartOf="@+id/body"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="@+id/body" />

    <EditText
        android:id="@+id/body"
        android:layout_width="0dp"
        android:layout_height="0dp"
        android:layout_marginEnd="25dp"
        android:layout_marginBottom="45dp"
        android:ems="10"
        android:inputType="text"
        android:textSize="24sp"
        app:layout_constraintBottom_toTopOf="@+id/button"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toEndOf="@+id/textView4"
        app:layout_constraintTop_toBottomOf="@+id/sub" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginEnd="112dp"
        android:layout_marginBottom="144dp"
        android:text="Send Email"
        android:textSize="24sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="@+id/body"
        app:layout_constraintTop_toBottomOf="@+id/body" />

    <EditText
        android:id="@+id/email"
        android:layout_width="0dp"
        android:layout_height="0dp"
        android:layout_marginEnd="21dp"
        android:layout_marginBottom="31dp"
        android:ems="10"
```

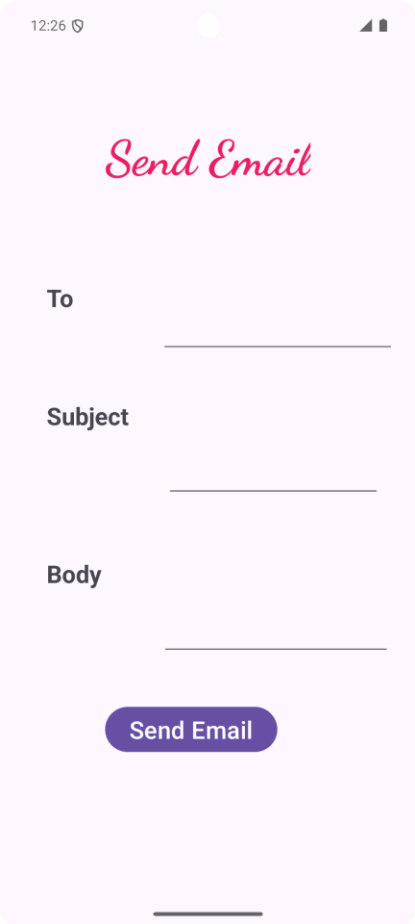
```
        android:inputType="textEmailAddress"
        android:textSize="24sp"
        app:layout_constraintBottom_toTopOf="@+id/sub"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toEndOf="@+id/textView2"
        app:layout_constraintTop_toBottomOf="@+id/textView" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

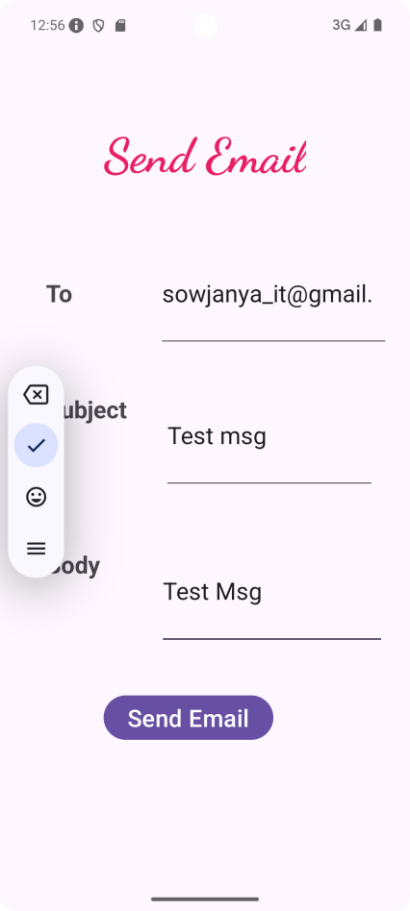
MainActivity.java

```
package com.example.sendemail;

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

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

public class MainActivity extends AppCompatActivity {
    Button send;
    EditText to, subject, body;

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

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });
        to = findViewById(R.id.email);
        subject = findViewById(R.id.sub);
        body = findViewById(R.id.body);
        send = findViewById(R.id.button);
```

```
        send.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                String emailsend = to.getText().toString();
            String emailsubject = subject.getText().toString();
                String emailbody = body.getText().toString();

                Intent i = new Intent(Intent.ACTION_SEND);
       i.putExtra(Intent.EXTRA_EMAIL, new String[]{emailsend});
                i.putExtra(Intent.EXTRA_SUBJECT, emailsubject);
                i.putExtra(Intent.EXTRA_TEXT, emailbody);
                i.setType("message/rfc822");
                startActivity(Intent.createChooser(i, "Choose an
Email client :"));
            }
        });

    }
}
```

**OUTPUT ON EMULATOR:**



EXPERIMENT NO.: 16

Aim: To develop a simple Android application to send a SMS.

1. Open android studio and select new android project by clicking Filemenu→ New →New Project.
2. Choose the project as Empty Views Activity and click Next.
3. Give project name (Start with a capital letter) as **SendSMS**
4. Choose the language as Java.
5. Choose the required android version (Minimum SDK) and select finish.
6. Go to package explorer in the left hand side and select the project.
7. Under the project, Go to res folder and select layout.
8. Double click the activity_main.xml file and design the layout for the page.
9. Select MainActivity.java file and type the program.
10. Now go to activity_main.xml and right click & select run as option and select run configuration OR select the virtual device and click on run icon.
11. Android output will be displayed on the android emulator.

Both activity_main.xml and MainActivity.java files together make our application work. The activity_main.xml is responsible for the layout (Front end User Interface) of the application. And the file MainActivity is responsible for the actions and the performance of the application (back end).

Code:

**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:id="@+id/main"
    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_marginTop="69dp"
        android:fontFamily="cursive"
        android:text="Send SMS"
        android:textColor="#E91E63"
        android:textSize="48sp"
        android:textStyle="bold"
```

```
        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_marginBottom="188dp"
        android:text="Send SMS"
        android:textSize="24sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent" />

    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="31dp"
        android:layout_marginEnd="15dp"
        android:text="Mobile No:"
        android:textSize="24sp"
        android:textStyle="bold"
        app:layout_constraintBaseline_toBaselineOf="@+id/pno"
        app:layout_constraintEnd_toStartOf="@+id/pno"
        app:layout_constraintStart_toStartOf="parent" />

    <TextView
        android:id="@+id/textView3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="35dp"
        android:layout_marginTop="3dp"
        android:layout_marginEnd="37dp"
        android:text="Message"
        android:textSize="24sp"
        android:textStyle="bold"
        app:layout_constraintEnd_toStartOf="@+id/msg"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="@+id/msg" />

    <EditText
        android:id="@+id/pno"
        android:layout_width="0dp"
        android:layout_height="0dp"
        android:layout_marginTop="247dp"
        android:layout_marginEnd="28dp"
        android:layout_marginBottom="51dp"
```

```
        android:ems="10"
        android:inputType="phone"
        android:textSize="24sp"
        app:layout_constraintBottom_toTopOf="@+id/msg"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toEndOf="@+id/textView2"
        app:layout_constraintTop_toTopOf="parent" />

    <EditText
        android:id="@+id/msg"
        android:layout_width="0dp"
        android:layout_height="0dp"
        android:layout_marginEnd="42dp"
        android:layout_marginBottom="292dp"
        android:ems="10"
        android:inputType="text"
        android:textSize="24sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toEndOf="@+id/textView3"
        app:layout_constraintTop_toBottomOf="@+id/pno" />

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

AndroidManifest.xml

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

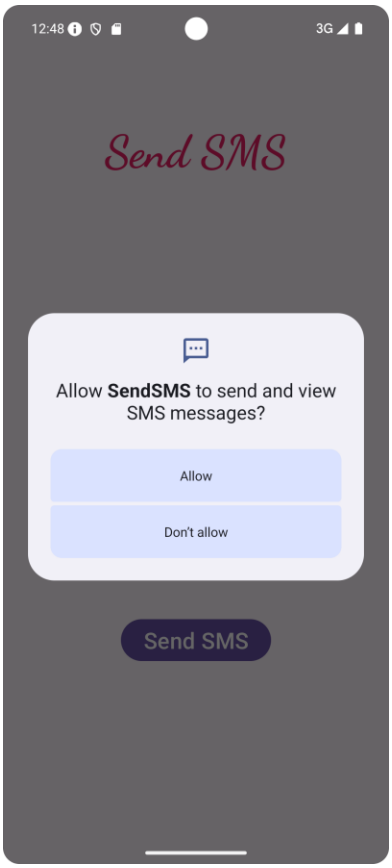
MainActivity.java

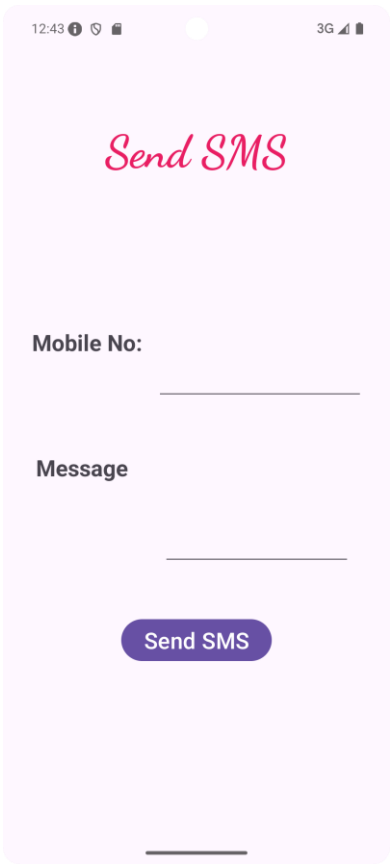
```
package com.example.sendsms;

import android.Manifest;
import android.content.pm.PackageManager;
import android.os.Build;
import android.os.Bundle;
import android.telephony.SmsManager;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import androidx.core.content.ContextCompat;
import androidx.core.graphics.Insets;
```

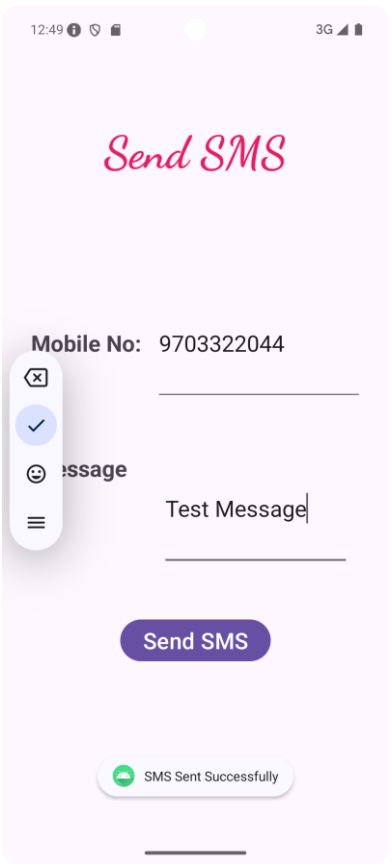
```
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

public class MainActivity extends AppCompatActivity {
   EditText phone,msg;
    Button sms;

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

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });
        if (Build.VERSION.SDK_INT >=
Build.VERSION_CODES.TIRAMISU) {
            if (ContextCompat.checkSelfPermission(this,
android.Manifest.permission.POST_NOTIFICATIONS) !=
PackageManager.PERMISSION_GRANTED) {
                ActivityCompat.requestPermissions(this, new
String[]{Manifest.permission.SEND_SMS}, 100);
            }
        }


        phone = (EditText)findViewById(R.id.pno);
        msg = (EditText)findViewById(R.id.msg);
        sms = (Button)findViewById(R.id.button);

        sms.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                try{
                    SmsManager smgr = SmsManager.getDefault();

smgr.sendTextMessage(phone.getText().toString(),null,msg.getText
().toString(),null,null);

 Toast.makeText(MainActivity.this, "SMS Sent Successfully",
Toast.LENGTH_SHORT).show();
                }
```

```
                catch (Exception e){

Toast.makeText(MainActivity.this, "SMS Failed to Send, Please
try again", Toast.LENGTH_SHORT).show();
                }
            }
        });

    }
}
```

**OUTPUT ON EMULATOR:**



EXPERIMENT NO.: 17

Aim: To develop a simple Android application that sends a Notification.

1. Open android studio and select new android project by clicking Filemenu→ New →New Project.
2. Choose the project as Empty Views Activity and click Next.
3. Give project name (Start with a capital letter) as **SendNotification**
4. Choose the language as Java.
5. Choose the required android version (Minimum SDK) and select finish.
6. Go to package explorer in the left hand side and select the project.
7. Under the project, Go to res folder and select layout.
8. Double click the activity_main.xml file and design the layout for the page.
9. Select MainActivity.java file and type the program.
10. Now go to activity_main.xml and right click & select run as option and select run configuration OR select the virtual device and click on run icon.
11. Android output will be displayed on the android emulator.

Both activity_main.xml and MainActivity.java files together make our application work. The activity_main.xml is responsible for the layout (Front end User Interface) of the application. And the file MainActivity is responsible for the actions and the performance of the application (back end).

Code:

**Android Manifest file**

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

**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:id="@+id/main"
    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:fontFamily="cursive"
```

```
        android:text="Notification"
        android:textColor="#E91E63"
        android:textSize="48sp"
        android:textStyle="bold"
        tools:layout_editor_absoluteX="105dp"
        tools:layout_editor_absoluteY="88dp" />

    <EditText
        android:id="@+id/msg"
        android:layout_width="297dp"
        android:layout_height="98dp"
        android:layout_marginTop="211dp"
        android:hint="message"
        android:textSize="34sp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <Button
        android:id="@+id/send"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="112dp"
        android:text="Send Notification"
        android:textSize="24sp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/msg" />

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

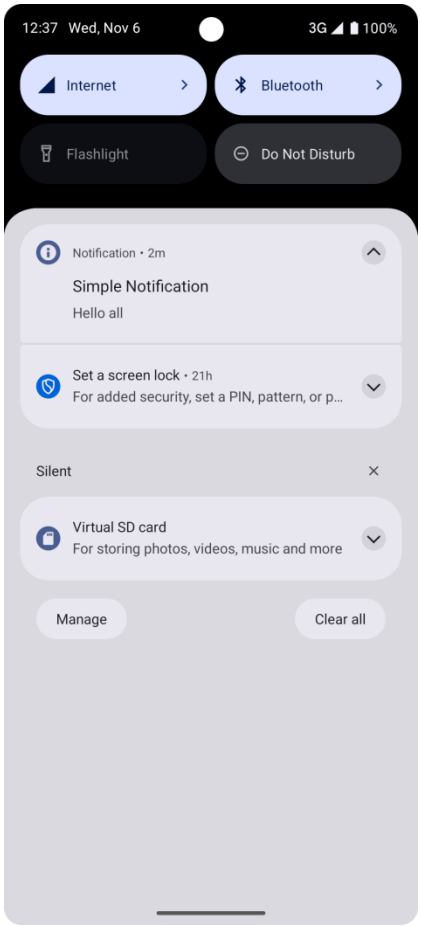
MainActivity.java

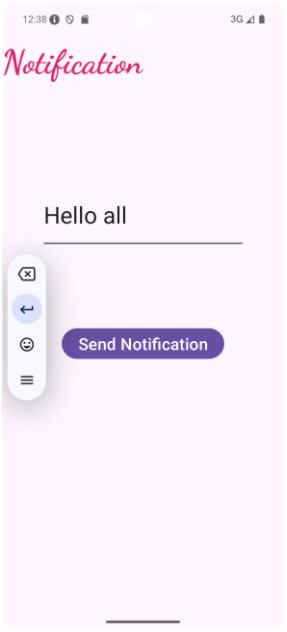
```
package com.example.sendnotification;

import android.Manifest;
import android.app.NotificationChannel;
import android.app.NotificationManager;
import android.app.PendingIntent;
import android.content.Context;
import android.content.Intent;
import android.content.pm.PackageManager;
import android.os.Build;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;

import androidx.activity.EdgeToEdge;
```

```
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import androidx.core.app.NotificationCompat;
import androidx.core.content.ContextCompat;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

public class MainActivity extends AppCompatActivity {
    EditText msg;
    Button send;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });

        if (Build.VERSION.SDK_INT >=
Build.VERSION_CODES.TIRAMISU) {
            if (ContextCompat.checkSelfPermission(this,
android.Manifest.permission.POST_NOTIFICATIONS) !=
PackageManager.PERMISSION_GRANTED) {
                ActivityCompat.requestPermissions(this, new
String[]{Manifest.permission.POST_NOTIFICATIONS}, 100);
            }
        }

        msg = findViewById(R.id.msg);
        send = findViewById(R.id.send);

        send.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String message = msg.getText().toString();
           int notificationId = (int)
System.currentTimeMillis();
         Intent notificationIntent = new
Intent(MainActivity.this, MainActivity.class);
         PendingIntent pendingIntent =
PendingIntent.getActivity(MainActivity.this, 0,
```

```
notificationIntent, PendingIntent.FLAG_UPDATE_CURRENT |
PendingIntent.FLAG_IMMUTABLE);

                NotificationCompat.Builder builder = new
NotificationCompat.Builder(MainActivity.this,
"notificationChannel")

.setSmallIcon(android.R.drawable.ic_dialog_info)
                        .setContentTitle("Simple Notification")
                        .setContentText(message)
                        .setAutoCancel(true)
                        .setContentIntent(pendingIntent);

NotificationManager notificationManager = (NotificationManager)
MainActivity.this.getSystemService(Context.NOTIFICATION_SERVICE)
;
                if (notificationManager != null) {
                    notificationManager.notify(notificationId,
builder.build()); // Unique notification ID
                }
// Create the notification channel (required for Android 8.0 and
above)
 if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.O) {
       NotificationChannel channel = new
NotificationChannel("notificationChannel", "Notification",
NotificationManager.IMPORTANCE_HIGH);

notificationManager.createNotificationChannel(channel);
                }
            }
        });
    }
}
```

**OUTPUT ON EMULATOR:**






EXPERIMENT NO.: 18

1. Aim: To develop a simple Android application that converts Text to Speech.

1. Open android studio and select new android project by clicking Filemenu→ New →New Project.
2. Choose the project as Empty Views Activity and click Next.
3. Give project name (Start with a capital letter) as **TexttoSpeech**
4. Choose the language as Java.
5. Choose the required android version (Minimum SDK) and select finish.
6. Go to package explorer in the left hand side and select the project.
7. Under the project, Go to res folder and select layout.
8. Double click the activity_main.xml file and design the layout for the page.
9. Select MainActivity.java file and type the program.
10. Now go to activity_main.xml and right click & select run as option and select run configuration OR select the virtual device and click on run icon.
11. Android output will be displayed on the android emulator.

Both activity_main.xml and MainActivity.java files together make our application work. The activity_main.xml is responsible for the layout (Front end User Interface) of the application. And the file MainActivity is responsible for the actions and the performance of the application (back end).

Code:

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

<TextView
    android:id="@+id/textView"
    android:layout_width="274dp"
    android:layout_height="132dp"
    android:layout_marginTop="120dp"
    android:layout_marginBottom="50dp"
    android:fontFamily="cursive"
    android:text="Text to Speech Converter"
    android:textAlignment="center"
    android:textColor="#E91E63"
    android:textSize="40sp"
    android:textStyle="bold"
    app:layout_constraintBottom_toTopOf="@+id/editText"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.401"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.28" />

<Button
    android:id="@+id/button"
    android:layout_width="212dp"
    android:layout_height="99dp"
    android:layout_marginTop="144dp"
    android:text="TexttoSpeech"
    android:textSize="24sp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.498"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/textView" />

<EditText
    android:id="@+id/editText"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginEnd="76dp"
    android:layout_marginBottom="393dp"
    android:ems="10"
    android:hint="Enter Text"
    android:inputType="text"
    android:textSize="24sp"
    app:layout_constraintBottom_toBottomOf="parent"
```

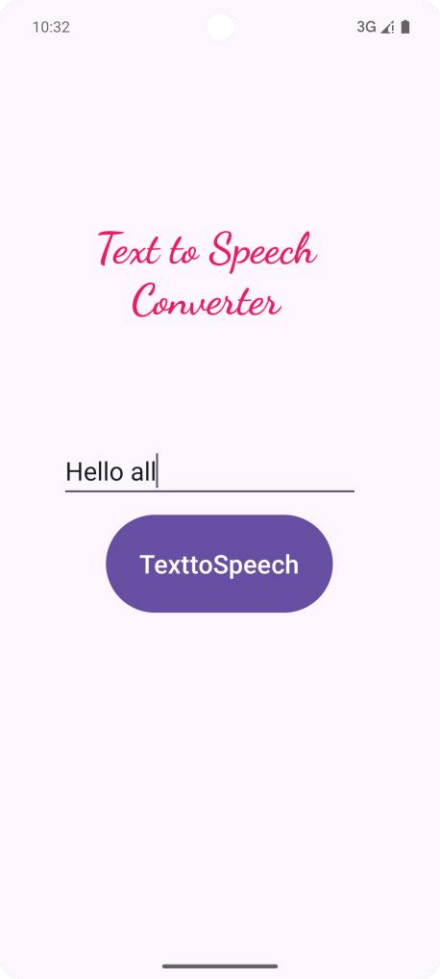
```
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView" />

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

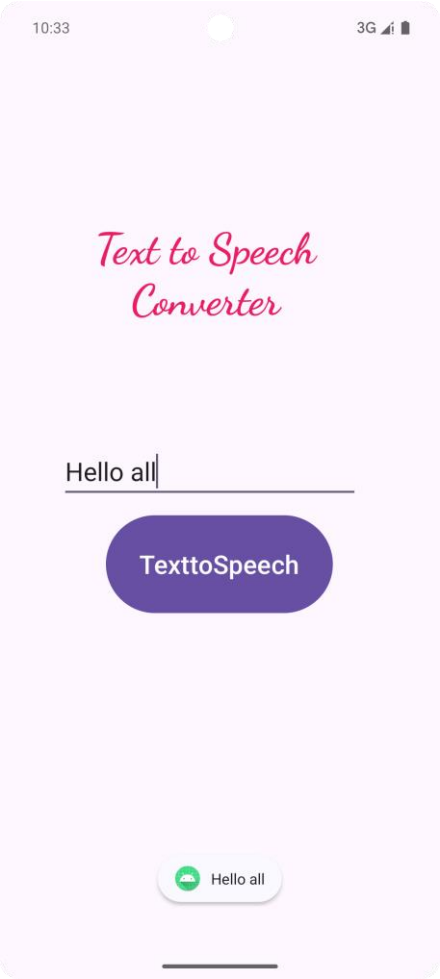
MainActivity.java

```
package com.example.texttospeech;

import android.os.Bundle;
import android.speech.tts.TextToSpeech;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

import java.util.Locale;

public class MainActivity extends AppCompatActivity {
    TextToSpeech t1;
    EditText e1;
    Button b;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });
        e1 = (EditText)findViewById(R.id.editText);
        b = (Button)findViewById(R.id.button);
        t1 = new TextToSpeech(getApplicationContext(), new
TextToSpeech.OnInitListener() {
            @Override
            public void onInit(int status) {
                if (status!=TextToSpeech.ERROR){
```

```
                    t1.setLanguage(Locale.UK);
                }
            }
        });

        b.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                String tospeak = e1.getText().toString();

Toast.makeText(getBaseContext(),tospeak,Toast.LENGTH_LONG).show(
);
                t1.speak(tospeak,TextToSpeech.QUEUE_FLUSH,null);
            }
        });
    }
}
```

**OUTPUT ON EMULATOR:**



EXPERIMENT NO.: 19

Aim: To develop a simple Android application that displays GPS Location.

1. Open android studio and select new android project by clicking Filemenu→ New →New Project.
2. Choose the project as Empty Views Activity and click Next.
3. Give project name (Start with a capital letter) as **GPS**
4. Choose the language as Java.
5. Choose the required android version (Minimum SDK) and select finish.
6. Go to package explorer in the left hand side and select the project.
7. Under the project, Go to res folder and select layout.
8. Double click the activity_main.xml file and design the layout for the page.
9. Select MainActivity.java file and type the program.
10. Now go to activity_main.xml and right click & select run as option and select run configuration OR select the virtual device and click on run icon.
11. Android output will be displayed on the android emulator.

Both activity_main.xml and MainActivity.java files together make our application work. The activity_main.xml is responsible for the layout (Front end User Interface) of the application. And the file MainActivity is responsible for the actions and the performance of the application (back end).

Code:

**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:id="@+id/main"
    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:fontFamily="cursive"
        android:text="GPS Location"
        android:textColor="#2C7C74"
        android:textSize="48sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
```

```
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.2" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="321dp"
        android:text="Get GPS Location"
        android:textSize="24sp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

    <TextView
        android:id="@+id/loc"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="45dp"
        android:layout_marginTop="72dp"
        android:text="Location: "
        android:textSize="24sp"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/button" />

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

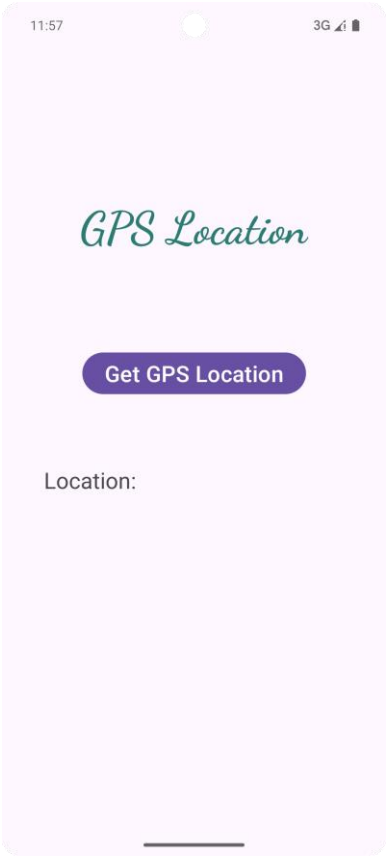
MainActivity.java

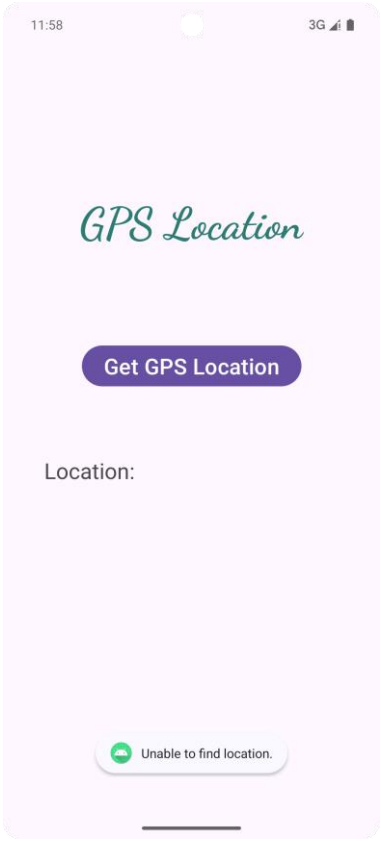
```
package com.example.gps;

import android.content.Context;
import android.location.Location;
import android.location.LocationManager;
import android.os.Bundle;

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

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;
```

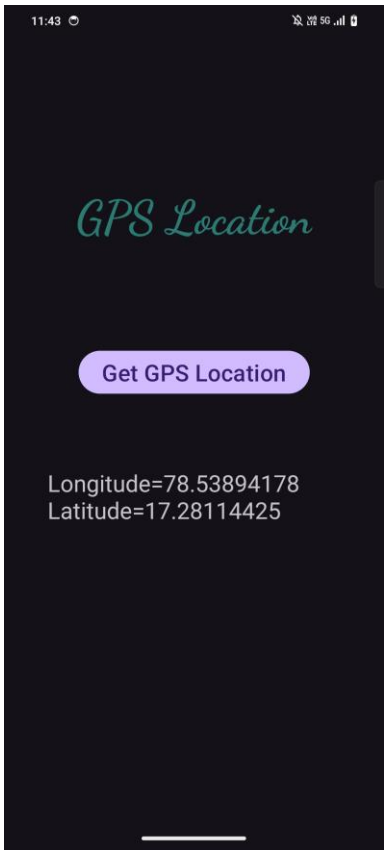
```
public class MainActivity extends AppCompatActivity {

    private static final int REQUEST_LOCATION = 1;
    Button gps;
    TextView loc;
    LocationManager locationManager;
    String latitude, longitude;

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

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });

        gps = (Button) findViewById(R.id.button);
        loc = (TextView) findViewById(R.id.loc);
  ActivityCompat.requestPermissions(this,
                new
String[]{android.Manifest.permission.ACCESS_FINE_LOCATION},
REQUEST_LOCATION);

        gps.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                locationManager = (LocationManager)

getSystemService(Context.LOCATION_SERVICE);
    Location locationGPS =
locationManager.getLastKnownLocation(LocationManager.GPS_PROVIDE
R);
                if (locationGPS != null) {
          double lat = locationGPS.getLatitude();
          double longi = locationGPS.getLongitude();
            latitude = String.valueOf(lat);
            longitude = String.valueOf(longi);
    loc.setText("Longitude=" + longitude + "\n" + "Latitude=" +
latitude + "\n");
                } else {
                    loc.setText("Unable to find GPS location");
```

```
                        }
                    }
                });
        }
}
```

**OUTPUT ON EMULATOR:**



EXPERIMENT NO.: 20

Aim: a) To develop a simple Android application for Scientific calculator.

1. Open android studio and select new android project by clicking Filemenu→ New →New Project.
2. Choose the project as Empty Views Activity and click Next.
3. Give project name (Start with a capital letter) as **Calculator**
4. Choose the language as Java.
5. Choose the required android version (Minimum SDK) and select finish.
6. Go to package explorer in the left hand side and select the project.
7. Under the project, Go to res folder and select layout.
8. Double click the activity_main.xml file and design the layout for the page.
9. Select MainActivity.java file and type the program.
10. Now go to activity_main.xml and right click & select run as option and select run configuration OR select the virtual device and click on run icon.
11. Android output will be displayed on the android emulator.

Both activity_main.xml and MainActivity.java files together make our application work. The activity_main.xml is responsible for the layout (Front end User Interface) of the application. And the file MainActivity is responsible for the actions and the performance of the application (back end).

Code:

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

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_marginTop="40dp"
        android:orientation="vertical"
        app:layout_constraintTop_toTopOf="parent">

        <TextView
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="Scientific Calculator"
```

```
        android:textAlignment="center"
        android:textStyle="bold"
        android:textColor="#FF008C"
        android:textSize="40sp" />
</LinearLayout>

<TableLayout
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_marginStart="50dp"
    android:layout_marginTop="100dp"
    android:layout_marginEnd="50dp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent">

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

        <TextView
            android:id="@+id/textView"
            style="@style/Widget.AppCompat.TextView"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Number1"
            android:textSize="24sp"/>

        <EditText
            android:id="@+id/e1"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:ems="10"
            android:inputType="numberDecimal"
            android:text="" />
    </TableRow>

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

        <TextView
            android:id="@+id/textView2"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Number2"
            android:textSize="24sp" />

        <EditText
```

```
            android:id="@+id/e2"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:ems="10"
            android:inputType="numberDecimal"
            android:text="" />
    </TableRow>

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

        <TextView
            android:id="@+id/textView3"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Result"
            android:textSize="24sp" />

        <EditText
            android:id="@+id/e3"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:ems="10"
            android:inputType="numberDecimal"
            android:text="" />
    </TableRow>

</TableLayout>

<TableLayout
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_marginStart="50dp"
    android:layout_marginTop="275dp"
    android:layout_marginEnd="20dp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent">

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

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

```
            android:textSize="40sp"
            android:onClick="doSum"/>

        <Button
            android:id="@+id/sub"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="-"
            android:onClick="doSub"
            android:textSize="40sp" />

        <Button
            android:id="@+id/mul"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="*"
            android:onClick="doMul"
            android:textSize="40sp" />
    </TableRow>

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

        <Button
            android:id="@+id/div"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="/"
            android:onClick="doDiv"
            android:textSize="40sp" />

        <Button
            android:id="@+id/mod"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="%"
            android:onClick="doMod"
            android:textSize="40sp" />

        <Button
            android:id="@+id/pow"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="^^"
            android:onClick="doPow"
            android:textSize="40sp" />
    </TableRow>
```

```
<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <Button
        android:id="@+id/sq"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="SQRT"
        android:onClick="doSqrt"
        android:textSize="30sp" />

    <Button
        android:id="@+id/exp"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="EXP"
        android:onClick="doExp"
        android:textSize="30sp" />

    <Button
        android:id="@+id/log"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="LOG"
        android:onClick="doLog"
        android:textSize="30sp" />
</TableRow>
<TableRow
    android:layout_width="match_parent"
    android:layout_height="match_parent">

    <Button
        android:id="@+id/sin"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="SIN"
        android:onClick="doSin"
        android:textSize="30sp" />

    <Button
        android:id="@+id/cos"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="COS"
        android:onClick="doCos"
        android:textSize="30sp" />

    <Button
```

```
                android:id="@+id/tan"
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:text="TAN"
                android:onClick="doTan"
                android:textSize="30sp" />
        </TableRow>
    </TableLayout>

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

**MainActivity.java**

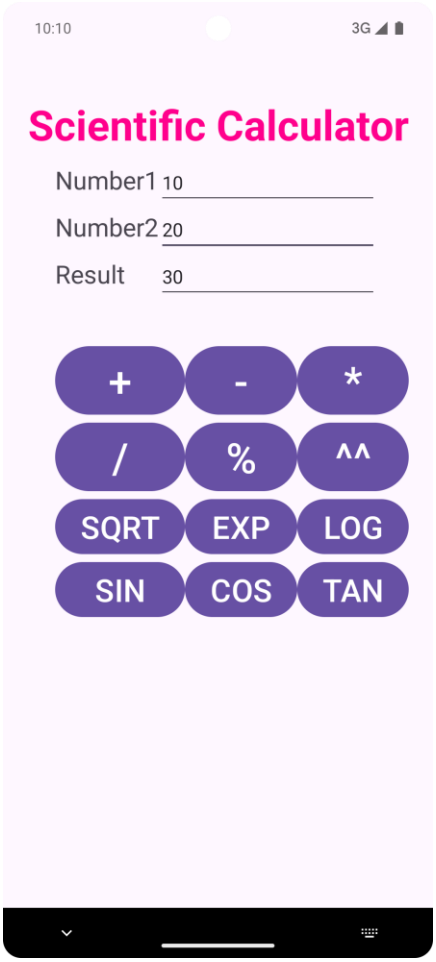
```
package com.example.calculator;

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

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

public class MainActivity extends AppCompatActivity {
    public EditText e1,e2,e3;
    int num1, num2;

    public boolean getNumbers() {
        e1 = (EditText) findViewById(R.id.e1);
        e2 = (EditText) findViewById(R.id.e2);
        e3 = (EditText)findViewById(R.id.e3);
        String s1 = e1.getText().toString();
        String s2 = e2.getText().toString();

        if(s1.equals("") || s2.equals(""))
        {
            String result = "Please enter required values";
            e3.setText(result);
            return false;
        }
        else
        {
            num1 = Integer.parseInt(s1);
            num2 = Integer.parseInt(s2);
            return true;
        }
    }
```

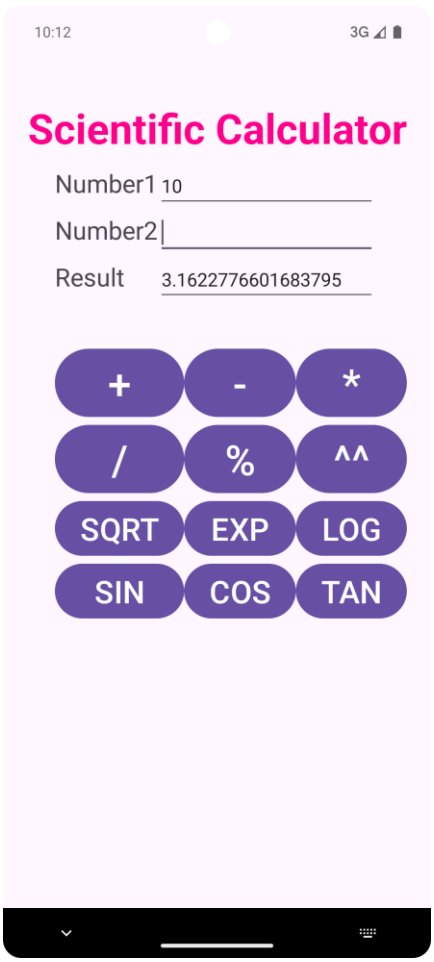
```
    public boolean getNumber() {
        e1 = (EditText) findViewById(R.id.e1);
        e2 = (EditText) findViewById(R.id.e2);
        e3 = (EditText)findViewById(R.id.e3);
        String s1 = e1.getText().toString();
        String s2 = e2.getText().toString();

        if(s1.equals(""))
        {
            String result = "Please enter required value in
Number1";
            e3.setText(result);
            return false;
        }
        else if(!s1.equals("") && !s2.equals(""))
        {
            String result = "Enter value Only in Number1";
            e3.setText(result);
            return false;
        }
        else
        {
            num1 = Integer.parseInt(s1);
            // num2 = Integer.parseInt(s2);
            return true;
        }
    }
    public void doSum(View v) {

        if (getNumbers()) {
            int sum = num1 + num2;
            e3.setText(Integer.toString(sum));
        }
    }

    public void doSub(View v) {

        if (getNumbers()) {
            int sum = num1 - num2;
            e3.setText(Integer.toString(sum));
        }

    }

    public void doMul(View v) {

        if (getNumbers()) {
            int sum = num1 * num2;
```

```
            e3.setText(Integer.toString(sum));
        }

    }

    public void doDiv(View v) {
        if (getNumbers()) {
            double sum = num1 / (num2 * 1.0);
            e3.setText(Double.toString(sum));
        }

    }

    public void doMod(View v) {
        if (getNumbers()) {
            double sum = num1 % num2;
            e3.setText(Double.toString(sum));
        }
    }

    public void doPow(View v) {

        if (getNumbers()) {
            double sum = Math.pow(num1, num2);
            e3.setText(Double.toString(sum));
        }
    }

    public void doSqrt(View v) {

        if (getNumber()) {
            double sum = Math.sqrt(num1);
            e3.setText(Double.toString(sum));
        }
    }

    public void doExp(View v) {

        if (getNumber()) {
            double sum = Math.exp(num1);
            e3.setText(Double.toString(sum));
        }
    }

    public void doLog(View v) {

        if (getNumber()) {
            double sum = Math.log(num1);
            e3.setText(Double.toString(sum));
```

```
        }
    }

    public void doSin(View v) {

        if (getNumber()) {
            double sum = Math.sin(num1);
            e3.setText(Double.toString(sum));
        }
    }
    public void doCos(View v) {

        if (getNumber()) {
            double sum = Math.cos(num1);
            e3.setText(Double.toString(sum));
        }
    }
    public void doTan(View v) {

        if (getNumber()) {
            double sum = Math.tan(num1);
            e3.setText(Double.toString(sum));
        }
    }

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

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });
    }
}
```

**OUTPUT ON EMULATOR:**




**Aim: b) To develop a simple Android application for Basic calculator.**

Code:

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

     <LinearLayout

xmlns:android="http://schemas.android.com/apk/res/android"
        android:orientation="vertical"
        android:layout_width="match_parent"
```

```
android:layout_height="match_parent"
android:layout_margin="20dp">

<TextView
    android:id="@+id/textView2"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginBottom="100dp"
    android:fontFamily="cursive"
    android:text="Basic Calculator"
    android:textAlignment="center"
    android:textColor="#F44811"
    android:textSize="48sp"
    android:textStyle="bold" />

<LinearLayout
    android:id="@+id/linearLayout1"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_margin="20dp">

    <EditText
        android:id="@+id/editText1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:inputType="numberDecimal"
        android:textSize="20sp" />

    <EditText
        android:id="@+id/editText2"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_weight="1"
        android:inputType="numberDecimal"
        android:textSize="20sp" />

</LinearLayout>

<LinearLayout
    android:id="@+id/linearLayout2"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_margin="20dp">

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

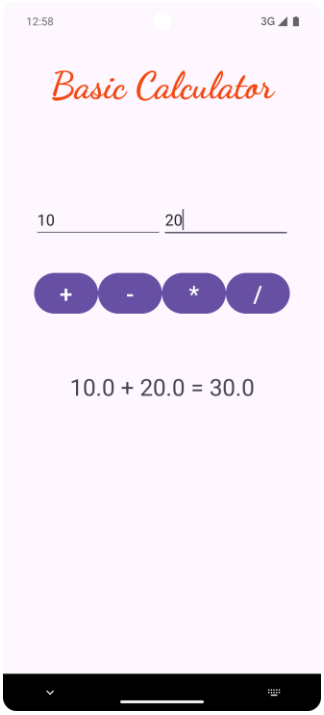
```
            android:layout_weight="1"
            android:text="+"
            android:textSize="30sp"/>

        <Button
            android:id="@+id/Sub"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="-"
            android:textSize="30sp"/>

        <Button
            android:id="@+id/Mul"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="*"
            android:textSize="30sp"/>

        <Button
            android:id="@+id/Div"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_weight="1"
            android:text="/"
            android:textSize="30sp"/>

    </LinearLayout>

    <TextView
        android:id="@+id/textView"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="50dp"
        android:text="Answer is"
        android:textSize="30sp"
        android:gravity="center"/>

</LinearLayout>


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

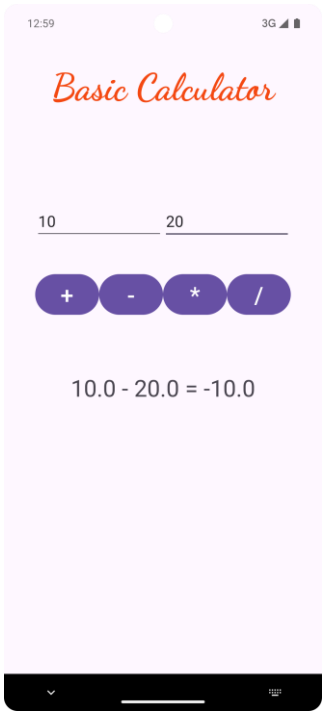
MainActivity.java

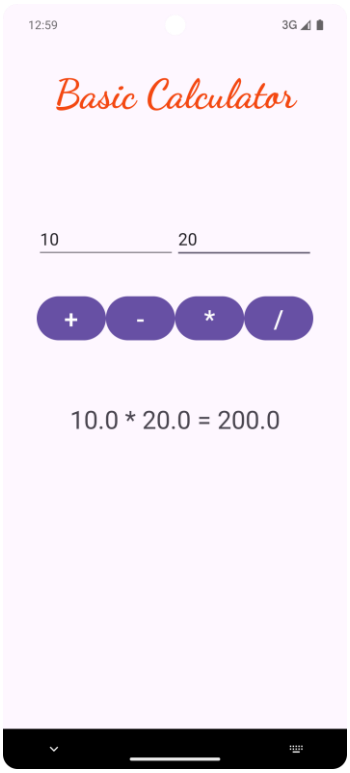
```
package com.example.basiccalculator123;

import android.os.Bundle;
import android.text.TextUtils;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;


public class MainActivity extends AppCompatActivity {

    EditText Num1,Num2;
    Button Add, Sub, Mul, Div;
    TextView Result;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);
ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });

        Num1 = (EditText) findViewById(R.id.editText1);
        Num2 = (EditText) findViewById(R.id.editText2);

        Add = (Button) findViewById(R.id.Add);
        Sub = (Button) findViewById(R.id.Sub);
        Mul = (Button) findViewById(R.id.Mul);
        Div = (Button) findViewById(R.id.Div);

        Result = (TextView) findViewById(R.id.textView);

        Add.setOnClickListener(this::onClick);
        Sub.setOnClickListener(this::onClick);
        Mul.setOnClickListener(this::onClick);
```

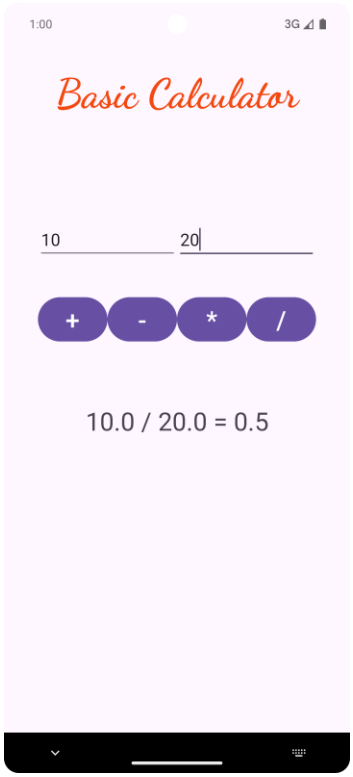
```
        Div.setOnClickListener(this::onClick);
    }

    public void onClick(View v)
    {
        float num1 = 0;
        float num2 = 0;
        float result = 0;
        String oper = "";
        // check if the fields are empty
        if (TextUtils.isEmpty(Num1.getText().toString()) ||
TextUtils.isEmpty(Num2.getText().toString()))
            return;
        // read EditText and fill variables with numbers
        num1 = Float.parseFloat(Num1.getText().toString());
        num2 = Float.parseFloat(Num2.getText().toString());

        if (v == Add)
        {
            oper = "+";
            result = num1 + num2;
        }
        if (v == Sub)
        {
            oper = "-";
            result = num1 - num2;
        }
        if (v == Mul)
        {
            oper = "*";
            result = num1 * num2;
        }
        if (v == Div)
        {
            oper = "/";
            result = num1 / num2;
        }
        // form the output line
     Result.setText(num1 + " " + oper + " " + num2 + " = " + result);
    }
}
```

**OUTPUT ON EMULATOR:**


12:58
3G
Basic Calculator
10
20
+
-
*
/
10.0 + 20.0 = 30.0


12:59
3G
Basic Calculator
10
20
+
-
*
/
10.0 - 20.0 = -10.0


12:59
3G
Basic Calculator
10
20
+
-
*
/
10.0 * 20.0 = 200.0


1:00
3G
Basic Calculator
10
20
+
-
*
/
10.0 / 20.0 = 0.5

EXPERIMENT NO.: 21

Aim: To develop a simple Android application that implements Multi threading.

1. Open android studio and select new android project by clicking Filemenu→ New →New Project.
2. Choose the project as Empty Views Activity and click Next.
3. Give project name (Start with a capital letter) as **Multithreading**
4. Choose the language as Java.
5. Choose the required android version (Minimum SDK) and select finish.
6. Go to package explorer in the left hand side and select the project.
7. Under the project, Go to res folder and select layout.
8. Double click the activity_main.xml file and design the layout for the page.
9. Select MainActivity.java file and type the program.
10. Now go to activity_main.xml and right click & select run as option and select run configuration OR select the virtual device and click on run icon.
11. Android output will be displayed on the android emulator.

Both activity_main.xml and MainActivity.java files together make our application work. The activity_main.xml is responsible for the layout (Front end User Interface) of the application. And the file MainActivity is responsible for the actions and the performance of the application (back end).

Code:

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

    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:fontFamily="cursive"
        android:text="Multithreading"
        android:textColor="#673AB7"
        android:textSize="48sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
```

```
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.057" />

    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginTop="19dp"
        android:text="Start Multithreading"
        android:textSize="24sp"
        app:layout_constraintStart_toStartOf="@+id/textView2"
        app:layout_constraintTop_toBottomOf="@+id/textView2" />

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="55dp"
        android:layout_marginTop="18dp"
        android:text="Main Thread"
        android:textSize="20sp"
        app:layout_constraintStart_toStartOf="@+id/button"
        app:layout_constraintTop_toBottomOf="@+id/button" />

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

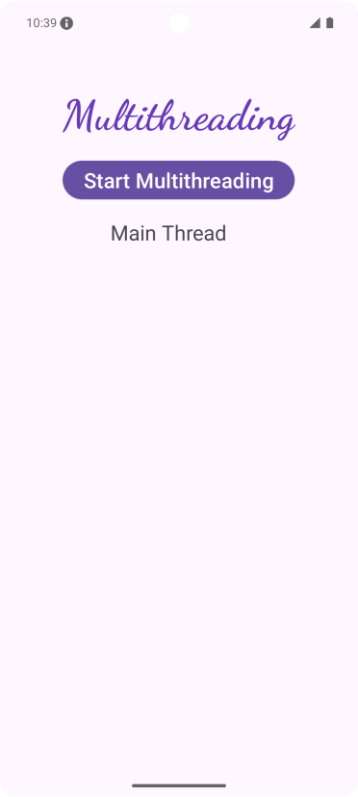
**MainActivity.java**

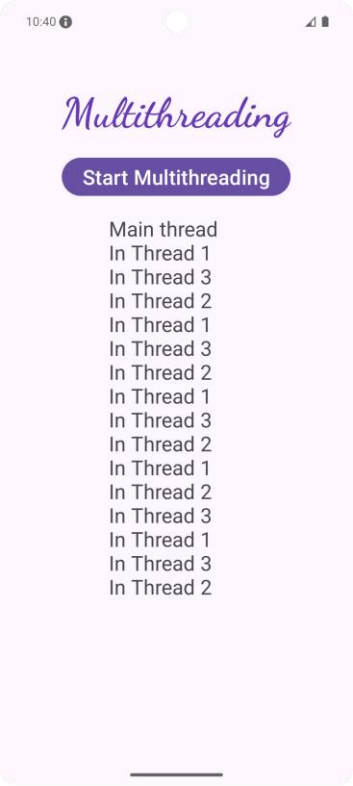
```
package com.example.multithreading;

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

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

public class MainActivity extends AppCompatActivity {
Button mt;
TextView th;
    private static final int t1 = 1;
    private static final int t2 = 2;
    private static final int t3 = 3;
```

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

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });

        mt = (Button) findViewById(R.id.button);
        th = (TextView) findViewById(R.id.textView);
            Handler handler = new Handler() {
                public void handleMessage(android.os.Message
msg) {
                    if (msg.what == t1) {
                        th.append("\nIn Thread 1");
                    }
                    if (msg.what == t2) {
                        th.append("\nIn Thread 2");
                    }
                    if (msg.what == t3) {
                        th.append("\nIn Thread 3");
                    }
                }    };
        Thread thread1 = new Thread(new Runnable() {
            @Override
            public void run()
            {
                for (int i = 0; i < 5; i++)
                {
                    try { Thread.sleep(1000);
                    } catch(InterruptedException e)
                    { e.printStackTrace(); }
                    handler.sendEmptyMessage(t1);
                }}});

        Thread thread2 = new Thread(new Runnable() {
            @Override public void run()
            { for (int i = 0; i < 5; i++)
            {
                try { Thread.sleep(1000); }
                catch(InterruptedException e)
                { e.printStackTrace(); }
```

```
                handler.sendEmptyMessage(t2);
            } } });

        Thread thread3 = new Thread(new Runnable()
          {
              @Override
              public void run()
              { for (int i = 0; i < 5; i++)
              { try { Thread.sleep(1000); }
              catch(InterruptedException e)
              { e.printStackTrace(); }
                  handler.sendEmptyMessage(t3); } } });
          mt.setOnClickListener(new View.OnClickListener() {
              @Override
              public void onClick(View view) {
                  th.setText("Main thread");
                  thread1.start();
                  thread2.start();
                  thread3.start();
              }
          });
    }
}
```

**OUTPUT ON EMULATOR:**



**EXPERIMENT NO.: 22**

Aim: a) To develop a simple Android application that makes use of Databases.

**Student Dabase**

1. Open android studio and select new android project by clicking Filemenu→ New →New Project.
2. Choose the project as Empty Views Activity and click Next.
3. Give project name (Start with a capital letter) as **StudentDatabase**
4. Choose the language as Java.
5. Choose the required android version (Minimum SDK) and select finish.
6. Go to package explorer in the left hand side and select the project.
7. Under the project, Go to res folder and select layout.
8. Double click the activity_main.xml file and design the layout for the page.
9. Select MainActivity.java file and type the program.
10. Now go to activity_main.xml and right click & select run as option and select run configuration OR select the virtual device and click on run icon.
11. Android output will be displayed on the android emulator.

Both activity_main.xml and MainActivity.java files together make our application work. The activity_main.xml is responsible for the layout (Front end User Interface) of the application. And the file MainActivity is responsible for the actions and the performance of the application (back end).

Code:

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

    <LinearLayout android:layout_width="match_parent"
android:layout_height="match_parent"
android:orientation="vertical"> <LinearLayout
android:layout_width="match_parent"
android:layout_height="match_parent"
android:orientation="vertical"> <TextView
android:layout_width="match_parent"
        android:layout_height="wrap_content"
android:layout_x="43dp" android:layout_y="32dp"
android:background="#59DBEC" android:text="Student Details"
```

```
android:textAlignment="center"
android:textAppearance="@style/TextAppearance.AppCompat.Large"
android:textColor="#DD2323" android:textSize="34sp"
android:textStyle="bold" android:visibility="visible" />
</LinearLayout> </LinearLayout>

<TableLayout android:layout_width="match_parent"
android:layout_height="match_parent"
android:layout_marginStart="20dp"
android:layout_marginTop="100dp"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"> <TableRow
android:layout_width="match_parent"
android:layout_height="match_parent"> <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="24sp" /> <EditText android:id="@+id/Rollno"
android:layout_width="150dp"
android:layout_height="wrap_content" android:layout_x="175dp"
android:layout_y="100dp" android:inputType="number"
android:textSize="20sp" /> </TableRow> <TableRow
android:layout_width="match_parent"
android:layout_height="match_parent"> <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="24sp" /> <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" />
</TableRow> <TableRow android:layout_width="match_parent"
android:layout_height="match_parent"> <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="24sp" /> <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" /> </TableRow> <TableRow
android:layout_width="match_parent"
android:layout_height="match_parent"> <Button
android:id="@+id/Insert" android:layout_width="94dp"
android:layout_height="wrap_content" android:layout_x="25dp"
android:layout_y="300dp" android:text="Insert"
android:textSize="24sp" /> <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="24sp" /> </TableRow> <TableRow
android:layout_width="match_parent"
android:layout_height="match_parent"> <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="24sp" />
    <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="24sp" /> </TableRow> <TableRow
android:layout_width="match_parent"
android:layout_height="match_parent"> <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="24sp" /> </TableRow> </TableLayout>

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

MainActivity.java

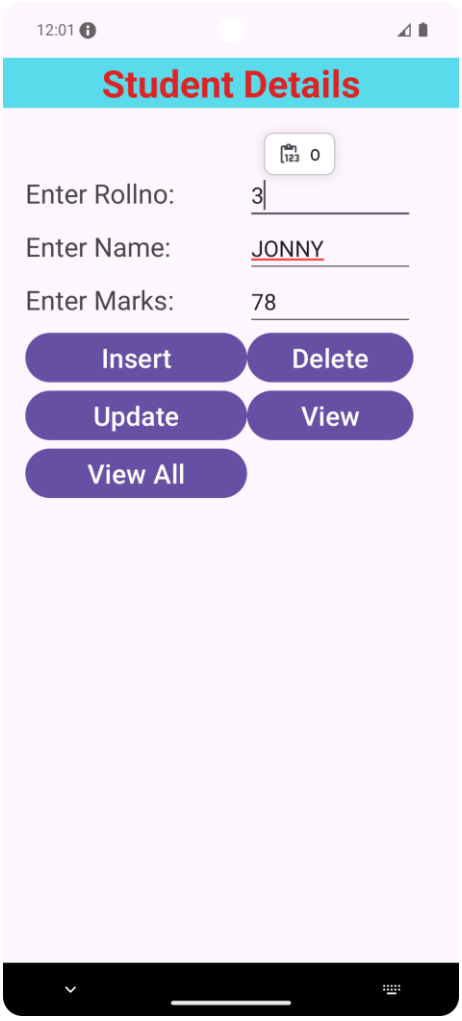
```
package com.example.studentdatabase;

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

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

public class MainActivity extends AppCompatActivity {
    EditText Rollno, Name, Marks;
    Button Insert, Delete, Update, View1, ViewAll;
    SQLiteDatabase db;

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

```
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });

        Rollno = (EditText) findViewById(R.id.Rollno);
        Name = (EditText) findViewById(R.id.Name);
        Marks = (EditText) findViewById(R.id.Marks);
        Insert = (Button) findViewById(R.id.Insert);
        Delete = (Button) findViewById(R.id.Delete);
        Update = (Button) findViewById(R.id.Update);
        View1 = (Button) findViewById(R.id.View);
        ViewAll = (Button) findViewById(R.id.ViewAll);
        Insert.setOnClickListener(this::onClick);
        Delete.setOnClickListener(this::onClick);
        Update.setOnClickListener(this::onClick);
        View1.setOnClickListener(this::onClick);
        ViewAll.setOnClickListener(this::onClick);
        // 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 == View1) {
            // 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) {
        Builder builder = new Builder(this);
        builder.setCancelable(true);
        builder.setTitle(title);
        builder.setMessage(message);
        builder.show();
    }

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

**OUTPUT ON EMULATOR:**




**b) To develop a simple Android application that makes use of Product Databases.**

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

    <TextView
        android:id="@+id/textView4"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:fontFamily="cursive"
```

```
        android:text="Product Database"
        android:textColor="#0993A6"
        android:textSize="48sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.057" />

    <TextView
        android:id="@+id/textView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="28dp"
        android:layout_marginEnd="54dp"
        android:text="Product ID:"
        android:textSize="24sp"
        app:layout_constraintBaseline_toBaselineOf="@+id/pid"
        app:layout_constraintEnd_toStartOf="@+id/pid"
        app:layout_constraintStart_toStartOf="parent" />

    <TextView
        android:id="@+id/textView2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="28dp"
        android:layout_marginTop="16dp"
        android:layout_marginEnd="11dp"
        android:text="Product Name:"
        android:textSize="24sp"
        app:layout_constraintEnd_toStartOf="@+id/pname"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="@+id/pname" />

    <TextView
        android:id="@+id/textView3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="28dp"
        android:layout_marginEnd="32dp"
        android:text="Product Price:"
        android:textSize="24sp"
        app:layout_constraintBaseline_toBaselineOf="@+id/price"
        app:layout_constraintEnd_toStartOf="@+id/price"
        app:layout_constraintStart_toStartOf="parent" />

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

```
        android:layout_width="0dp"
        android:layout_height="0dp"
        android:layout_marginTop="170dp"
        android:layout_marginEnd="7dp"
        android:layout_marginBottom="49dp"
        android:ems="10"
        android:inputType="text"
        android:textSize="24sp"
        app:layout_constraintBottom_toTopOf="@+id/pname"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toEndOf="@+id/textView"
        app:layout_constraintTop_toTopOf="parent" />

    <EditText
        android:id="@+id/pname"
        android:layout_width="0dp"
        android:layout_height="0dp"
        android:layout_marginEnd="12dp"
        android:layout_marginBottom="54dp"
        android:ems="10"
        android:inputType="text"
        android:textSize="24sp"
        app:layout_constraintBottom_toTopOf="@+id/price"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toEndOf="@+id/textView2"
        app:layout_constraintTop_toBottomOf="@+id/pid" />

    <EditText
        android:id="@+id/price"
        android:layout_width="0dp"
        android:layout_height="0dp"
        android:layout_marginEnd="14dp"
        android:layout_marginBottom="86dp"
        android:ems="10"
        android:inputType="text"
        android:textSize="24sp"
        app:layout_constraintBottom_toTopOf="@+id/display"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toEndOf="@+id/textView3"
        app:layout_constraintTop_toBottomOf="@+id/pname" />

    <Button
        android:id="@+id/insert"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="15dp"
        android:layout_marginEnd="12dp"
        android:text="Insert Data"
        android:textSize="24sp"
```

```
app:layout_constraintBaseline_toBaselineOf="@+id/display"
        app:layout_constraintEnd_toStartOf="@+id/display"
        app:layout_constraintHorizontal_chainStyle="packed"
        app:layout_constraintStart_toStartOf="parent" />

    <Button
        android:id="@+id/display"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="175dp"
        android:text="Display Data"
        android:textSize="24sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toEndOf="@+id/insert"
        app:layout_constraintTop_toBottomOf="@+id/price" />

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

**MainActivity.java**

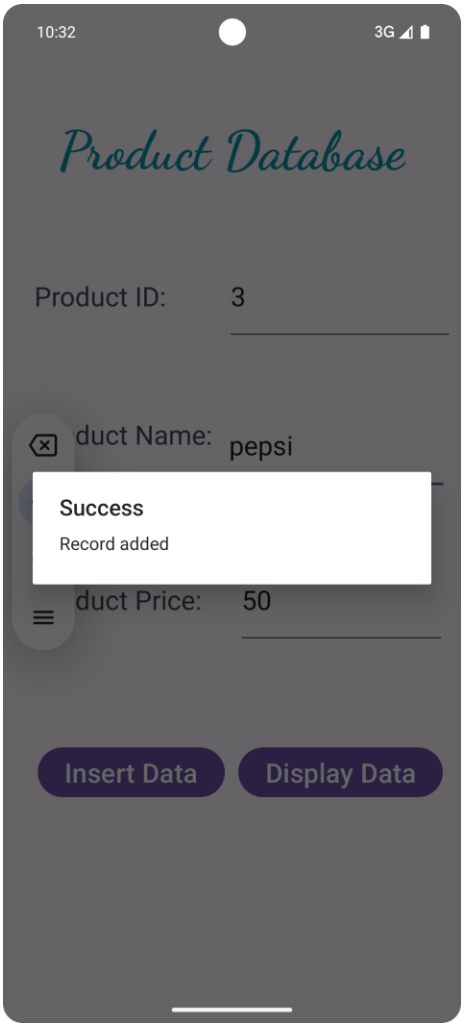
```
package com.example.productdatabase;


import android.app.AlertDialog;
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;
import android.widget.Toast;

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;


public class MainActivity extends AppCompatActivity {

EditText pid,pname,price;
Button insert, display;

SQLiteDatabase db;
```

```
    @Override

    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);
ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });

        pid = (EditText) findViewById(R.id.pid);
        pname = (EditText) findViewById(R.id.pname);
        price = (EditText) findViewById(R.id.price);

        insert = (Button) findViewById(R.id.insert);
        display = (Button) findViewById(R.id.display);

db = openOrCreateDatabase("ProductDB", Context.MODE_PRIVATE,
null);

        db.execSQL("CREATE TABLE IF NOT EXISTS product(pid
VARCHAR,pname VARCHAR,price VARCHAR);");

        insert.setOnClickListener(new View.OnClickListener() {

            @Override

            public void onClick(View view) {
  if (pid.getText().toString().trim().length() == 0 ||
pname.getText().toString().trim().length() == 0 ||
price.getText().toString().trim().length() == 0) {

                    // Toast.makeText(getBaseContext(),"Enter all
values",Toast.LENGTH_LONG);
       showMessage("Error", "Please enter all values");
                     return;
                }

                db.execSQL("INSERT INTO product VALUES('" +
pid.getText() + "','" + pname.getText() + "','" +
price.getText() + "');");

                // Toast.makeText(getBaseContext(),"Record added
successfully",Toast.LENGTH_LONG);
```

```
                showMessage("Success", "Record added");
            }
        });

        display.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
        Cursor c = db.rawQuery("SELECT * FROM product", null);
                if (c.getCount() == 0) {
                  // Toast.makeText(getBaseContext()," Error :
No records found",Toast.LENGTH_LONG);
                    showMessage("Error", "No records found");
                    return;
                }

                StringBuffer buffer = new StringBuffer();
                while (c.moveToNext()) {
          buffer.append("PID: " + c.getString(0) + "\n");
          buffer.append("PNAME: " + c.getString(1) + "\n");
          buffer.append("PRICE: " + c.getString(2) + "\n\n");
                }

               // Toast.makeText(getBaseContext(),"Product
Details" + buffer.toString(),Toast.LENGTH_LONG);
            showMessage("Product 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();
    }
}
```

**OUTPUT ON EMULATOR:**


10:31
3G
Product Database
Product ID:
1
Product Name:
coke
Product Price:
50
Insert Data
Display Data


10:32
3G
Product Database
Product ID:
3
duct Name:
pepsi
Success
Record added
duct Price:
50
Insert Data
Display Data

**EXPERIMENT NO.: 23**

Aim: To develop a simple Android application that creates an alert Dialogue upon receiving a message.

1. Open android studio and select new android project by clicking Filemenu→ New →New Project.
2. Choose the project as Empty Views Activity and click Next.
3. Give project name (Start with a capital letter) as **AlertDialogue**
4. Choose the language as Java.
5. Choose the required android version (Minimum SDK) and select finish.
6. Go to package explorer in the left hand side and select the project.
7. Under the project, Go to res folder and select layout.
8. Double click the activity_main.xml file and design the layout for the page.
9. Select MainActivity.java file and type the program.
10. Now go to activity_main.xml and right click & select run as option and select run configuration OR select the virtual device and click on run icon.
11. Android output will be displayed on the android emulator.

Both activity_main.xml and MainActivity.java files together make our application work. The activity_main.xml is responsible for the layout (Front end User Interface) of the application. And the file MainActivity is responsible for the actions and the performance of the application (back end).

Code:

**activity_main.xml**

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_marginStart="100dp"
        android:layout_marginTop="100dp"
        android:layout_marginEnd="100dp"
        android:layout_marginBottom="100dp"
        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:id="@+id/textView"
            android:layout_width="232dp"
            android:layout_height="wrap_content"
            android:layout_marginBottom="100dp"
            android:fontFamily="cursive"
            android:text="Alert Dialogue"
            android:textColor="#E90F0F"
            android:textSize="34sp" />

        <TextView
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:text="Enter Message"
            android:textAlignment="center"
            android:textColor="#3F51B5"
            android:textSize="24sp" />
        <EditText
            android:id="@+id/e1"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:ems="10"
            android:inputType="textPersonName" />
        <Button
            android:id="@+id/button"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="Submit"
            android:textSize="24sp" />
        <Button
            android:id="@+id/button2"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="Close App"
            android:textSize="24sp" />
    </LinearLayout>

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

**MainActivity.java**

```
package com.example.alertdialogue;

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

```
import android.widget.EditText;
import android.widget.Toast;

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AlertDialog;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

public class MainActivity extends AppCompatActivity {
    Button submitButton, closeButton;
    EditText e1;
    AlertDialog.Builder builder;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });

        e1 = (EditText) findViewById(R.id.e1);
        submitButton = (Button) findViewById(R.id.button);
        closeButton = (Button)findViewById(R.id.button2);
        builder = new AlertDialog.Builder(this);
        submitButton.setOnClickListener(new
View.OnClickListener() {
            @Override
            public void onClick(View v) {
            builder.setMessage(R.string.dialog_message)
.setTitle(R.string.dialog_title);
//Setting message manually and performing action on button click
                builder.setMessage("Do you want to submit your
Message ?")
                        .setCancelable(false)
                        .setPositiveButton("Yes", new
DialogInterface.OnClickListener() {
                            public void onClick(DialogInterface
dialog, int id) {
                                String s1 = " Your Message:
"+e1.getText().toString()+" has been submitted successfully";
```

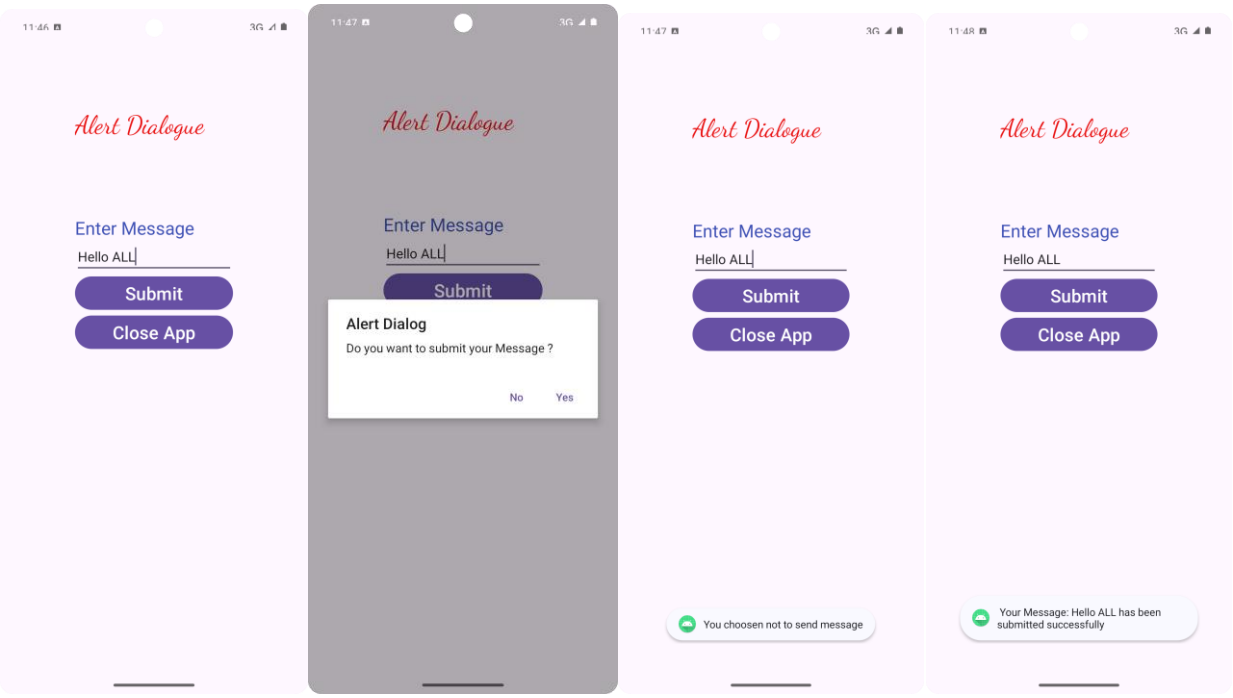
```
// finish();
                                    dialog.cancel();

Toast.makeText(getApplicationContext(),s1,Toast.LENGTH_SHORT).sh
ow();
                                }
                            })
                            .setNegativeButton("No", new
DialogInterface.OnClickListener() {
                                public void onClick(DialogInterface
dialog, int id) {
// Action for 'NO' Button
                                    dialog.cancel();

Toast.makeText(getApplicationContext(),"You choosen not to send
message", Toast.LENGTH_SHORT).show();
                                }
                            });
//Creating dialog box
                    AlertDialog alert = builder.create();
//Setting the title manually
                    alert.setTitle("Alert Dialog");
                    alert.show();
                }
            });
            closeButton.setOnClickListener(new
View.OnClickListener() {
                @Override
                public void onClick(View v) {
//Uncomment the below code to Set the message and title from the
strings.xml file

builder.setMessage(R.string.dialog_message).setTitle(R.string.di
alog_title);
//Setting message manually and performing action on button click
                    builder.setMessage("Do you want to close this
application ?").setCancelable(false)
                            .setPositiveButton("Yes", new
DialogInterface.OnClickListener() {

public void onClick(DialogInterface dialog, int id) {
                                    finish();

Toast.makeText(getApplicationContext(), "Your App has been
Closed", Toast.LENGTH_SHORT).show();
                                }
                            })
                            .setNegativeButton("No", new
DialogInterface.OnClickListener() {
```

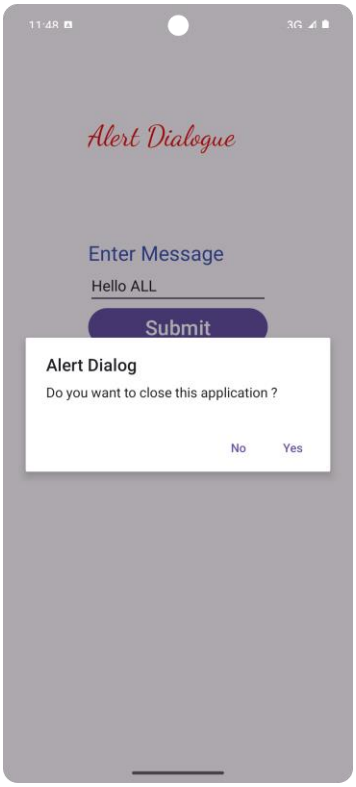
```
  public void onClick(DialogInterface dialog, int id) {
// Action for 'NO' Button
                                    dialog.cancel();

Toast.makeText(getApplicationContext(), "You choosen not to
close App",Toast.LENGTH_SHORT).show();
                                }
                            });
                    AlertDialog alert = builder.create();
//Setting the title manually
                    alert.setTitle("Alert Dialog");
                    alert.show();
                }
            });
    }
}
```

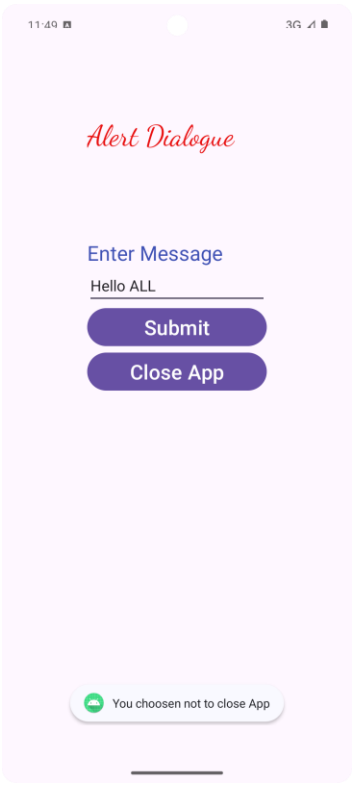
**Strings.xml**

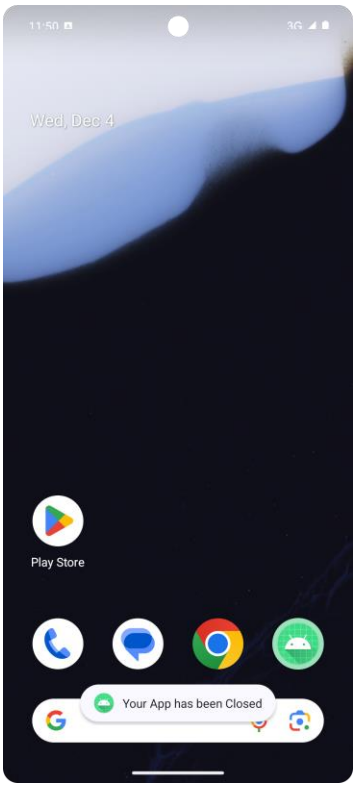
```
<resources>
    <string name="app_name">AlertDialogue</string>
    <string name="dialog_message">Welcome to Alert Dialog</string>
    <string name="dialog_title">Alert Dialog</string>
</resources>
```

**OUTPUT ON EMULATOR:**




11:48
3G
Alert Dialogue
Enter Message
Hello ALL
Submit
Alert Dialog
Do you want to close this application ?
No
Yes


11:49
3G
Alert Dialogue
Enter Message
Hello ALL
Submit
Close App
You choosen not to close App


11:50
3G
Wed, Dec 4
Play Store
Your App has been Closed

**EXPERIMENT NO.: 24**

Aim: a) To develop a simple Android application that writes data to the SDCard (External Storage).

1. Open android studio and select new android project by clicking Filemenu→ New →New Project.
2. Choose the project as Empty Views Activity and click Next.
3. Give project name (Start with a capital letter) as **ExternalfileReadWrite**
4. Choose the language as Java.
5. Choose the required android version (Minimum SDK) and select finish.
6. Go to package explorer in the left hand side and select the project.
7. Under the project, Go to res folder and select layout.
8. Double click the activity_main.xml file and design the layout for the page.
9. Select MainActivity.java file and type the program.
10. Now go to activity_main.xml and right click & select run as option and select run configuration OR select the virtual device and click on run icon.
11. Android output will be displayed on the android emulator.

Both activity_main.xml and MainActivity.java files together make our application work. The activity_main.xml is responsible for the layout (Front end User Interface) of the application. And the file MainActivity is responsible for the actions and the performance of the application (back end).

Code:

**activity_main.xml**

AndroidManifest.xml

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

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

**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:id="@+id/main"
    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_marginTop="43dp"
    android:layout_marginBottom="79dp"
    android:text="External Storage File Read / Write Demo"
    android:textAlignment="center"
    android:textColor="#0895A8"
    android:textSize="38sp"
    android:textStyle="bold"
    app:layout_constraintBottom_toTopOf="@+id/data"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.2"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.064" />

<EditText
    android:id="@+id/data"
    android:layout_width="0dp"
    android:layout_height="0dp"
    android:layout_marginStart="55dp"
    android:layout_marginEnd="55dp"
    android:layout_marginBottom="36dp"
    android:ems="10"
    android:inputType="text"
    android:textSize="24sp"
    app:layout_constraintBottom_toTopOf="@+id/write"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/textView" />

<Button
    android:id="@+id/write"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginBottom="38dp"
    android:text="Write Data"
    android:textSize="30sp"
    app:layout_constraintBottom_toTopOf="@+id/read"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/data" />

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

```
        android:layout_height="wrap_content"
        android:layout_marginBottom="259dp"
        android:text="Read Data"
        android:textSize="30sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="@+id/write"
        app:layout_constraintTop_toBottomOf="@+id/write" />

    <TextView
        android:id="@+id/Responce"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="24dp"
        android:layout_marginTop="51dp"
        android:text="Response"
        android:textColor="#E91E63"
        android:textSize="34sp"
        app:layout_constraintStart_toStartOf="@+id/read"
        app:layout_constraintTop_toBottomOf="@+id/read" />

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

MainActivity.java

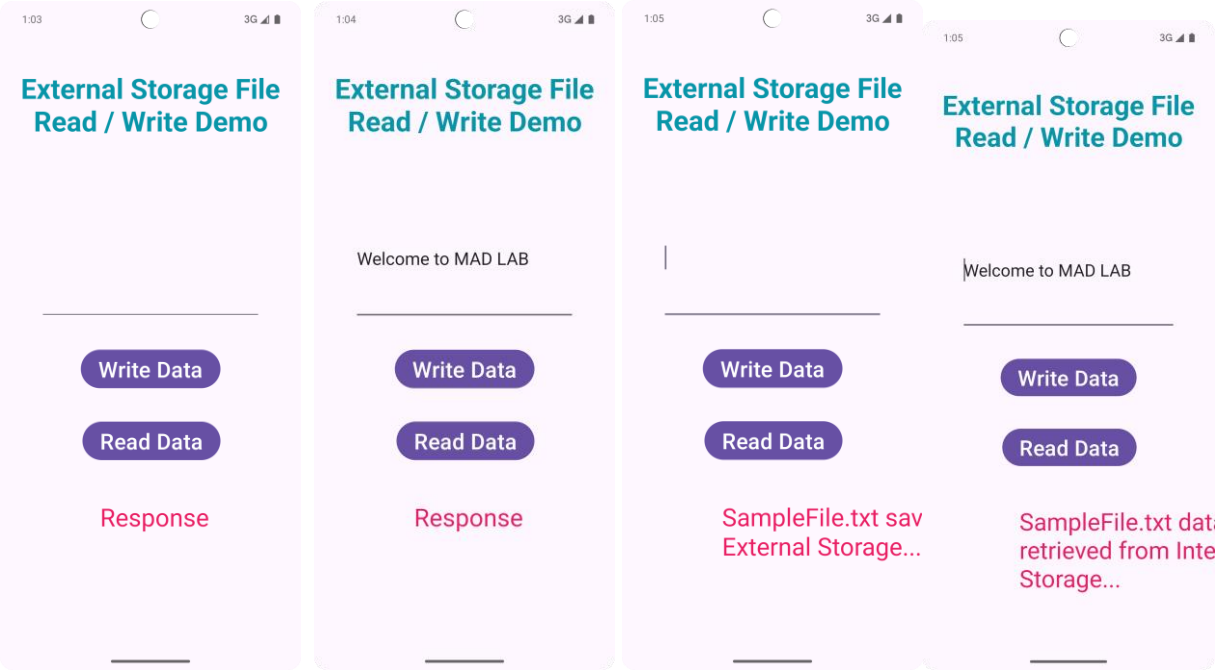
```
package com.example.externalstorage;

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

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

import java.io.BufferedReader;
import java.io.DataInputStream;
import java.io.File;
import java.io.FileOutputStream;
import java.io.FileInputStream;
import java.io.IOException;
import java.io.InputStreamReader;

public class MainActivity extends AppCompatActivity {
    EditText data;
```

```
    Button save,read;
    TextView res;

    private String filename = "SampleFile.txt";
    private String filepath = "MyFileStorage";
    File myExternalFile;
    String myData = "";

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

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });

        data = (EditText) findViewById(R.id.data);
        res = (TextView) findViewById(R.id.Responce);
        save = (Button) findViewById(R.id.write);

        save.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {

                try {
                    FileOutputStream fos = new
FileOutputStream(myExternalFile);

fos.write(data.getText().toString().getBytes());
                    fos.close();
                } catch (IOException e) {
                    e.printStackTrace();
                }
                data.setText("");
                res.setText("SampleFile.txt saved to External
Storage...");
            }
        });

        read = (Button) findViewById(R.id.read);
       read.setOnClickListener(new View.OnClickListener() {
           @Override
```

```
            public void onClick(View view) {

                try {
                        FileInputStream fis = new
FileInputStream(myExternalFile);
                        DataInputStream in = new
DataInputStream(fis);
                        BufferedReader br = new BufferedReader(new
InputStreamReader(in));
                        String strLine;
                        while ((strLine = br.readLine()) != null) {
                            myData = myData + strLine;
                        }
                        in.close();
                    } catch (IOException e) {
                        e.printStackTrace();
                    }
                    data.setText(myData);
                 res.setText("SampleFile.txt data retrieved from
Internal Storage...");
                }
            });

            if (!isExternalStorageAvailable() ||
isExternalStorageReadOnly()) {
                save.setEnabled(false);
            }
            else {
                myExternalFile = new
File(getExternalFilesDir(filepath), filename);
            }


        }
        private static boolean isExternalStorageReadOnly() {
            String extStorageState =
Environment.getExternalStorageState();
            if
(Environment.MEDIA_MOUNTED_READ_ONLY.equals(extStorageState)) {
                return true;
            }
            return false;
        }

        private static boolean isExternalStorageAvailable() {
            String extStorageState =
Environment.getExternalStorageState();
            if (Environment.MEDIA_MOUNTED.equals(extStorageState)) {
                return true;
```

```
        }
        return false;
    }
    }
```

**OUTPUT ON EMULATOR:**




b) To develop a simple Android application that writes data to Internal Storage.

**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:id="@+id/main"
    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_marginTop="43dp"
        android:layout_marginBottom="79dp"
        android:text="File Read / Write Demo"
```

```
        android:textColor="#0895A8"
        android:textSize="38sp"
        android:textStyle="bold"
        app:layout_constraintBottom_toTopOf="@+id/data"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.473"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.064" />

    <EditText
        android:id="@+id/data"
        android:layout_width="0dp"
        android:layout_height="0dp"
        android:layout_marginStart="55dp"
        android:layout_marginEnd="55dp"
        android:layout_marginBottom="36dp"
        android:ems="10"
        android:inputType="text"
        android:textSize="24sp"
        app:layout_constraintBottom_toTopOf="@+id/write"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/textView" />

    <Button
        android:id="@+id/write"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="38dp"
        android:text="Write Data"
        android:textSize="30sp"
        app:layout_constraintBottom_toTopOf="@+id/read"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/data" />

    <Button
        android:id="@+id/read"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginBottom="259dp"
        android:text="Read Data"
        android:textSize="30sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="@+id/write"
        app:layout_constraintTop_toBottomOf="@+id/write" />

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

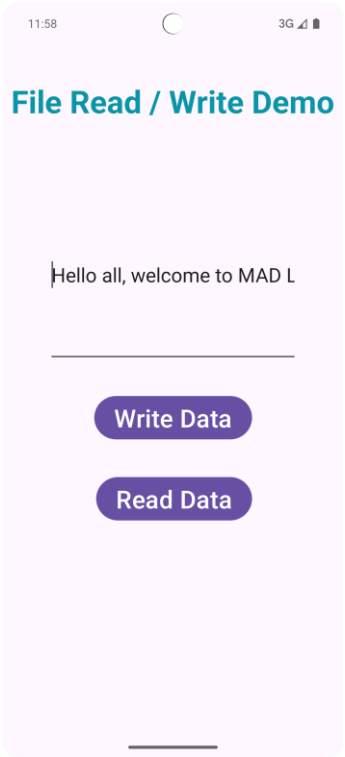
MainActivity.java

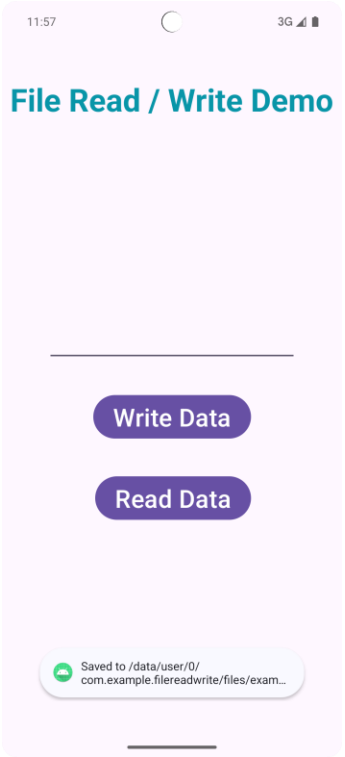
```
package com.example.filereadwrite;

import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

import java.io.BufferedReader;
import java.io.FileInputStream;
import java.io.FileNotFoundException;
import java.io.FileOutputStream;
import java.io.IOException;
import java.io.InputStreamReader;

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

public class MainActivity extends AppCompatActivity {
EditText data;
Button read, write;
private static final String FILE_NAME = "example.txt";

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

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });

        data = (EditText) findViewById(R.id.data);
        read = (Button) findViewById(R.id.read);
        write = (Button) findViewById(R.id.write);

        read.setOnClickListener(new View.OnClickListener() {
```

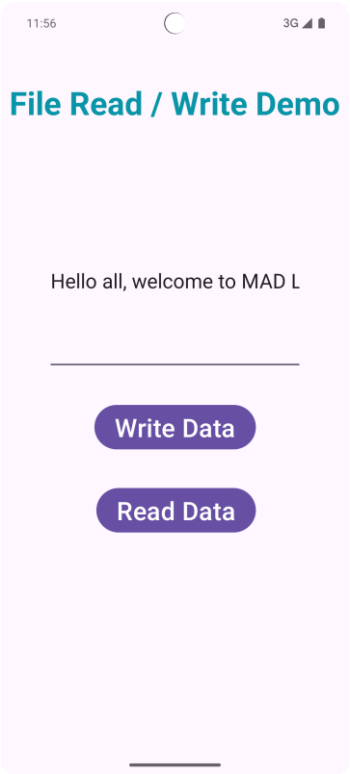
```
            @Override
            public void onClick(View view) {
                FileInputStream fis = null;
                try {
                    fis = openFileInput(FILE_NAME);
                    InputStreamReader isr = new
InputStreamReader(fis);
                    BufferedReader br = new BufferedReader(isr);
                    StringBuilder sb = new StringBuilder();
                    String text;
                    while ((text = br.readLine()) != null) {
                        sb.append(text).append("\n");
                    }
                    data.setText(sb.toString());
                } catch (FileNotFoundException e) {
                    e.printStackTrace();
                } catch (IOException e) {
                    e.printStackTrace();
                } finally {
                    if (fis != null) {
                        try {
                            fis.close();
                        } catch (IOException e) {
                            e.printStackTrace();
                        }
                    }
                }
            }
        });

        write.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                String text = data.getText().toString();
                FileOutputStream fos = null;
                try {
                    fos = openFileOutput(FILE_NAME,
MODE_PRIVATE);
                    fos.write(text.getBytes());
                    data.getText().clear();

Toast.makeText(getApplicationContext(),"Saved to " +
getFilesDir() + "/" + FILE_NAME, Toast.LENGTH_LONG).show();
                } catch (FileNotFoundException e) {
                    e.printStackTrace();
                } catch (IOException e) {
                    e.printStackTrace();
                } finally {
                    if (fos != null) {
```

```
                    try {
                        fos.close();
                    } catch (IOException e) {
                        e.printStackTrace();
                    }
                }
            }
        }
    });
    }
}
```

**OUTPUT ON EMULATOR:**



**EXPERIMENT NO.: 25**

Aim: To develop a simple Android application that creates Alarm Clock.

12. Open android studio and select new android project by clicking Filemenu→ New →New Project.
13. Choose the project as Empty Views Activity and click Next.
14. Give project name (Start with a capital letter) as **AlarmClock**
15. Choose the language as Java.
16. Choose the required android version (Minimum SDK) and select finish.
17. Go to package explorer in the left hand side and select the project.
18. Under the project, Go to res folder and select layout.
19. Double click the activity_main.xml file and design the layout for the page.
20. Select MainActivity.java file and type the program.
21. Now go to activity_main.xml and right click & select run as option and select run configuration OR select the virtual device and click on run icon.
22. Android output will be displayed on the android emulator.

Both activity_main.xml and MainActivity.java files together make our application work. The activity_main.xml is responsible for the layout (Front end User Interface) of the application. And the file MainActivity is responsible for the actions and the performance of the application (back end).

Code:

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

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:orientation="vertical">
        <!--Added Time picker just to pick the alarm time--> <!-
-gravity is aligned to center-->
        <TextView
            android:id="@+id/textView"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text="Alarm Clock"
```

```
            android:textAlignment="center"
            android:textSize="48sp"
            android:textStyle="bold" />

        <TimePicker
            android:id="@+id/timePicker"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_gravity="center" />
        <!--Added Toggle Button to set the alarm on or off-->
<!--ByDefault toggleButton is set to false-->
        <ToggleButton
            android:id="@+id/toggleButton"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:layout_gravity="center"
            android:layout_margin="20dp"
            android:checked="false"
            android:onClick="OnToggleClicked" />

        <!--"OnToggleClicked" method will be implemented in
MainActivity.java -->
    </LinearLayout>

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

**MainActivity.java**

```
package com.example.alarmclock;

import android.app.AlarmManager;
import android.app.PendingIntent;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.TimePicker;
import android.widget.Toast;
import android.widget.ToggleButton;

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

import java.util.Calendar;
```

```
public class MainActivity extends AppCompatActivity {
    TimePicker alarmTimePicker;
    PendingIntent pendingIntent;
    AlarmManager alarmManager;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
       super.onCreate(savedInstanceState);
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);
ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });

alarmTimePicker = (TimePicker) findViewById(R.id.timePicker);
alarmManager = (AlarmManager) getSystemService(ALARM_SERVICE);
    }
    public void OnToggleClicked(View view)
    {
        long time;
        if (((ToggleButton)view).isChecked())
        {
            Toast.makeText(MainActivity.this, "ALARM ON",
Toast.LENGTH_SHORT).show();
            Calendar calendar = Calendar.getInstance();
            calendar.set(Calendar.HOUR_OF_DAY,
alarmTimePicker.getCurrentHour());
            calendar.set(Calendar.MINUTE,
alarmTimePicker.getCurrentMinute());
            Intent intent = new Intent(this,
AlarmReceiver.class);
            //startActivity(intent);
            PendingIntent pendingIntent =
PendingIntent.getBroadcast(this, 0, intent,
PendingIntent.FLAG_IMMUTABLE);
        time = (calendar.getTimeInMillis() -
(calendar.getTimeInMillis() % 60000));
        if (System.currentTimeMillis() > time)
        {
            if (Calendar.AM_PM == 0)
                time = time + (1000 * 60 * 60 * 12);
            else time = time + (1000 * 60 * 60 * 24);
        }
```

```
        alarmManager.setRepeating(AlarmManager.RTC_WAKEUP, time,
10000, pendingIntent);

     //   alarmManager.set(AlarmManager.RTC_WAKEUP,
System.currentTimeMillis() + (time * 1000), pendingIntent);
        }
        else { alarmManager.cancel(pendingIntent);
           Toast.makeText(MainActivity.this, "ALARM OFF",
Toast.LENGTH_SHORT).show();
        }
    }
}
```

AlarmReceiver.java

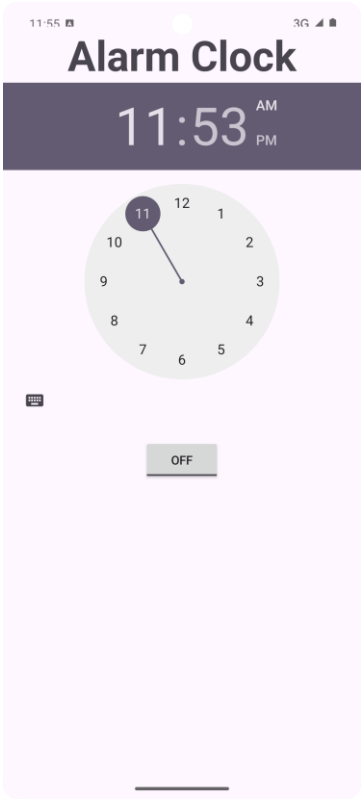
```
package com.example.alarmclock;

import android.content.BroadcastReceiver;
import android.content.Context;
import android.content.Intent;
import android.media.Ringtone;
import android.media.RingtoneManager;
import android.net.Uri;
import android.os.Build;
import android.os.Vibrator;
import android.widget.Toast;
import androidx.annotation.RequiresApi;

public class AlarmReceiver extends BroadcastReceiver
{
   // @RequiresApi(api = Build.VERSION_CODES.Q)

    @Override // implement onReceive() method
    public void onReceive(Context context, Intent intent)
    {
   // we will use vibrator first
        Vibrator vibrator = (Vibrator)
context.getSystemService(Context.VIBRATOR_SERVICE);
        vibrator.vibrate(4000);
        Toast.makeText(context, "Alarm! Wake up! Wake up!",
Toast.LENGTH_LONG).show();
        Uri alarmUri =
RingtoneManager.getDefaultUri(RingtoneManager.TYPE_ALARM);
        if (alarmUri == null)
        {
            alarmUri =
RingtoneManager.getDefaultUri(RingtoneManager.TYPE_NOTIFICATION);
       }
```

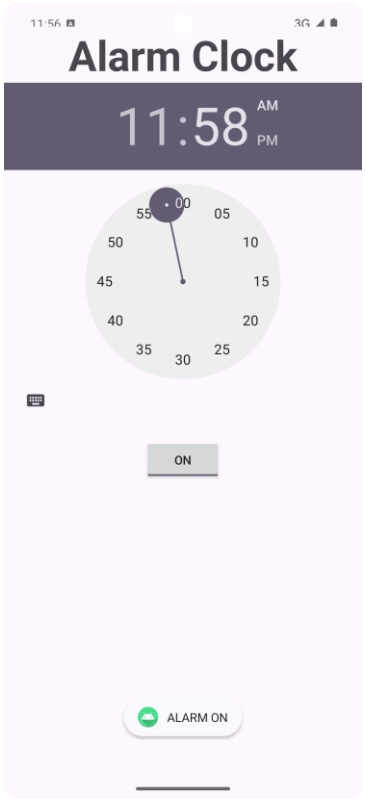
```
    // setting default ringtone
    Ringtone ringtone = RingtoneManager.getRingtone(context,
alarmUri);
    // play ringtone
    ringtone.play();
    }
}
```

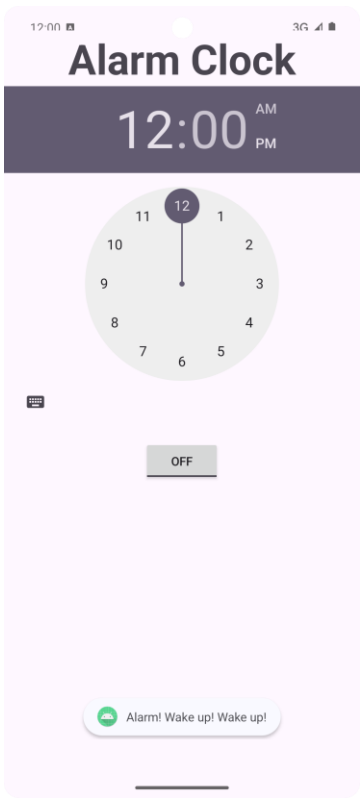
Androidmanifest.xml

```
<?xml version="1.0" encoding="utf-8"?>
<manifest
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools">
    <uses-permission android:name="android.permission.VIBRATE"
/>
    <application
        android:allowBackup="true"
        android:dataExtractionRules="@xml/data_extraction_rules"
        android:fullBackupContent="@xml/backup_rules"
        android:icon="@mipmap/ic_launcher"
        android:label="@string/app_name"
        android:roundIcon="@mipmap/ic_launcher_round"
        android:supportsRtl="true"
        android:theme="@style/Theme.Alarmclock"
        tools:targetApi="31">

        <receiver
            android:name=".AlarmReceiver" />
        <activity
            android:name=".MainActivity"
            android:exported="true">
        <intent-filter>
                <action
android:name="android.intent.action.MAIN" />
                <category
android:name="android.intent.category.LAUNCHER" />
            </intent-filter>
        </activity>
    </application>
</manifest>
```

**OUTPUT ON EMULATOR:**


11:55
3G
Alarm Clock
11:53
AM
PM
12
1
2
3
4
5
6
7
8
9
10
11
OFF


11:56
3G
Alarm Clock
11:58
AM
PM
00
05
10
15
20
25
30
35
40
45
50
55
ON
ALARM ON


12:00
3G
Alarm Clock
12:00
AM
PM
12
1
2
3
4
5
6
7
8
9
10
11
OFF
Alarm! Wake up! Wake up!

**EXPERIMENT NO.: 26**

Aim: To develop a simple Android application that makes use of RSS Feed.

1. Open android studio and select new android project by clicking Filemenu→ New →New Project.
2. Choose the project as Empty Views Activity and click Next.
3. Give project name (Start with a capital letter) as **AlarmClock**
4. Choose the language as Java.
5. Choose the required android version (Minimum SDK) and select finish.
6. Go to package explorer in the left hand side and select the project.
7. Under the project, Go to res folder and select layout.
8. Double click the activity_main.xml file and design the layout for the page.
9. Select MainActivity.java file and type the program.
10. Now go to activity_main.xml and right click & select run as option and select run configuration OR select the virtual device and click on run icon.
11. Android output will be displayed on the android emulator.

Both activity_main.xml and MainActivity.java files together make our application work. The activity_main.xml is responsible for the layout (Front end User Interface) of the application. And the file MainActivity is responsible for the actions and the performance of the application (back end).

Code:

**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:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    tools:context=".MainActivity">

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

        <TextView
            android:id="@+id/textView"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_marginBottom="50dp"
            android:text="RSS Feed"
```

```
            android:textAlignment="center"
            android:textColor="#E91E63"
            android:textSize="34sp" />

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

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

MainActivity.java

```
package com.example.rssfeed;

import android.content.Intent;
import android.net.Uri;
import android.os.AsyncTask;
import android.os.Bundle;
import android.view.View;
import android.widget.ArrayAdapter;
import android.widget.ListView;

import androidx.activity.EdgeToEdge;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.graphics.Insets;
import androidx.core.view.ViewCompat;
import androidx.core.view.WindowInsetsCompat;

import org.xmlpull.v1.XmlPullParser;
import org.xmlpull.v1.XmlPullParserException;
import org.xmlpull.v1.XmlPullParserFactory;

import java.io.IOException;
import java.io.InputStream;
import java.net.MalformedURLException;
import java.net.URL;
import java.util.ArrayList;
import java.util.List;

import android.app.ListActivity;

public class MainActivity extends AppCompatActivity {
    List headlines;
    List links;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
```

```
        EdgeToEdge.enable(this);
        setContentView(R.layout.activity_main);

ViewCompat.setOnApplyWindowInsetsListener(findViewById(R.id.main
), (v, insets) -> {
            Insets systemBars =
insets.getInsets(WindowInsetsCompat.Type.systemBars());
            v.setPadding(systemBars.left, systemBars.top,
systemBars.right, systemBars.bottom);
            return insets;
        });
        new MyAsyncTask().execute();
        }
    class MyAsyncTask extends AsyncTask<Object,Void,
ArrayAdapter>
    {
        @Override
        protected ArrayAdapter doInBackground(Object[] params)
        {
            headlines = new ArrayList();
            links = new ArrayList();
            try
            {
  URL url = new URL("https://codingconnect.net/feed");
// URL url = new URL("https://xkcd.com/rss.xml");

                XmlPullParserFactory factory =
XmlPullParserFactory.newInstance();
                factory.setNamespaceAware(false);
                XmlPullParser xpp = factory.newPullParser();
// We will get the XML from an input stream
                xpp.setInput(getInputStream(url), "UTF_8");
                boolean insideItem = false;
// Returns the type of current event: START_TAG, END_TAG, etc..
                int eventType = xpp.getEventType();
                while (eventType != XmlPullParser.END_DOCUMENT)
                {
                    if (eventType == XmlPullParser.START_TAG)
                    {
                        if
(xpp.getName().equalsIgnoreCase("item"))
                        {
                            insideItem = true;
                        }
                        else if
(xpp.getName().equalsIgnoreCase("title"))
                        {
                            if (insideItem)
                                headlines.add(xpp.nextText());
```

```
//extract the headline
                        }
                        else if
(xpp.getName().equalsIgnoreCase("link"))
                        {
                            if (insideItem)
                                links.add(xpp.nextText());
//extract the link of article
                        }
                    }
                    else if(eventType==XmlPullParser.END_TAG &&
xpp.getName().equalsIgnoreCase("item"))
                    {
                        insideItem=false;
                    }
                    eventType = xpp.next(); //move to next
element
                }
            }
            catch (MalformedURLException e)
            {
                e.printStackTrace();
            }
            catch (XmlPullParserException e)
            {
                e.printStackTrace();
            }
            catch (IOException e)
            {
                e.printStackTrace();
            }
            return null;
        }
        protected void onPostExecute(ArrayAdapter adapter)
        {
            adapter = new ArrayAdapter(MainActivity.this,
android.R.layout.simple_list_item_1,headlines);
            ListView lv = (ListView)findViewById(R.id.listView);
            lv.setAdapter(adapter);
        }
    }

    protected void onListItemClick(ListView l, View v, int
position, long id)
    {
        Uri uri = Uri.parse((links.get(position)).toString());
        Intent intent = new Intent(Intent.ACTION_VIEW, uri);
        startActivity(intent);
    }
```

```
    public InputStream getInputStream(URL url)
    {
        try
        {
            return url.openConnection().getInputStream();
        }
        catch (IOException e)
        {
            return null;
        }
    }
}
```

Android Manifest file

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

**OUTPUT ON EMULATOR:**