

**MASTER OF COMPUTER APPLICATIONS (MCA) APJ
ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

RLMCA234- Mobile Application Development Lab

Lab Record Submitted by

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AMAL JYOTHI COLLEGE OF ENGINEERING KANJIRAPPALLY

[Affiliated to APJ Abdul Kalam Technological University, Kerala. Approved by AICTE,
Accredited by NAAC with 'A' grade. Koovappally, Kanjirappally, Kottayam, Kerala -
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Course Outcome

- CO1 Setup Android Platform and Android Studio IDE
- CO2 Mange UI Design Widget and Layouts , UI Events, Event Listeners
- CO3 Experiment Android Components , Activities, Intents, and Services
- CO4 Debug Android Applications using different tools
- CO5 Develop application with SQLite DB
- CO6 Design and build functional Android applications

RLMCA234 Mobile Application Development Lab

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1	Simple calculator	20-12-23	4	CO2
2	Temperature converter	17-01-23	8	CO2
3	Explicit intent	17-01-23	11	CO3
4	Changing background color of layout	17-01-23	13	CO3
5.	Implicit Intent	24-01-23	15	CO2
6.	Armstrong,Palindrome,OddorEven	31-01-23	17	CO2
7.	Registration form	24-01-23	20	CO3
8.	Application to demonstrate date picker	07-02-23	30	CO2
9.	Application to demonstrate Android lifecycle	21-02-23	32	CO1
10.	Application to perform arithmetic operations with Options Menu	28-02-23	33	CO3,CO2
11.	Application to illustrate Popup Menu	28-02-23	36	CO3,CO2
12.	Application to illustrate Context Menu	28-02-23	38	CO2,CO3
13.	Develop an alert dialog for confirmation on exit.	14-02-23	40	CO2
14.	SQLite Database	14-03-23	42	CO5
15.	Shared Preferences – FM Radio	28-03-23	46	CO6
16.	Shared Preferences – Calculator	28-03-23	51	CO6
17.	Create and apply style in your sample UI.	04-04-23	59	CO2
18.	Application to developed using Tabbed Activity	11-04-23	61	CO2
19	Apply a style as a theme in your project	04-04-23	64	CO2
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1.Simple calculator

Mainactivity.java

```
package com.example.calculator;

import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity {
    Button b1,b2,b3,b4;
    EditText ed1,ed2,ed3;
    int a,b,c;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        b1= (Button)findViewById(R.id.btn);
        b2=(Button)findViewById(R.id.btnSub);
        b3=(Button)findViewById(R.id.btnmul);
        b4=(Button)findViewById(R.id.btndiv);
        ed1=(EditText)findViewById(R.id.edf);
        ed2=(EditText)findViewById(R.id.eds);
        ed3=(EditText)findViewById(R.id.edResult);
        b1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                a=Integer.parseInt(ed1.getText().toString());
                b=Integer.parseInt(ed2.getText().toString());
                c=a+b;
                ed3.setText("Result is "+c);
                Toast.makeText(getApplicationContext(),"result
is"+c,Toast.LENGTH_LONG).show();
            }
        });
        b2.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                a=Integer.parseInt(ed1.getText().toString());
                b=Integer.parseInt(ed2.getText().toString());
                c=a-b;
                ed3.setText("Result is "+c);
                Toast.makeText(getApplicationContext(),"resultis"+c,Toast.LENGTH_LONG).show();
            }
        });
        b3.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
```

```

        a=Integer.parseInt(ed1.getText().toString());
        b=Integer.parseInt(ed2.getText().toString());
        c=a*b;
        ed3.setText("Result is "+c);

    Toast.makeText(getApplicationContext(),"resultis"+c,Toast.LENGTH_LONG).show();
    }
    }
    );
    b4.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            a=Integer.parseInt(ed1.getText().toString());
            b=Integer.parseInt(ed2.getText().toString());
            c=a/b;
            ed3.setText("Result is "+c);

            Toast.makeText(getApplicationContext(),"resultis"+c,Toast.LENGTH_LONG).show();
        }
    }
    );
}
}

```

activitymain.xml

```

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

    <Button
        android:id="@+id/btn"
        android:layout_width="91dp"
        android:layout_height="42dp"
        android:text="add"
        android:textColor="#FBF8F8"
        android:textSize="16sp"
        app:backgroundTint="#BFACE1"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.209"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.568"
        tools:text="add" />

    <EditText
        android:id="@+id/edResult"
        android:layout_width="184dp"

```

```

android:layout_height="53dp"
android:ems="10"
android:fontFamily="monospace"
android:inputType="textPersonName"
android:text=""
android:textAlignment="center"
android:textSize="20sp"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.559"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.893" />

```

```

<TextView
    android:id="@+id/textView3"
    android:layout_width="115dp"
    android:layout_height="39dp"
    android:fontFamily="casual"
    android:text="First Number"
    android:textColor="#232020"
    android:textSize="16sp"
    android:textStyle="italic"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.145"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.257" />

```

```

<TextView
    android:id="@+id/textView4"
    android:layout_width="128dp"
    android:layout_height="51dp"
    android:fontFamily="casual"
    android:text="Second Number"
    android:textColor="#2C2727"
    android:textSize="16sp"
    android:textStyle="italic"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.147"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.412" />

```

```

<EditText
    android:id="@+id/edf"
    android:layout_width="150dp"
    android:layout_height="46dp"
    android:ems="10"
    android:fontFamily="sans-serif"
    android:inputType="textPersonName"

```

```

android:text=""
android:textColor="#000000"
android:textSize="20sp"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.804"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.259" />

```

```

<EditText
    android:id="@+id/eds"
    android:layout_width="153dp"
    android:layout_height="35dp"
    android:ems="10"
    android:inputType="textPersonName"
    android:text=""
    android:textColor="#0E0D0D"
    android:textSize="20sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.937"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.413" />

```

```

<TextView
    android:id="@+id/textView6"
    android:layout_width="117dp"
    android:layout_height="43dp"
    android:fontFamily="casual"
    android:text="Calculator"
    android:textColor="#A327BA"
    android:textSize="24sp"
    android:textStyle="bold"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.469"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.072" />

```

```

<Button
    android:id="@+id/btnmul"
    android:layout_width="93dp"
    android:layout_height="42dp"
    android:text="multiple"
    app:backgroundTint="#BFACE1"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.205"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"

```

```
app:layout_constraintVertical_bias="0.695" />
```

```
<Button
```

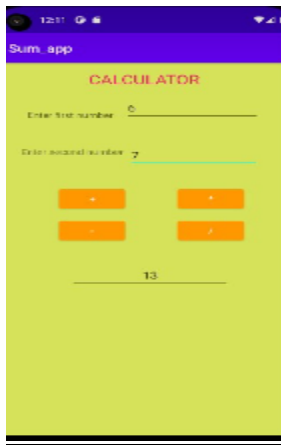
```
    android:id="@+id/btnSub"
    android:layout_width="92dp"
    android:layout_height="39dp"
    android:text="subtract"
    app:backgroundTint="#BFACE1"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.799"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.566" />
```

```
<Button
```

```
    android:id="@+id/btnDiv"
    android:layout_width="94dp"
    android:layout_height="44dp"
    android:text="divide"
    app:backgroundTint="#BFACE1"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.804"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.697" />
```

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

Output



2. Temperature Converter

Mainactivity.java

```
package com.example.temp_converter;
```

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



```

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

import java.text.CollationElementIterator;

public class MainActivity extends AppCompatActivity {
    // Button b1,b2;

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

    }
    public void ConverF(View v)
    {
        EditText t1 =(EditText)findViewById(R.id.ed2);
        int a=Integer.parseInt(String.valueOf(t1.getText()));
        double y=(a*1.8)+32;
        EditText t2 =(EditText)findViewById(R.id.ed1);
        t2.setText(y+"Farenheit");
    }
    public void Converc(View v)
    {
        EditText t1 =(EditText)findViewById(R.id.ed2);
        int a=Integer.parseInt(String.valueOf(t1.getText()));
        double y=(a-32)*5/9;
        EditText t2 =(EditText)findViewById(R.id.ed1);
        t2.setText(y+"celcius");
    }
}

```

activitymain.xml

```

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

    <EditText
        android:id="@+id/ed1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:ems="10"
        android:inputType="textPersonName"

```

```
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.442"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.747" />
```

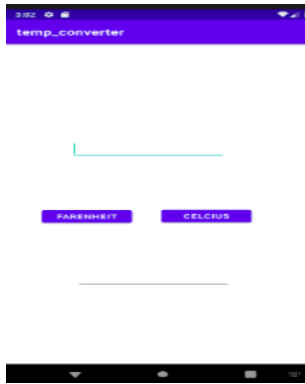
```
<Button
    android:id="@+id/b1"
    android:layout_width="124dp"
    android:layout_height="41dp"
    android:onClick="ConverC"
    android:text="Celcius"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.693"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.54" />
```

```
<Button
    android:id="@+id/b2"
    android:layout_width="124dp"
    android:layout_height="41dp"
    android:onClick="ConverF"
    android:text="Fahrenheit"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.162"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.541" />
```

```
<EditText
    android:id="@+id/ed2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:ems="10"
    android:inputType="textPersonName"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.407"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.316" />
```

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

Output



3.Explicit Intent

Firstactivity

```
package com.example.first_avty;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class MainActivity extends AppCompatActivity {
    Button btnnext;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        btnnext=(Button) findViewById((R.id.b1));
        btnnext.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Intent in =new Intent(MainActivity.this,second_avty.class);
                startActivity(in);
            }
        });
    }
}
```

Second activity.java

```
package com.example.first_avty;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
public class second_avty extends AppCompatActivity {
    Button prev;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
```

```

setContentView(R.layout.activity_second_avty);
prev=(Button) findViewById((R.id.b2));
prev.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        Intent in2=new Intent(second_avty.this,MainActivity.class);
        startActivity(in2);
    }
});
}
}

```

Activity_main.xml

```

<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
xmlns:app="http://schemas.android.com/apk/res-auto"
xmlns:tools="http://schemas.android.com/tools"
android:layout_width="match_parent"
android:layout_height="match_parent"
android:background="#E3CEE6"
android:backgroundTint="#E8BEEF"
tools:context=".MainActivity">
<Button
    android:id="@+id/b1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Next"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

Secondactivity.xml

```

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

<Button
    android:id="@+id/b2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Previous"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"

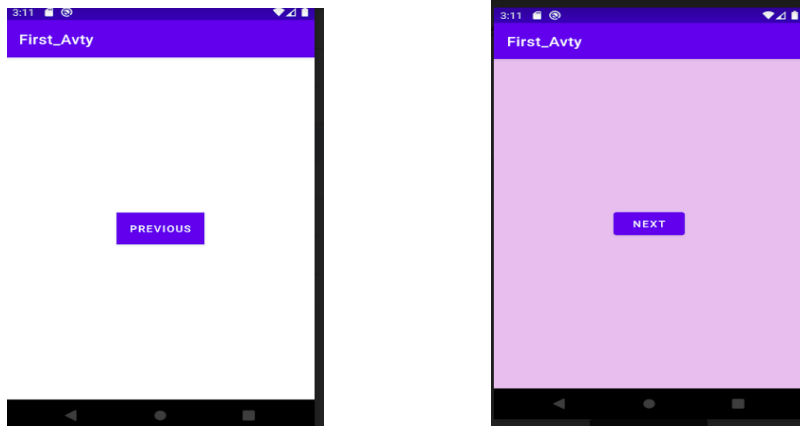
```

```

    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

Output



4. change background color on button click

Mainactivity.java

```

package com.example.bgcolor;
import static android.graphics.Color.GREEN;
import androidx.appcompat.app.AppCompatActivity;
import androidx.constraintlayout.widget.ConstraintLayout;
import androidx.core.content.ContextCompat;
import android.annotation.SuppressLint;
import android.graphics.Color;
import android.os.Bundle;
import android.text.Layout;
import android.view.View;
import android.widget.Button;
public class MainActivity extends AppCompatActivity {
    Button b1,b2;
    private ConstraintLayout mConstraintLayout;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        b1= (Button) findViewById(R.id.btnColor1);
        b2 = (Button) findViewById(R.id.btnColor2);
        mConstraintLayout =
        (ConstraintLayout)findViewById(R.id.constraintLayout);
        b1.setOnClickListener(new View.OnClickListener() {
            public void onClick(View view ) {
                //
            }
        });
    }
}

```

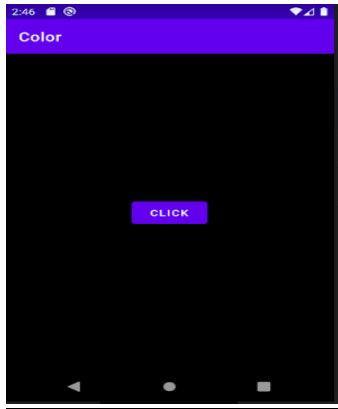
```
b1.setBackgroundColor(getResources().getColor(R.color.green));
//
mConstraintLayout.setBackgroundColor(ContextCompat.getColor(this.,R.color.
green));
mConstraintLayout.setBackgroundColor(getResources().getColor(R.color.green
));
}
});
b2.setOnClickListener(new View.OnClickListener() {
@Override
public void onClick(View view) {
mConstraintLayout.setBackgroundColor(getResources().getColor(R.color.red)
;});}
}
```

Activitymain.xml

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

```
<include xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:id="@+id/constraintLayout"
    tools:context=".MainActivity">
    <Button
        android:id="@+id/btnColor1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Green"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.198"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.499"/>
    <Button
        android:id="@+id/btnColor2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Red"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.782"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.499"/>
    </include>
```

Output



5.Implicit intent

Mainactivity.java

```
package com.example.expintent;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.net.Uri;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

public class MainActivity extends AppCompatActivity {
    Button btn1,btn2,btn3;

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        btn1=(Button) findViewById(R.id.b1);
        btn2=(Button) findViewById(R.id.b2);
        btn3=(Button) findViewById(R.id.b3);
        btn1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Intent in= new Intent(Intent.ACTION_VIEW, Uri.parse("https://www.google.com"));
                startActivity(in);
            }
        });
        btn2.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                Intent in=new Intent(Intent.ACTION_DIAL,Uri.parse("tel:096543"));
                startActivity(in);
            }
        });
        btn3.setOnClickListener(new View.OnClickListener() {
            @Override
```

```

        public void onClick(View view) {
            Intent in=new Intent(Intent.ACTION_SEND);
            in.setType("text/plain");
            in.putExtra(Intent.EXTRA_TEXT,"hello");
            startActivity(in);
        }
    });
}
}

```

Mainactivity.xml

```

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

    <Button
        android:id="@+id/b1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Google"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.459"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.124" />

    <Button
        android:id="@+id/b2"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Dial"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.459"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.464" />

    <Button
        android:id="@+id/b3"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Messege"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.461"

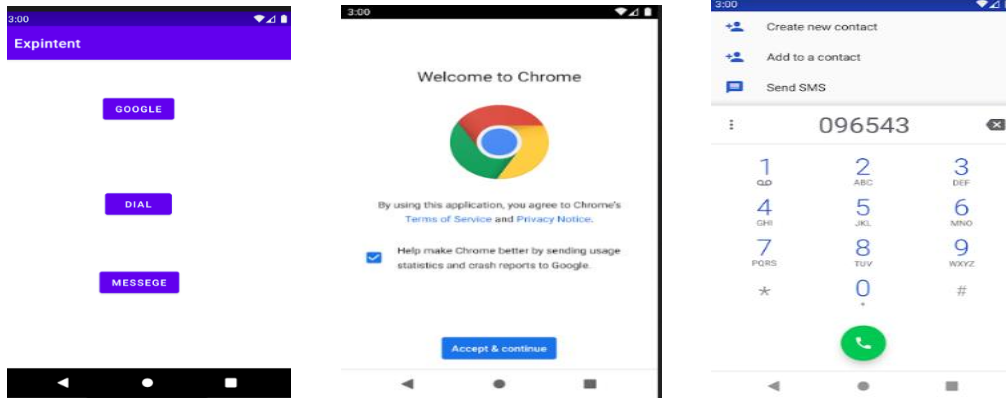
```



```

        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.745" />
    </androidx.constraintlayout.widget.ConstraintLayout>
    
```

Output



6.Armstrong, odd or even, factorial

Mainactivity.java

```
package com.example.fact;
```

```

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

```

public class MainActivity extends AppCompatActivity {
    Button b1,b2,b3;
    EditText ed1,ed2;
    int a;
    int fact=1;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        b1= (Button)findViewById(R.id.btn1);
        b2=(Button)findViewById(R.id.btn2);
        b3=(Button)findViewById(R.id.btn3);
        ed1=(EditText)findViewById(R.id.ed);
        ed2=(EditText)findViewById(R.id.edres);
        b1.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
    
```

```

        a=Integer.parseInt(ed1.getText().toString());
        for(int i = 1; i<=a; i++){
            fact= i * fact;
            ed2.setText("Result is "+fact);
        }
    }
});
b2.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        a=Integer.parseInt(ed1.getText().toString());
        if (a%2==0)
            ed2.setText(a+ " is even");
        else
            ed2.setText(a+ " is odd");
    }
});
b3.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        a=Integer.parseInt(ed1.getText().toString());
        int temp = a;
        int result=0;
        int n=0;
        int rem;
        for(;temp!=0;temp/=10)
        {
            n++;
        }
        temp=a;
        for(;temp!=0;temp/=10)
        {
            rem=temp%10;
            result +=Math.pow(rem,n);
        }
        if(result==a)
            ed2.setText(a+ " is armstrong");
        else
            ed2.setText(a+ " is not armstrong");
    }
});
}
}

```

Activitymain.xml

```

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

```

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

```
<TextView
    android:id="@+id/textView2"
    android:layout_width="101dp"
    android:layout_height="23dp"
    android:text="Number"
    android:textStyle="bold"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.003"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.36"
    tools:ignore="MissingConstraints" />
```

```
<EditText
    android:id="@+id/ed"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:ems="10"
    android:inputType="number"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="1.0"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.354"
    tools:ignore="MissingConstraints" />
```

```
<Button
    android:id="@+id/btn1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Factorial"
    app:backgroundTint="#1BAABD"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.498"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.56"
    tools:ignore="MissingConstraints" />
```

```
<Button
    android:id="@+id/btn2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Odd or Even"
    app:backgroundTint="#32ABBC"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.05"
```

```

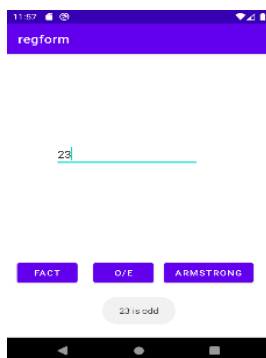
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.705"
tools:ignore="MissingConstraints" />

<Button
    android:id="@+id/btn3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Armstrong"
    app:backgroundTint="#16ABBF"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.946"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.705"
    tools:ignore="MissingConstraints" />

<EditText
    android:id="@+id/edres"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:ems="10"
    android:inputType="textPersonName"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.547"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.908" />

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

Output



7.Registration Form

MainActivity.java

```

import android.widget.AdapterView;
import android.widget.ArrayAdapter;
    
```

```

import android.widget.Button;
import android.widget.EditText;
import android.widget.RadioButton;
import android.widget.Spinner;
import android.widget.Toast;
import java.util.ArrayList;
public class MainActivity extends AppCompatActivity {
    Button b1;
    EditText e1,e2,e3;
    RadioButton r1,r2;
    Spinner s1;
    String name,email,ph,gender,course;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        e1 = (EditText) findViewById(R.id.name);
        e2 = (EditText) findViewById(R.id.edemail);
        e3 = (EditText) findViewById(R.id.edphone);
        r1 = (RadioButton) findViewById(R.id.rb1);
        r2 = (RadioButton) findViewById(R.id.rb2);
        b1 = (Button) findViewById(R.id.btnsubmit);
        s1 = (Spinner) findViewById(R.id.course);

        ArrayList<String> list = new ArrayList<>();
        list.add("--select--");
        list.add("MCA");
        list.add("CSE");
        list.add("CE");
        list.add("FT");
        list.add("EEE");

        ArrayAdapter<String> adapter = new ArrayAdapter<String>(this,
        android.R.layout.simple_spinner_dropdown_item,list);
        s1.setAdapter(adapter);
        adapter.setDropDownViewResource(android.R.layout.simple_spinner_dropdown_item);
        s1.setAdapter(adapter);
        s1.setOnItemClickListener(new AdapterView.OnItemClickListener() {
            @Override
            public void onItemClick(AdapterView<?> adapterView, View view, int i, long l) {
                course = list.get(i);
            }

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

```

```

b1.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        name = e1.getText().toString();
        email = e2.getText().toString();
        ph = e3.getText().toString();
        if(r1.isChecked()){
            gender = r1.getText().toString();
        }
        else{
            gender = r2.getText().toString();
        }
        // Toast.makeText(getApplicationContext()," "+name +
        email+gender,Toast.LENGTH_SHORT).show();

        Intent in = new Intent(MainActivity.this,reg_print.class);
        in.putExtra("key1",name);
        in.putExtra("key3",email);
        in.putExtra("key4",ph);
        in.putExtra("key2",gender);
        in.putExtra("key5",course);
        startActivity(in);
    }
});
}
}

```

Activitymain.xml

```

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

<TextView
    android:id="@+id/textView"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:fontFamily="@font/amaranth"
    android:text="Student Registration"
    android:textColor="#471E4E"
    android:textSize="34sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.498"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.053" />

<TextView
    android:id="@+id/textView2"

```

```

android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:text="Name"
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.124"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.212" />

```

```

<TextView
    android:id="@+id/textView3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Email id"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.124"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.283" />

```

```

<TextView
    android:id="@+id/textView4"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Phone"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.124"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.362" />

```

```

<TextView
    android:id="@+id/textView5"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Course"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.123"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.566" />

```

```

<EditText
    android:id="@+id/name"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:ems="10"
    android:hint="Enter name"
    android:inputType="textPersonName"

```

```

app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.736"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.182" />

```

```

<EditText
    android:id="@+id/edemail"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:ems="10"
    android:inputType="textPersonName"
    android:hint="Enter Email"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.746"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.338" />

```

```

<EditText
    android:id="@+id/edphone"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:ems="10"
    android:inputType="textPersonName"
    android:hint="Enter phone"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.741"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.256" />

```

```

<RadioGroup
    android:id="@+id/radioGroup"
    android:layout_width="230dp"
    android:layout_height="63dp"
    android:orientation="horizontal"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.524"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.458">

```

```

<RadioButton
    android:id="@+id/rb1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_weight="1"
    android:text="Male" />

```



```

<RadioButton
    android:id="@+id/rb2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_weight="1"
    android:text="Female" />
</RadioGroup>

<Button
    android:id="@+id/btnsubmit"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:backgroundTint="#787283"
    android:text="Submit"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.756" />

<Spinner
    android:id="@+id/course"
    android:layout_width="243dp"
    android:layout_height="24dp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.69"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.562" />

</androidx.constraintlayout.widget.ConstraintLayout>

```

reg_print.java

```

package com.example.registration;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
public class reg_print extends AppCompatActivity {
    Button b1;
    EditText name,email,phone,gender,course;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_reg_print);
        b1 = (Button) findViewById(R.id.prevbtn);
        name = (EditText) findViewById(R.id.sname);
        gender = (EditText) findViewById(R.id.sgender);
        email = (EditText) findViewById(R.id.semail);
    }
}

```

```

phone = (EditText) findViewById(R.id.sphone);
course = (EditText) findViewById(R.id.scourse);

Intent in = getIntent();
String st1 = in.getStringExtra("key1");
String st2 = in.getStringExtra("key2");
String st3 = in.getStringExtra("key3");
String st4 = in.getStringExtra("key4");
String st5 = in.getStringExtra("key5");
name.setText(st1);
gender.setText(st2);
email.setText(st3);
phone.setText(st4);
course.setText(st5);
b1.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        Intent in = new Intent(reg_print.this,MainActivity.class);
        startActivity(in);
    }
});
}
}

```

reg_print.xml

```

<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
xmlns:app="http://schemas.android.com/apk/res-auto"
xmlns:tools="http://schemas.android.com/tools"
android:layout_width="match_parent"
android:layout_height="match_parent"
tools:context=".reg_print">
<TextView
    android:id="@+id/txt6"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Student Details"
    android:textAlignment="center"
    android:textColor="#43194A"
    android:textSize="24sp"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.467"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.07" />

<TextView
    android:id="@+id/txt7"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"

```

```

    android:text="Name"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.152"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.228" />

```

```

<TextView
    android:id="@+id/txt10"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Gender"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.152"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.285" />

```

```

<EditText
    android:id="@+id/sname"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:ems="10"
    android:inputType="textPersonName"
    android:text=""
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.646"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.186" />

```

```

<TextView
    android:id="@+id/txt11"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Email id"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.152"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.353" />

```

```

<EditText
    android:id="@+id/sgender"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:ems="10"
    android:inputType="textPersonName"
    android:text=""
    app:layout_constraintBottom_toBottomOf="parent"

```

```

app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.646"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.278" />

```

```

<TextView
    android:id="@+id/txt12"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Phone"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.164"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.433" />

```

```

<TextView
    android:id="@+id/txt13"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Course"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.166"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.54" />

```

```

<EditText
    android:id="@+id/semail"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:ems="10"
    android:inputType="textPersonName"
    android:text=""
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.641"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.365" />

```

```

<EditText
    android:id="@+id/scourse"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:ems="10"
    android:inputType="textPersonName"
    android:text=""
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"

```

```
app:layout_constraintHorizontal_bias="0.641"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.543" />
```

```
<EditText
    android:id="@+id/sphone"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:ems="10"
    android:inputType="textPersonName"
    android:text=""
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.641"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.448" />
```

```
<Button
    android:id="@+id/prevbtn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Previous"
    android:backgroundTint="#787283"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.498"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.726" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

Output

4:16

registration

Student Registration

Name Aleena Thomas

Email id aleena@gmail.com

Phone 1234567890

☐ Male ☒ Female

Course MCA

SUBMIT

4:15

registration

Student Details

Name Aleena Thomas

Gender Female

Email id aleena2gmail.com

Phone 1234567890

Course MCA

PREVIOUS

8.DatePicker MainActivity.java

```

package com.example.datepicker;
import androidx.appcompat.app.AppCompatActivity;
import android.graphics.Color;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.DatePicker;
import android.widget.TextView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
    DatePicker simpleDatePicker;
    Button submit;
    TextView txtdate;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        DatePicker ssimpleDatePicker=(DatePicker)findViewById(R.id.simpleDP); // initiate a date picker
        ssimpleDatePicker.setBackgroundColor(Color.YELLOW);
        txtdate = (TextView) findViewById(R.id.txtsimplifiedate);
        simpleDatePicker = (DatePicker) findViewById(R.id.simpleDP);
        submit = (Button) findViewById(R.id.btnsubmit);
        // perform click event on submit button
        submit.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                // get the values for day of month , month and year from a date picker
                String day = "Day = " + simpleDatePicker.getDayOfMonth();
                String month = "Month = " + (simpleDatePicker.getMonth() + 1);
                String year = "Year = " + simpleDatePicker.getYear();
                // display the values by using a toast
                // Toast.makeText(getApplicationContext(), day + "\n" + month + "\n" + year,
                Toast.LENGTH_LONG).show();
                Toast.makeText(getApplicationContext(), day + ", " + month + ", " + year,
                Toast.LENGTH_LONG).show();

            }
        });
    }
}

```

Activitymain.xml

```

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

```

```

tools:context=".MainActivity" >

<DatePicker
    android:id="@+id/simpleDP"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.491"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.083"
/>

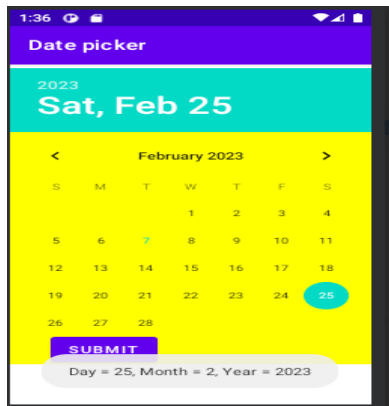
<TextView
    android:id="@+id/txtsimplifiedate"
    android:layout_width="104dp"
    android:layout_height="32dp"
    android:text="TextView"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.703"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.706" />

<Button
    android:id="@+id/btnsubmit"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="SUBMIT"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.178"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.699" />

<ImageView
    android:id="@+id/imageView2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.568"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.969"
    app:srcCompat="@drawable/ss_qrcode"
    tools:srcCompat="@tools:sample/avatars" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

Output



9.Application life cycle

MainActivity.java

```
package com.example.myapplication;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.util.Log;
public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Log.d("lifecycle","onCreate invoked");
    }
    protected void onStart(){
        super.onStart();
        Log.d("Lifecycle","onStart invoked");
    }
    protected void onResume(){
        super.onResume();
        Log.d("Lifecycle","onResume invoked");
    }
    protected void onPause(){
        super.onPause();
        Log.d("Lifecycle","onPause invoked");
    }
    protected void onStop(){
        super.onStop();
        Log.d("Lifecycle","onStop invoked");
    }
    protected void onRestart() {
        super.onRestart();
        Log.d("Lifecycle","onRestart invoked");
    }
    protected void onDestroy(){
        super.onDestroy();
        Log.d("Lifecycle","onDestroy invoked");
    }
}
```



```

    }
}

```

Activitymain.xml

```

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

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

</androidx.constraintlayout.widget.ConstraintLayout>

```

Output

```

2023-02-21 01:12:39.427 3494-3494/com.example.myapplication D/Lifecycle: onPause invoked
2023-02-21 01:12:39.896 3494-3494/com.example.myapplication D/Lifecycle: onStop invoked
2023-02-21 01:12:39.899 3494-3494/com.example.myapplication D/Lifecycle: onDestroy invoked

```

10. Develop an application to perform arithmetic operations with options Menu

MainActivity.java

```

package com.example.calculatormenu;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.Menu;
import android.view.MenuItem;
import android.widget.EditText;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
    int a,b,c;
    EditText ed1,ed2;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}

```

```

public boolean onCreateOptionsMenu(Menu menu)
{
    getMenuInflater().inflate(R.menu.menu,menu);
    return true;
}
public boolean onOptionsItemSelected(MenuItem item)
{
    ed1=(EditText)findViewById(R.id.ed1);
    ed2=(EditText)findViewById(R.id.ed2);
    a=Integer.parseInt(ed1.getText().toString());
    b=Integer.parseInt(ed2.getText().toString());
    // Toast.makeText(this,"Selected item: " +item.getTitle(),Toast.LENGTH_LONG).show();
    switch (item.getItemId())
    {
        case R.id.add:
            c=a+b;
            Toast.makeText(this,"Addition: " +c,Toast.LENGTH_LONG).show();
            return true;
        case R.id.sub:
            c=a-b;
            Toast.makeText(this,"Subtraction: " +c,Toast.LENGTH_LONG).show();
            return true;
        case R.id.mul:
            c=a*b;
            Toast.makeText(this,"Multiplication: " +c,Toast.LENGTH_LONG).show();
            return true;
        case R.id.div:
            c=a/b;
            Toast.makeText(this,"Division: " +c,Toast.LENGTH_LONG).show();
            return true;
        default:
            return super.onOptionsItemSelected(item);
    }
}
}

```

Activitymain.xml

```

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

<EditText
    android:id="@+id/ed1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:ems="10"
    android:inputType="textPersonName"

```

```

app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.92"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.368" />

```

```

<TextView
    android:id="@+id/textView2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="First number"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.0"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.373" />

```

```

<TextView
    android:id="@+id/textView3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Second number"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.0"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.554" />

```

```

<EditText
    android:id="@+id/ed2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:ems="10"
    android:inputType="textPersonName"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.925"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.552" />

```

```

</androidx.constraintlayout.widget.ConstraintLayout>

```

menu.xml

```

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

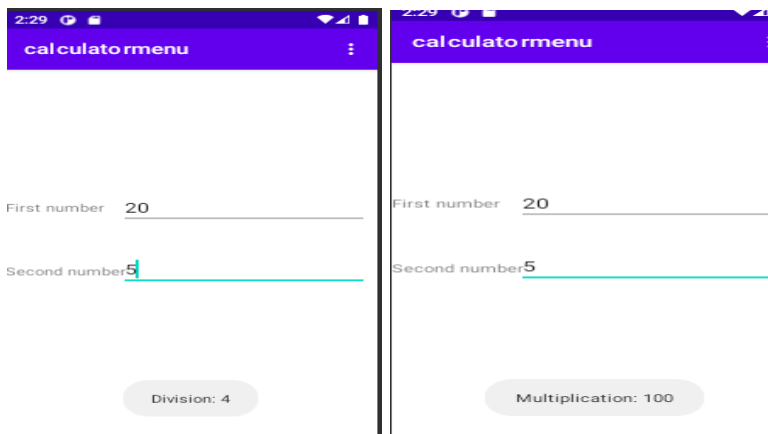
    <item
        android:id="@+id/add"
        android:title="add" />
    <item

```

```

        android:id="@+id/sub"
        android:title="subtract" />
    </item>
    <item
        android:id="@+id/mul"
        android:title="multiply" />
    </item>
    <item
        android:id="@+id/div"
        android:title="divide" />
</menu>
    
```

Output



11. Develop an application to show a list of fruits and vegetables in popup menu

MainActivity.java

```

package com.example.popup;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.MenuItem;
import android.view.View;
import android.widget.Button;
import android.widget.PopupMenu;
import android.widget.Toast;
import com.example.popup.R;
public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Button b1 = (Button) findViewById(R.id.btn);
    
```

```

b1.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        PopupMenu popup = new PopupMenu(MainActivity.this, b1);
        popup.getMenuInflater().inflate(R.menu.menu, popup.getMenu());
        popup.setOnMenuItemClickListener(new PopupMenu.OnMenuItemClickListener() {
            @Override
            public boolean onMenuItemClick(MenuItem item) {
                Toast.makeText(MainActivity.this, "You clicked " + item.getTitle(),
                    Toast.LENGTH_LONG).show();
                return true;
            }
        });
        popup.show();
    }
});
}

```

Activitymain.xml

```

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

    <Button
        android:id="@+id/btn"
        android:layout_width="147dp"
        android:layout_height="79dp"
        android:text="Click"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

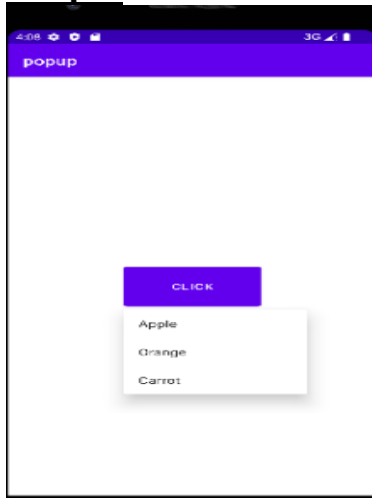
menu.xml

```

<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android">
    <item
        android:id="@+id/one"
        android:title = "Apple"/>
    <item
        android:id="@+id/two"
        android:title = "Orange"/>
    <item
        android:id="@+id/three"
        android:title = "Carrot"/>
</menu>

```

Output



12. Develop an application to show phone contacts using context menu

MainActivity.java

```
package com.example.contextmenu;
import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.ContextMenu;
import android.view.MenuInflater;
import android.view.MenuItem;
import android.view.View;
import android.widget.AdapterView;
import android.widget.ArrayAdapter;
import android.widget.ListView;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity {
    ListView ls;
    String contact[]={"anu","ann","rahul"};
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        ls=(ListView) findViewById(R.id.lsvview);
        ArrayAdapter<String> adapter=new ArrayAdapter<>(this, android.R.layout.simple_list_item_1,contact);
        ls.setAdapter(adapter);
        registerForContextMenu(ls);

    }

    @Override
    public void onCreateContextMenu(ContextMenu menu, View v, ContextMenu.ContextMenuInfo menuInfo)
    {
        super.onCreateContextMenu(menu, v, menuInfo);
        MenuInflater inflater=getMenuInflater();
        inflater.inflate(R.menu.menu,menu);
    }
}
```

```

        menu.setHeaderTitle("Select the action");
    }

    @Override
    public boolean onOptionsItemSelected(@NonNull MenuItem item) {

        if(item.getItemId()==R.id.call){
            Toast.makeText(getApplicationContext(), "calling section", Toast.LENGTH_SHORT).show();
        }
        else if(item.getItemId()==R.id.sms){
            Toast.makeText(getApplicationContext(), "sms section", Toast.LENGTH_SHORT).show();

        }
        else{
            return true;
        }
        return true;
    }
}

```

Activitymain.xml

```

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

    <ListView
        android:id="@+id/lsvview"
        android:layout_width="259dp"
        android:layout_height="466dp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

menu.xml

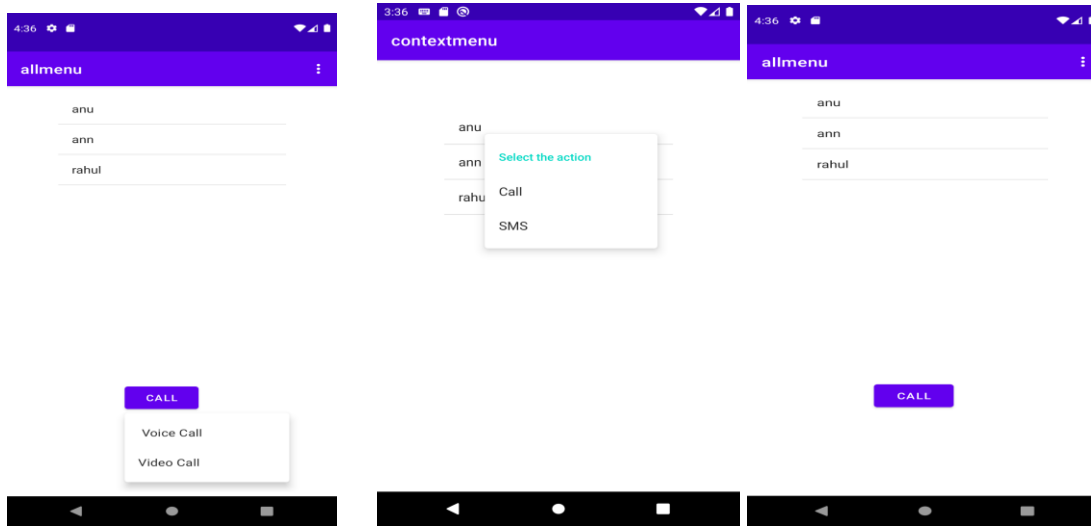
```

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

    <item
        android:id="@+id/call"
        android:title="Call" />
    <item
        android:id="@+id/sms"
        android:title="SMS" />
</menu>

```

Output



13. Develop an alert dialog for confirmation on exit.

MainActivity.java

```
package com.example.alert;
import androidx.appcompat.app.AppCompatActivity;
import android.content.DialogInterface;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.app.AlertDialog;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
    Button closeButton;
    AlertDialog.Builder builder;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        closeButton = (Button) findViewById(R.id.button);
        builder = new AlertDialog.Builder(this);
        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.dialog_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(),"you choose yes action for alertbox",
                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 choose no action for alertbox",
                Toast.LENGTH_SHORT).show();
        }
    });
//Creating dialog box
AlertDialog alert = builder.create();
//Setting the title manually
alert.setTitle("AlertDialogExample");
alert.show();
}
});
}
}

```

Activitymain.xml

```

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

    <TextView
        android:id="@+id/textView"
        android:layout_width="110dp"
        android:layout_height="24dp"
        android:fontFamily="cursive"
        android:text="Alert Window"
        android:textColor="#2C5EB6"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.422"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.11" />

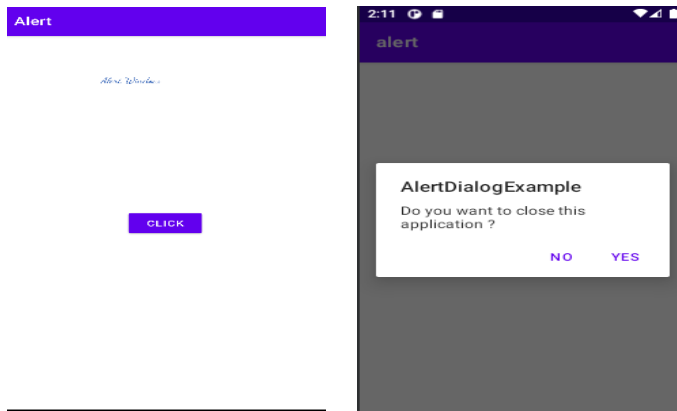
```

```

<Button
    android:id="@+id/btn"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Click"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

Output



14. Develop an SQLite program for writing, reading, updating and deleting Employee details.

Activitymain.xml

```

package com.example.employee;
import androidx.appcompat.app.AppCompatActivity;
import android.annotation.SuppressLint;
import android.content.ContentValues;
import android.database.Cursor;
import android.database.SQLException;
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;
public class MainActivity extends AppCompatActivity {
    SQLiteDatabase db;
    Button btninsert,btnlist,btnupdate,btndelete;

```

```

    @SuppressLint("WrongConstant")

```

```

@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    btninsert=(Button) findViewById(R.id.btninsert);
    btnlist=(Button) findViewById(R.id.btn2);
    btnupdate=(Button)findViewById(R.id.btn3);
    btndelete=(Button)findViewById(R.id.btn4);
    EditText eid=(EditText) findViewById(R.id.ed1);
    EditText ename=(EditText) findViewById(R.id.ed2);
    try{
        db=openOrCreateDatabase("Studentdb",SQLiteDatabase.CREATE_IF_NECESSARY,null);
        db.execSQL("Create Table temp(id integer,name text)");
    }
    catch (SQLException e){}
    btninsert.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {

            ContentValues values=new ContentValues();
            values.put("id",eid.getText().toString());
            values.put("name",ename.getText().toString());
            if((db.insert("temp",null,values))!=-1){
                Toast.makeText(MainActivity.this, "Record succesfully inserted",
Toast.LENGTH_SHORT).show();
            }
            else{
                Toast.makeText(MainActivity.this, "Not inserted", Toast.LENGTH_SHORT).show();
            }
            eid.setText("");
            ename.setText("");

        }

    });
    btnlist.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {

            Cursor c=db.rawQuery("SELECT * FROM temp",null);
            c.moveToFirst();
            while(!c.isAfterLast()){
                Toast.makeText(MainActivity.this,c.getString(0)+ " "+c.getString(1),1000).show();
                c.moveToNext();
            }
            c.close();

        }

    });
    btnupdate.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {

```

```

int id = Integer.parseInt(eid.getText().toString());

String name = ename.getText().toString();

// Update the name of the record with the specified ID
db.execSQL("UPDATE 'temp' SET name='" + name + "' WHERE id=" + id);

Toast.makeText(MainActivity.this, "Updated", Toast.LENGTH_SHORT).show();

    }
});
btndelete.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        int id = Integer.parseInt(eid.getText().toString());
        db.execSQL("DELETE FROM 'temp' WHERE id=" + id);

        Toast.makeText(MainActivity.this, "Deleted", Toast.LENGTH_SHORT).show();

    }
});
}
}

```

Activitymain.xml

```

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

```

```

<Button
    android:id="@+id/btn3"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Update"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.705" />

```

```

<EditText
    android:id="@+id/ed1"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"

```

```

android:ems="10"
android:inputType="textPersonName"
android:text="Id"
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="0.201" />

```

```

<EditText
    android:id="@+id/ed2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:ems="10"
    android:inputType="textPersonName"
    android:text="Name"
    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="0.341" />

```

```

<Button
    android:id="@+id/btninsert"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Insert"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.495"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.499" />

```

```

<Button
    android:id="@+id/btn2"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="List"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.495"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    app:layout_constraintVertical_bias="0.613" />

```

```

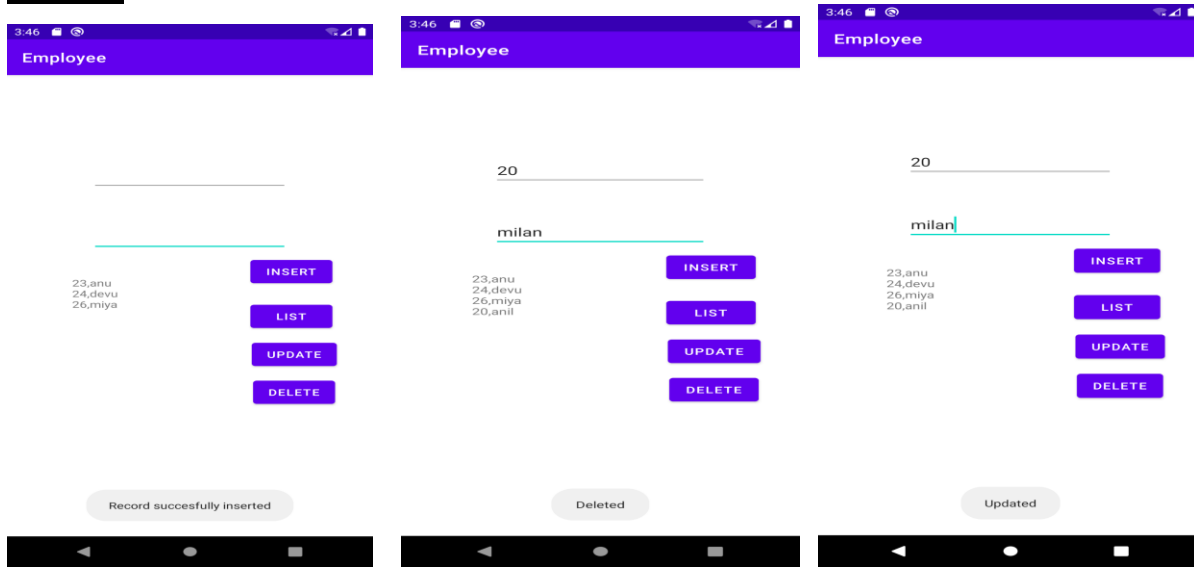
<Button
    android:id="@+id/btn4"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Delete"

```

```
app:layout_constraintBottom_toBottomOf="parent"
app:layout_constraintEnd_toEndOf="parent"
app:layout_constraintHorizontal_bias="0.485"
app:layout_constraintStart_toStartOf="parent"
app:layout_constraintTop_toTopOf="parent"
app:layout_constraintVertical_bias="0.803" />
```

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

Output



15. Develop an FM Radio with scan button to save the stations and select the saved stations using PREVIOUS and NEXT Buttons.

MainActivity.java

```
package com.example.fmradio;
import androidx.appcompat.app.AppCompatActivity;
import android.content.SharedPreferences;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import java.util.ArrayList;
import java.util.List;
import java.util.HashSet;
import java.util.Set;
public class MainActivity extends AppCompatActivity {
    EditText e1;
    Button b1,b2,b3;
```

```

TextView t1;
int counter = 0;
@Override
protected void onCreate(Bundle savedInstanceState) {
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    e1 = (EditText) findViewById(R.id.freq_edtxt);
    b1 = (Button) findViewById(R.id.btn_scan);
    b2 = (Button) findViewById(R.id.btn_pre);
    b3 = (Button) findViewById(R.id.btn_nxt);
    t1 = (TextView) findViewById(R.id.list_txt);
    SharedPreferences sp = getSharedPreferences("mychannel",MODE_PRIVATE);
    List<String> items = new ArrayList<String>();
    items.add("89.15");
    items.add("89.45");
    items.add("90.00");
    items.add("98.75");
    items.add("99.15");
    items.add("102.3");
    Set<String> itemsSet = new HashSet<String>(items);
    SharedPreferences.Editor ed = sp.edit();
    ed.putStringSet("items", itemsSet);
    ed.apply();
    b1.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            SharedPreferences sp = getSharedPreferences("mychannel",MODE_PRIVATE);
            Set<String> itemsSet = sp.getStringSet("items", new HashSet<String>());
            List<String> itemsList = new ArrayList<String>(itemsSet);
            // Loop through the items and add them to the TextView
            StringBuilder stringBuilder = new StringBuilder();
            for (String item : itemsList) {
                stringBuilder.append(item).append("\n");
            }
            t1.setText(stringBuilder.toString());
            if (itemsList.size() > 0) {
                e1.setText(itemsList.get(counter));
            }
        }
    });
    b2.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View view) {
            SharedPreferences sp = getSharedPreferences("mychannel",MODE_PRIVATE);
            Set<String> itemsSet = sp.getStringSet("items", new HashSet<String>());
            List<String> itemsList = new ArrayList<String>(itemsSet);

```

```

counter--;
if (counter < 0) {
    counter = itemsList.size() - 1;
}
e1.setText(itemsList.get(counter));
}
});
b3.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        SharedPreferences sp = getSharedPreferences("mychannel",MODE_PRIVATE);
        Set<String> itemsSet = sp.getStringSet("items", new HashSet<String>());
        List<String> itemsList = new ArrayList<String>(itemsSet);
        counter++;
        if (counter >= itemsList.size()) {
            counter = 0;
        }
        e1.setText(itemsList.get(counter));
    }
});
}}

```

Activitymain.xml

```

<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <Button
        android:id="@+id/btn_pre"
        android:layout_width="90dp"
        android:layout_height="49dp"
        android:text="pre"
        android:textSize="16sp"
        app:backgroundTint="#FFC107"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.262"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent"
        app:layout_constraintVertical_bias="0.439"/>
    </Button>

```



```

android:id="@+id/btn_nxt";
android:layout_width="90dp";
android:layout_height="49dp";
android:text="nxt";
android:textSize="16sp";
app:backgroundTint="#FFC107";
app:layout_constraintBottom_toBottomOf="parent";
app:layout_constraintEnd_toEndOf="parent";
app:layout_constraintHorizontal_bias="0.681";
app:layout_constraintStart_toStartOf="parent";
app:layout_constraintTop_toTopOf="parent";
app:layout_constraintVertical_bias="0.438"; />
<TextView
android:id="@+id/head_txtv";
android:layout_width="476dp";
android:layout_height="89dp";

android:background="#E91E63";
android:gravity="center";
android:text="FM Radio Frequency";
android:textAlignment="gravity";
android:textColor="#FFFFFF";
android:textSize="24sp";
android:textStyle="bold|italic";
app:layout_constraintBottom_toBottomOf="parent";
app:layout_constraintEnd_toEndOf="parent";
app:layout_constraintHorizontal_bias="0.011";
app:layout_constraintStart_toStartOf="parent";
app:layout_constraintTop_toTopOf="parent";
app:layout_constraintVertical_bias="0.003"; />
<EditText
android:id="@+id/freq_edtxt";
android:layout_width="253dp";
android:layout_height="52dp";
android:ems="10";
android:gravity="center";
android:hint="FM Frequency";
android:inputType="textPersonName";
app:layout_constraintBottom_toBottomOf="parent";
app:layout_constraintEnd_toEndOf="parent";
app:layout_constraintHorizontal_bias="0.452";
app:layout_constraintStart_toStartOf="parent";
app:layout_constraintTop_toBottomOf="@+id/head_txtv";
app:layout_constraintVertical_bias="0.072"; />
<Button
android:id="@+id/btn_scan";

```

```

android:layout_width=&quot;135dp&quot;
android:layout_height=&quot;53dp&quot;
android:text=&quot;Scan&quot;
app:backgroundTint=&quot;#FFC107&quot;
app:layout_constraintBottom_toBottomOf=&quot;parent&quot;
app:layout_constraintEnd_toEndOf=&quot;parent&quot;
app:layout_constraintStart_toStartOf=&quot;parent&quot;
app:layout_constraintTop_toTopOf=&quot;parent&quot;
app:layout_constraintVertical_bias=&quot;0.318&quot; /&gt;
<TextView
android:id=&quot;@+id/list_txt&quot;
android:layout_width=&quot;149dp&quot;
android:layout_height=&quot;230dp&quot;
android:gravity=&quot;center|top&quot;
android:textSize=&quot;14sp&quot;
app:layout_constraintBottom_toBottomOf=&quot;parent&quot;
app:layout_constraintEnd_toEndOf=&quot;parent&quot;

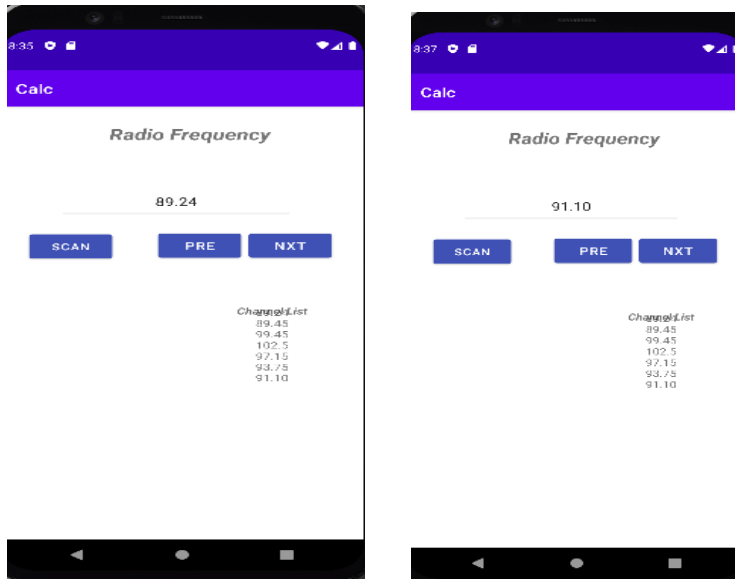
```

```

app:layout_constraintHorizontal_bias=&quot;0.9&quot;
app:layout_constraintStart_toStartOf=&quot;parent&quot;
app:layout_constraintTop_toTopOf=&quot;parent&quot;
app:layout_constraintVertical_bias=&quot;0.952&quot; /&gt;
<TextView
android:id=&quot;@+id/txt_channel&quot;
android:layout_width=&quot;149dp&quot;
android:layout_height=&quot;38dp&quot;
android:gravity=&quot;bottom|center&quot;
android:text=&quot;Channel List&quot;
android:textStyle=&quot;bold|italic&quot;
app:layout_constraintBottom_toBottomOf=&quot;parent&quot;
app:layout_constraintEnd_toEndOf=&quot;parent&quot;
app:layout_constraintHorizontal_bias=&quot;0.9&quot;
app:layout_constraintStart_toStartOf=&quot;parent&quot;
app:layout_constraintTop_toTopOf=&quot;parent&quot;
app:layout_constraintVertical_bias=&quot;0.627&quot;
</androidx.constraintlayout.widget.ConstraintLayout>

```

Output



16. Develop an ordinary calculator with memory options.

MainActivity.java

```
package com.example.calculatorsharedpreference;
```

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

```
import android.content.Context;
```

```
import android.content.SharedPreferences;
```

```
import android.os.Bundle;
```

```
import android.view.View;
```

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

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

```
public class MainActivity extends AppCompatActivity {
    private double memory = 0.0;
```

```
    boolean isNewOperator = true;
```

```
    EditText edt1;
```

```
    String operator = "+";
```

```
    String initialNumber = "";
```

```
    // Shared preferences keys
```

```
    private static final String PREFS_NAME = "MyPrefsFile";
```

```
    private static final String MEMORY_KEY = "memory";
```

```
    @Override
```

```
    protected void onCreate(Bundle savedInstanceState) {
```

```
        super.onCreate(savedInstanceState);
```

```
        setContentView(R.layout.activity_main);
```

```
        edt1 = findViewById(R.id.editText);
```

```

        SharedPreferences sharedPrefs = getSharedPreferences(PREFS_NAME,
Context.MODE_PRIVATE);
        memory = sharedPrefs.getFloat(MEMORY_KEY, 0);
        edt1.setText(String.valueOf(memory));

    }

    public void numberEvent(View view) {

        if (isNewOperator)
            edt1.setText("");
        isNewOperator = false;

        String number = edt1.getText().toString();

        if (view.getId() == R.id.btnOne) {
            number += "1";
        } else if (view.getId() == R.id.btnTwo) {
            number += "2";
        } else if (view.getId() == R.id.btnThree) {
            number += "3";
        } else if (view.getId() == R.id.btnFour) {
            number += "4";
        } else if (view.getId() == R.id.btnFive) {
            number += "5";
        } else if (view.getId() == R.id.btnSix) {
            number += "6";
        } else if (view.getId() == R.id.btnSeven) {
            number += "7";
        } else if (view.getId() == R.id.btnEight) {
            number += "8";
        } else if (view.getId() == R.id.btnNine) {
            number += "9";
        } else if (view.getId() == R.id.btnZero) {
            number += "0";
        } else if (view.getId() == R.id.btnDot) {
            number += ".";
        }
        edt1.setText(number);
    }

    public void operatorEvent(View view) {

        isNewOperator = true;
        initialNumber = edt1.getText().toString();

        if (view.getId() == R.id.btnMultiply) {
            operator = "*";
        } else if (view.getId() == R.id.btnMinus) {
            operator = "-";
        } else if (view.getId() == R.id.btnDivide) {
            operator = "/";
        } else if (view.getId() == R.id.btnPlus) {

```

```

        operator = "+";
    }
}

public void equalEvent(View view) {
    String newNumber = edt1.getText().toString();
    double output = 0.0;

    if (operator == "+")
        output = Double.parseDouble(initialNumber) + Double.parseDouble(newNumber);

    if (operator == "/")
        output = Double.parseDouble(initialNumber) / Double.parseDouble(newNumber);

    if (operator == "*")
        output = Double.parseDouble(initialNumber) * Double.parseDouble(newNumber);

    if (operator == "-")
        output = Double.parseDouble(initialNumber) - Double.parseDouble(newNumber);

    edt1.setText(output + "");

    // Save memory to shared preferences
    SharedPreferences sharedPrefs = getSharedPreferences(PREFS_NAME,
Context.MODE_PRIVATE);
    SharedPreferences.Editor editor = sharedPrefs.edit();
    editor.putFloat(MEMORY_KEY, (float) output);
    editor.apply();

}

public void memoryPlusEvent(View view) {
    String number = edt1.getText().toString();
    double value = Double.parseDouble(number);
    memory += value;
}

public void memoryMinusEvent(View view) {
    String number = edt1.getText().toString();
    double value = Double.parseDouble(number);
    memory -= value;
}

public void memoryRecallEvent(View view) {
    edt1.setText(String.valueOf(memory));
}

public void memoryClearEvent(View view) {
    memory = 0.0;
}
}

```

Activitymain.xml

```

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

    <EditText
        android:id="@+id/editText"
        android:layout_width="match_parent"
        android:layout_marginBottom="1pt"
        android:layout_height="wrap_content"
        android:ems="10"
        android:layout_weight="1"
        android:background="@color/black"
        android:gravity="right|center"
        android:textColor="@color/white"
        android:textSize="20pt"
        android:inputType="textPersonName"
        android:text="0" />

    <TableLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
    >
        <TableRow
            android:layout_marginBottom="1pt"
            android:layout_width="match_parent"
            android:layout_height="match_parent">
            <Button
                android:id="@+id/btnSeven"
                android:text="@string/_7"
                android:onClick="numberEvent"
                android:layout_marginRight="1pt"
                android:layout_height="30pt"
                android:layout_weight="1"
                android:textColor="@color/white"
                android:layout_width="30pt"
                android:background="@color/purple_200"
            ></Button>
            <Button
                android:id="@+id/btnEight"
                android:text="@string/_8"
                android:layout_marginRight="1pt"
                android:onClick="numberEvent"
                android:layout_height="30pt"
                android:layout_weight="1"
                android:textColor="@color/white"
                android:layout_width="30pt"

```

```

        android:background="@color/purple_200"
    ></Button>
    <Button
        android:id="@+id/btnNine"
        android:text="@string/_9"
        android:layout_marginRight="1pt"
        android:onClick="numberEvent"
        android:layout_height="30pt"
        android:layout_weight="1"
        android:textColor="@color/white"
        android:layout_width="30pt"
        android:background="@color/purple_200"
    ></Button>
    <Button
        android:id="@+id/btnDivide"
        android:text="@string/div"
        android:onClick="operatorEvent"
        android:layout_marginRight="1pt"
        android:layout_height="30pt"
        android:textColor="@color/white"
        android:layout_weight="1"
        android:layout_width="30pt"
        android:background="@color/purple_200"
    ></Button>
</TableRow>

</TableLayout>

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

    <TableRow
        android:layout_marginBottom="1pt"
        android:layout_width="match_parent"
        android:layout_height="match_parent">
        <Button
            android:id="@+id/btnFour"
            android:text="@string/_4"
            android:layout_marginRight="1pt"
            android:onClick="numberEvent"
            android:textColor="@color/white"
            android:layout_height="30pt"
            android:layout_weight="1"
            android:layout_width="30pt"
            android:background="@color/purple_200"
        ></Button>
        <Button
            android:id="@+id/btnFive"
            android:text="@string/_5"
            android:layout_marginRight="1pt"
            android:layout_height="30pt"

```

```

        android:textColor="@color/white"
        android:onClick="numberEvent"
        android:layout_weight="1"
        android:layout_width="30pt"
        android:background="@color/purple_200"
    </Button>
    <Button
        android:id="@+id/btnSix"
        android:text="@string/_6"
        android:layout_marginRight="1pt"
        android:onClick="numberEvent"
        android:layout_height="30pt"
        android:textColor="@color/white"
        android:layout_weight="1"
        android:layout_width="30pt"
        android:background="@color/purple_200"
    </Button>
    <Button
        android:id="@+id/btnMultiply"
        android:text="@string/multiply"
        android:onClick="operatorEvent"
        android:layout_marginRight="1pt"
        android:layout_height="30pt"
        android:textColor="@color/white"
        android:layout_weight="1"
        android:layout_width="30pt"
        android:background="@color/purple_200"
    </Button>
</TableRow>

</TableLayout>

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

    <TableRow
        android:layout_width="match_parent"
        android:layout_marginBottom="1pt"
        android:layout_height="match_parent">
        <Button
            android:id="@+id/btnOne"
            android:text="@string/one"
            android:layout_marginRight="1pt"
            android:layout_height="30pt"
            android:layout_weight="1"
            android:textColor="@color/white"
            android:onClick="numberEvent"
            android:layout_width="30pt"
            android:background="@color/purple_200"
        ></Button>
        <Button

```



```

        android:id="@+id/btnTwo"
        android:text="@string/two"
        android:layout_marginRight="1pt"
        android:layout_height="30pt"
        android:textColor="@color/white"
        android:layout_weight="1"
        android:onClick="numberEvent"
        android:layout_width="30pt"
        android:background="@color/purple_200"
    </Button>
    <Button
        android:id="@+id/btnThree"
        android:text="@string/three"
        android:layout_marginRight="1pt"
        android:layout_height="30pt"
        android:layout_weight="1"
        android:layout_width="30pt"
        android:textColor="@color/white"
        android:onClick="numberEvent"
        android:background="@color/purple_200"
    </Button>
    <Button
        android:id="@+id/btnMinus"
        android:text="@string/minus"
        android:layout_marginRight="1pt"
        android:layout_height="30pt"
        android:onClick="operatorEvent"
        android:textColor="@color/white"
        android:layout_weight="1"
        android:layout_width="30pt"
        android:background="@color/purple_200"
    </Button>
</TableRow>

</TableLayout>

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

    <TableRow
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_marginBottom="1pt">
        <Button
            android:id="@+id/btnZero"
            android:text="@string/zero"
            android:layout_marginRight="1pt"
            android:layout_height="30pt"
            android:layout_weight="1"
            android:textColor="@color/white"
            android:layout_width="30pt"

```

```

        android:onClick="numberEvent"
        android:background="@color/purple_200"
    ></Button>
    <Button
        android:id="@+id/btnDot"
        android:text="."
        android:layout_marginRight="1pt"
        android:layout_height="30pt"
        android:onClick="numberEvent"
        android:layout_weight="1"
        android:textColor="@color/white"
        android:layout_width="30pt"
        android:background="@color/purple_200"
    ></Button>
    <Button
        android:id="@+id/btnPlus"
        android:text="@string/plus"
        android:layout_marginRight="1pt"
        android:layout_height="30pt"
        android:layout_weight="1"
        android:textColor="@color/white"
        android:onClick="operatorEvent"
        android:layout_width="30pt"
        android:background="@color/purple_200"
    ></Button>
</TableRow>

</TableLayout>

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

    <TableRow
        android:layout_width="match_parent"
        android:layout_marginBottom="1pt"
        android:layout_height="match_parent">

        <Button
            android:id="@+id/btnC"
            android:layout_width="30pt"
            android:layout_height="match_parent"
            android:layout_marginRight="1pt"
            android:layout_weight="1"
            android:background="@color/purple_200"
            android:onClick="clearEvent"
            android:text="@string/cancel"></Button>

        <Button
            android:id="@+id/btnEqual"
            android:layout_width="30pt"
            android:layout_height="60dp"
            android:layout_marginRight="1pt"

```

```

        android:layout_weight="1"
        android:background="@color/purple_200"
        android:onClick="equalEvent"
        android:text="@string/equal"
        android:textColor="@color/white">
    
```

```

<Button
    android:id="@+id/btnMemoryMinus"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="M-"
    android:onClick="memoryMinusEvent">
</Button>
    
```

```

<Button
    android:id="@+id/btnMemoryRecall"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="MR"
    android:onClick="memoryRecallEvent" >
</Button>
    
```

```

<Button
    android:id="@+id/btnMemoryClear"
    android:layout_width="139dp"
    android:layout_height="wrap_content"
    android:onClick="memoryClearEvent"
    android:text="MC">
    
```

```

</Button>
</TableRow>
    
```

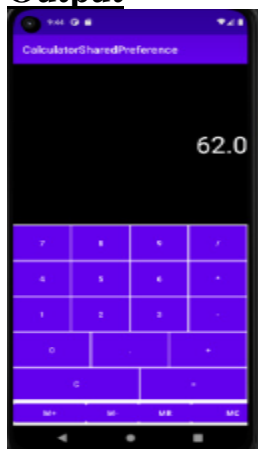
```

</TableLayout>
    
```

```

</LinearLayout>
    
```

Output



17. Create and apply style in your sample UI.

Apply a style as a theme (eg: dark theme) in your project**MainActivity.java**

```

package com.example.style;

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

public class MainActivity extends AppCompatActivity {

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

```

Activitymain.xml

```

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

    <TextView
        android:id="@+id/myTextView"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Styles And Themes!"
        android:theme="@style/MyCustomStyle"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

</androidx.constraintlayout.widget.ConstraintLayout>

```

Style.xml

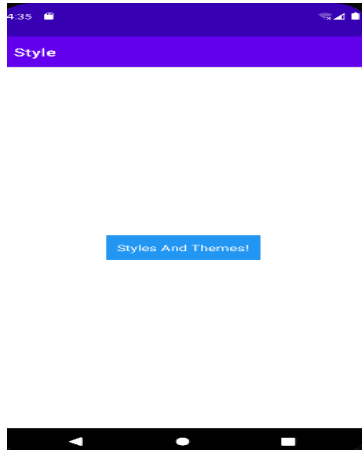
```

<?xml version="1.0" encoding="utf-8"?>
<resources>
    <style name="MyCustomStyle">
        <item name="android:textColor">#FFFFFF</item>
        <item name="android:background">#2196F3</item>
        <item name="android:padding">12dp</item>
        <item name="android:textSize">16sp</item>
    </style>

```

```
</resources>
```

Output



18. Develop a two tabbed window using Tabbed Activity and display proper messages when you switch between these tabs.

MainActivity.java

```
package com.example.tab;

import android.os.Bundle;

import com.google.android.material.floatingactionbutton.FloatingActionButton;
import com.google.android.material.snackbar.Snackbar;
import com.google.android.material.tabs.TabLayout;

import androidx.viewpager.widget.ViewPager;
import androidx.appcompat.app.AppCompatActivity;

import android.view.Menu;
import android.view.MenuItem;
import android.view.View;

import com.example.tab.ui.main.SectionsPagerAdapter;
import com.example.tab.databinding.ActivityMainBinding;

public class MainActivity extends AppCompatActivity {

    private ActivityMainBinding binding;

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

        binding = ActivityMainBinding.inflate(getLayoutInflater());
        setContentView(binding.getRoot());
```

```

SectionsPagerAdapter sectionsPagerAdapter = new SectionsPagerAdapter(this,
getSupportFragmentManager());
ViewPager viewPager = binding.viewPager;
viewPager.setAdapter(sectionsPagerAdapter);
TabLayout tabs = binding.tabs;
tabs.setupWithViewPager(viewPager);
FloatingActionButton fab = binding.fab;

fab.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        Snackbar.make(view, "Replace with your own action", Snackbar.LENGTH_LONG)
            .setAction("Action", null).show();
    }
});
}
}

```

Activitymain.xml

```

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

    <com.google.android.material.appbar.AppBarLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:theme="@style/Theme.Tab.AppBarOverlay">

        <TextView
            android:id="@+id/title"
            android:layout_width="wrap_content"
            android:layout_height="wrap_content"
            android:gravity="center"
            android:minHeight="?actionBarSize"
            android:padding="@dimen/appbar_padding"
            android:text="@string/app_name"
            android:textAppearance="@style/TextAppearance.Widget.AppCompat.Toolbar.Title" />

        <com.google.android.material.tabs.TabLayout
            android:id="@+id/tabs"
            android:layout_width="match_parent"
            android:layout_height="wrap_content" />
    </com.google.android.material.appbar.AppBarLayout>

    <androidx.viewpager.widget.ViewPager
        android:id="@+id/view_pager"
        android:layout_width="match_parent"
        android:layout_height="match_parent"

```

```

app:layout_behavior="@string/appbar_scrolling_view_behavior" />

<com.google.android.material.floatingactionbutton.FloatingActionButton
    android:id="@+id/fab"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_gravity="bottom|end"
    android:layout_marginEnd="@dimen/fab_margin"
    android:layout_marginBottom="16dp"
    app:srcCompat="@android:drawable/ic_dialog_email" />
</androidx.coordinatorlayout.widget.CoordinatorLayout>

```

Fragment.xml

```

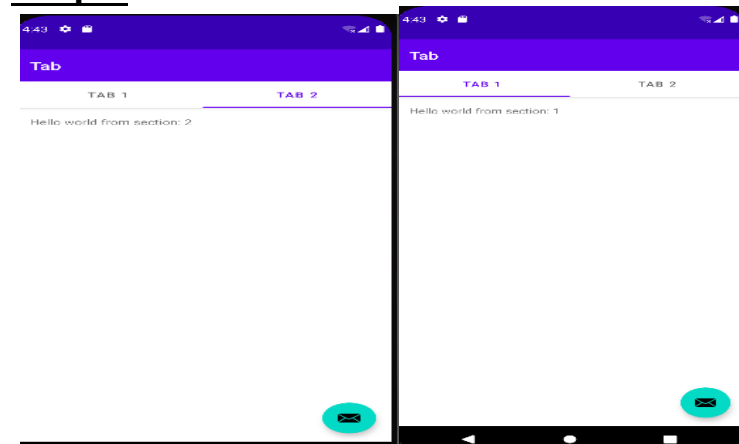
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/constraintLayout"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".ui.main.PlaceholderFragment">

    <TextView
        android:id="@+id/section_label"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="@dimen/activity_horizontal_margin"
        android:layout_marginTop="@dimen/activity_vertical_margin"
        android:layout_marginEnd="@dimen/activity_horizontal_margin"
        android:layout_marginBottom="@dimen/activity_vertical_margin"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintTop_toTopOf="@+id/constraintLayout"
        tools:layout_constraintLeft_creator="1"
        tools:layout_constraintTop_creator="1" />

</androidx.constraintlayout.widget.ConstraintLayout>

```

Output



19. Apply a style as a theme in your project

style.xml

```
<?xml version="1.0" encoding="utf-8"?>
<resources xmlns:tools="http://schemas.android.com/tools">
  <style name="AppTheme" parent="Theme.AppCompat.Light.DarkActionBar">
    <!-- Customize your theme here. -->
    <item name="colorPrimary">@color/colorPrimary</item>
    <item name="colorPrimaryDark">@color/colorPrimaryDark</item>
    <item name="colorAccent">@color/colorAccent</item>
  </style>
</resources>
```

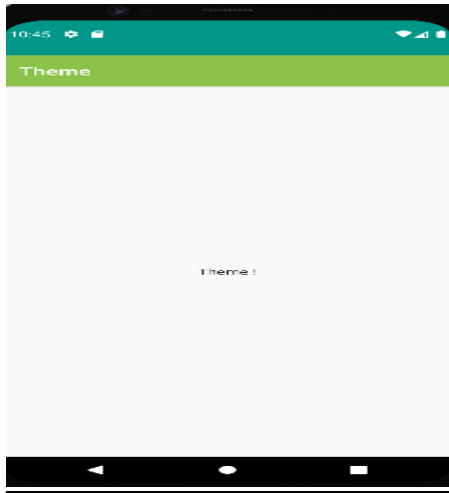
Activitymain.xml

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

  <TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="This text is styled via textAppearance!"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    style="@style/AppTheme"/>

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

Output



20. Micro project

MainActivity.java

```
package com.example.home;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.widget.ImageView;

public class MainActivity extends AppCompatActivity {
    private ImageView logoImageView;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        logoImageView = findViewById(R.id.logo_imageview);
        logoImageView.postDelayed(new Runnable() {
            @Override
            public void run() {
                Intent intent = new Intent(MainActivity.this, Login.class);
                startActivity(intent);
                finish();
            }
        }, 3000); // wait for 3 seconds before navigating to the next page
    }
}
```

Home.java

```
package com.example.home;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.AdapterView;
import android.widget.AdapterView.OnItemClickListener;
import android.widget.GridView;
import androidx.appcompat.app.AppCompatActivity;
public class Home extends AppCompatActivity {
    private int[] serviceImages = {
```

```

        R.drawable.plumbing,
        R.drawable.electrician,
        R.drawable.carpentry,
        R.drawable.car,
        R.drawable.gardening,
        R.drawable.painting,
    };

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_home);
        GridView servicesGrid = findViewById(R.id.services_grid);
        ServiceImageAdapter adapter = new ServiceImageAdapter(this, serviceImages);
        servicesGrid.setAdapter(adapter);
        servicesGrid.setOnItemClickListener(new AdapterView.OnItemClickListener() {
            @Override
            public void onItemClick(AdapterView<?> adapterView, View view, int position, long id) {
                Intent intent = new Intent(Home.this, Details.class);
                intent.putExtra("image_id", serviceImages[position]);
                startActivity(intent);
            }
        });
    }
}

```

DataBaseHelper.java

```

package com.example.home;

import android.content.Context;
import android.database.sqlite.SQLiteDatabase;
import android.database.sqlite.SQLiteOpenHelper;
public class DatabaseHelper extends SQLiteOpenHelper {
    private static final String DATABASE_NAME = "home.db";
    private static final int DATABASE_VERSION = 1;
    public static final String TABLE_NAME = "users";
    public static final String COL_1 = "ID";
    public static final String COL_2 = "USERNAME";
    public static final String COL_3 = "PASSWORD";
    public DatabaseHelper(Context context) {
        super(context, DATABASE_NAME, null, DATABASE_VERSION);
    }
    @Override
    public void onCreate(SQLiteDatabase db) {
        db.execSQL("CREATE TABLE " + TABLE_NAME + " (ID INTEGER PRIMARY KEY\nAUTOINCREMENT, " +\n        "USERNAME TEXT, PASSWORD TEXT)");
    }

    @Override
    public void onUpgrade(SQLiteDatabase db, int oldVersion, int newVersion) {
        db.execSQL("DROP TABLE IF EXISTS " + TABLE_NAME);
        onCreate(db);
    }
}

```

Details.java

```

package com.example.home;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.ImageView;
import android.widget.TextView;
import androidx.appcompat.app.AppCompatActivity;
import com.example.home.R;
public class Details extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_details);
        ImageView serviceImage = findViewById(R.id.service_image);
        TextView serviceName = findViewById(R.id.service_name);
        TextView serviceDetails = findViewById(R.id.service_details);
        Button bookNowButton = findViewById(R.id.book_button);
        bookNowButton.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                // Create a new intent to start the next activity
                Intent intent = new Intent(Details.this, DateTime.class);

                // Add any extra data that you want to pass to the next activity
                intent.putExtra("service_name", serviceName.getText().toString());

                // Start the next activity
                startActivity(intent);
            }
        });

        // Get the image ID from the intent
        int imageId = getIntent().getIntExtra("image_id", 0);

        // Set the image for the service
        serviceImage.setImageResource(imageId);

        // Set the name and details for the service
        switch (imageId) {
            case R.drawable.plumbing:
                serviceName.setText(R.string.plumbing_service);
                serviceDetails.setText(R.string.plumbing_service_details);
                break;
            case R.drawable.electrician:
                serviceName.setText(R.string.electrician_service);
                serviceDetails.setText(R.string.electrician_service_details);
                break;
            case R.drawable.carpentry:
                serviceName.setText(R.string.carpentry_service);
                serviceDetails.setText(R.string.carpentry_service_details);
                break;
        }
    }
}

```

```

        case R.drawable.car:
            serviceName.setText(R.string.car_service);
            serviceDetails.setText(R.string.car_service_details);
            break;
        case R.drawable.gardening:
            serviceName.setText(R.string.gardening_service);
            serviceDetails.setText(R.string.gardening_service_details);
            break;
        case R.drawable.painting:
            serviceName.setText(R.string.painting_service);
            serviceDetails.setText(R.string.painting_service_details);
            break;
    }
}
}

```

Activitymain.xml

```

<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingLeft="30dp">

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

        <LinearLayout
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:orientation="vertical"
            android:padding="16dp">

            <ImageView
                android:id="@+id/service_image"

                android:layout_width="200dp"
                android:layout_height="200dp"

                android:scaleType="centerCrop" />

            <TextView
                android:id="@+id/service_name"
                android:layout_width="match_parent"
                android:layout_height="wrap_content"
                android:layout_marginTop="16dp"
                android:textColor="@color/black"
                android:textSize="24sp"
                android:textStyle="bold" />

            <TextView
                android:id="@+id/service_details"

```

```

    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="16dp"
    android:textColor="@color/black"
    android:textSize="18sp" />

```

```

<Button
    android:id="@+id/book_button"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="16dp"
    android:text="book_now" />

```

```
</LinearLayout>
```

```
</ScrollView>
```

```
</RelativeLayout>
```

Activity home.xml

```

<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical">
    <TextView
        android:id="@+id/header"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:padding="16dp"
        android:text="Home Services"
        android:textSize="24sp"
        android:textStyle="bold"/>
    <GridView
        android:id="@+id/services_grid"
        android:layout_width="310dp"
        android:layout_height="2000dp"
        android:horizontalSpacing="10dp"
        android:numColumns="2"
        android:padding="20dp"
        android:verticalSpacing="30dp"/>
</LinearLayout>

```

Activity details.xml

```

<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingLeft="30dp">

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

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

```

```

        android:orientation="vertical"
        android:padding="16dp">

        <ImageView
            android:id="@+id/service_image"

            android:layout_width="200dp"
            android:layout_height="200dp"

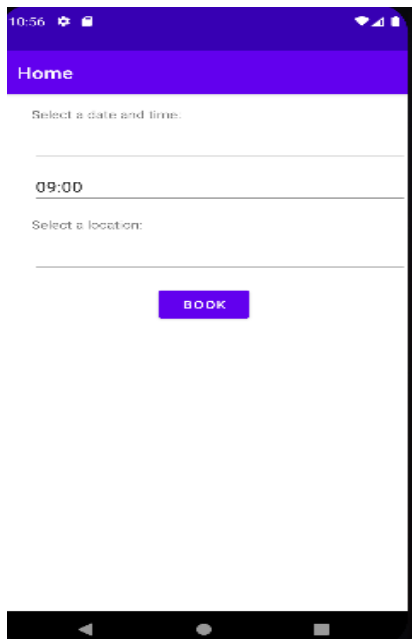
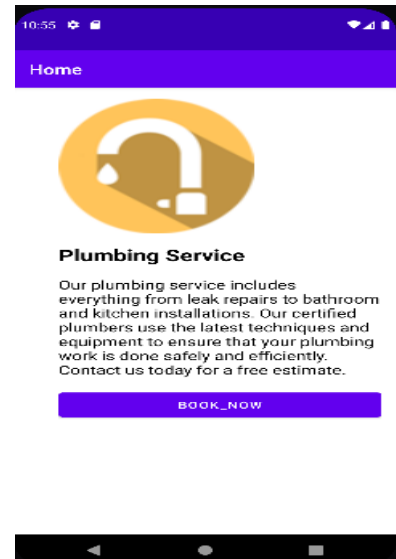
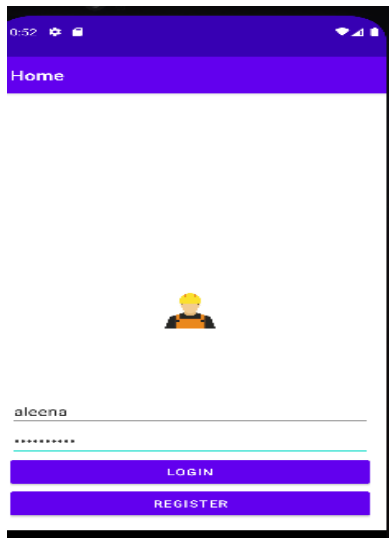
            android:scaleType="centerCrop" />

        <TextView
            android:id="@+id/service_name"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_marginTop="16dp"
            android:textColor="@color/black"
            android:textSize="24sp"
            android:textStyle="bold" />

        <TextView
            android:id="@+id/service_details"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_marginTop="16dp"
            android:textColor="@color/black"
            android:textSize="18sp" />
        <Button
            android:id="@+id/book_button"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_marginTop="16dp"
            android:text="book_now" />
    </LinearLayout>
</ScrollView>
</RelativeLayout>

```

Output



Android Layout

Android Layout is used to define the user interface that holds the UI controls or widgets that will appear on the screen of an android application or activity screen. Generally, every application is a combination of View and ViewGroup. As we know, an android application contains a large number of activities and we can say each activity is one page of the application. So, each activity contains multiple user interface components and those components are the instances of the View and ViewGroup. All the elements in a layout are built using a hierarchy of View and ViewGroup objects.

Types of Android Layout

- **Android Linear Layout:** LinearLayout is a ViewGroup subclass, used to provide child View elements one by one either in a particular direction either horizontally or vertically based on the orientation property.
- **Android Relative Layout:** RelativeLayout is a ViewGroup subclass, used to specify the position of child View elements relative to each other like (A to the right of B) or relative to the parent (fix to the top of the parent).
- **Android Constraint Layout:** ConstraintLayout is a ViewGroup subclass, used to specify the position of layout constraints for every child View relative to other views present. A ConstraintLayout is similar to a RelativeLayout, but having more power.
- **Android Frame Layout:** FrameLayout is a ViewGroup subclass, used to specify the position of View elements it contains on the top of each other to display only a single View inside the FrameLayout.
- **Android Table Layout:** TableLayout is a ViewGroup subclass, used to display the child View elements in rows and columns.
- **Android Web View:** WebView is a browser that is used to display the web pages in our activity layout.
- **Android ListView:** ListView is a ViewGroup, used to display scrollable lists of items in a single column.
- **Android Grid View:** GridView is a ViewGroup that is used to display a scrollable list of items in a grid view of rows and columns.

Emulator

The Android emulator is an Android Virtual Device (AVD), which represents a specific Android device. We can use the Android emulator as a target device to execute and test our Android

application on our PC. The Android emulator provides almost all the functionality of a real device. We can get the incoming phone calls and text messages. It also gives the location of the device and simulates different network speeds. Android emulator simulates rotation and other hardware sensors. It accesses the Google Play store, and much more

Flexibility: In addition to being able to simulate a variety of devices and Android API levels, the emulator comes with predefined configurations for various Android phone, tablet, Wear OS, and Android TV devices.

High fidelity: The emulator provides almost all the capabilities of a real Android device. You can simulate incoming phone calls and text messages, specify the location of the device, simulate different network speeds, simulate rotation and other hardware sensors, access the Google Play Store, and much more.

Speed: Testing your app on the emulator is in some ways faster and easier than doing so on a physical device. For example, you can transfer data faster to the emulator than to a device connected over USB.

Launch emulator

1. In Android Studio, we need to create an Android Virtual Device (AVD) that the emulator can use to install and run your app. To create a new AVD:-

- Open the AVD Manager by clicking Tools > AVD Manager.
- Click on Create Virtual Device, at the bottom of the AVD Manager dialog. Then Select Hardware page appears.
- Select a hardware profile and then click Next. If we don't see the hardware profile we want, then we can create or import a hardware profile. The System Image page appears.
- Select the system image for the particular API level and click Next. This leads to open a Verify Configuration page

2. Change AVD properties if needed, and then click Finish

3. Click Run.

Emulator shortcuts

- To change orientation of the emulator and switch between portrait and landscape, use CTRL-F12 or number 9 on your keypad if numLock is turned off.
- To start track ball emulation, press F6.
- To Enable or disable network on the emulator to check how your app reacts, press F8.
- Note that buttons and controls on the emulator work as they would on a real device.
- Think to use Host GPU to make your emulator works faster. To use it, you will need : Android SDK Tools, Revision 17 or higher and Android SDK Platform API 15, Revision 3 or higher.
- Tune the AVD hardware specifications to speed up your emulator.

