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BCA 606:- PRACTICAL ON ANDROID APPLICATION DEVELOPMENT

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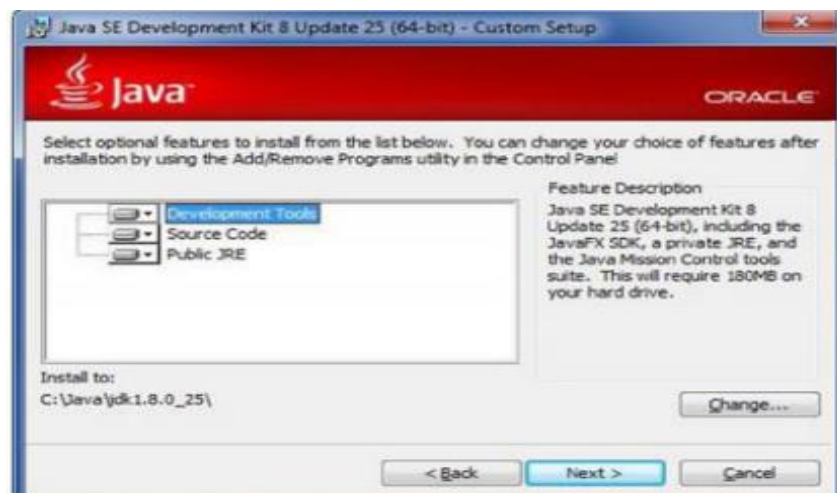
1. Installation and setup of java development kit (JDK), setup android SDK, setup eclipse IDE, setup android development tools (ADT) plugins, create android virtual device.

1. Installation and setup of java development kit (JDK)

- You can download the JDK from the following Oracle site:
www.oracle.com/technetwork/java/javase/downloads/index.html
- After download install the setup *Installation Wizard for the JDK on Windows* as follows



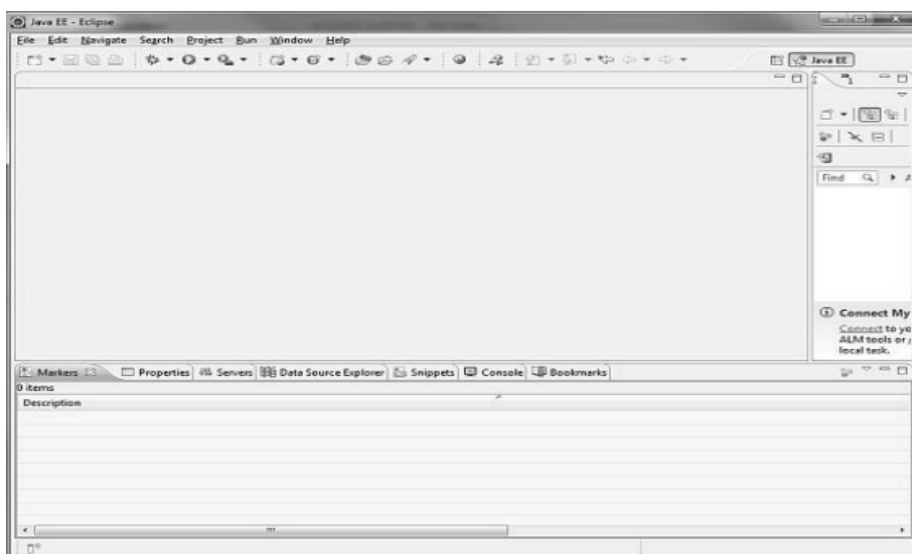
- Select the JDK installation directory and click next to setup



- Make a note of where you are installing your JDK. Follow the prompts until the installation is complete. If prompted to install the Java Runtime Edition (JRE), choose the same directory where you installed the JDK.

2.Setup eclipse IDE

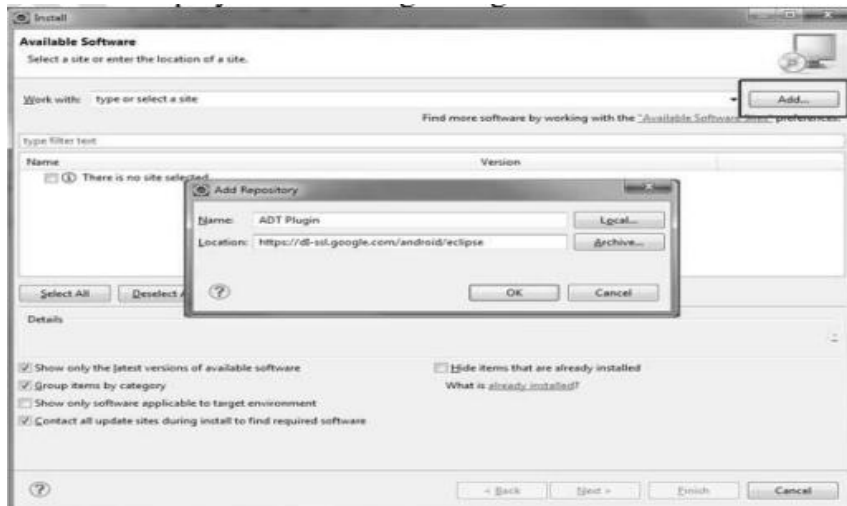
- To install Eclipse IDE, download the latest Eclipse binaries from <http://www.eclipse.org/downloads/>.
- Once you have downloaded the installation, unpack the binary distribution into a convenient location. For example in C:\eclipse on windows, and finally set PATH variable appropriately.
- Eclipse can be started by executing the following commands on windows machine, or you can simply double click on eclipse.exe
- %C:\eclipse\eclipse.exe



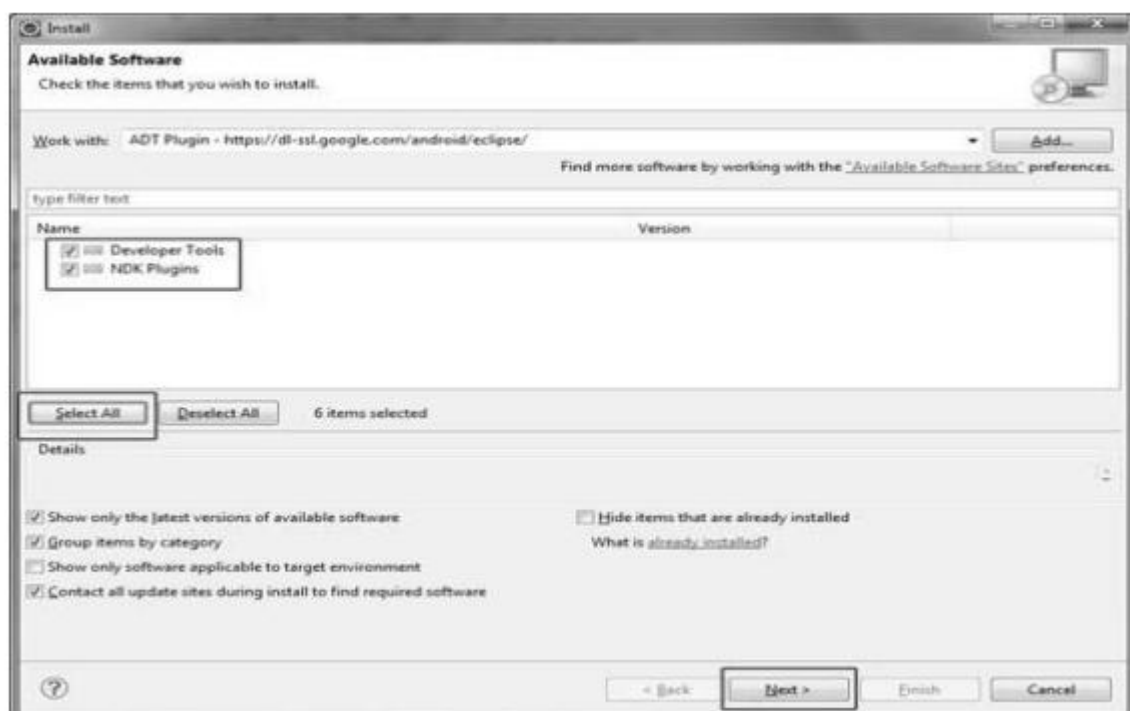
Setup android development tools (ADT) Plugin

- This step will help you in setting Android Development Tool plugin for Eclipse. Let's start with launching Eclipse and then, choose **Help > Software Updates > Install New Software**.

This will display the following dialogue box



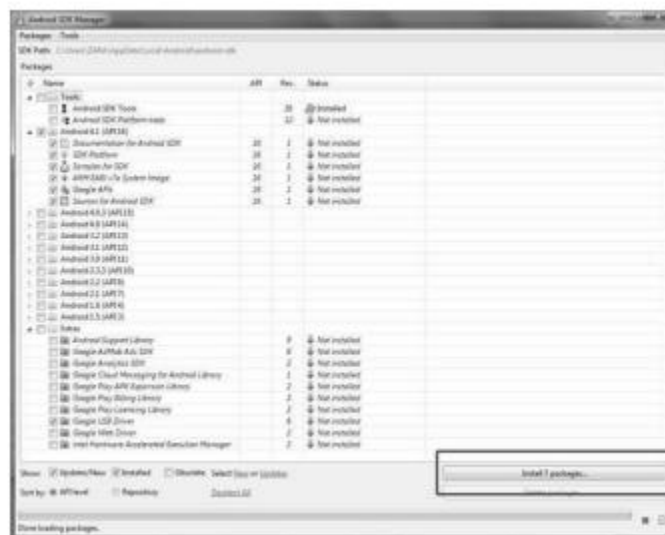
- Now use Add button to add ADT Plugin as name and <https://dl-ssl.google.com/android/eclipse/> as the location. Then click OK to add this location. As soon as you will click OK button to add this location, Eclipse starts searching for the plug-in available in the given location and finally lists down the found plugins



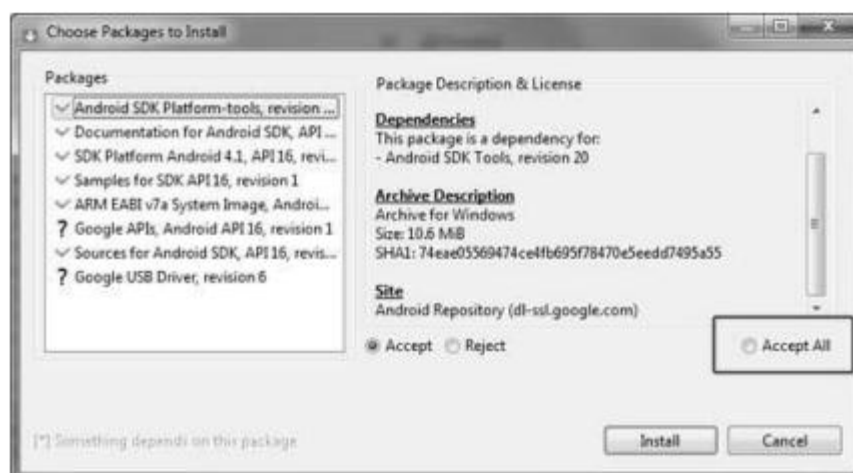
- Now select all the listed plug-ins using Select All button and click Next button which will guide you ahead to install Android Development Tools and other required plugins.

3.Setup android SDK

- You can download the latest version of Android SDK from Android's official website: **<http://developer.android.com/sdk/index.html>**.
- If you are installing SDK on Windows machine, then you will find **ainstaller_rXXwindows.exe**, so just download and run this exe which will launch Android SDK Tool Setup wizard to guide you throughout the installation,
- so just follow the instructions carefully. Finally, you will have Android SDK Tools installed on your machine.
- So let's launch Android SDK Manager using the option **All Programs > Android SDK Tools > SDK Manager**, this will give you following window:



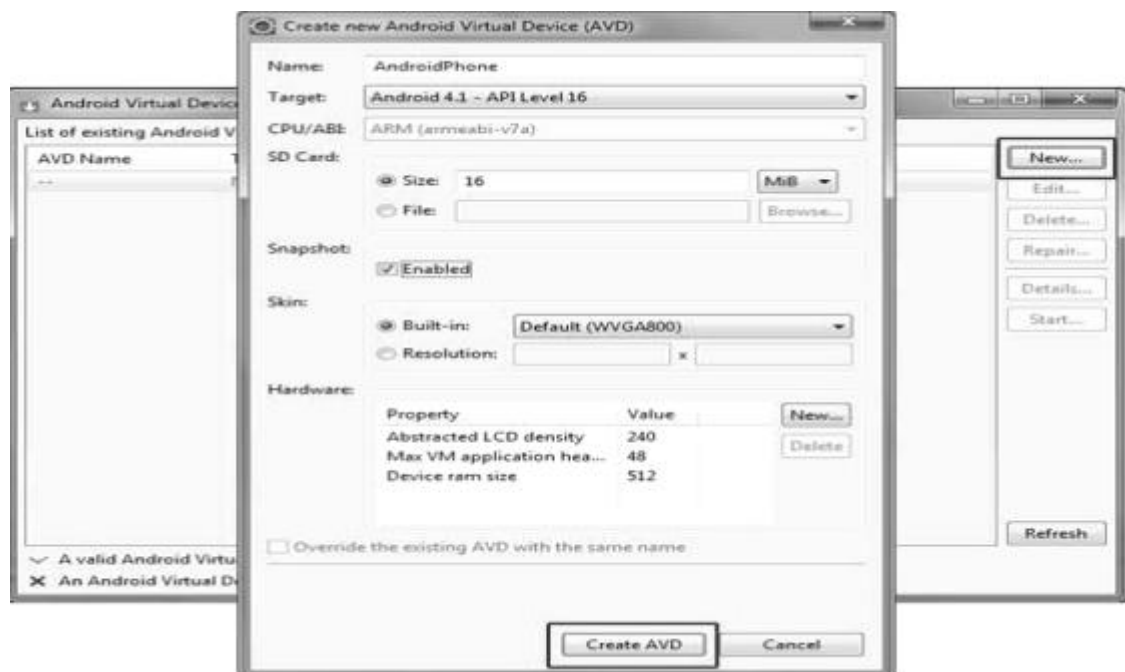
- Once you launched SDK manager, it is time to install other required packages. By default it will list down total 7 packages to be installed.
- Next click the Install 7 Packages button to proceed, which will display following dialogue box:



- If you agree to install all the packages, select Accept All radio button and proceed by clicking Install button. Once all the packages are installed, you can close SDK manager using top-right cross button.

4. Create android virtual device.

- To test your Android applications you will need a virtual Android device. So before we start writing our code, let us create an Android virtual device.
- Launch Android AVD Manager using Eclipse menu options **Window > AVD Manager>** which will launch Android AVD Manager.
- Use New button to create a new Android Virtual Device and enter the following information, before clicking Create AVD button.



- If your AVD is created successfully it means your environment is ready for Android application development.

2.Create “Hello World” application. That will display “Hello World” in the middle of the screen using Text View Widget in the red color.

A] Code: a]

MainActivity.java:

```
package com.example.helloworld;

import android.os.Bundle;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}
```

b] activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
xmlns:app="http://schemas.android.com/apk/res-auto"
xmlns:tools="http://schemas.android.com/tools"
android:id="@+id/main"
android:layout_width="match_parent"
android:layout_height="match_parent"
tools:context=".MainActivity">
    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World!"
        android:textColor="#D32f2f"
        android:textSize="50sp"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

B] O/P:



3.Create registration page to demonstrate basics of widgets available in Android.

A] Code: a]

MainActivity.java:

```
package com.example.registrationpage;

import android.os.Bundle;
import androidx.annotation.Nullable;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(@Nullable Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}
```

b] activity_main.xml:

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

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:orientation="vertical"
        android:padding="10dp"
        tools:ignore="MissingConstraints">
        <TextView
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_marginTop="20dp"
            android:fontFamily="serif"
            android:gravity="center"
            android:text="@string/registration"
```

```

        android:textColor="#e65100"
        android:textSize="40sp"/>
<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:orientation="vertical"
    android:padding="2dp">
    <com.google.android.material.textfield.TextInputLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content">
        <com.google.android.material.textfield.TextInputEditText
            android:id="@+id/nm"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_marginLeft="20dp"
            android:layout_marginTop="2dp"
            android:layout_marginRight="20dp"
            android:hint="@string/name"
            android:padding="10dp"
            android:textColorHint="#546E7A"

tools:ignore="TextContrastCheck,TouchTargetSizeCheck,VisualLintTextFieldSize"/>
    </com.google.android.material.textfield.TextInputLayout>
    <com.google.android.material.textfield.TextInputLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content">
        <com.google.android.material.textfield.TextInputEditText
            android:id="@+id/mob"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:layout_marginLeft="20dp"
            android:layout_marginRight="20dp"
            android:hint="Mobile"
            android:padding="10dp"
            android:textColorHint="#546E7A"

tools:ignore="HardcodedText,TextContrastCheck,TouchTargetSizeCheck,VisualLintTextFieldSize" />
    </com.google.android.material.textfield.TextInputLayout>
    <com.google.android.material.textfield.TextInputLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content">
        <com.google.android.material.textfield.TextInputEditText
            android:id="@+id/email"
            android:layout_width="match_parent"
            android:layout_height="wrap_content"

```

```
        android:layout_marginLeft="20dp"
        android:layout_marginRight="20dp"
        android:hint="@string/email"
        android:padding="10dp"
        android:textColorHint="#546E7A"
```

```
tools:ignore="TextContrastCheck,TouchTargetSizeCheck,VisualLintTexize,VisualLintTextFieldSize" />
```

```
</com.google.android.material.textfield.TextInputLayout>
<com.google.android.material.textfield.TextInputLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content">
    <com.google.android.material.textfield.TextInputEditText
        android:id="@+id/pass"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginLeft="20dp"
        android:layout_marginRight="20dp"
        android:hint="@string/password"
        android:inputType="textPassword"
        android:padding="10dp"
```

```
tools:ignore="TextContrastCheck,TouchTargetSizeCheck,VisualLintTextFieldSize"/>
```

```
</com.google.android.material.textfield.TextInputLayout>
<com.google.android.material.textfield.TextInputLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content">
    <com.google.android.material.textfield.TextInputEditText
        android:id="@+id/rollNo"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginLeft="20dp"
        android:layout_marginTop="2dp"
        android:layout_marginRight="20dp"
        android:hint="@string/roll_no"
        android:padding="10dp"
```

```
tools:ignore="TextContrastCheck,TouchTargetSizeCheck,VisualLintTextFieldSize"/>
```

```
</com.google.android.material.textfield.TextInputLayout>
<com.google.android.material.textfield.TextInputLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content">
    <com.google.android.material.textfield.TextInputEditText
        android:id="@+id/age"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginLeft="20dp"
```

```

        android:layout_marginTop="2dp"
        android:layout_marginRight="20dp"
        android:hint="@string/age"
        android:padding="10dp"
        android:textColorHint="#546E7A"

tools:ignore="TextContrastCheck,TouchTargetSizeCheck,VisualLintTextFieldSize"/>
</com.google.android.material.textfield.TextInputLayout>
<RadioGroup
    android:id="@+id/rd_gen"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginLeft="10dp"
    android:layout_marginTop="10dp"
    android:layout_marginRight="10dp"
    android:orientation="horizontal">
    <RadioButton
        android:id="@+id/right_male"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginLeft="50dp"
        android:gravity="center"
        android:text="@string/male"
        android:textSize="20sp"
        tools:ignore="RtlHardcoded" />

    <RadioButton
        android:id="@+id/right_female"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_marginStart="20dp"
        android:text="@string/female"
        android:textSize="20sp"
        tools:ignore="TouchTargetSizeCheck,VisualLintBounds" />
    </RadioButton>
</RadioGroup>
</LinearLayout>
<Button
    android:id="@+id/btnsub"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:layout_marginTop="5dp"
    android:layout_marginBottom="30dp"
    android:backgroundTint="#e65100"
    android:padding="20dp"
    android:text="@string/submit"

```

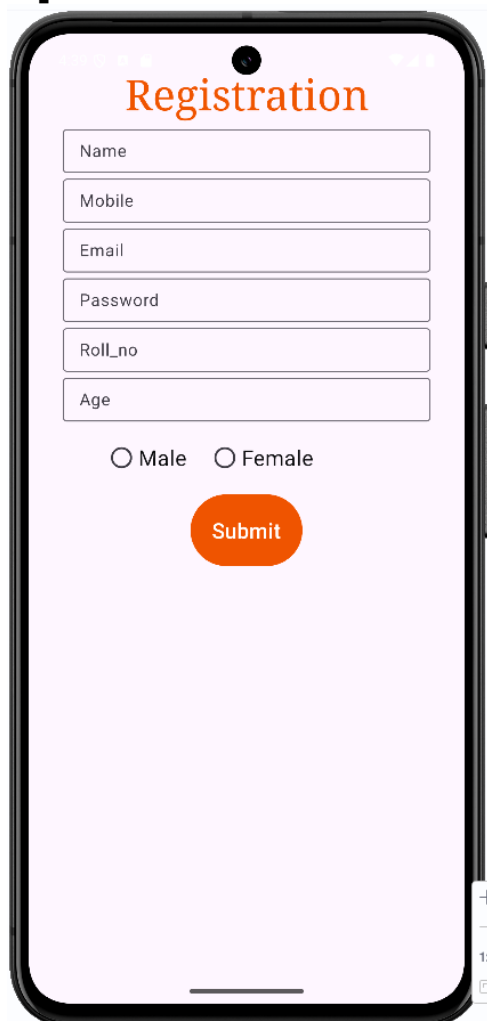
```
        android:textColor="#fff"
        android:textSize="20sp" />
    </LinearLayout>
</androidx.constraintlayout.widget.ConstraintLayout>
```

c] strings.xml:

```
<resources>
    <string name="app_name">Registrationpage</string>
    <string name="registration">Registration</string>
    <string name="name">Name</string>
    <string name="email">Email</string>
    <string name="password">Password</string>
    <string name="roll_no">Roll_no</string>
    <string name="age">Age</string>
    <string name="male">Male</string>
    <string name="female">Female</string>
    <string name="submit">Submit</string>
</resources>
```

B] O/P:

a] With data not entered:



b] With data entered:

Registration

Name
Shraddha Satish khare

Mobile
7378725110

Email
shraddhak2104@gmail.com

Password

Roll_no
60

Age
20

☐ Male ☒ Female

Submit

Navigation icons: Menu (bottom left), Home (bottom center), Search (bottom right), and a vertical toolbar on the right side with a plus sign, minus sign, 1:1, and a document icon.

4. Create sample application with login module (check username and password) & on successful login, change TextView to “Login Successful” and on failed login, alert user using Toast “Login fail”.

A] Code:

a] MainActivity.java:

```
package com.example.loginpage;

import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;
import androidx.annotation.Nullable;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity implements View.OnClickListener {
    TextView txtheadline;
    EditText edteemail1, edtpw1;
    Button btnlog;
    @Override
    protected void onCreate(@Nullable Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        // Initialize UI components
        txtheadline = findViewById(R.id.txtthead);
        edteemail1 = findViewById(R.id.edt_email1);
        edtpw1 = findViewById(R.id.edt_passwd1);
        btnlog = findViewById(R.id.btnLog);
        // Set click listener
        btnlog.setOnClickListener(this);
    }
    @Override
    public void onClick(View v) {
        // Check login credentials
        if ((edteemail1.getText().toString().equals("user@gmail.com")) &&
            (edtpw1.getText().toString().equals("1234"))) {
            Toast.makeText(this, "Login Successful",
                Toast.LENGTH_SHORT).show();
        } else {
            Toast.makeText(this, "Login Failed", Toast.LENGTH_SHORT).show();
        }
    }
}
```

b] activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:background="#FA80CAD5">
    <TextView
        android:id="@+id/txthead"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_marginLeft="20dp"
        android:layout_marginTop="40dp"
        android:layout_marginRight="20dp"
        android:text="@string/login_form"
        android:textAlignment="center"
        android:textColor="#616161"
        android:textStyle="bold"/>
    <EditText
        android:id="@+id/edt_email1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@+id/txthead"
        android:layout_marginLeft="20dp"
        android:layout_marginTop="20dp"
        android:layout_marginRight="20dp"
        android:autofillHints="true"
        android:text="@string/enter_email"
        tools:ignore="LabelFor,TextFields,TouchTargetSizeCheck,VisualLintTextFieldSize"/>
    <EditText
        android:id="@+id/edt_passwd1"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_below="@+id/edt_email1"
        android:layout_marginLeft="20dp"
        android:layout_marginTop="22dp"
        android:minHeight="48dp"
        android:text="@string/enter_password"
        android:textColorHint="#37474F"

tools:ignore="Autofill,LabelFor,RtlHardcoded,SpeakableTextPresentCheck,TextFields,VisualL
intTextFieldSize"/>
    <Button
        android:id="@+id/btnLog"
        android:layout_width="match_parent"
```



```

        android:layout_height="wrap_content"
        android:layout_below="@+id/edt_passwd1"
        android:layout_marginLeft="60dp"
        android:layout_marginTop="40dp"
        android:layout_marginRight="60dp"
        android:background="#0B8B9B"
        android:text="Login"
        android:textColor="#fff"
        android:textSize="25sp"
        tools:ignore="HardcodedText,VisualLintButtonSize"/>
    </RelativeLayout>

```

c] strings.xml:

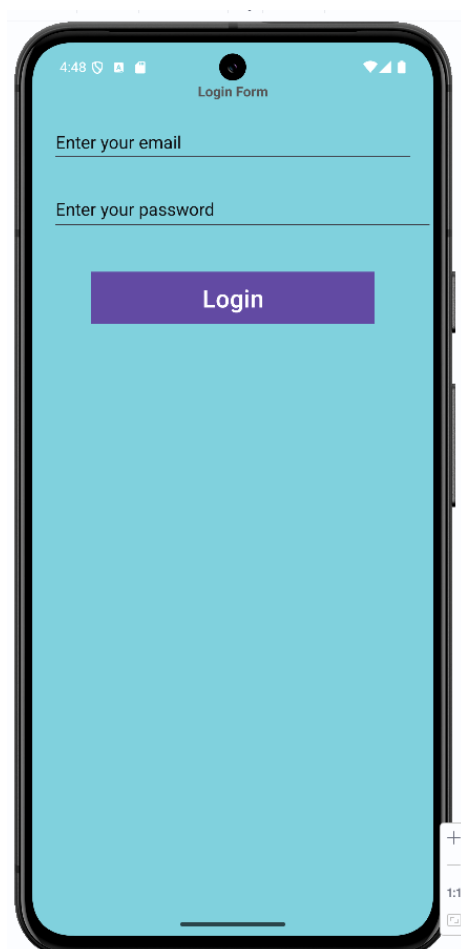
```

<resources>
    <string name="app_name">Loginpage</string>
    <string name="login_form">Login Form</string>
    <string name="enter_email">Enter your email</string>
    <string name="enter_password">Enter your password</string>
</resources>

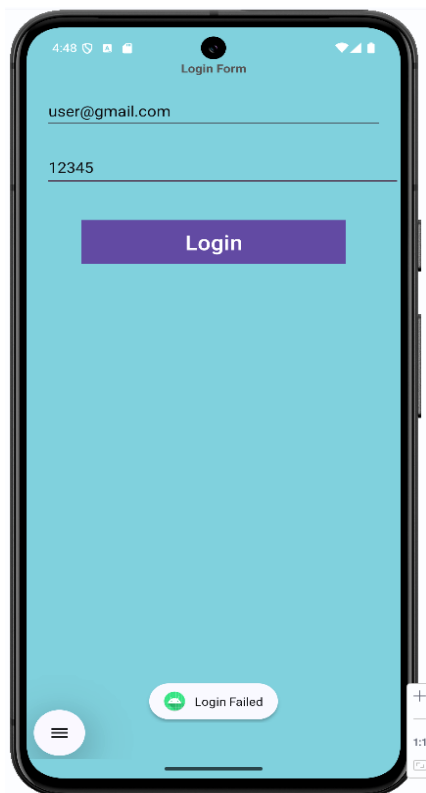
```

B] O/P:

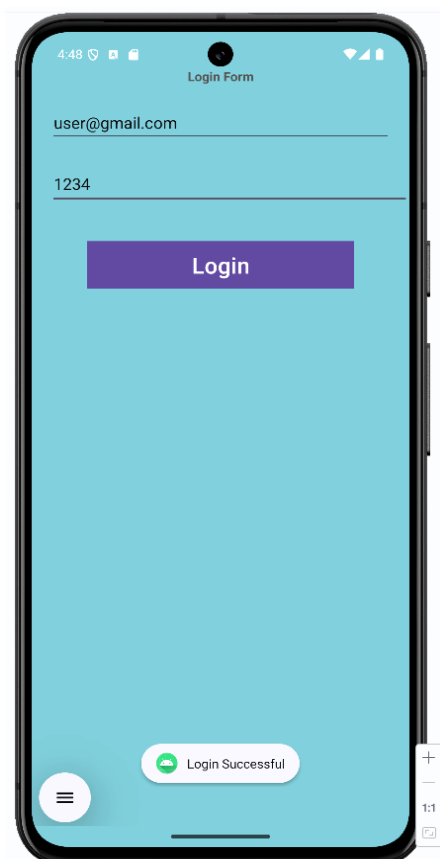
a] With data not entered:



b] With login failed:



b] With login successful:



5.Create an application for demonstration of ScrollView in Android.

A] Code:

a] MainActivity.java:

```
package com.example.scrollview;

import android.os.Bundle;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}
```

b] activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
xmlns:app="http://schemas.android.com/apk/res-auto"
xmlns:tools="http://schemas.android.com/tools"
android:id="@+id/main"
android:layout_width="match_parent"
android:layout_height="match_parent"
tools:context=".MainActivity">
    <ScrollView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        tools:ignore="MissingConstraints">
        <LinearLayout
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:orientation="vertical">
            <ImageView
                android:layout_width="match_parent"
                android:layout_height="200dp"
                android:layout_marginTop="8dp"
                android:background="#9C27B0"
                tools:ignore="ContentDescription,ImageContrastCheck"/>
            <Button
                android:layout_width="417dp"
                android:layout_height="121dp"
```

```

        android:background="#ff5722"
        android:text="@string/hello_world_1"
        android:textColor="#212121"
        tools:ignore="HardcodedText,SpeakableTextPresentCheck,TextContrastCheck,VisualLintButtonSize" />
    <TextView
        android:layout_width="match_parent"
        android:layout_height="200dp"
        android:background="#00BCD4" />
    <Button
        android:layout_width="match_parent"
        android:layout_height="200dp"
        android:background="@color/black"
        tools:ignore="SpeakableTextPresentCheck,VisualLintButtonSize" />
    <Button
        android:layout_width="match_parent"
        android:layout_height="200dp"
        android:background="#673AB7"
        android:text="@string/hello_world_2"
        android:textColor="#C5CAE9"
        tools:ignore="VisualLintButtonSize" />
    <ImageView
        android:layout_width="match_parent"
        android:layout_height="200dp"
        android:background="#9C27B0"
        tools:ignore="ContentDescription,ImageContrastCheck" />
    <TextView
        android:layout_width="match_parent"
        android:layout_height="200dp"
        android:background="#E91E63" />
    <Button
        android:layout_width="match_parent"
        android:layout_height="200dp"
        android:background="#F44336"
        tools:ignore="VisualLintButtonSize" />
    <Button
        android:layout_width="match_parent"
        android:layout_height="200dp"
        android:background="#03A9F4"
        android:text="@string/hello_world_3"
        tools:ignore="VisualLintButtonSize" />
    <ImageView
        android:layout_width="match_parent"
        android:layout_height="200dp"
        android:background="#FF5722"
        tools:ignore="ContentDescription" />
    <TextView

```

```
    android:layout_width="match_parent"
    android:layout_height="200dp"
    android:background="#FF9800" />
<Button
    android:layout_width="match_parent"
    android:layout_height="200dp"
    android:background="#FFEB3B"
    android:text="@string/hello_world_4"
    tools:ignore="HardcodedText,VisualLintButtonSize" />
<ImageView
    android:layout_width="match_parent"
    android:layout_height="200dp"
    android:background="#FF5722"
    tools:ignore="ContentDescription" />
<TextView
    android:layout_width="match_parent"
    android:layout_height="200dp"
    android:background="#FFA000" />
<Button
    android:layout_width="match_parent"
    android:layout_height="200dp"
    android:background="#981874"
    tools:ignore="VisualLintButtonSize" />
<Button
    android:layout_width="match_parent"
    android:layout_height="200dp"
    android:background="#6A7C6B"
    android:text="@string/hello_world_5"
    tools:ignore="VisualLintButtonSize" />
<ImageView
    android:layout_width="match_parent"
    android:layout_height="200dp"
    android:background="#3F51B5"
    tools:ignore="ContentDescription" />
<TextView
    android:layout_width="match_parent"
    android:layout_height="200dp"
    android:background="#FF0000" />
<Button
    android:layout_width="match_parent"
    android:layout_height="200dp"
    android:background="#819012"
    android:text="@string/hello_world_6"
    tools:ignore="VisualLintButtonSize" />
<Button
    android:layout_width="match_parent"
    android:layout_height="200dp"
```

```

        android:background="#00FF1A"
        tools:ignore="VisualLintButtonSize"/>
    </LinearLayout>
</ScrollView>
</androidx.constraintlayout.widget.ConstraintLayout>

```

c] strings.xml:

```

<resources>
    <string name="app_name">Scrollview</string>
    <string name="hello_world_1">Hello World 1</string>
    <string name="hello_world_2">Hello World 2</string>
    <string name="hello_world_3">Hello World 3</string>
    <string name="hello_world_4">Hello World 4</string>
    <string name="hello_world_5">Hello World 5</string>
    <string name="hello_world_6">Hello World 6</string>
</resources>

```

B] O/P:



6. Create login application where you will have to validate username and password till the & username and password is not validated, login button should remain disabled.

A] Code:

a] MainActivity.java:

```
package com.example.disabledlogin;

import android.os.Bundle;
import android.text.Editable;
import android.text.TextWatcher;
import android.widget.Button;
import android.widget.EditText;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity {
    private EditText editTextUN;
    private EditText editTextPass;
    private Button btnLog;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        editTextUN = findViewById(R.id.edittxt_Username);
        editTextPass = findViewById(R.id.edittxt_Password);
        btnLog = findViewById(R.id.button_Login);
        editTextUN.addTextChangedListener(loginTextWatcher);
        editTextPass.addTextChangedListener(loginTextWatcher);
    }
    private final TextWatcher loginTextWatcher = new TextWatcher() {
        @Override
        public void beforeTextChanged(CharSequence s, int start, int count, int after) {
        }
        @Override
        public void onTextChanged(CharSequence s, int start, int before, int count) {
            String usernameInput = editTextUN.getText().toString();
            String passwordInput = editTextPass.getText().toString();
            btnLog.setEnabled(!usernameInput.isEmpty() && !passwordInput.isEmpty());
        }
        @Override
        public void afterTextChanged(Editable s) {
        }
    };
}
```

b] activity_main.xml:

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

```

xmlns:app="http://schemas.android.com/apk/res-auto"
xmlns:tools="http://schemas.android.com/tools"
android:id="@+id/main"
android:layout_width="match_parent"
android:layout_height="match_parent"
android:layout_margin="20dp"
android:layout_gravity="center_horizontal"
android:orientation="vertical"
android:padding="15dp"
tools:context=".MainActivity">
<EditText
    android:id="@+id/edittxt_Username"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="70dp"
    android:autoFillHints=""
    android:hint="@string/username"
    android:inputType="text"
    android:textColorHint="#78909C"
    android:textSize="20sp"
    tools:ignore="VisualLineTextFieldSize,VisualLintTextFieldSize" />
<EditText
    android:id="@+id/edittxt_Password"
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:hint="@string/password"
    android:importantForAutofill="no"
    android:inputType="textPassword"
    android:textColorHint="#78909C"
    android:textSize="20sp"
    tools:ignore="VisualLintTextFieldSize" />

<Button
    android:id="@+id/button_Login"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_gravity="center"
    android:enabled="true"
    android:text="@string/login"
    android:textSize="30sp" />
</LinearLayout>

```

c] strings.xml:

```

<resources>
    <string name="app_name">Disabled Login</string>
    <string name="username">Username</string>
    <string name="password">Password</string>

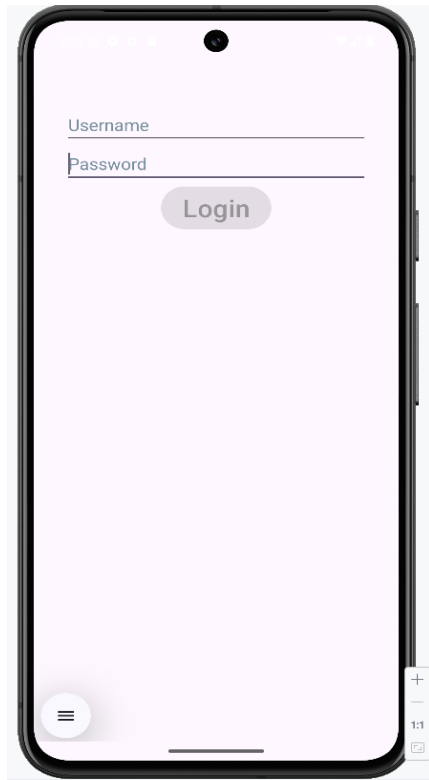
```



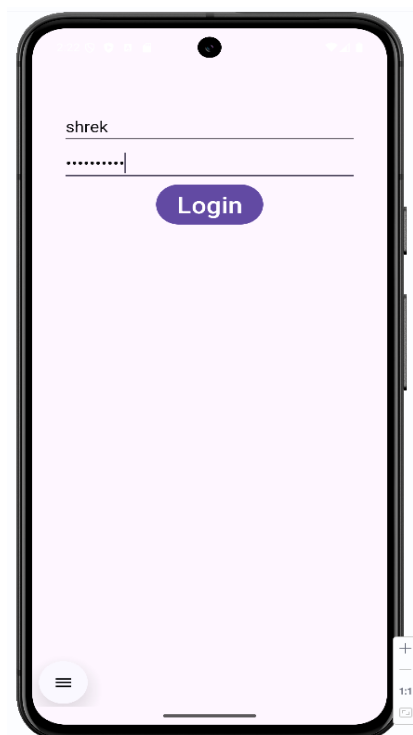
```
<string name="login">Login</string>
</resources>
```

B] O/P:

a] With no data entered:



b] With data entered:



7.Create an application for calculator.

A] Code:

a] MainActivity.java:

```
package com.example.calculator_pr7;

import android.annotation.SuppressLint;
import android.os.Bundle;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
import java.text.DecimalFormat;

public class MainActivity extends AppCompatActivity {
    private EditText num1EditText, num2EditText;
    private TextView resultTextView;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        num1EditText = findViewById(R.id.num1EditText);
        num2EditText = findViewById(R.id.num2EditText);
        resultTextView = findViewById(R.id.resultTextView);
        Button addButton = findViewById(R.id.addButton);
        addButton.setOnClickListener(v -> performCalculation('+'));
        Button subtractButton = findViewById(R.id.subtractButton);
        subtractButton.setOnClickListener(v -> performCalculation('-'));
        Button multiplyButton = findViewById(R.id.multiplyButton);
        multiplyButton.setOnClickListener(v -> performCalculation('*'));
        Button divideButton = findViewById(R.id.divideButton);
        divideButton.setOnClickListener(v -> performCalculation('/'));
        Button sqrtButton = findViewById(R.id.sqrtButton);
        sqrtButton.setOnClickListener(v -> calculateSquareRoot());
    }
    @SuppressLint("SetTextI18n")
    private void performCalculation(char operator) {
        String num1Str = num1EditText.getText().toString();
        String num2Str = num2EditText.getText().toString();
        if (num1Str.isEmpty() || num2Str.isEmpty()) {
            Toast.makeText(this, "Please enter both numbers", Toast.LENGTH_SHORT).show();
            return;
        }
        double num1 = Double.parseDouble(num1Str);
        double num2 = Double.parseDouble(num2Str);
        double result = 0;
        switch (operator) {
```

```

        case '+':
            result = num1 + num2;
            break;
        case '-':
            result = num1 - num2;
            break;
        case '*':
            result = num1 * num2;
            break;
        case '/':
            if (num2 != 0) {
                result = num1 / num2;
            } else {
                Toast.makeText(this, "Cannot divide by zero", Toast.LENGTH_SHORT).show();
                return;
            }
            break;
    }
    DecimalFormat df = new DecimalFormat("#.##");
    resultTextView.setText("Result: " + df.format(result));
}
@SuppressWarnings("SetTextI18n")
private void calculateSquareRoot() {
    String num1Str = num1EditText.getText().toString();
    if (num1Str.isEmpty()) {
        Toast.makeText(this, "Please enter a number", Toast.LENGTH_SHORT).show();
        return;
    }
    double num = Double.parseDouble(num1Str);
    double sqrtResult = Math.sqrt(num);
    DecimalFormat df = new DecimalFormat("#.##");
    resultTextView.setText("Square Root: " + df.format(sqrtResult));
}
}

```

b] activity_main.xml:

```

<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:padding="16dp"
    tools:context=".MainActivity">

```

```

<EditText
    android:id="@+id/num1EditText"
    android:layout_width="0dp"
    android:layout_height="48dp"
    android:layout_marginTop="44dp"
    android:hint="Enter number 1"
    android:inputType="numberDecimal"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="1.0"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent"
    tools:ignore="Autofill,HardcodedText,TextContrastCheck,VisualLintTextFieldSize" />
<EditText
    android:id="@+id/num2EditText"
    android:layout_width="0dp"
    android:layout_height="48dp"
    android:layout_marginTop="32dp"
    android:hint="Enter number 2"
    android:inputType="numberDecimal"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="1.0"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/num1EditText"
    tools:ignore="Autofill,HardcodedText,TextContrastCheck,VisualLintTextFieldSize" />
<Button
    android:id="@+id/addButton"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="20dp"
    android:background="#5C07F0"
    android:text="+"
    android:textColor="@color/white"
    android:textSize="16sp"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/num2EditText"
    tools:ignore="HardcodedText" />
<Button
    android:id="@+id/subtractButton"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="20dp"
    android:background="#5C07F0"
    android:text="-"
    android:textColor="@color/white"
    android:textSize="16sp"
    app:layout_constraintEnd_toStartOf="@+id/multiplyButton"
    app:layout_constraintHorizontal_bias="0.582"

```

```

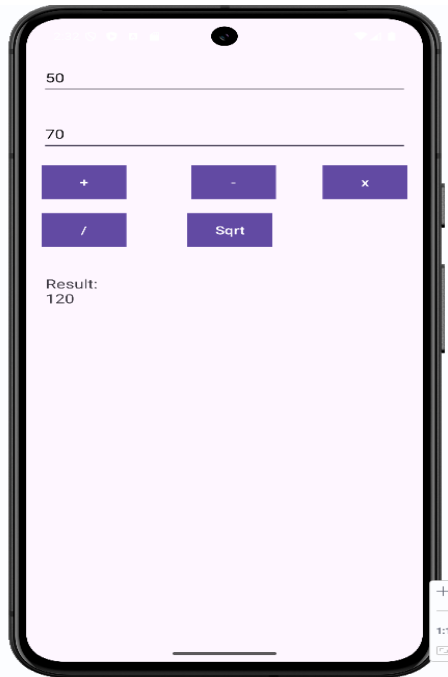
        app:layout_constraintStart_toEndOf="@+id/addButton"
        app:layout_constraintTop_toBottomOf="@+id/num2EditText"
        tools:ignore="HardcodedText" />
<Button
    android:id="@+id/multiplyButton"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="20dp"
    android:background="#5C07F0"
    android:text="x"
    android:textColor="@color/white"
    android:textSize="16sp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/num2EditText"
    tools:ignore="HardcodedText" />
<Button
    android:id="@+id/divideButton"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="20dp"
    android:background="#5C07F0"
    android:text="/"
    android:textColor="@color/white"
    android:textSize="16sp"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/addButton"
    tools:ignore="HardcodedText" />
<Button
    android:id="@+id/sqrtButton"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:layout_marginTop="20dp"
    android:layout_marginEnd="140dp"
    android:background="#5C07F0"
    android:text="Sqrt"
    android:textColor="@color/white"
    android:textSize="16sp"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/subtractButton"
    tools:ignore="HardcodedText" />
<TextView
    android:id="@+id/resultTextView"
    android:layout_width="84dp"
    android:layout_height="41dp"
    android:layout_marginStart="4dp"
    android:layout_marginTop="40dp"
    android:text="Result: "

```

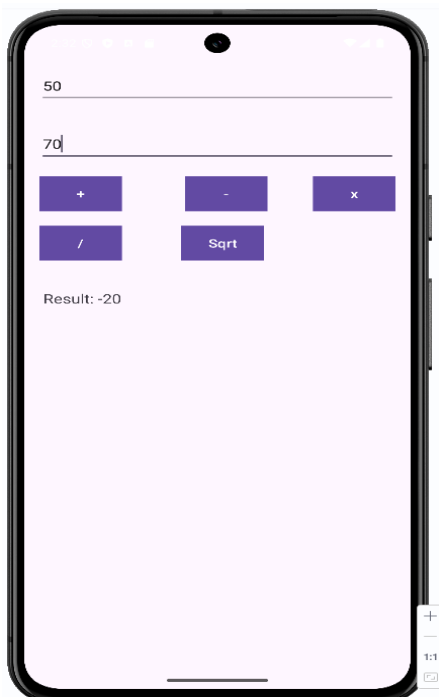
```
    android:textSize="18sp"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/divideButton"
    tools:ignore="HardcodedText" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

B] O/P:

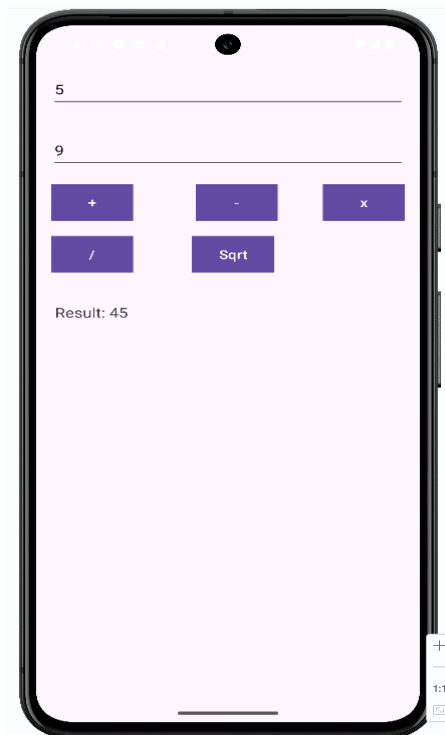
a] Addition:



b] Subtraction:

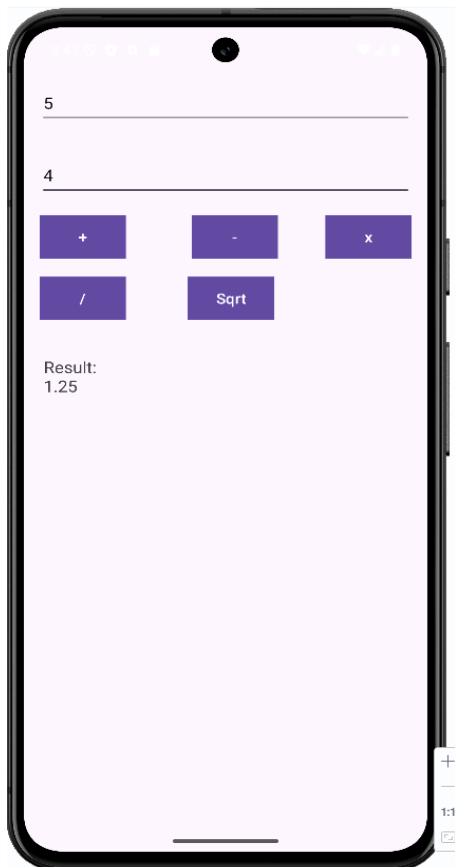


c] Multiplication:

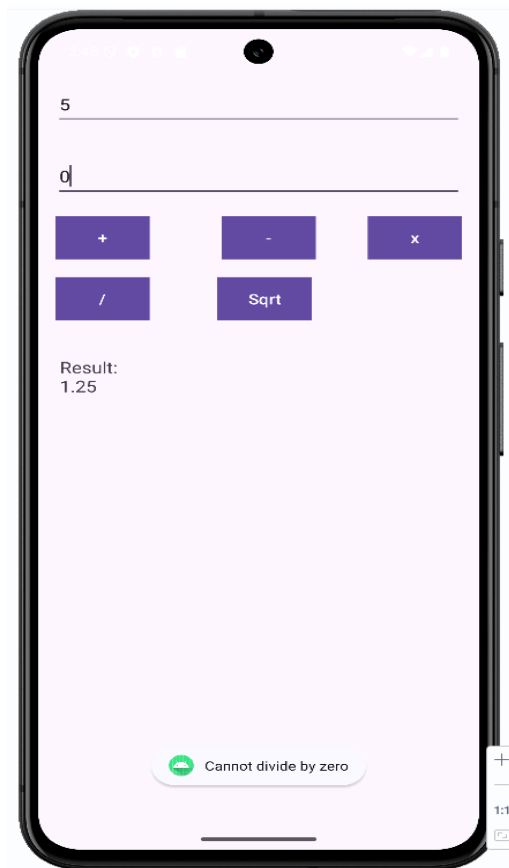


d] Division:

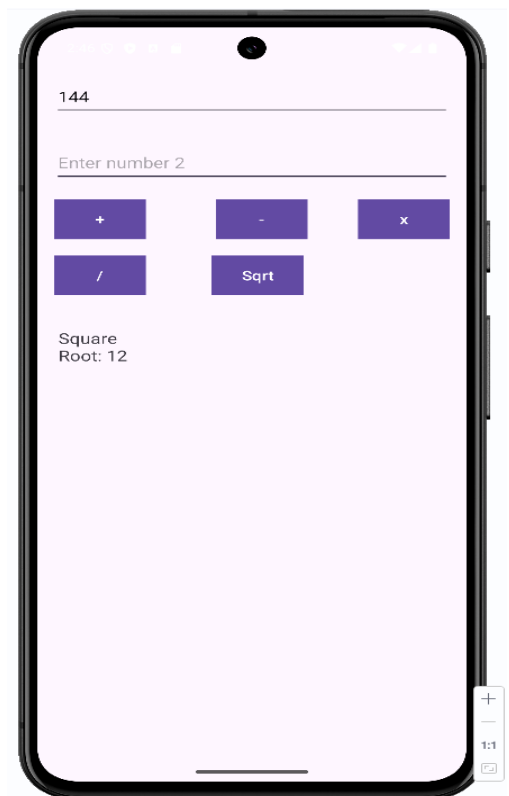
1. Normal division:



2. Division by zero:



e] Square Root:



8.Demonstrate use of ScrollView.

1. Vertical ScrollView:

1.A] Code:

a] MainActivity.java:

```
package com.example.verticalscrollview;

import android.os.Bundle;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}
```

b] activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<!--suppress ALL -->
<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:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    tools:context=".MainActivity">
    <ScrollView
        android:id="@+id/scrollView"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="20dp"
        tools:ignore="UselessParent">
        <LinearLayout
            android:layout_width="fill_parent"
            android:layout_height="wrap_content"
            android:orientation="vertical">
            <Button
                android:layout_width="fill_parent"
                android:layout_height="wrap_content"
                android:background="@color/design_default_color_primary"
                android:text="vertical_scroll_view"
                android:textAlignment="center"
                android:textColor="#ffffff"
```

```
tools:ignore="VisualLintButtonSize" />

<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="10sp"
    android:background="@color/design_default_color_primary"
    android:text="@string/button_2"
    android:textAlignment="center"
    android:textColor="#ffffff"
    tools:ignore="VisualLintButtonSize" />
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="10sp"
    android:background="@color/design_default_color_primary"
    android:text="@string/button_3"
    android:textAlignment="center"
    android:textColor="#ffffff"
    tools:ignore="VisualLintButtonSize" />
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="10sp"
    android:background="@color/design_default_color_primary"
    android:text="@string/button_4"
    android:textAlignment="center"
    android:textColor="#ffffff"
    tools:ignore="VisualLintButtonSize" />
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="10sp"
    android:background="@color/design_default_color_primary"
    android:text="@string/button_5"
    android:textAlignment="center"
    android:textColor="#ffffff"
    tools:ignore="VisualLintButtonSize" />
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="10sp"
    android:background="@color/design_default_color_primary"
    android:text="@string/button_6"
    android:textAlignment="center"
    android:textColor="#ffffff"
    tools:ignore="VisualLintButtonSize" />
```

```
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="10sp"
    android:background="@color/design_default_color_primary"
    android:text="@string/button_7"
    android:textAlignment="center"
    android:textColor="#ffffff"
    tools:ignore="VisualLintButtonSize" />
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="10sp"
    android:background="@color/design_default_color_primary"
    android:text="@string/button_8"
    android:textAlignment="center"
    android:textColor="#ffffff"
    tools:ignore="VisualLintButtonSize" />
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="10sp"
    android:background="@color/design_default_color_primary"
    android:text="@string/button_9"
    android:textAlignment="center"
    android:textColor="#ffffff"
    tools:ignore="VisualLintButtonSize" />
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="10sp"
    android:background="@color/design_default_color_primary"
    android:text="@string/button_10"
    android:textAlignment="center"
    android:textColor="#ffffff"
    tools:ignore="VisualLintButtonSize" />
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="10sp"
    android:background="@color/design_default_color_primary"
    android:text="@string/button_11"
    android:textAlignment="center"
    android:textColor="#ffffff"
    tools:ignore="VisualLintButtonSize" />
<Button
    android:layout_width="fill_parent"
```

```

        android:layout_height="wrap_content"
        android:layout_marginTop="10sp"
        android:background="@color/design_default_color_primary"
        android:text="@string/button_12"
        android:textAlignment="center"
        android:textColor="#ffffff"
        tools:ignore="VisualLintButtonSize" />
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="10sp"
    android:background="@color/design_default_color_primary"
    android:text="Button 13"
    android:textAlignment="center"
    android:textColor="#ffffff"
    tools:ignore="HardcodedText,VisualLintButtonSize" />
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="10sp"
    android:background="@color/design_default_color_primary"
    android:text="@string/button_14"
    android:textAlignment="center"
    android:textColor="#ffffff"
    tools:ignore="VisualLintButtonSize" />
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="10sp"
    android:background="@color/design_default_color_primary"
    android:text="@string/button_15"
    android:textAlignment="center"
    android:textColor="#ffffff"
    tools:ignore="VisualLintButtonSize" />
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="10sp"
    android:background="@color/design_default_color_primary"
    android:text="@string/button_16"
    android:textAlignment="center"
    android:textColor="#ffffff"
    tools:ignore="VisualLintButtonSize" />
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:layout_marginTop="10sp"

```

```

        android:background="@color/design_default_color_primary"
        android:text="@string/button_17"
        android:textAlignment="center"
        android:textColor="#ffffff"
        tools:ignore="VisualLintButtonSize" />
    <Button
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="10sp"
        android:background="@color/design_default_color_primary"
        android:text="@string/button_18"
        android:textAlignment="center"
        android:textColor="#ffffff"
        tools:ignore="VisualLintButtonSize" />
    <Button
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="10sp"
        android:background="@color/design_default_color_primary"
        android:text="@string/button_19"
        android:textAlignment="center"
        android:textColor="#ffffff"
        tools:ignore="VisualLintButtonSize" />
    <Button
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:layout_marginTop="10sp"
        android:background="@color/design_default_color_primary"
        android:text="@string/button_20"
        android:textAlignment="center"
        android:textColor="#ffffff"
        tools:ignore="VisualLintButtonSize" />
</LinearLayout>
</ScrollView>
</LinearLayout>

```

c] strings.xml:

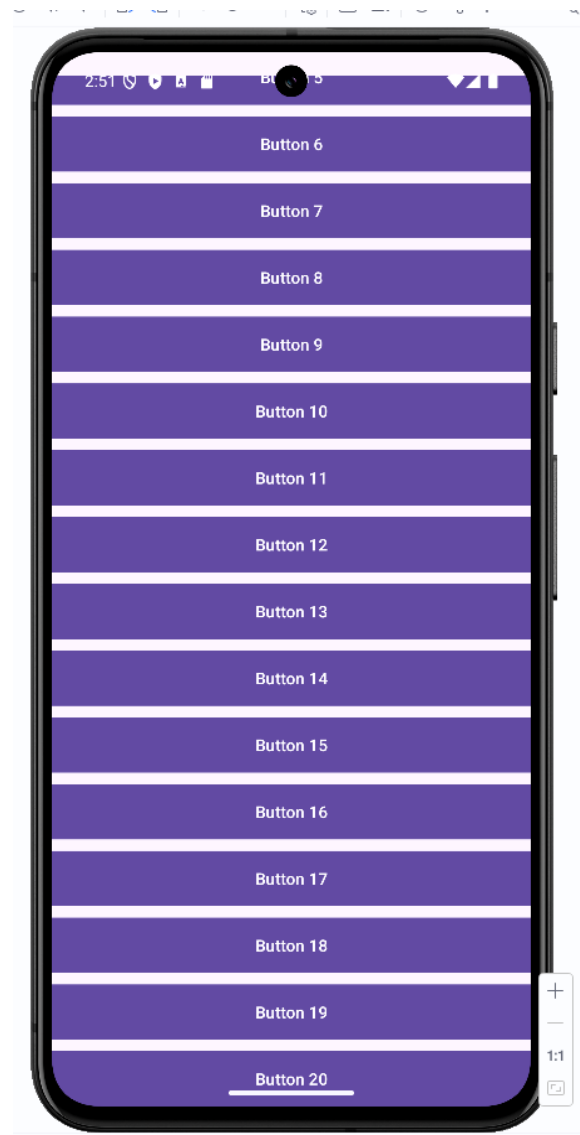
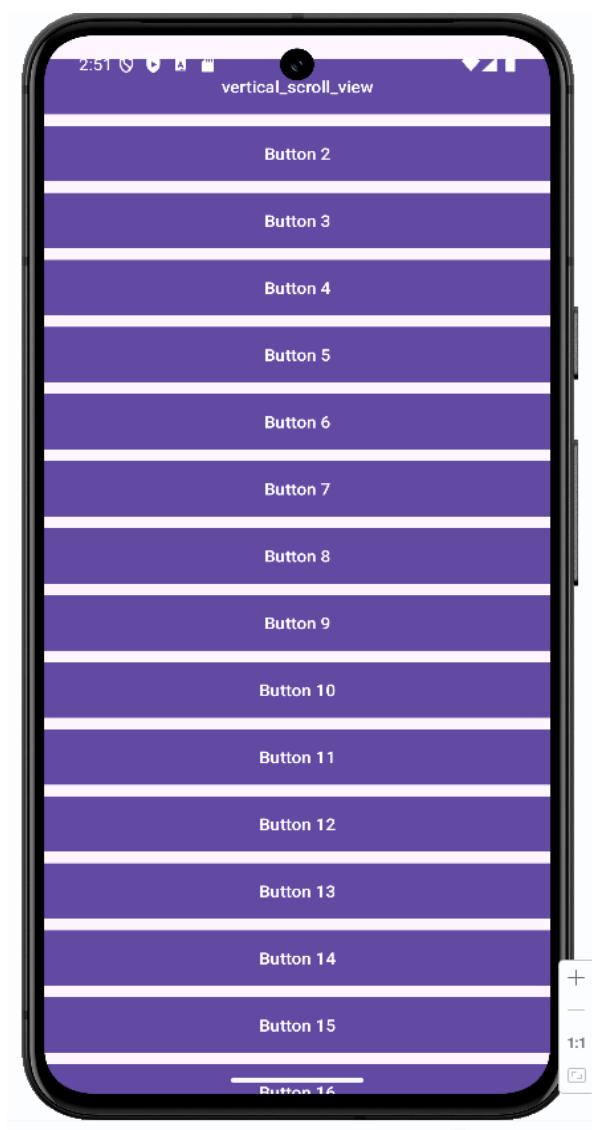
```

<resources>
    <string name="app_name">Vertical Scroll View</string>
    <string name="Vertical_scroll_view">Vertical Scroll View</string>
    <string name="button_2">Button 2</string>
    <string name="button_3">Button 3</string>
    <string name="button_4">Button 4</string>
    <string name="button_5">Button 5</string>
    <string name="button_6">Button 6</string>
    <string name="button_7">Button 7</string>
    <string name="button_8">Button 8</string>

```

```
<string name="button_9">Button 9</string>
<string name="button_10">Button 10</string>
<string name="button_11">Button 11</string>
<string name="button_12">Button 12</string>
<string name="button_13">Button 13</string>
<string name="button_14">Button 14</string>
<string name="button_15">Button 15</string>
<string name="button_16">Button 16</string>
<string name="button_17">Button 17</string>
<string name="button_18">Button 18</string>
<string name="button_19">Button 19</string>
<string name="button_20">Button 20</string>
</resources>
```

1.B] O/P:



2. Horizontal ScrollView:

2.A] Code:

a] MainActivity.java:

```
package com.example.horizontalscrollview;

import android.os.Bundle;
import androidx.appcompat.app.AppCompatActivity;
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
    }
}
```

b] activity_main.xml:

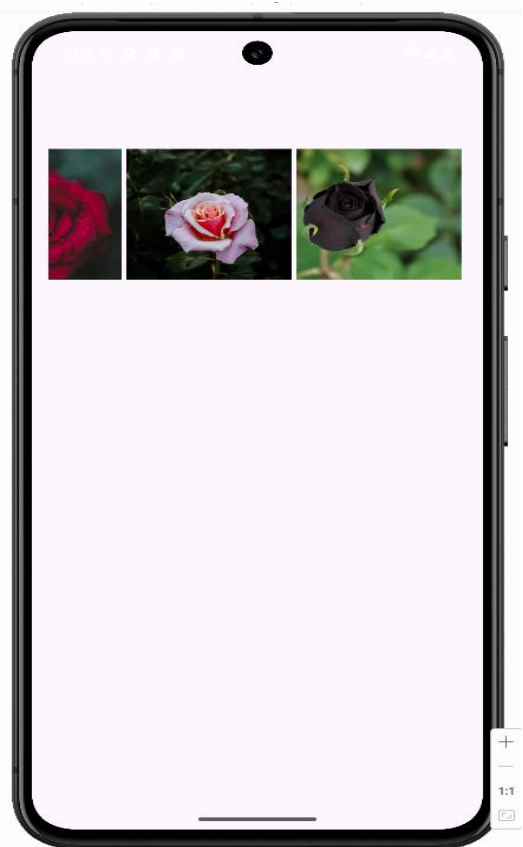
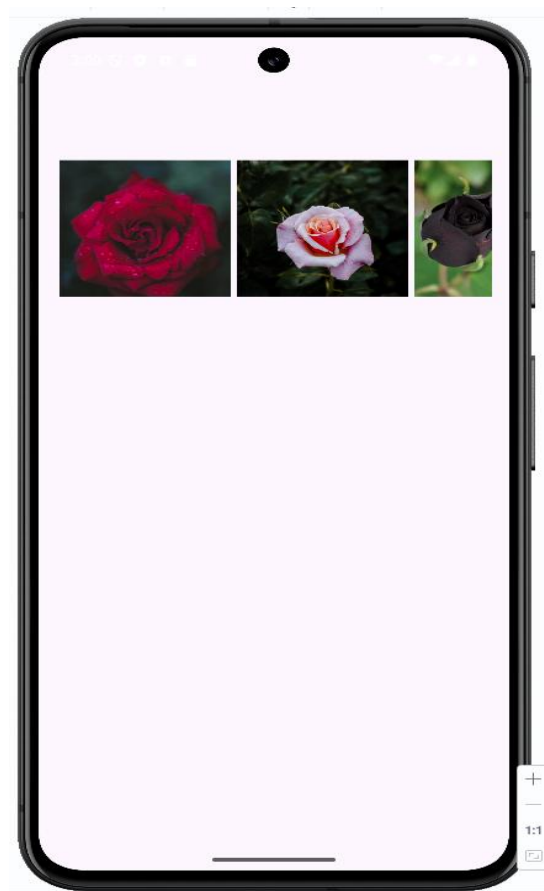
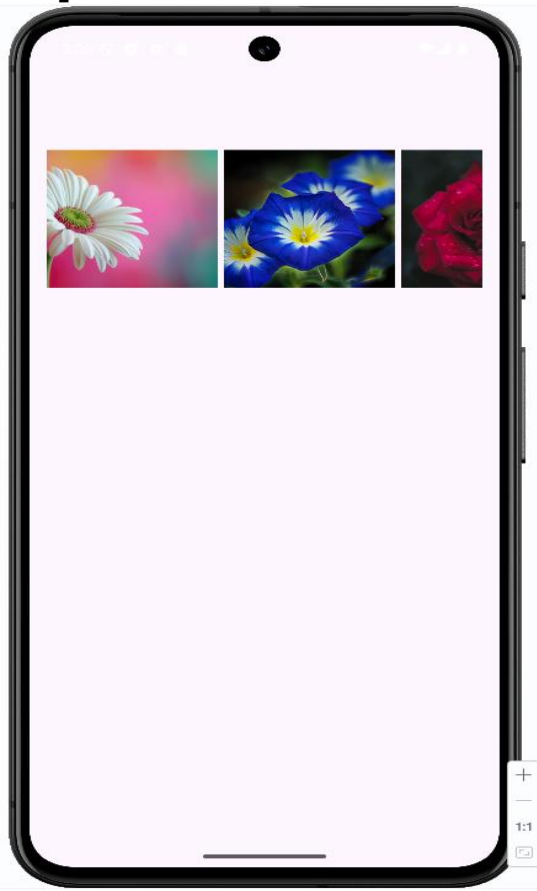
```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:orientation="vertical"
    android:padding="15dp"
    tools:context=".MainActivity">

    <HorizontalScrollView
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        tools:ignore="SpeakableTextPresentCheck,UselessParent">
        <LinearLayout
            android:layout_width="wrap_content"
            android:layout_height="match_parent"
            android:orientation="horizontal"
            tools:ignore="VisualLintBounds">

            <ImageView
                android:layout_width="150dp"
                android:layout_height="150dp"
                android:layout_marginTop="120dp"
                android:layout_marginEnd="5dp"
                android:scaleType="centerCrop"
                android:src="@drawable/image1"
```

```
        tools:ignore="ContentDescription,ImageContrastCheck" />
<ImageView
    android:layout_width="150dp"
    android:layout_height="150dp"
    android:layout_marginEnd="5dp"
    android:layout_marginTop="120dp"
    android:scaleType="centerCrop"
    android:src="@drawable/image2"
    tools:ignore="ContentDescription" />
<ImageView
    android:layout_width="150dp"
    android:layout_height="150dp"
    android:layout_marginTop="120dp"
    android:layout_marginEnd="5dp"
    android:scaleType="centerCrop"
    android:src="@drawable/image3"
    tools:ignore="ContentDescription" />
<ImageView
    android:layout_width="150dp"
    android:layout_height="150dp"
    android:layout_marginEnd="5dp"
    android:layout_marginTop="120dp"
    android:scaleType="centerCrop"
    android:src="@drawable/image4"
    tools:ignore="ContentDescription" />
<ImageView
    android:layout_width="150dp"
    android:layout_height="150dp"
    android:layout_marginRight="5dp"
    android:layout_marginTop="120dp"
    android:scaleType="centerCrop"
    android:src="@drawable/image5"
    tools:ignore="ContentDescription,RtlHardcoded" />
</LinearLayout>
</HorizontalScrollView>
</LinearLayout>
```


2.C] O/P:



9.Demonstrate use of Intent in Android.

A] Code:

a] MainActivity.java:

```
package com.example.intent;

import android.os.Bundle;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.net.Uri;
import android.view.View;
import android.widget.Button;
/**
 * @noinspection ALL
 */
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Button email = findViewById(R.id.openEmail);
        Button gallery = findViewById(R.id.openGallery);
        Button dialer = findViewById(R.id.openDialer);
        email.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent intent = new Intent(Intent.ACTION_SENDTO);
                intent.setData(Uri.parse("mailto:"));
                intent.putExtra(Intent.EXTRA_EMAIL, "Dnc@gmail.com");
                intent.putExtra(Intent.EXTRA_SUBJECT, "Android App Practice");
                startActivity(intent);
            }
        });
        gallery.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent intent = new Intent();
                intent.setAction(android.content.Intent.ACTION_VIEW);
                intent.setType("image/*");
                intent.setFlags(Intent.FLAG_ACTIVITY_NEW_TASK);
                startActivity(intent);
            }
        });
        dialer.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent intent = new Intent(Intent.ACTION_DIAL);
```

```

        intent.setData(Uri.parse("tel:2613401000"));
        startActivity(intent);
    }
});
}
}

```

b] activity_main.xml:

```

<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
xmlns:app="http://schemas.android.com/apk/res-auto"
xmlns:tools="http://schemas.android.com/tools"
android:id="@+id/main"
android:layout_width="match_parent"
android:layout_height="match_parent"
tools:context=".MainActivity">
    <Button
        android:id="@+id/openEmail"
        android:layout_width="177dp"
        android:layout_height="48dp"
        android:backgroundTint="#2962FF"
        android:text="@string/open_email_app"
        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="0.197" />
    <Button
        android:id="@+id/openGallery"
        android:layout_width="177dp"
        android:layout_height="48dp"
        android:backgroundTint="#D50000"
        android:text="@string/open_gallery_app"
        app:layout_constraintBottom_toTopOf="@+id/openDialer"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.465"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/openEmail" />
    <Button
        android:id="@+id/openDialer"
        android:layout_width="176dp"
        android:layout_height="49dp"
        android:layout_marginTop="4dp"
        android:backgroundTint="#64DD17"
        android:text="@string/open_phone_dialer"

```

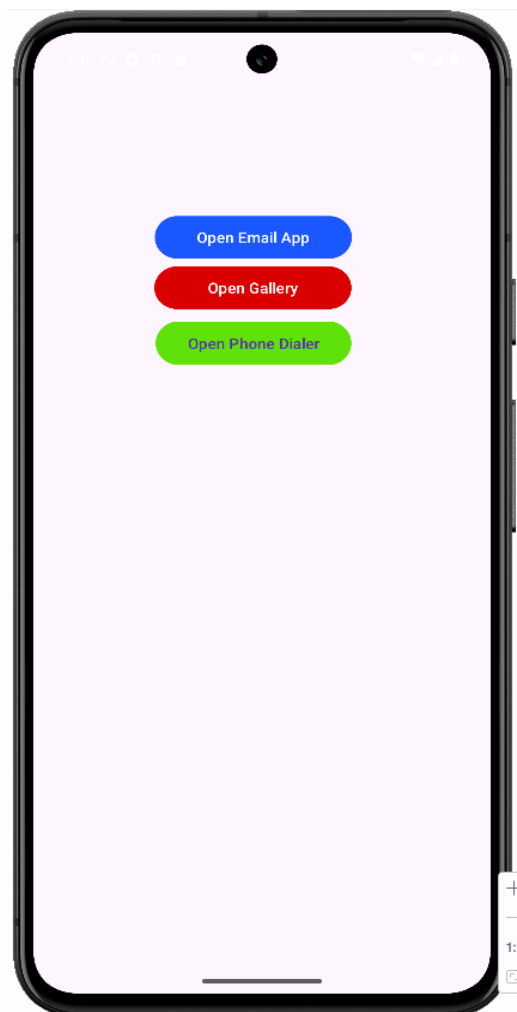
```
        android:textColor="#5E35B1"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.468"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toBottomOf="@+id/openGallery" />
    </androidx.constraintlayout.widget.ConstraintLayout>
```

c] strings.xml:

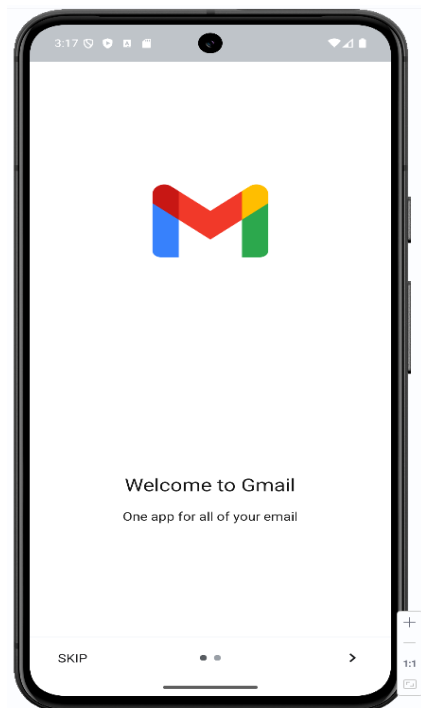
```
<resources>
    <string name="app_name">Intent</string>
    <string name="open_email_app">Open Email App</string>
    <string name="open_gallery_app">Open Gallery</string>
    <string name="open_phone_dialer">Open Phone Dialer</string>
</resources>
```

B] O/P:

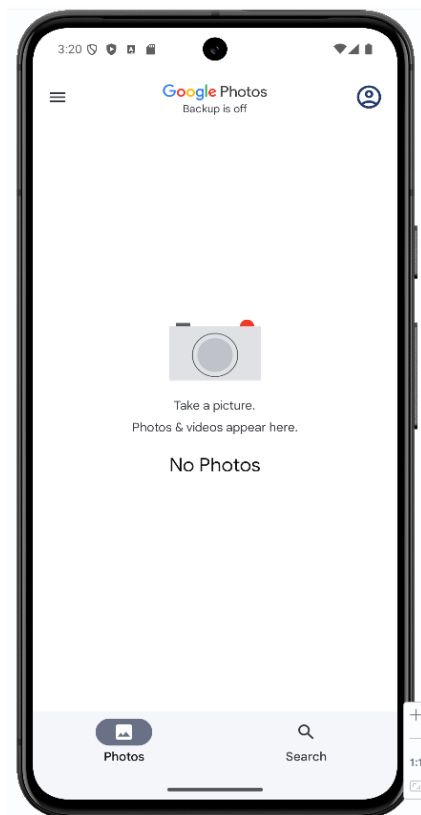
a] Homepage:



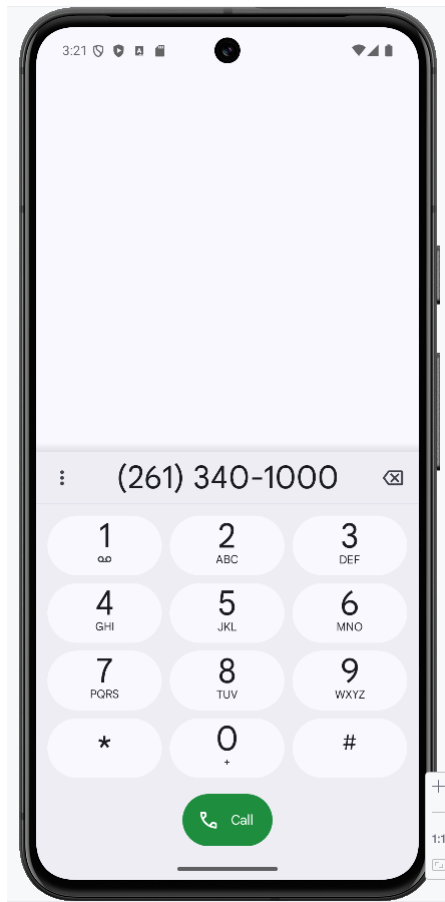
b] Opening Gmail:



c] Opening Gallery:



d] Opening Phone Dialer:



10. Create application to demonstrate menu option.

1. Options Menu:

1.A] Code:

a] MainActivity.java:

```
package com.example.menuoptions;

import android.os.Bundle;

import android.view.Menu;
import android.view.MenuItem;
import android.widget.Toast;
import androidx.annotation.NonNull;
import androidx.appcompat.app.AppCompatActivity;

public class MainActivity extends AppCompatActivity {

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

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

    @Override
    public boolean onOptionsItemSelected(@NonNull MenuItem item) {
        int id = item.getItemId();
        if (id == R.id.item1) {
            Toast.makeText(this, "Item 1 selected", Toast.LENGTH_SHORT).show();
        } else if (id == R.id.item2) {
            Toast.makeText(this, "Item 2 selected", Toast.LENGTH_SHORT).show();
        } else if (id == R.id.item3) {
            Toast.makeText(this, "Item 3 selected", Toast.LENGTH_SHORT).show();
        } else {
            return super.onOptionsItemSelected(item);
        }
        return true;
    }
}
```

b] activity_main.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
```

```

xmlns:android="http://schemas.android.com/apk/res/android"
xmlns:app="http://schemas.android.com/apk/res-auto"
xmlns:tools="http://schemas.android.com/tools"
android:id="@+id/main"
android:layout_width="match_parent"
android:layout_height="match_parent"
tools:context=".MainActivity">
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Hello World!"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

c] menu.xml:

```

<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android">
    <item
        android:title="@string/item1"
        android:id="@+id/item1"/>
    <item
        android:title="@string/item2"
        android:id="@+id/item2"/>
    <item
        android:title="@string/item3"
        android:id="@+id/item3"/>
</menu>

```

c] strings.xml:

```

<resources>
    <string name="app_name">MenuOptions</string>
    <string name="item1">Item 1</string>
    <string name="item3">Item 2</string>
    <string name="item2">Item 3</string>
</resources>

```

d] themes.xml:

```

<resources xmlns:tools="http://schemas.android.com/tools">
    <!-- Base application theme. -->
    <style name="Base.Theme.MenuOptions"
parent="Theme.AppCompat.DayNight.DarkActionBar">
        <!-- Customize your light theme here. -->
        <!-- <item name="colorPrimary">@color/my_light_primary</item> -->

```



```
</style>
```

```
<style name="Theme.MenuOptions" parent="Base.Theme.MenuOptions" />  
</resources>
```

e] themes.xml:

```
<resources xmlns:tools="http://schemas.android.com/tools">  
    <!-- Base application theme. -->  
    <style name="Base.Theme.MenuOptions"  
parent="Theme.AppCompat.DayNight.DarkActionBar">  
        <!-- Customize your dark theme here. -->  
        <!-- <item name="colorPrimary">@color/my_dark_primary</item> -->  
    </style>  
</resources>
```

B] O/P:

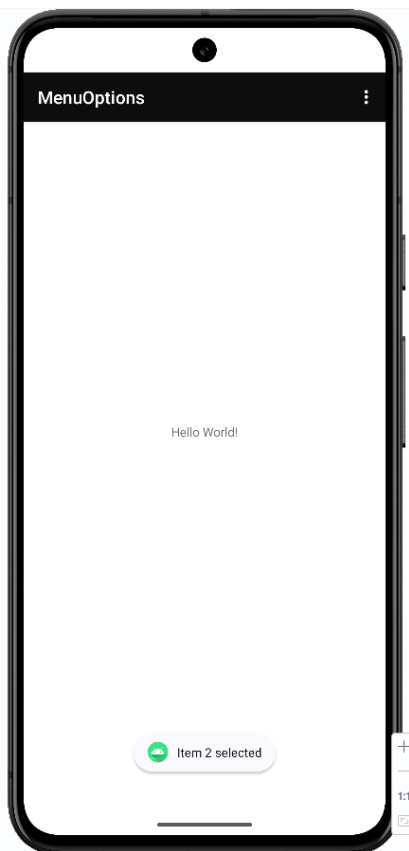
a] Homepage:



b] After clicking Menu button:



c] After clicking one of the menu buttons:



2.Context Menu:

2.A] Code:

a] MainActivity.java:

```
package com.example.contextmenu;

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.AdapterView.OnItemClickListener;
import android.widget.ArrayAdapter;
import android.widget.ListView;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
/** @noinspection RedundantCast, CStyleArrayDeclaration */
public class MainActivity extends AppCompatActivity {
    ListView listView;
    String contacts[]={"Abhishek","Ashish","Piyush","Shraddha","Chaitali"};
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        listView=(ListView)findViewById(R.id.listView);
        ArrayAdapter<String> adapter= new ArrayAdapter<>(this,
        android.R.layout.simple_list_item_1, contacts);
        listView.setAdapter(adapter);
        registerForContextMenu(listView);
    }
    @Override
    public void onCreateContextMenu(ContextMenu menu, View v,
    ContextMenu.ContextMenuInfo menuInfo) {
        super.onCreateContextMenu(menu, v, menuInfo);
        MenuInflater inflater = getMenuInflater();
        inflater.inflate(R.menu.mainmenu, menu);
        menu.setHeaderTitle("Select The Action");
    }
    @Override
    public boolean onContextItemSelected(MenuItem item){
        if(item.getItemId()==R.id.call) {
            Toast.makeText(getApplicationContext(), "calling code",
            Toast.LENGTH_LONG).show();
        }
        else if(item.getItemId()==R.id.sms){
            Toast.makeText(getApplicationContext(),"sending sms
            code",Toast.LENGTH_LONG).show();
        }else{
```

```

        return false;
    }
    return true;
}
}

```

b) activity_main.xml:

```

<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity"
    tools:ignore="VisualLintBounds">
    <ListView
        android:id="@+id/listView"
        android:layout_width="334dp"
        android:layout_height="441dp"
        android:layout_marginStart="8dp"
        android:layout_marginTop="132dp"
        android:layout_marginEnd="8dp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.295"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>

```

c) mainmenu.xml:

```

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

```

d) strings.xml:

```

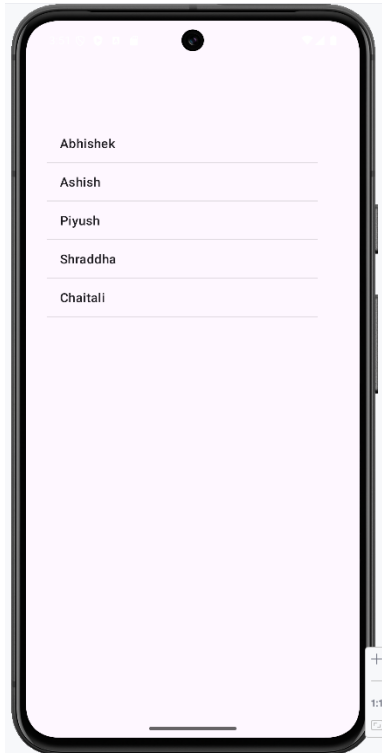
<resources>
    <string name="app_name">ContextMenu</string>
    <string name="call">Call</string>

```

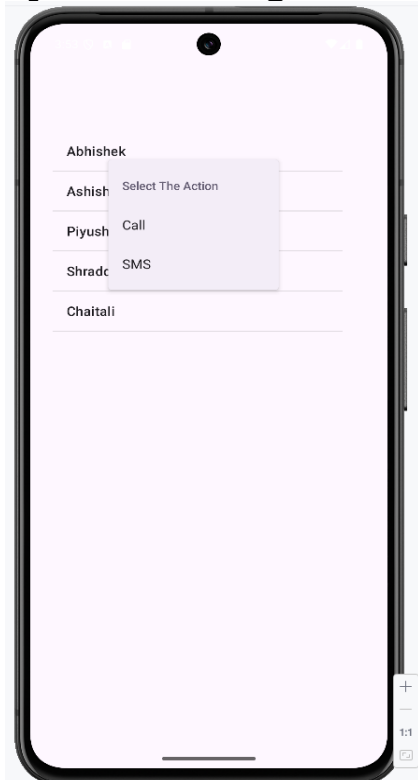
```
<string name="sms">SMS</string>
</resources>
```

B] O/P:

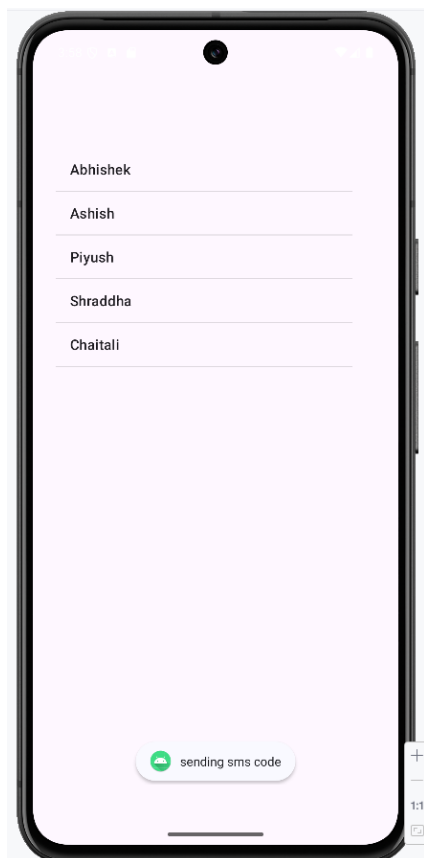
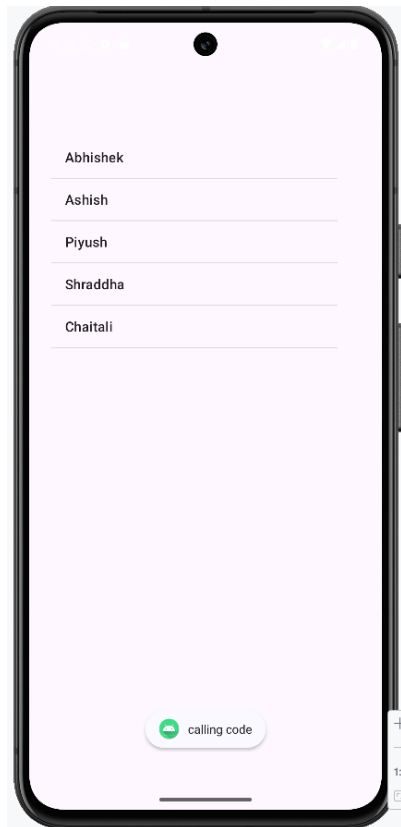
a] Homepage:



b] After clicking Context-Menu button:



c] After clicking one of the menu buttons:



3.Popup Menu:

3.A] Code:

a] MainActivity.java:

```
package com.example.popup_menu;

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 androidx.appcompat.app.AppCompatActivity;
/** @noinspection Convert2Lambda */
public class MainActivity extends AppCompatActivity {
    Button button;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        button = findViewById(R.id.button); // Casting is not needed
        button.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View view) {
                PopupMenu popupMenu = new PopupMenu(MainActivity.this, button);
                popupMenu.getMenuInflater().inflate(R.menu.popup_menu,
                popupMenu.getMenu());
                popupMenu.setOnMenuItemClickListener(new
                PopupMenu.OnMenuItemClickListener() {
                    @Override
                    public boolean onMenuItemClick(MenuItem menuItem) {
                        Toast.makeText(MainActivity.this, "You Clicked " + menuItem.getTitle(),
                        Toast.LENGTH_SHORT).show();
                        return true;
                    }
                });
                popupMenu.show();
            }
        });
    }
}
```

b] activity_main.xml:

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

```
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:gravity="center"
    android:orientation="vertical">
    <Button
        android:id="@+id/button"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="@string/show_popup_menu" />
</LinearLayout>
```

c] popup_menu.xml:

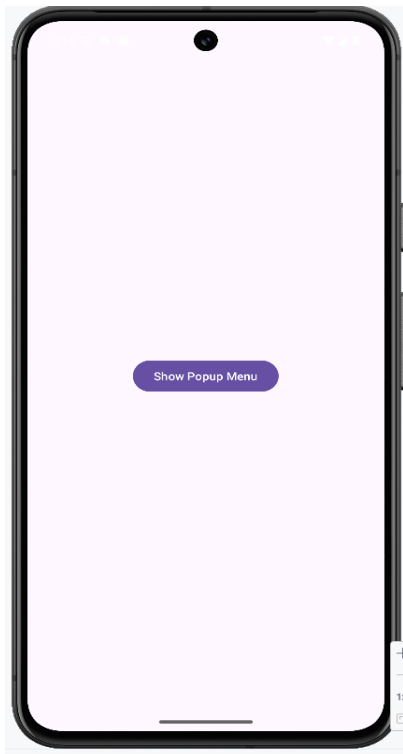
```
<?xml version="1.0" encoding="utf-8"?>
<menu xmlns:android="http://schemas.android.com/apk/res/android">
    <item android:id="@+id/one" android:title="@string/one" />
    <item android:id="@+id/two" android:title="@string/two" />
    <item android:id="@+id/three" android:title="@string/three" />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

d] strings.xml:

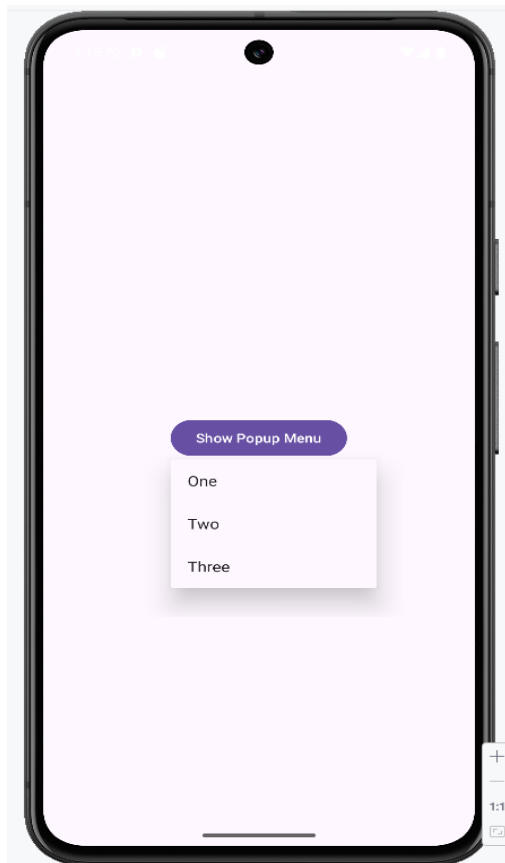
```
<resources>
    <string name="app_name">POPUP_MENU</string>
    <string name="show_popup_menu">Show Popup Menu</string>
    <string name="one">One</string>
    <string name="two">Two</string>
    <string name="three">Three</string>
</resources>
```


B] O/P:

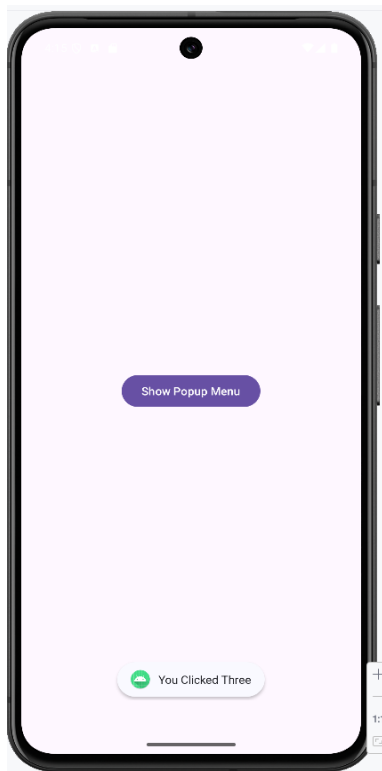
a] Homepage:



b] After clicking Popup-Menu button:



c] After clicking one of the menu buttons:



11. Create application to demonstrate progress bar.

A] Code:

a] MainActivity.java:

```
package com.example.progress_bar;

import android.os.Bundle;
import android.app.ProgressDialog;
import android.os.Handler;
import android.view.View;
import android.widget.Button;
import androidx.appcompat.app.AppCompatActivity;
/** @noinspection ALL */
public class MainActivity extends AppCompatActivity {
    Button btnStartProgress;
    ProgressDialog progressBar;
    private int progressBarStatus = 0;
    private Handler progressBarHandler = new Handler();
    private long fileSize = 0;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        addListenerOnButtonClick();
    }
    public void addListenerOnButtonClick() {
        btnStartProgress = findViewById(R.id.button1);
        btnStartProgress.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                progressBar = new ProgressDialog(MainActivity.this);
                progressBar.setCancelable(true);
                progressBar.setMessage("File downloading.....");
                progressBar.setProgressStyle(ProgressDialog.STYLE_HORIZONTAL);
                progressBar.setProgress(0);
                progressBar.setMax(100);
                progressBar.show();
                progressBarStatus = 0;
                fileSize = 0;

                new Thread(new Runnable() {
                    @Override
                    public void run() {
                        while (progressBarStatus < 100) {
                            progressBarStatus = doOperation();
                            try {
```

```

        Thread.sleep(1000);
    } catch (InterruptedException e) {
        e.printStackTrace();
    }
    progressBarHandler.post(new Runnable() {
        @Override
        public void run() {
            progressBar.setProgress(progressBarStatus);
        }
    });
}
if (progressBarStatus >= 100) {
    try {
        Thread.sleep(1000);
    } catch (InterruptedException e) {
        e.printStackTrace();
    }
    progressBar.dismiss();
}
}
}).start();
}
});
}

public int doOperation() {
    if (fileSize < 10000) {
        fileSize += 1000; // Increment by 1000 for a smoother progress
        return (int) ((fileSize / 10000.0) * 100); // Return percentage
    }
    return 100; // Once fileSize reaches 10000, return 100%
}
}

```

b] activity_main.xml:

```

<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:id="@+id/main"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity">
    <Button
        android:id="@+id/button1"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"

```

```
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true"
        android:layout_marginTop="116dp"
        android:text="@string/download_file"/>
</RelativeLayout>
```

c] strings.xml:

```
<resources>
    <string name="app_name">Progress_Bar</string>
    <string name="download_file">Download File</string>
</resources>
```

B] O/P:

a] Homepage:



b] After clicking the download button:

