

BCA 606 Lab on Android Application Development

W.E.F. 2024-25

Assignments

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.
2. Create “Hello World” application. That will display “Hello World” in the middle of the screen using TextView Widget in the red color.
3. Create Registration page to demonstration of Basic widgets available in android.
4. Create sample application with login module.(Check username and password) On successful login, Change TextView “Login Successful”. And on failing login, alert user using Toast “Login fail”.
5. Create an application for demonstration of Scroll view in android.
6. Create login application where you will have to validate username and passwords till the username and password is not validated, login button should remain disabled.
7. Create an application for calculator.
8. Demonstrate use of scroll view.
9. Demonstrate use of intent in android.
10. Create application to demonstrate menu option.
11. Create application to demonstrate progress bar..

Practical No – 1

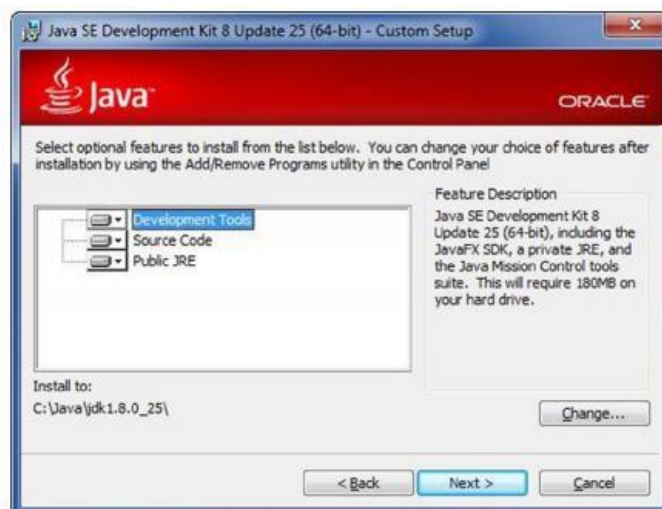
Installation and setup of java development kit (JDK), setup android SDK, setup eclipse IDE, setup android development tools (ADT) plugins, create android virtual device.

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 are follows*



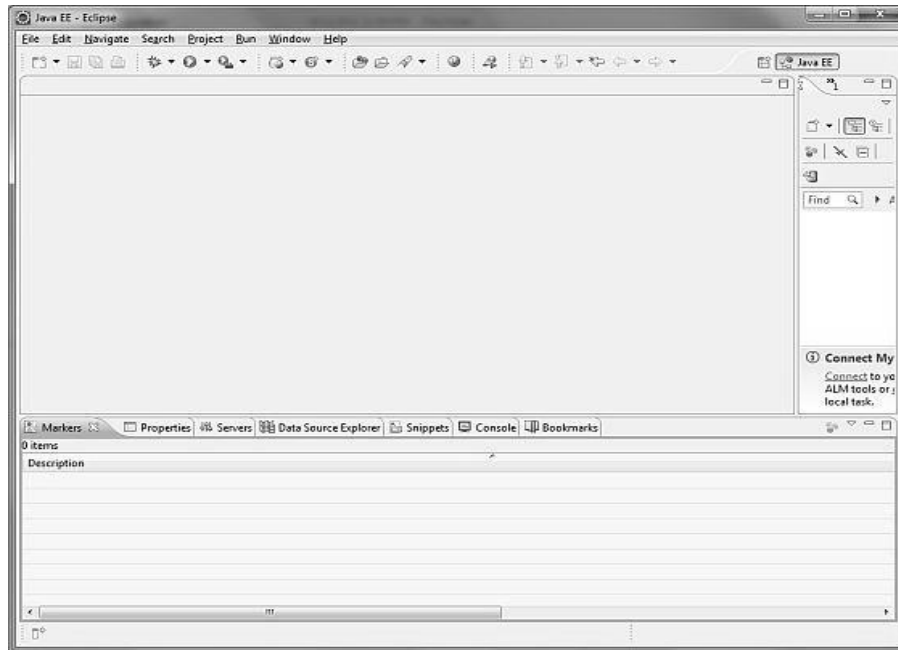
- *Select the JDK installation directory and click next to setup*



- 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

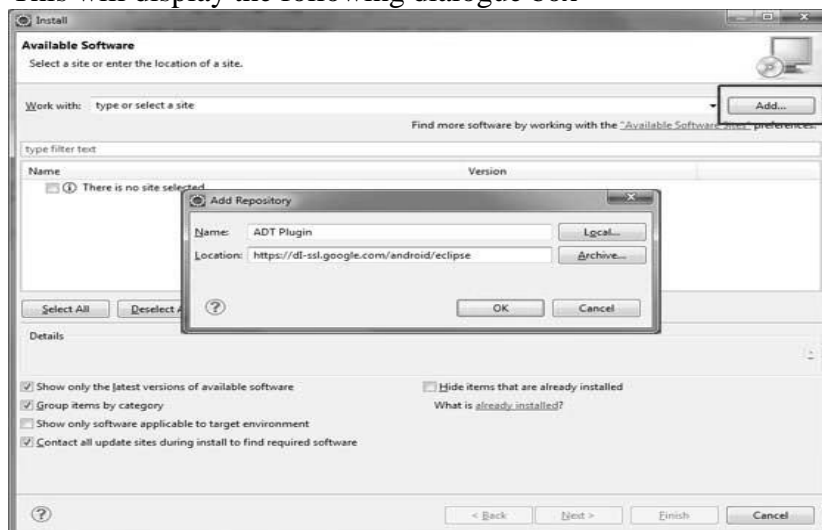
- To install Eclipse IDE, download the latest Eclipse binaries from <http://www.eclipse.org/downloads/>.
- Once you have downloaded the installation, unpack the binary distribution into a convenient location. For example in C:\eclipse on windows, and finally set PATH variable appropriately.
- Eclipse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



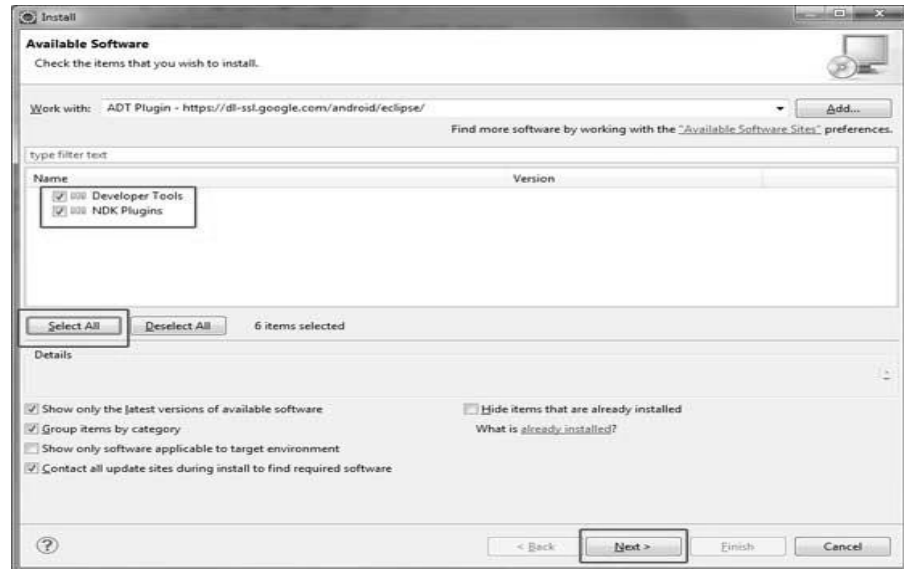
Setup android development tools (ADT) Plugin

- 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



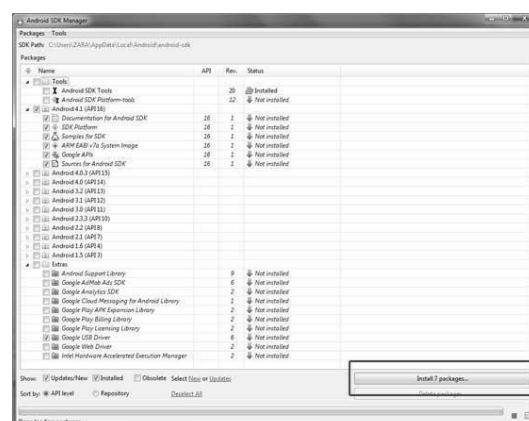
- Now use Add button to add ADT Plugin as name and <https://dl-ssl.google.com/android/eclipse/> as the location. Then click OK to add this location. As soon as you will click OK button to add this location, Eclipse starts searching for the plug-in available in the given location and finally lists down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



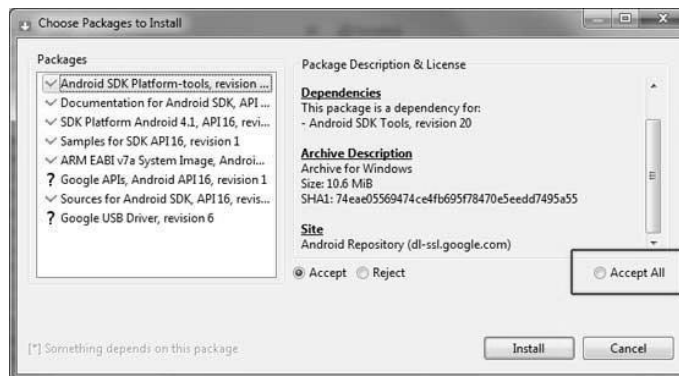
- Now select all the listed plug-ins using Select All button and click Next button which will guide you ahead to install Android Development Tools and other required plugins.

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_rXX-windows.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:



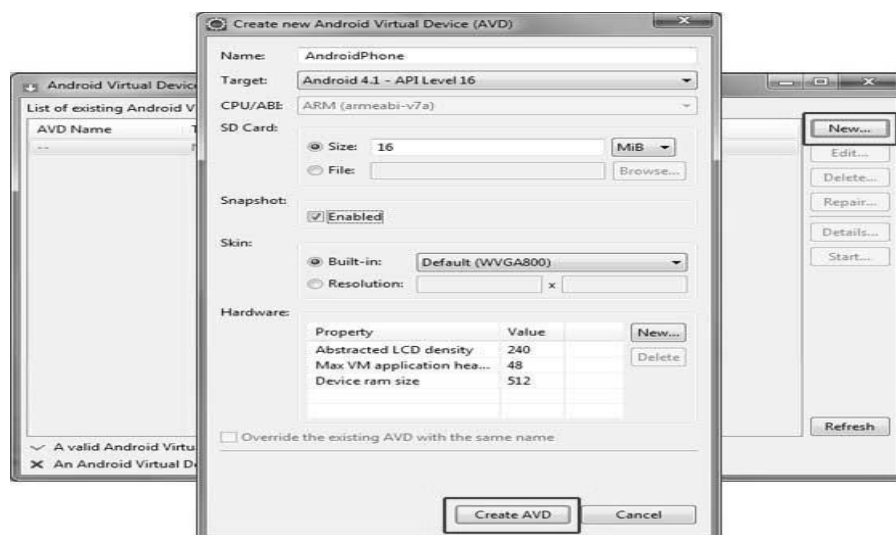
- Once you launched SDK manager, it is time to install other required packages. By default it will list down total 7 packages to be installed.
- Next click the Install 7 Packages button to proceed, which will display following dialogue box:



- 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.

Practical No – 2

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

activity_main.xml :

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

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Hello World!"
        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>
```

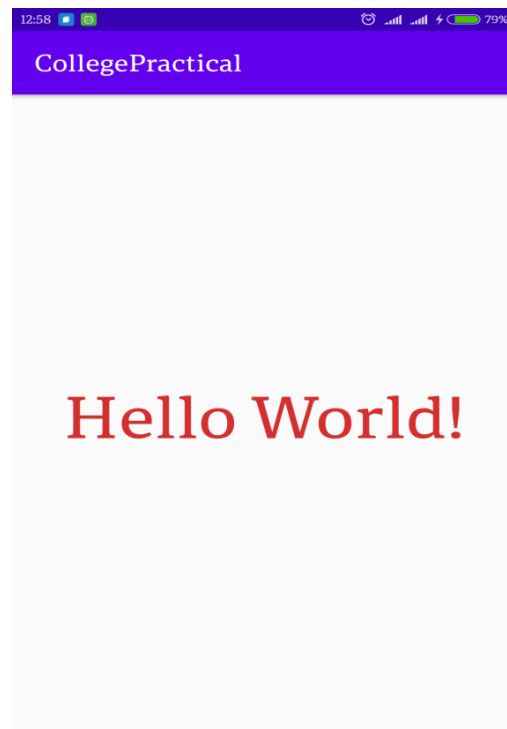
MainActivity :

```
package com.example.collegepractical;
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);  
    }  
}
```

Output:



Practical No – 3

Create Registration page to demonstration of Basic widgets available in android.

activity_main.xml :

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

<androidx.coordinatorlayout.widget.CoordinatorLayoutandroid:layout_width="match
_parent"
android:layout_height="match_parent"
android:orientation="vertical"
xmlns:android="http://schemas.android.com/apk/res/android">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:orientation="vertical"
        android:padding="10dp"
        android:layout_gravity="center">

        <TextView
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:text=" Registration "
            android:textSize="40sp"
            android:textColor="#e65100"
            android:gravity="center"
            android:layout_marginTop="20dp"
            android:fontFamily="serif"/>

        <LinearLayout
            android:layout_width="match_parent"
            android:layout_height="wrap_content"
            android:orientation="vertical"
            android:padding="2dp"
            android:layout_gravity="center"
            android:textColorHint="#000">
```



```
<com.google.android.material.textfield.TextInputLayout
android:layout_width="match_parent"
android:layout_height="wrap_content">
```

```
<com.google.android.material.textfield.TextInputEditText
android:layout_width="match_parent"
android:layout_height="wrap_content"
android:padding="10dp"
```

```
android:hint="Name"
android:id="@+id/nm"
android:layout_marginLeft="20dp"
android:layout_marginRight="20dp"
android:layout_marginTop="2dp"/>
```

```
</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:layout_width="match_parent"
android:layout_height="wrap_content"
android:padding="10dp"
android:hint="Mobile"
android:id="@+id/mob"
android:layout_marginLeft="20dp"
android:layout_marginRight="20dp"/>
```

```
</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:layout_width="match_parent"
android:layout_height="wrap_content"
android:padding="10dp"
android:hint="Email"
android:id="@+id/email"
android:layout_marginLeft="20dp"
android:layout_marginRight="20dp"/>
```

```
</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:layout_width="match_parent"
android:layout_height="wrap_content"
android:padding="10dp"
android:hint="Password"
android:inputType="textPassword"
android:id="@+id/pass"
android:layout_marginLeft="20dp"
android:layout_marginRight="20dp"/>
```

```
</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:layout_width="match_parent"
android:layout_height="wrap_content"
android:padding="10dp"
```

```
android:hint="Roll No: "  
android:id="@+id/rollNo"  
android:layout_marginLeft="20dp"  
android:layout_marginRight="20dp"  
android:layout_marginTop="2dp"/>
```

```
</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:layout_width="match_parent"  
android:layout_height="wrap_content"  
android:padding="10dp"  
android:hint="Age "  
android:id="@+id/age"  
android:layout_marginLeft="20dp"  
android:layout_marginRight="20dp"  
android:layout_marginTop="2dp"/>
```

```
</com.google.android.material.textfield.TextInputLayout>
```

```
<RadioGroup  
android:layout_width="match_parent"  
android:layout_height="wrap_content"  
android:id="@+id/rd_gen"  
android:padding="5dp"  
android:layout_marginLeft="10dp"  
android:layout_marginRight="10dp"  
android:layout_marginTop="10dp"  
android:orientation="horizontal">
```

```
<RadioButton
```

```
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:id="@+id/radio_male"
android:text="Male"
android:layout_marginLeft="50dp"
android:textSize="20sp"
android:gravity="center"/>
```

```
<RadioButton
android:id="@+id/radio_female"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_marginLeft="20dp"
android:text="Female"
android:textSize="20sp" />
```

```
</RadioGroup>
```

```
</LinearLayout>
```

```
<Button
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_gravity="center"
android:id="@+id/btnsub"
android:text=" Submit "
android:textColor="#fff"
android:textSize="20sp"
android:backgroundTint="#e65100"
android:layout_marginBottom="30dp"
android:layout_marginTop="5dp"
android:padding="20dp"/>
```

```
</LinearLayout>
```

```
</androidx.coordinatorlayout.widget.CoordinatorLayout>
```

MainActivity :

```
package com.example.techyuwa.Activities;

import android.os.Bundle;
import androidx.annotation.Nullable;
import androidx.appcompat.app.AppCompatActivity;

import com.example.techyuwa.R;

public class REG_Act extends AppCompatActivity {

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

Output:

The screenshot shows a mobile application interface with a blue header bar labeled "TechUva". Below the header, the title "Registration" is displayed in a large, bold, black font. The form consists of several input fields with labels above them: "Name" (filled with "Manas Dhanraj Patil"), "Mobile" (filled with "8484848484"), "Email" (filled with "manaspatil11@gmail.com"), "Password" (filled with "*****"), and "Roll No:" (filled with "21"). Below the "Roll No:" field, there is a label "Age" in red, followed by a field containing "18". At the bottom of the form, there are two radio buttons: "Male" (selected) and "Female". A prominent red button labeled "SUBMIT" is located at the very bottom of the form area.

Practical No – 4

Create sample application with login module.(Check username and password) On successful login, Change TextView “Login Successful”. And on failing login, alert user using Toast “Login fail”.

activity_main.xml :

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayoutxmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:gravity="center">

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="399dp"
        android:layout_gravity="center"
        android:layout_margin="20dp"
        android:gravity="center"
        android:orientation="vertical">

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

            <TextView
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:layout_gravity="center"
                android:padding="15dp"
                android:text=" Log In "
                android:textColor="#000"
                android:textSize="40sp"
                android:textStyle="bold"
                android:fontFamily="serif"/>
            </LinearLayout>

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

                <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/Unm"
```

```

        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:layout_margin="10dp"
        android:backgroundTint="#b2ebf2"
        android:hint="User Name/Mob"
        android:padding="10dp" />

</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_margin="10dp"
        android:backgroundTint="#b2ebf2"
        android:hint="Password"
        android:inputType="textPassword"
        android:padding="10dp">

    </com.google.android.material.textfield.TextInputEditText>

</com.google.android.material.textfield.TextInputLayout>
</LinearLayout>

<LinearLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:layout_gravity="center|bottom"
    android:layout_marginTop="40dp"
    android:orientation="horizontal"
    android:padding="10dp">

    <Button
        android:id="@+id/login"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:layout_gravity="center"
        android:layout_marginLeft="60dp"
        android:layout_marginRight="60dp"
        android:layout_weight="1"
        android:backgroundTint="#e91e63"
        android:padding="15dp"
        android:text="Submit"
        android:fontFamily="serif"
        android:textStyle="bold"
        android:textColor="#fff"
        android:textSize="25sp" />

</LinearLayout>

```

```

<TextView
    android:layout_width="wrap_content"
    android:layout_height="match_parent"
    android:id="@+id/txt"
    android:textColor="#000"/>
</LinearLayout>

</LinearLayout>

```

MainActivity :

```

package com.example.techyuwa.Activities;
import android.graphics.Color;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
import android.widget.Toast;
import androidx.annotation.Nullable;
import androidx.appcompat.app.AppCompatActivity;
import com.example.techyuwa.R;
import com.google.android.material.textfield.TextInputEditText;

public class Login_Activity extends AppCompatActivity {
    TextInputEditText Unm, Pass;
    Button Login;
    TextView txt;

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

        Unm=findViewById(R.id.Unm);
        Pass=findViewById(R.id.Pass);
        Login=findViewById(R.id.login);
        txt=findViewById(R.id.txt);

        Login.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v)
            {
                String nm = Unm.getText().toString();
                String pass = Pass.getText().toString();
                if (nm.equals("Manas Patil") && pass.equals("manas1234"))
                {
                    txt.setText("Login Successfully..");
                    txt.setTextColor(Color.parseColor("#e91e63"));
                }
                else
                {
                    Toast.makeText(Login_Activity.this, "Login Failed",
                        Toast.LENGTH_SHORT).show();
                }
            }
        });
    }
}

```



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

Output:

A mobile app interface with a blue header labeled "App". The main content area is light gray and contains the text "Log In" in a large, bold, black serif font. Below this, there are two input fields. The first is labeled "User Name/Mob" in a small gray font, and the second is labeled "Password" in a small red font. Both fields contain the text "Manas Patil". Below the input fields is a red rectangular button with the word "SUBMIT" in white, bold, uppercase letters. Below the button, the text "Login Successfully.." is displayed in a small red font.

A mobile app interface with a blue header labeled "App". The main content area is light gray and contains the text "Log In" in a large, bold, black serif font. Below this, there are two input fields. The first is labeled "User Name/Mob" in a small gray font, and the second is labeled "Password" in a small red font. Both fields contain the text "Manas Patil". Below the input fields is a red rectangular button with the word "SUBMIT" in white, bold, uppercase letters. Below the button, the text "Login Failed" is displayed in a small black font inside a white rectangular box with a gray border.

Practical No – 5

Create an application for demonstration of Scroll view in android.

activity_main.xml

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

            <Button
                android:background="#4CAF50"
                android:text="Hello World 1"
                android:layout_width="match_parent"
                android:layout_height="200dp"/>

            <ImageView
                android:background="#2196F3"
                android:layout_width="match_parent"
                android:layout_height="200dp"/>

            <TextView
                android:background="#FF0D59"
                android:layout_width="match_parent"
                android:layout_height="200dp"/>

            <Button
                android:background="#24d"
                android:layout_width="match_parent"
```

```
android:layout_height="200dp"/>
```

```
<Button
```

```
    android:background="#673AB7"
```

```
    android:text="Hello World 2"
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="200dp"/>
```

```
<ImageView
```

```
    android:background="#9C27B0"
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="200dp"/>
```

```
<TextView
```

```
    android:background="#E91E63"
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="200dp"/>
```

```
<Button
```

```
    android:background="#F44336"
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="200dp"/>
```

```
<Button
```

```
    android:background="#03A9F4"
```

```
    android:text="Hello World 3"
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="200dp"/>
```

```
<ImageView
```

```
    android:background="#FF5722"
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="200dp"/>
```

```
<TextView
```

```
    android:background="#FF9800"
```

```
    android:layout_width="match_parent"
```

```
android:layout_height="200dp"/>
```

```
<Button
```

```
    android:background="#8BC34A"
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="200dp"/>
```

```
<Button
```

```
    android:background="#FFEB3B"
```

```
    android:text="Hello World 4"
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="200dp"/>
```

```
<ImageView
```

```
    android:background="#009688"
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="200dp"/>
```

```
<TextView
```

```
    android:background="#FFA000"
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="200dp"/>
```

```
<Button
```

```
    android:background="#981874"
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="200dp"/>
```

```
<Button
```

```
    android:background="#6A7C6B"
```

```
    android:text="Hello World 5"
```

```
    android:layout_width="match_parent"
```

```
    android:layout_height="200dp"/>
```

```
<ImageView
```

```
    android:background="#3F51B5"
```

```
    android:layout_width="match_parent"
```

```
        android:layout_height="200dp"/>

        <TextView
            android:background="#FF0000"
            android:layout_width="match_parent"
            android:layout_height="200dp"/>

        <Button
            android:background="#00FF1A"
            android:layout_width="match_parent"
            android:layout_height="200dp"/>
    </LinearLayout>
</ScrollView>
</RelativeLayout>
```

MainActivity.java

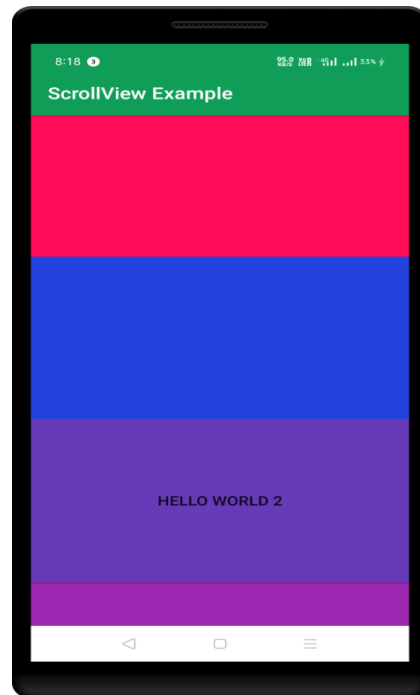
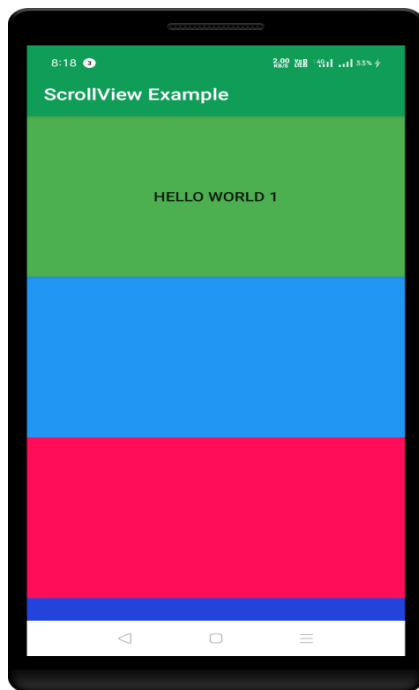
```
package com.studytonight.project;

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);
    }
}
```

Output:



Practical No – 6

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

enabled_disabled.xml:

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayoutxmlns:android="http://schemas.android.com/apk/res/android"
    android:orientation="vertical"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:padding="15dp"
    android:gravity="center_horizontal"
    android:layout_margin="20dp">

    <EditText
        android:id="@+id/edittxt_Username"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Username"
        android:textSize="20sp"
        android:inputType="text"/>

    <EditText
        android:id="@+id/edittxt_Password"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:textSize="20sp"
        android:hint="Password"
        android:inputType="textPassword"/>

    <Button
        android:id="@+id/button_Login"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="LOGIN"
        android:textSize="30sp"
        android:enabled="false"/>

</LinearLayout>
```

Enabled_Disabled_Activity.java:

```
packagecom.example.practical.Activities;
import android.os.Bundle;
import android.text.Editable;
import android.text.TextWatcher;
import android.widget.Button;
import android.widget.EditText;
import androidx.annotation.Nullable;
```

```

import androidx.appcompat.app.AppCompatActivity;
import com.example.practical.R;

public class Enabled_Disabled extends AppCompatActivity {
    private EditText editTextUN;
    private EditText editTextPass;
    private Button btnLog;

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

        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 TextWatcher loginTextWatcher=new TextWatcher() {

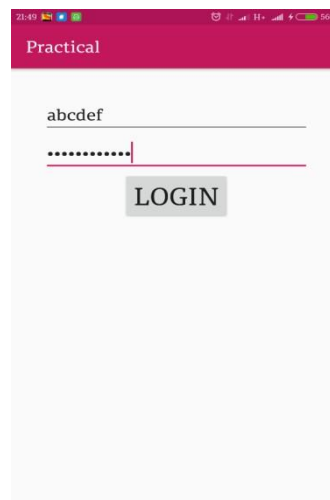
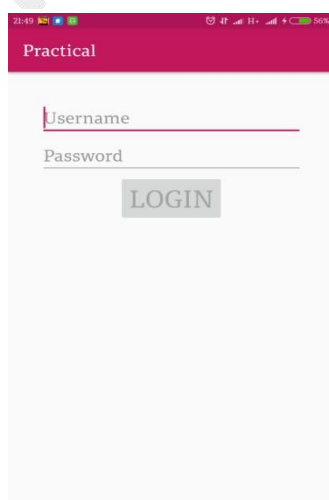
        @Override
        public void beforeTextChanged(CharSequence s, int start, int count, int after) {
        }

        @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) {
        }
    };
}

```

Output:



Practical No – 7

Create an application for calculator.

colors.xml

```
<color name="lavender">#8692f7</color>
```

themes.xml

```
<resources xmlns:tools="http://schemas.android.com/tools">
    <!-- Base application theme. -->
    <style name="Theme.Calculator"
parent="Theme.MaterialComponents.DayNight.DarkActionBar">
        <!-- Primary brand color. -->
        <item name="colorPrimary">@color/lavender</item>
        <item name="colorPrimaryVariant">@color/lavender</item>
        <item name="colorOnPrimary">@color/white</item>
        <!-- Secondary brand color. -->
        <item name="colorSecondary">@color/teal_200</item>
        <item name="colorSecondaryVariant">@color/teal_700</item>
        <item name="colorOnSecondary">@color/black</item>
        <!-- Status bar color. -->
        <item name="android:statusBarColor">?attr/colorPrimaryVariant</item>
        <!-- Customize your theme here. -->
    </style>
</resources>
```

buttons_layout.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"
    android:layout_width="match_parent"
    android:layout_height="wrap_content">

    <GridLayout
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:rowCount="5"
        android:columnCount="4">
```

```
<com.google.android.material.button.MaterialButton
    android:id="@+id/off"
    android:layout_width="wrap_content"
    android:layout_height="100dp"
    android:text="OFF"
    android:textColor="@color/white"
    android:backgroundTint="@color/lavender"
    android:textSize="25sp"
    android:layout_margin="3dp"
    android:layout_row="0"
    android:layout_column="0"
    android:layout_columnWeight="1"/>
```

```
<com.google.android.material.button.MaterialButton
    android:id="@+id/clear"
    android:layout_width="wrap_content"
    android:layout_height="100dp"
    android:text="C"
    android:textColor="@color/white"
    android:backgroundTint="@color/lavender"
    android:textSize="25sp"
    android:layout_margin="3dp"
    android:layout_row="0"
    android:layout_column="1"
    android:layout_columnWeight="1"/>
```

```
<com.google.android.material.button.MaterialButton
    android:id="@+id/percent"
    android:layout_width="wrap_content"
    android:layout_height="100dp"
    android:text="% "
    android:textColor="@color/white"
    android:backgroundTint="@color/lavender"
    android:textSize="25sp"
```

```
android:layout_margin="3dp"
android:layout_row="0"
android:layout_column="2"
android:layout_columnWeight="1"/>
```

```
<com.google.android.material.button.MaterialButton
    android:id="@+id/division"
    android:layout_width="wrap_content"
    android:layout_height="100dp"
    android:text="÷"
    android:textColor="@color/white"
    android:backgroundTint="@color/lavender"
    android:textSize="25sp"
    android:layout_margin="3dp"
    android:layout_row="0"
    android:layout_column="3"
    android:layout_columnWeight="1"/>
```

```
<com.google.android.material.button.MaterialButton
    android:id="@+id/btn7"
    android:layout_width="wrap_content"
    android:layout_height="100dp"
    android:layout_row="1"
    android:layout_column="0"
    android:layout_columnWeight="1"
    android:text="7"
    android:textSize="25sp"
    android:textColor="@color/lavender"
    android:backgroundTint="@color/white"
    app:strokeColor="@color/lavender"
    app:strokeWidth="3dp"/>
```

```
<com.google.android.material.button.MaterialButton
    android:id="@+id/btn8"
    android:layout_width="wrap_content"
```

```
android:layout_height="100dp"
android:layout_row="1"
android:layout_column="1"
android:layout_columnWeight="1"
android:text="8"
android:textSize="25sp"
android:textColor="@color/lavender"
android:backgroundTint="@color/white"
app:strokeColor="@color/lavender"
app:strokeWidth="3dp"/>
```

```
<com.google.android.material.button.MaterialButton
```

```
    android:id="@+id/btn9"
    android:layout_width="wrap_content"
    android:layout_height="100dp"
    android:layout_row="1"
    android:layout_column="2"
    android:layout_columnWeight="1"
    android:text="9"
    android:textSize="25sp"
    android:textColor="@color/lavender"
    android:backgroundTint="@color/white"
    app:strokeColor="@color/lavender"
    app:strokeWidth="3dp"/>
```

```
<com.google.android.material.button.MaterialButton
```

```
    android:id="@+id/multiply"
    android:layout_width="wrap_content"
    android:layout_height="100dp"
    android:text="x"
    android:textColor="@color/white"
    android:backgroundTint="@color/lavender"
    android:textSize="25sp"
    android:layout_marginLeft="3dp"
    android:layout_row="1"
```

```
android:layout_column="3"  
android:layout_columnWeight="1"/>
```

```
<com.google.android.material.button.MaterialButton  
    android:id="@+id/btn4"  
    android:layout_width="wrap_content"  
    android:layout_height="100dp"  
    android:layout_row="2"  
    android:layout_column="0"  
    android:layout_columnWeight="1"  
    android:text="4"  
    android:textSize="25sp"  
    android:textColor="@color/lavender"  
    android:backgroundTint="@color/white"  
    app:strokeColor="@color/lavender"  
    app:strokeWidth="3dp"/>
```

```
<com.google.android.material.button.MaterialButton  
    android:id="@+id/btn5"  
    android:layout_width="wrap_content"  
    android:layout_height="100dp"  
    android:layout_row="2"  
    android:layout_column="1"  
    android:layout_columnWeight="1"  
    android:text="5"  
    android:textSize="25sp"  
    android:textColor="@color/lavender"  
    android:backgroundTint="@color/white"  
    app:strokeColor="@color/lavender"  
    app:strokeWidth="3dp"/>
```

```
<com.google.android.material.button.MaterialButton  
    android:id="@+id/btn6"  
    android:layout_width="wrap_content"  
    android:layout_height="100dp"
```

```
android:layout_row="2"
android:layout_column="2"
android:layout_columnWeight="1"
android:text="6"
android:textSize="25sp"
android:textColor="@color/lavender"
android:backgroundTint="@color/white"
app:strokeColor="@color/lavender"
app:strokeWidth="3dp"/>
```

```
<com.google.android.material.button.MaterialButton
    android:id="@+id/subtract"
    android:layout_width="wrap_content"
    android:layout_height="100dp"
    android:text="-"
    android:textColor="@color/white"
    android:backgroundTint="@color/lavender"
    android:textSize="25sp"
    android:layout_marginLeft="3dp"
    android:layout_row="2"
    android:layout_column="3"
    android:layout_columnWeight="1"/>
```

```
<com.google.android.material.button.MaterialButton
    android:id="@+id/btn1"
    android:layout_width="wrap_content"
    android:layout_height="100dp"
    android:layout_row="3"
    android:layout_column="0"
    android:layout_columnWeight="1"
    android:text="1"
    android:textSize="25sp"
    android:textColor="@color/lavender"
    android:backgroundTint="@color/white"
    app:strokeColor="@color/lavender"
```

```
app:strokeWidth="3dp"/>
```

```
<com.google.android.material.button.MaterialButton  
    android:id="@+id/btn2"  
    android:layout_width="wrap_content"  
    android:layout_height="100dp"  
    android:layout_row="3"  
    android:layout_column="1"  
    android:layout_columnWeight="1"  
    android:text="2"  
    android:textSize="25sp"  
    android:textColor="@color/lavender"  
    android:backgroundTint="@color/white"  
    app:strokeColor="@color/lavender"  
    app:strokeWidth="3dp"/>
```

```
<com.google.android.material.button.MaterialButton  
    android:id="@+id/btn3"  
    android:layout_width="wrap_content"  
    android:layout_height="100dp"  
    android:layout_row="3"  
    android:layout_column="2"  
    android:layout_columnWeight="1"  
    android:text="3"  
    android:textSize="25sp"  
    android:textColor="@color/lavender"  
    android:backgroundTint="@color/white"  
    app:strokeColor="@color/lavender"  
    app:strokeWidth="3dp"/>
```

```
<com.google.android.material.button.MaterialButton  
    android:id="@+id/add"  
    android:layout_width="wrap_content"  
    android:layout_height="100dp"  
    android:text="+"
```

```
android:textColor="@color/white"
android:backgroundTint="@color/lavender"
android:textSize="25sp"
android:layout_marginLeft="3dp"
android:layout_row="3"
android:layout_column="3"
android:layout_columnWeight="1"/>
```

```
<com.google.android.material.button.MaterialButton
    android:id="@+id/btn0"
    android:layout_width="wrap_content"
    android:layout_height="100dp"
    android:layout_row="4"
    android:layout_column="0"
    android:layout_columnWeight="1"
    android:text="0"
    android:textSize="25sp"
    android:textColor="@color/lavender"
    android:backgroundTint="@color/white"
    app:strokeColor="@color/lavender"
    app:strokeWidth="3dp"/>
```

```
<com.google.android.material.button.MaterialButton
    android:id="@+id/btnPoint"
    android:layout_width="wrap_content"
    android:layout_height="100dp"
    android:layout_row="4"
    android:layout_column="1"
    android:layout_columnWeight="1"
    android:text="."
    android:textSize="25sp"
    android:textColor="@color/lavender"
    android:backgroundTint="@color/white"
    app:strokeColor="@color/lavender"
    app:strokeWidth="3dp"/>
```



```
<com.google.android.material.button.MaterialButton
    android:id="@+id/equal"
    android:layout_width="wrap_content"
    android:layout_height="100dp"
    android:text=""
    android:textColor="@color/white"
    android:backgroundTint="@color/lavender"
    android:textSize="25sp"
    android:layout_marginLeft="3dp"
    android:layout_row="4"
    android:layout_column="2"
    android:layout_columnSpan="2"
    android:layout_columnWeight="1"/>
```

```
</GridLayout>
```

```
</RelativeLayout>
```

activity_main.xml

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

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text=""
        android:textSize="40sp"
        android:textColor="@color/lavender"
```

```
        android:padding="10dp"
        android:layout_gravity="end"
        android:id="@+id/input"/>
```

```
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text=""
    android:textSize="60sp"
    android:textColor="@color/lavender"
    android:padding="10dp"
    android:layout_gravity="end"
    android:id="@+id/output"/>
```

```
<RelativeLayout
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:layout_marginLeft="8dp"
    android:layout_marginRight="8dp"
    android:background="@color/white"
    android:gravity="bottom">
```

```
<include
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    layout="@layout/buttons_layout"/>
```

```
</RelativeLayout>
```

```
</LinearLayout>
```

MainActivity.java

```
package com.example.calculator;

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

```

import com.google.android.material.button.MaterialButton;
import java.text.DecimalFormat;

public class MainActivity extends AppCompatActivity {

    private static final char ADDITION = '+';
    private static final char SUBTRACTION = '-';
    private static final char MULTIPLICATION = '*';
    private static final char DIVISION = '/';
    private static final char PERCENT = '%';

    private char currentSymbol;

    private double firstValue = Double.NaN;
    private double secondValue;
    private TextView inputDisplay, outputDisplay;
    private DecimalFormat decimalFormat;
    private MaterialButton button0, button1, button2, button3, button4, button5,
button6, button7, button8, button9,
    buttonDot, buttonAdd, buttonSub, buttonMultiply, buttonDivide, buttonPercent,
buttonClear, buttonOFF, buttonEqual;

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

        decimalFormat = new DecimalFormat("#.#####");

        inputDisplay = findViewById(R.id.input);
        outputDisplay = findViewById(R.id.output);

        button0 = findViewById(R.id.btn0);
        button1 = findViewById(R.id.btn1);
        button2 = findViewById(R.id.btn2);

```

```
button3 = findViewById(R.id.btn3);
button4 = findViewById(R.id.btn4);
button5 = findViewById(R.id.btn5);
button6 = findViewById(R.id.btn6);
button7 = findViewById(R.id.btn7);
button8 = findViewById(R.id.btn8);
button9 = findViewById(R.id.btn9);
```

```
buttonAdd = findViewById(R.id.add);
buttonSub = findViewById(R.id.subtract);
buttonDivide = findViewById(R.id.division);
buttonDot = findViewById(R.id.btnPoint);
buttonMultiply = findViewById(R.id.multiply);
buttonClear = findViewById(R.id.clear);
buttonOFF = findViewById(R.id.off);
buttonEqual = findViewById(R.id.equal);
buttonPercent = findViewById(R.id.percent);
```

```
button0.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        inputDisplay.setText(inputDisplay.getText() + "0");
    }
});
```

```
button1.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        inputDisplay.setText(inputDisplay.getText() + "1");
    }
});
```

```
button2.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
```

```
        inputDisplay.setText(inputDisplay.getText() + "2");
    }
});
```

```
button3.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        inputDisplay.setText(inputDisplay.getText() + "3");
    }
});
```

```
button4.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        inputDisplay.setText(inputDisplay.getText() + "4");
    }
});
```

```
button5.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        inputDisplay.setText(inputDisplay.getText() + "5");
    }
});
```

```
button6.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        inputDisplay.setText(inputDisplay.getText() + "6");
    }
});
```

```
button7.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
```

```
        inputDisplay.setText(inputDisplay.getText() + "7");
    }
});
```

```
button8.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        inputDisplay.setText(inputDisplay.getText() + "8");
    }
});
```

```
button9.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        inputDisplay.setText(inputDisplay.getText() + "9");
    }
});
```

```
buttonAdd.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        allCalculations();
        currentSymbol = ADDITION;
        outputDisplay.setText(decimalFormat.format(firstValue) + "+");
        inputDisplay.setText(null);
    }
});
```

```
buttonSub.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        allCalculations();
        currentSymbol = SUBTRACTION;
        outputDisplay.setText(decimalFormat.format(firstValue) + "-");
        inputDisplay.setText(null);
    }
});
```

```

    }
});

buttonMultiply.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        allCalculations();
        currentSymbol = MULTIPLICATION;
        outputDisplay.setText(decimalFormat.format(firstValue) + "x");
        inputDisplay.setText(null);
    }
});

buttonDivide.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        allCalculations();
        currentSymbol = DIVISION;
        outputDisplay.setText(decimalFormat.format(firstValue) + "/");
        inputDisplay.setText(null);
    }
});

buttonPercent.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        allCalculations();
        currentSymbol = PERCENT;
        outputDisplay.setText(decimalFormat.format(firstValue) + "%");
        inputDisplay.setText(null);
    }
});

buttonDot.setOnClickListener(new View.OnClickListener() {
    @Override

```

```

    public void onClick(View view) {
        inputDisplay.setText(inputDisplay.getText() + ".");
    }
});

```

```

buttonClear.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        if (inputDisplay.getText().length() > 0) {
            CharSequence currentText = inputDisplay.getText();
            inputDisplay.setText(currentText.subSequence(0, currentText.length() -
1));
        } else {
            firstValue = Double.NaN;
            secondValue = Double.NaN;
            inputDisplay.setText("");
            outputDisplay.setText("");
        }
    }
});

```

```

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

```

```

buttonEqual.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        allCalculations();
        outputDisplay.setText(decimalFormat.format(firstValue));
        firstValue = Double.NaN;
        currentSymbol = '0';
    }
});

```



```
    }  
    });  
}
```

```
private void allCalculations(){  
    if (!Double.isNaN(firstValue)) {  
        secondValue = Double.parseDouble(inputDisplay.getText().toString());  
        inputDisplay.setText(null);  
  
        if (currentSymbol == ADDITION)  
            firstValue = this.firstValue + secondValue;  
        else if (currentSymbol == SUBTRACTION)  
            firstValue = this.firstValue - secondValue;  
        else if (currentSymbol == MULTIPLICATION)  
            firstValue = this.firstValue * secondValue;  
        else if (currentSymbol == DIVISION)  
            firstValue = this.firstValue / secondValue;  
        else if (currentSymbol == PERCENT)  
            firstValue = this.firstValue % secondValue;  
    } else {  
        try {  
            firstValue = Double.parseDouble(inputDisplay.getText().toString());  
        } catch (Exception e) {  
  
        }  
    }  
}
```

Output:



Practical No – 8

Demonstrate use of scroll view. // Android ScrollView (Vertical)

activity_main.xml

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

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    android:paddingBottom="@dimen/activity_vertical_margin"
    android:paddingLeft="@dimen/activity_horizontal_margin"
    android:paddingRight="@dimen/activity_horizontal_margin"
    android:paddingTop="@dimen/activity_vertical_margin"
    tools:context="com.example.test.scrollviews.MainActivity">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textAppearance="?android:attr/textAppearanceMedium"
        android:text="Vertical ScrollView example"
        android:id="@+id/textView"
        android:layout_gravity="center_horizontal"
        android:layout_centerHorizontal="true"
        android:layout_alignParentTop="true" />

    <ScrollView android:layout_marginTop="30dp"
        android:layout_width="fill_parent"
        android:layout_height="wrap_content"
        android:id="@+id/scrollView">

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

            <Button
                android:layout_width="fill_parent"
```

```
        android:layout_height="wrap_content"
        android:text="Button 1" />
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:text="Button 2" />
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:text="Button 3" />
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:text="Button 4" />
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:text="Button 5" />
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:text="Button 6" />
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:text="Button 7" />
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:text="Button 8" />
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:text="Button 9" />
```

```
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:text="Button 10" />
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:text="Button 11" />
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:text="Button 12" />
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:text="Button 13" />
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:text="Button 14" />
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:text="Button 15" />
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:text="Button 16" />
<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:text="Button 17" />
<Button
    android:layout_width="fill_parent"
```

```
        android:layout_height="wrap_content"

        android:text="Button 18" />

<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:text="Button 19" />

<Button
    android:layout_width="fill_parent"
    android:layout_height="wrap_content"
    android:text="Button 20" />

</LinearLayout>

</ScrollView>

</RelativeLayout>
```

MainActivity.java

```
package com.example.test.scrollviews;

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

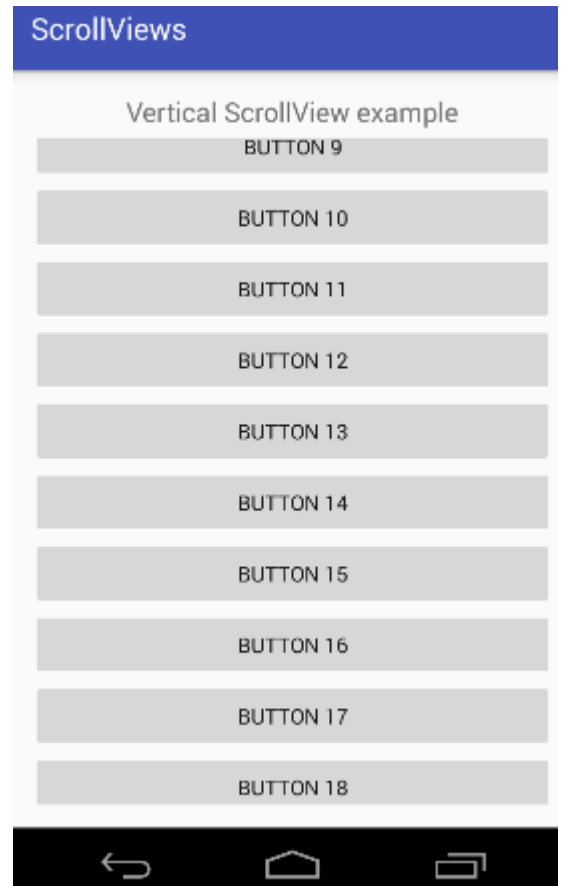
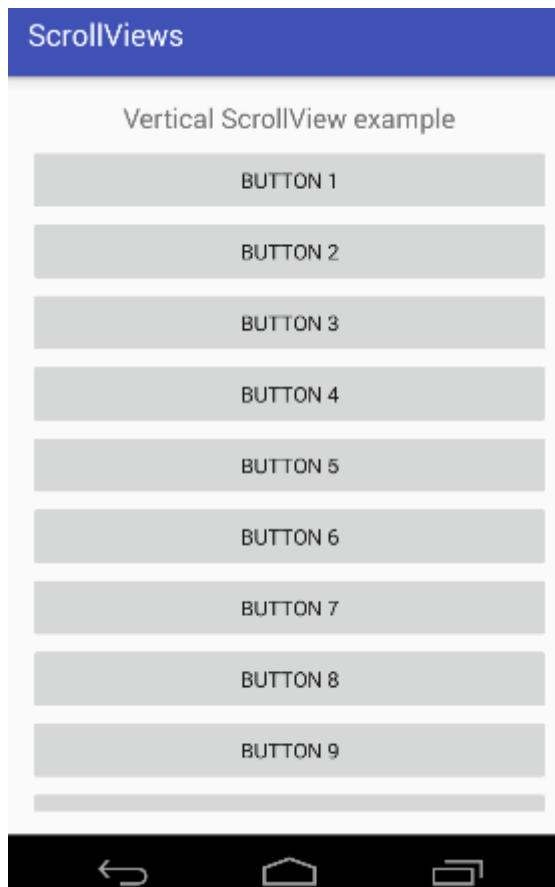
public class MainActivity extends AppCompatActivity {

    @Override

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

}
```

Output:



// Android HorizontalScrollView

activity_main.xml

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

<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout_width="fill_parent"
    android:layout_height="fill_parent">

    <TextView
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:textAppearance="?android:attr/textAppearanceSmall"
        android:text="Horizontal ScrollView Example"
        android:id="@+id/textView"
        android:layout_alignParentTop="true"
        android:layout_centerHorizontal="true" />

    <LinearLayout
        android:layout_width="match_parent"
        android:layout_height="match_parent"
        android:layout_marginTop="25dp">
        <HorizontalScrollView
            android:layout_width="match_parent"
            android:layout_height="60dp"
            android:id="@+id/horizontalScrollView">

            <LinearLayout
                android:layout_width="wrap_content"
                android:layout_height="wrap_content"
                android:orientation="horizontal">
                <Button
                    android:layout_width="wrap_content"
                    android:layout_height="wrap_content"
                    android:text="New Button1"
                    android:id="@+id/button1" />
                <Button
```



```
android:layout_width="wrap_content"
```

```
android:layout_height="wrap_content"
```

```
android:text="New Button2"
```

```
android:id="@+id/button2" />
```

```
<Button
```

```
    android:layout_width="wrap_content"
```

```
    android:layout_height="wrap_content"
```

```
    android:text="New Button3"
```

```
    android:id="@+id/button3" />
```

```
<Button
```

```
    android:layout_width="wrap_content"
```

```
    android:layout_height="wrap_content"
```

```
    android:text="New Button4"
```

```
    android:id="@+id/button4" />
```

```
<Button
```

```
    android:layout_width="wrap_content"
```

```
    android:layout_height="wrap_content"
```

```
    android:text="New Button5"
```

```
    android:id="@+id/button5" />
```

```
<Button
```

```
    android:layout_width="wrap_content"
```

```
    android:layout_height="wrap_content"
```

```
    android:text="New Button6"
```

```
    android:id="@+id/button6" />
```

```
<Button
```

```
    android:layout_width="wrap_content"
```

```
    android:layout_height="wrap_content"
```

```
    android:text="New Button7"
```

```
    android:id="@+id/button7" />
```

```
<Button
```

```
    android:layout_width="wrap_content"
```

```
    android:layout_height="wrap_content"
```

```
    android:text="New Button8"
```

```
    android:id="@+id/button8"/>
```

```

        </LinearLayout>
    </HorizontalScrollView>
</LinearLayout>
</RelativeLayout>

```

MainActivity.java

```

package com.example.test.horizontalscrollview;

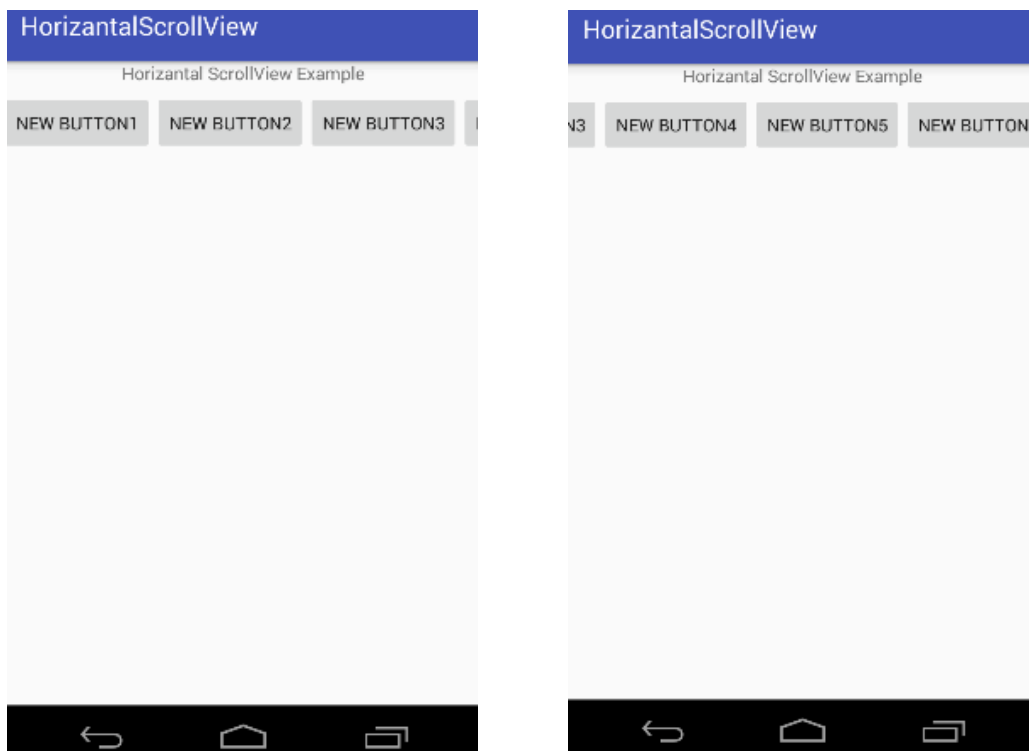
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;

public class MainActivity extends AppCompatActivity {

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

```

Output:



Practical No – 9

Demonstrate use of intent in android.

activity_main.xml file:

```
<?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/openEmail"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Open Email App"
    android:backgroundTint="#2962FF"
    app:layout_constraintBottom_toTopOf="@+id/openGallery"
    app:layout_constraintEnd_toEndOf="@+id/openGallery"
    app:layout_constraintStart_toStartOf="@+id/openGallery"
    app:layout_constraintTop_toTopOf="parent" />

<Button
    android:id="@+id/openGallery"
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Open Gallery App"
    android:backgroundTint="#D50000"
    app:layout_constraintBottom_toTopOf="@+id/openDialer"
    app:layout_constraintEnd_toEndOf="@+id/openDialer"
    app:layout_constraintStart_toStartOf="@+id/openDialer"
    app:layout_constraintTop_toBottomOf="@+id/openEmail" />

<Button
    android:id="@+id/openDialer"
```

```
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Open Phone Dialer"
    android:backgroundTint="#64DD17"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintEnd_toEndOf="parent"
    app:layout_constraintHorizontal_bias="0.5"
    app:layout_constraintStart_toStartOf="parent"
    app:layout_constraintTop_toBottomOf="@+id/openGallery" />
```

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

MainActivity.java file:

```
package com.karanthenoobie.opennativeapps;

import androidx.appcompat.app.AppCompatActivity;
import androidx.constraintlayout.widget.ConstraintLayout;
import android.content.Intent;
import android.graphics.Color;
import android.net.Uri;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

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);
```

```

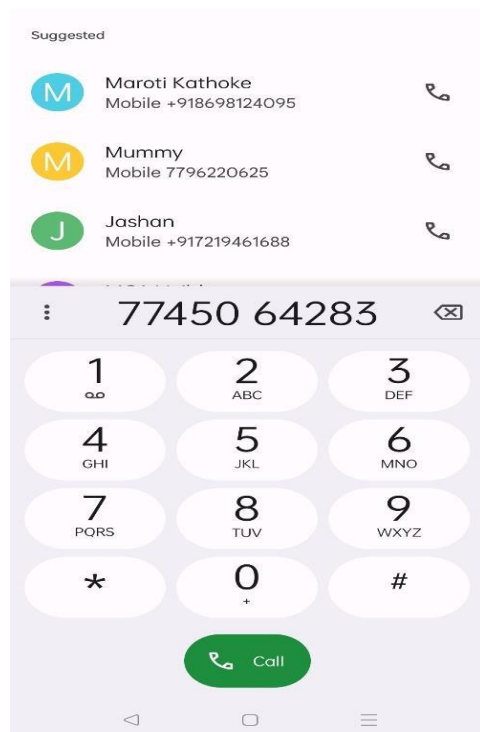
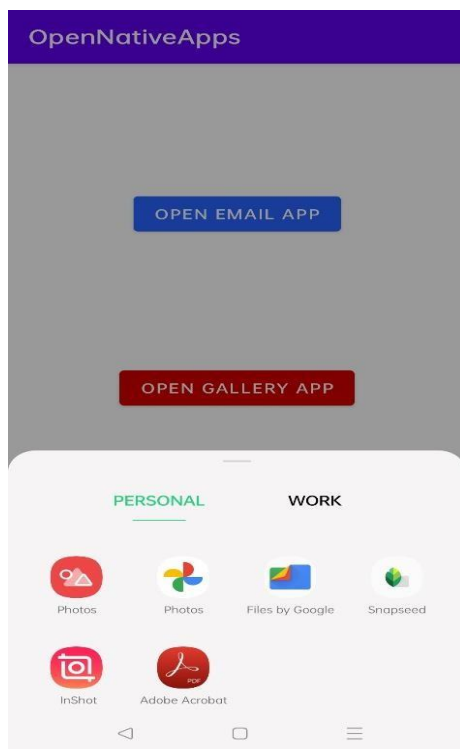
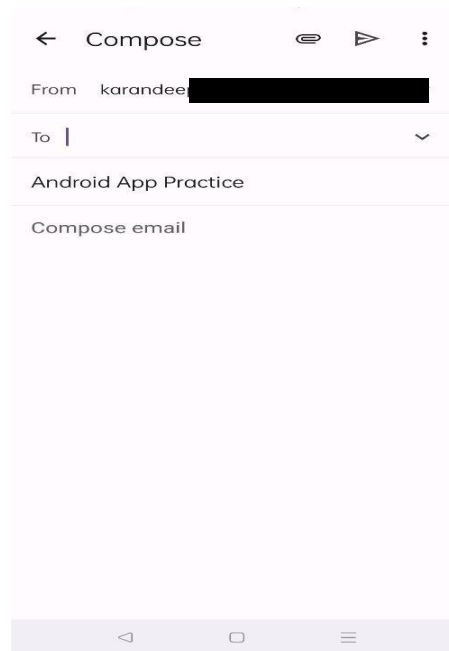
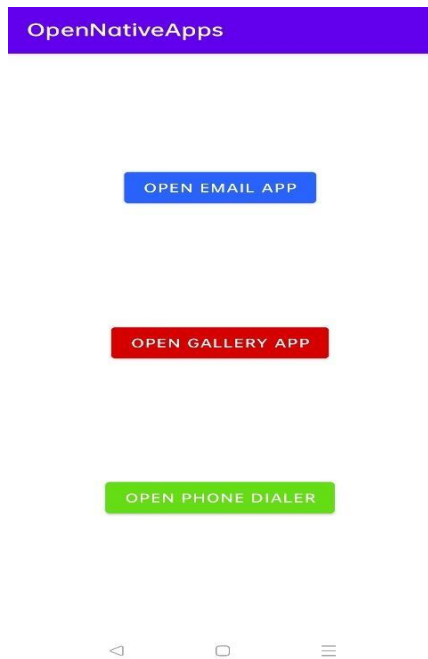
email.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        Intent intent = new Intent(Intent.ACTION_SENDTO);
        intent.setData(Uri.parse("mailto:")); // only email apps should handle this
        intent.putExtra(Intent.EXTRA_EMAIL, "Nahata@gmail.com");
        intent.putExtra(Intent.EXTRA_SUBJECT, "Android App Practice");
        startActivity(intent);
    }
});

gallery.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View view) {
        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 view) {
        Intent intent = new Intent(Intent.ACTION_DIAL);
        intent.setData(Uri.parse("tel:7745064283"));
        startActivity(intent);
    }
});
}
}

```

Output:



Practical No – 10

Create applications to demonstrate menu option.

// Android Option Menu

activity_main.xml

```
<?xml version="1.0" encoding="utf-8"?>
<android.support.design.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="example.javatpoint.com.optionmenu.MainActivity">

<android.support.design.widget.AppBarLayout
    android:layout_width="match_parent"
    android:layout_height="wrap_content"
    android:theme="@style/AppTheme.AppBarOverlay">

    <android.support.v7.widget.Toolbar
        android:id="@+id/toolbar"
        android:layout_width="match_parent"
        android:layout_height="?attr/actionBarSize"
        android:background="?attr/colorPrimary"
        app:popupTheme="@style/AppTheme.PopupOverlay" />
    </android.support.design.widget.AppBarLayout>

    <include layout="@layout/content_main" />
</android.support.design.widget.CoordinatorLayout>
```

context_main.xml

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

```
app:layout_behavior="@string/appbar_scrolling_view_behavior"
tools:context="example.javatpoint.com.optionmenu.MainActivity"
tools:showIn="@layout/activity_main">
```

```
<TextView
    android:layout_width="wrap_content"
    android:layout_height="wrap_content"
    android:text="Hello World!"
    app:layout_constraintBottom_toBottomOf="parent"
    app:layout_constraintLeft_toLeftOf="parent"
    app:layout_constraintRight_toRightOf="parent"
    app:layout_constraintTop_toTopOf="parent" />
</android.support.constraint.ConstraintLayout>
```

menu_main.xml

```
<menu 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"
    tools:context="example.javatpoint.com.optionmenu.MainActivity">

    <item android:id="@+id/item1"
        android:title="Item 1"/>
    <item android:id="@+id/item2"
        android:title="Item 2"/>
    <item android:id="@+id/item3"
        android:title="Item 3"
        app:showAsAction="withText"/>

</menu>
```

MainActivity.java

```
package example.javatpoint.com.optionmenu;

import android.os.Bundle;
import android.support.v7.app.AppCompatActivity;
import android.support.v7.widget.Toolbar;
```



```

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

public class MainActivity extends AppCompatActivity {

    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);
        Toolbar toolbar = (Toolbar) findViewById(R.id.toolbar);
        setSupportActionBar(toolbar);
    }

    @Override
    public boolean onCreateOptionsMenu(Menu menu) {
        // Inflate the menu; this adds items to the action bar if it is present.
        getMenuInflater().inflate(R.menu.menu_main, menu);
        return true;
    }

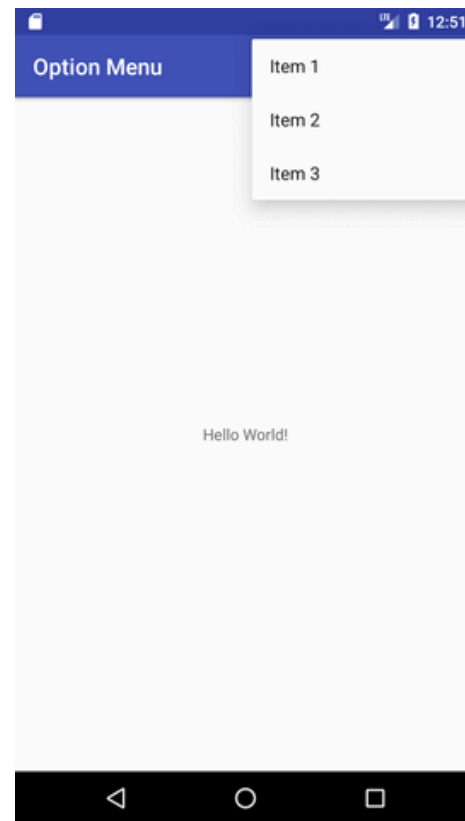
    @Override
    public boolean onOptionsItemSelected(MenuItem item) {
        int id = item.getItemId();
        switch (id){
            case R.id.item1:
                Toast.makeText(getApplicationContext(),"Item
Selected",Toast.LENGTH_LONG).show();
                return true;
            case R.id.item2:
                Toast.makeText(getApplicationContext(),"Item
Selected",Toast.LENGTH_LONG).show();
                return true;
            case R.id.item3:

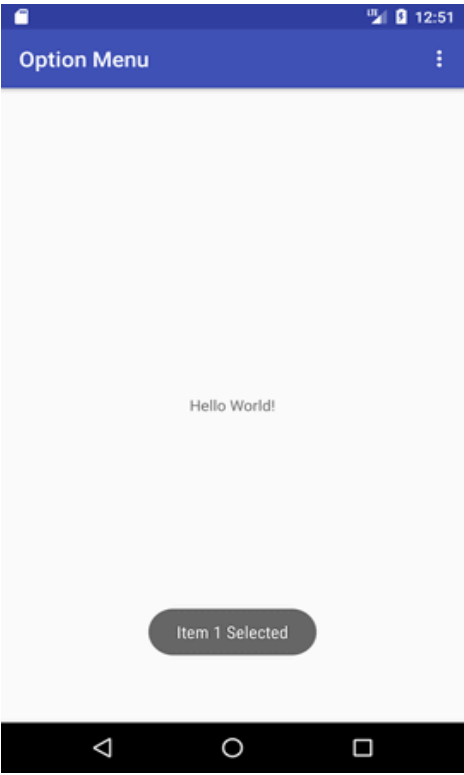
```

```
        Toast.makeText(getApplicationContext(),"Item  
Selected",Toast.LENGTH_LONG).show();  
        return true;  
    default:  
        return super.onOptionsItemSelected(item);  
    }  
}  
}
```

3

Output:





// Android Context Menu

activity_main.xml

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

    <ListView
        android:layout_width="368dp"
        android:layout_height="495dp"
        android:id="@+id/listView"
        android:layout_marginEnd="8dp"
        android:layout_marginStart="8dp"
        android:layout_marginTop="8dp"
        app:layout_constraintEnd_toEndOf="parent"
        app:layout_constraintHorizontal_bias="0.0"
        app:layout_constraintStart_toStartOf="parent"
        app:layout_constraintTop_toTopOf="parent" />
</android.support.constraint.ConstraintLayout>
```

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

MainActivity.java

```
package example.javatpoint.com.contextmenu;
```

```

import android.support.v7.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.ArrayAdapter;
import android.widget.ListView;
import android.widget.Toast;

public class MainActivity extends AppCompatActivity {
    ListView listView;
    String contacts[]={"Ajay","Sachin","Sumit","Tarun","Yogesh"};
    @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<String>(this,android.R.layout.simple_list_item_1,contacts);
        listView.setAdapter(adapter);
        // Register the ListView for Context menu
        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.menu_main, menu);
        menu.setHeaderTitle("Select The Action");
    }
    @Override
    public boolean onOptionsItemSelected(MenuItem item){

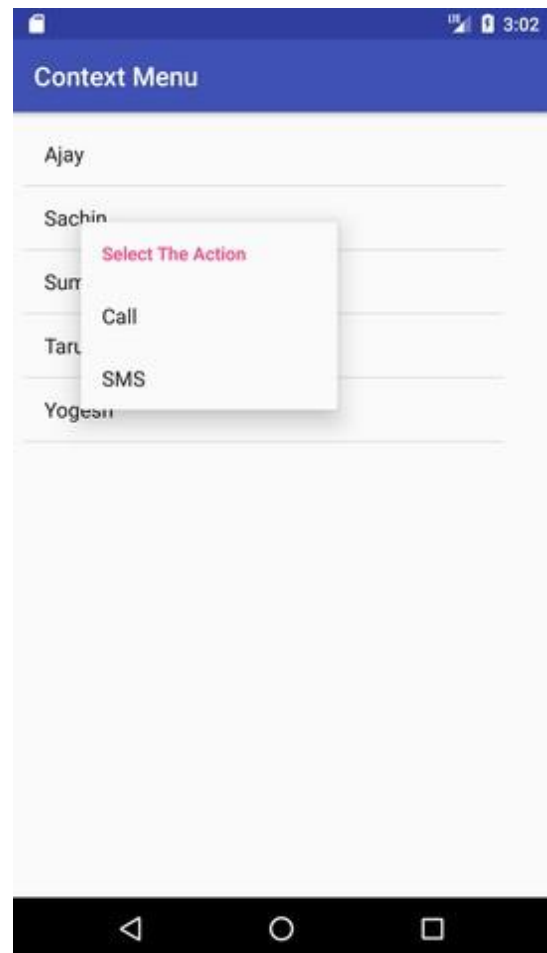
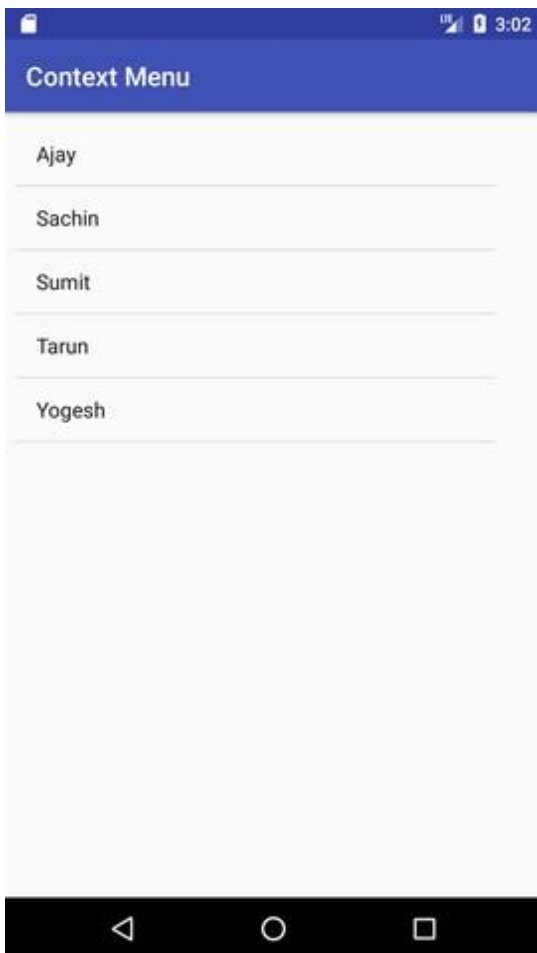
```

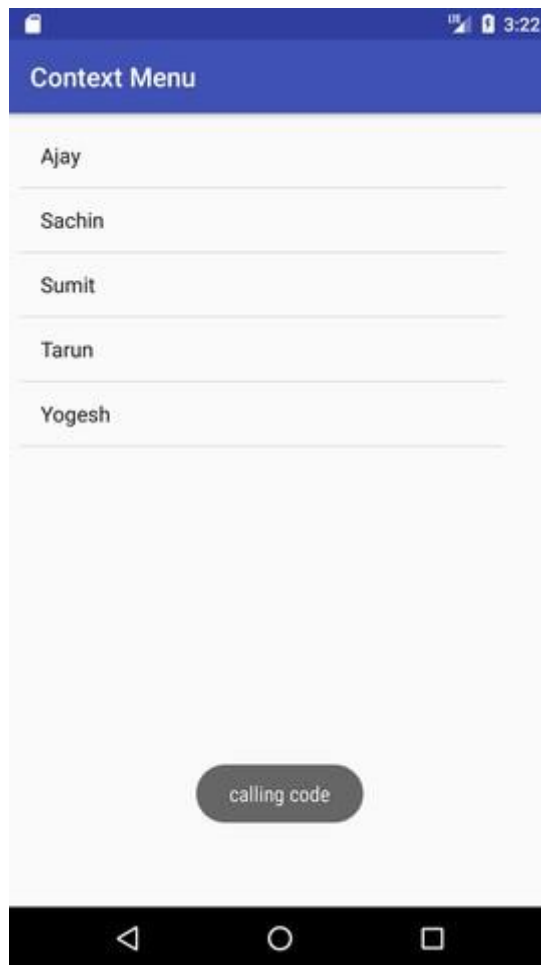
```

        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
code",Toast.LENGTH_LONG).show();
        }else{
            return false;
        }
        return true;
    }
}

```

Output:





// Android Popup Menu

activity_main.xml

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

    <Button
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:id="@+id/button"
        android:text="Click"
        app:layout_constraintBottom_toBottomOf="parent"
        app:layout_constraintLeft_toLeftOf="parent"
        app:layout_constraintRight_toRightOf="parent"
        app:layout_constraintTop_toTopOf="parent" />

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

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="One" />
    <item
        android:id="@+id/two"
        android:title="Two"/>
    <item
        android:id="@+id/three"
        android:title="Three"/>
</menu>
```


</menu>

MainActivity.java

```
package example.javatpoint.com.popupmenu;

import android.support.v7.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;

public class MainActivity extends AppCompatActivity {
    Button button;

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

        button = (Button) findViewById(R.id.button);
        button.setOnClickListener(new View.OnClickListener() {

            @Override
            public void onClick(View v) {
                //Creating the instance of PopupMenu
                PopupMenu popup = new PopupMenu(MainActivity.this, button);
                //Inflating the Popup using xml file
                popup.getMenuInflater().inflate(R.menu.popup_menu, popup.getMenu());

                //registering popup with OnMenuItemClickListener
                popup.setOnMenuItemClickListener(new
                    PopupMenu.OnMenuItemClickListener() {
                        public boolean onMenuItemClick(MenuItem item) {
```

```

        Toast.makeText(MainActivity.this,"You Clicked : " + item.getTitle(),
        Toast.LENGTH_SHORT).show();
        return true;
    }
});

popup.show();//showing popup menu
}
});//closing the setOnClickListener method
}
}

```

Output:





Practical No – 11

Create applications to demonstrate progress bar.

activity_main.xml

```
<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout_width="match_parent"
    android:layout_height="match_parent"
    tools:context=".MainActivity" >

    <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="download file" />

</RelativeLayout>
```

MainActivity.java

```
package example.javatpoint.com.progressbar;

import android.app.ProgressDialog;
import android.os.Handler;
import android.support.v7.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;

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.button);
```

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

@Override

```
public void onClick(View v) {
```

```
    // creating progress bar dialog
```

```
    progressBar = new ProgressDialog(v.getContext());
```

```
    progressBar.setCancelable(true);
```

```
    progressBar.setMessage("File downloading ...");
```

```
    progressBar.setProgressStyle(ProgressDialog.STYLE_HORIZONTAL);
```

```
    progressBar.setProgress(0);
```

```
    progressBar.setMax(100);
```

```
    progressBar.show();
```

```
    //reset progress bar and filesize status
```

```
    progressBarStatus = 0;
```

```
    fileSize = 0;
```

```
    new Thread(new Runnable() {
```

```
        public void run() {
```

```
            while (progressBarStatus < 100) {
```

```
                // performing operation
```

```
                progressBarStatus = doOperation();
```

```
                try {
```

```
                    Thread.sleep(1000);
```

```
                } catch (InterruptedException e) {
```

```
                    e.printStackTrace();
```

```
                }
```

```
            // Updating the progress bar
```

```

        progressBarHandler.post(new Runnable() {
            public void run() {
                progressBar.setProgress(progressBarStatus);
            }
        });
    }
    // performing operation if file is downloaded,
    if (progressBarStatus >= 100) {
        // sleeping for 1 second after operation completed
        try {
            Thread.sleep(1000);
        } catch (InterruptedException e) {
            e.printStackTrace();
        }
        // close the progress bar dialog
        progressBar.dismiss();
    }
}

}).start();
} //end of onClick method
});
}

// checking how much file is downloaded and updating the filesize
public int doOperation() {
    //The range of ProgressDialog starts from 0 to 10000
    while (fileSize <= 10000) {
        fileSize++;
        if (fileSize == 1000) {
            return 10;
        } else if (fileSize == 2000) {
            return 20;
        } else if (fileSize == 3000) {
            return 30;
        } else if (fileSize == 4000) {
            return 40; // you can add more else if

```

```
    }  
    /* else {  
        return 100;  
    }*/  
} //end of while  
return 100;  
} //end of doOperation  
}
```

Output:

