Installation and setup of the Java development kit (JDK), setup of Android SDK, setup of Eclipse IDE, setup of Android development tools (ADT) plugins, create an Android virtual device.

1. Install Java Development Kit (JDK):

- Download the latest version of JDK from the official Oracle website: https://www.oracle.com/java/technologies/javase-downloads.html
- Run the installer and follow the instructions to complete the installation.
- After the installation, set the PATH environment variable for Java on your computer

2. Install Android SDK:

- Download the latest version of Android SDK Command-line Tools from the official Android website: https://developer.android.com/studio#downloads
- Extract the downloaded file to a directory on your computer.
- Set the ANDROID_HOME environment variable to the directory where you extracted the Android SDK. To do this, follow the instructions for your operating system:
- Windows: https://developer.android.com/studio/intro/update#set-upyourandroid-home-environment-variable
- Mac: https://developer.android.com/studio/intro/update#macos-usr-local

3. Install Eclipse IDE:

- Download the latest version of Eclipse IDE for Java Developers from the official Eclipse website: https://www.eclipse.org/downloads/packages/
- Extract the downloaded file to a directory on your computer.

4. Install Android Development Tools (ADT) plugins:

- Open Eclipse IDE.
- Click on Help > Eclipse Marketplace.
- Search for "Android Development Tools" and click "Go".
- Select "Android Development Tools for Eclipse" and click "Install".
- Follow the instructions to complete the installation. Restart Eclipse IDE.

5. Create an Android virtual device:

- Open Eclipse IDE.
- Click on Window > Android SDK and AVD Manager.
- Click on the "Virtual Devices" tab.
- Click the "New" button to create a new virtual device.
- Follow the instructions to configure the virtual device.
- Click the "Create AVD" button to create the virtual device.

That's it! We have now installed and set up Java Development Kit (JDK), Android SDK, Eclipse IDE, Android Development Tools (ADT) plugins, and created an Android virtual device. We can now start developing Android applications in Eclipse IDE.

Create "Hello World" application. That will display "Hello World" in the middle of the screen using TextView Widget in the red colour

Xml code:

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout</pre>
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="172dp"
        android:layout height="52dp"
        android:background="#C62828"
        android:text="Hello World!"
        android:textColor="@color/black"
        android:textSize="20sp"
        app:layout constraintBottom toBottomOf="parent"
        app:layout constraintEnd toEndOf="parent"
        app:layout constraintHorizontal bias="0.498"
        app:layout constraintStart toStartOf="parent"
        app:layout constraintTop toTopOf="parent"
        app:layout constraintVertical bias="0.481" />
</androidx.constraintlayout.widget.ConstraintLayout>
```

Java Code:

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



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

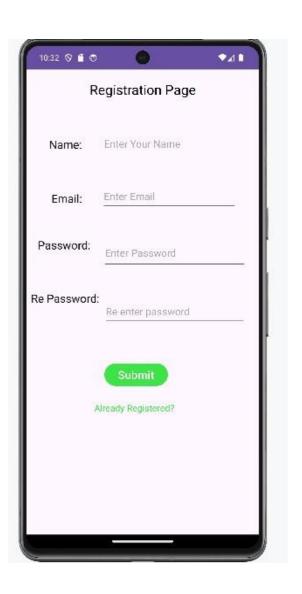
Xml Code:

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout</pre>
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout width="match parent"
    android:layout height="match parent"
    android:textAlignment="center"
    tools:context=".MainActivity">
    <TextView
        android:id="@+id/textView"
        android:layout width="wrap content"
        android:layout height="wrap content"
        android:layout marginTop="20dp"
        android:text="Registration Page"
        android:textColor="@color/black"
        android:textSize="24sp"
        app:layout constraintEnd toEndOf="parent"
        app:layout constraintStart toStartOf="parent"
        app:layout constraintTop toTopOf="parent" />
    <TextView
        android:id="@+id/textView2"
        android:layout width="60dp"
        android:layout height="48dp"
        android:layout marginStart="40dp"
        android:layout marginTop="68dp"
        android:text="Name:"
        android:textColor="@color/black"
        android:textSize="20sp"
        app:layout constraintStart toStartOf="parent"
        app:layout constraintTop toBottomOf="@+id/textView" />
    <EditText
        android:id="@+id/editTextText"
        android:layout width="233dp"
        android:layout height="49dp"
        android:layout marginTop="56dp"
```

```
android:ems="10"
        android:hint="Enter Your Name"
        android:inputType="text"
        app:layout constraintEnd toEndOf="parent"
        app:layout constraintHorizontal bias="0.425"
        app:layout_constraintStart toEndOf="@+id/textView2"
        app:layout constraintTop toBottomOf="@+id/textView" />
    <TextView
        android:id="@+id/textView3"
        android:layout width="wrap content"
        android:layout height="wrap content"
        android:layout_marginStart="44dp"
        android:layout marginTop="48dp"
        android:text="Email:"
        android:textColor="@color/black"
        android:textSize="20sp"
        app:layout constraintStart toStartOf="parent"
        app:layout constraintTop toBottomOf="@+id/textView2"
/>
    <EditText
        android:id="@+id/editTextTextEmailAddress"
        android:layout width="240dp"
        android:layout height="49dp"
        android:layout marginTop="44dp"
        android:ems="10"
        android:hint="Enter Email"
        android:inputType="textEmailAddress"
        app:layout constraintEnd toEndOf="parent"
        app:layout constraintHorizontal bias="0.472"
        app:layout constraintStart toEndOf="@+id/textView3"
app:layout constraintTop toBottomOf="@+id/editTextText" />
    <TextView
        android:id="@+id/textView4"
        android:layout width="wrap content"
        android:layout_height="wrap_content"
        android:layout marginStart="20dp"
        android:layout marginTop="56dp"
        android:text="Password:"
        android:textColor="@color/black"
        android:textSize="20sp"
        app:layout constraintStart toStartOf="parent"
        app:layout constraintTop toBottomOf="@+id/textView3"
/>
    <TextView
        android:id="@+id/textView5"
        android:layout width="wrap content"
```

```
android:layout height="wrap content"
        android:layout marginStart="8dp"
        android:layout marginTop="68dp"
        android:text="Re Password:"
        android:textColor="@color/black"
        android:textSize="20sp"
        app:layout constraintStart toStartOf="parent"
        app:layout constraintTop toBottomOf="@+id/textView4"
/>
    <EditText
        android:id="@+id/editTextTextPassword"
        android:layout width="254dp"
        android:layout height="56dp"
        android:layout marginTop="48dp"
        android:ems="10"
        android:hint="Enter Password"
        android:inputType="textPassword"
        app:layout constraintEnd toEndOf="parent"
        app:layout constraintHorizontal bias="0.488"
        app:layout constraintStart toEndOf="@+id/textView4"
app:layout constraintTop toBottomOf="@+id/editTextTextEmailAdd
ress" />
    <EditText
        android:id="@+id/editTextTextPassword2"
        android:layout width="252dp"
        android:layout height="48dp"
        android:layout marginTop="52dp"
        android:ems="10"
        android:hint="Re enter password"
        android:inputType="textPassword"
        app:layout constraintEnd toEndOf="parent"
        app:layout constraintHorizontal bias="0.241"
        app:layout constraintStart toEndOf="@+id/textView5"
app:layout constraintTop toBottomOf="@+id/editTextTextPassword
" />
    <Button
        android:id="@+id/button"
        android:layout width="wrap content"
        android:layout height="wrap content"
        android:layout marginTop="64dp"
        android:backgroundTint="#3FE448"
        android:text="Submit"
        android:textSize="20sp"
        app:layout constraintEnd toEndOf="parent"
        app:layout constraintHorizontal bias="0.461"
        app:layout constraintStart toStartOf="parent"
```

```
app:layout constraintTop toBottomOf="@+id/editTextTextPassword
2" />
    <TextView
        android:id="@+id/textView6"
        android:layout width="181dp"
        android:layout height="35dp"
        android:layout marginTop="24dp"
        android:text="Already Registered?"
        android:textAlignment="center"
        android:textColor="#3FE448"
        android:textSize="16sp"
        app:layout constraintEnd toEndOf="parent"
        app:layout constraintHorizontal bias="0.434"
        app:layout constraintStart toStartOf="parent"
        app:layout constraintTop toBottomOf="@+id/button" />
</androidx.constraintlayout.widget.ConstraintLayout>
Java Code:
package com.example.myapplication helloworld;
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:
```



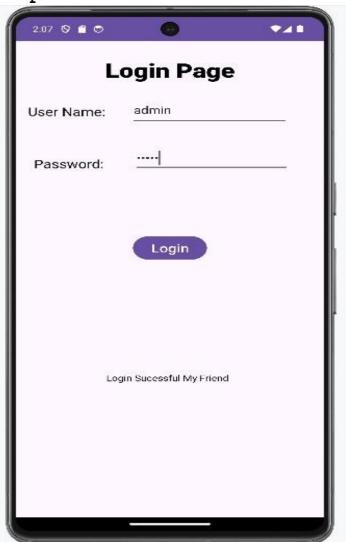
Create sample application with login module. (Check username and password) On successful login, Change Text View "Login Successful". And on failing login, alert user using Toast "Login fail".

XmlCode:

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout</pre>
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout width="match parent"
    android:layout height="match parent"
    tools:context=".MainActivity">
    <TextView
        android:id="@+id/textView"
        android:layout width="wrap content"
        android:layout height="wrap content"
        android:layout marginTop="28dp"
        android:fontFamily="sans-serif-black"
        android:text="Login Page"
        android:textAlignment="center"
        android:textColor="@color/black"
        android:textSize="34sp"
        app:layout constraintEnd toEndOf="parent"
        app:layout constraintStart toStartOf="parent"
        app:layout constraintTop toTopOf="parent" />
    <TextView
        android:id="@+id/textView2"
        android:layout width="wrap content"
        android:layout height="wrap content"
        android:layout marginStart="16dp"
        android:layout marginTop="36dp"
        android:text="User Name:"
        android:textColor="@color/black"
        android:textSize="20sp"
        app:layout constraintStart toStartOf="parent"
        app:layout constraintTop toBottomOf="@+id/textView" />
    <EditText
        android:id="@+id/tvUserName"
        android:layout width="211dp"
        android:layout height="54dp"
        android:layout marginTop="20dp"
```

```
android:ems="10"
        android:hint="Enter your name"
        android:inputType="text"
        app:layout constraintEnd toEndOf="parent"
        app:layout constraintHorizontal bias="0.421"
        app:layout_constraintStart_toEndOf="@+id/textView2"
        app:layout constraintTop toBottomOf="@+id/textView" />
   <TextView
        android:id="@+id/tvpass"
        android:layout width="wrap content"
        android:layout height="wrap content"
        android:layout marginStart="24dp"
        android:layout marginTop="64dp"
        android:text="Password:"
        android:textColor="@color/black"
        android:textSize="20sp"
        app:layout constraintStart toStartOf="parent"
        app:layout constraintTop toBottomOf="@+id/textView2"
/>
   <EditText
        android:id="@+id/etPassword"
        android:layout width="wrap content"
        android:layout height="48dp"
        android:layout marginTop="32dp"
        android:ems="10"
        android:hint="Enter Password"
        android:inputType="textPassword"
        app:layout constraintEnd toEndOf="parent"
        app:layout constraintHorizontal bias="0.463"
        app:layout constraintStart toEndOf="@+id/tvpass"
        app:layout constraintTop toBottomOf="@+id/tvUserName"
/>
   <Button
        android:id="@+id/button"
        android:layout width="wrap content"
        android:layout_height="wrap_content"
        android:layout marginTop="108dp"
        android:text="Login"
        android:textSize="20sp"
        app:layout constraintEnd toEndOf="parent"
        app:layout constraintStart toStartOf="parent"
        app:layout constraintTop toBottomOf="@+id/etPassword"
/>
    <TextView
        android:id="@+id/tvLoginStatus"
        android:layout width="3dp"
        android:layout height="14dp"
```

```
android:layout marginTop="192dp"
        android:textColor="@color/black"
        app:layout constraintEnd toEndOf="parent"
        app:layout constraintHorizontal bias="0.498"
        app:layout constraintStart toStartOf="parent"
        app:layout constraintTop toBottomOf="@+id/button" />
</androidx.constraintlayout.widget.ConstraintLayout>
JavaCode:
package com.example.myapplication loginsing toast;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity {
    EditText etUserName, etPassword;
    Button btnStatus;
    TextView tvLoginStatus;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity main);
        etUserName=(EditText) findViewById(R.id.tvUserName);
        etPassword=(EditText) findViewById(R.id.etPassword);
        btnStatus=(Button)findViewById(R.id.button);
        tvLoginStatus =
(TextView) findViewById(R.id.tvLoginStatus);
        btnStatus.setOnClickListener(new
View.OnClickListener() {
            @Override
            public void onClick(View v) {
(etUserName.getText().toString().equals("admin") &&
etPassword.getText().toString().equals("admin"))
                    tvLoginStatus.setText("Login Sucessful My
Friend");
                else {
Toast.makeText(getApplicationContext(),"Login
```



Create an application for demonstration of Scroll view in android.

```
Xml Code:
 <?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout width="match parent"
    android:layout height="match parent"
    tools:context=".MainActivity">
    <ScrollView
        android:layout width="fill parent"
        android:layout height="fill parent"
        android:layout margin="20dp"
        android:scrollbars="vertical">
        <LinearLayout
            android:layout width="fill parent"
            android:layout height="fill parent"
            android:layout margin="20dp"
            android:orientation="vertical">
            <TextView
                android:layout width="fill parent"
                android:layout height="wrap content"
                android:layout margin="20dp"
                android:layout marginTop="20dp"
                android:text="Hello there , we are on top of
the page."
                android:textSize="30sp" />
            <TextView
                android:layout width="fill parent"
                android:layout height="wrap content"
                android:layout marginTop="900dp"
                android:layout marginBottom="30dp"
                android:text="Hello, we are at bottom of the
page "
                android:textSize="30sp" />
        </LinearLayout>
    </ScrollView>
```

</RelativeLayout>



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.

Xml Code:

```
<?xml version="1.0" encoding="utf-8"?>
<RelativeLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout width="match parent"
    android:layout height="match parent" >
    <TextView
        android:id="@+id/tvName"
        android:layout width="wrap content"
        android:layout height="wrap content"
        android:layout marginStart="21dp"
        android:layout marginTop="49dp"
        android:text="User Name"
        android:textSize="18sp" />
    <EditText
        android:id="@+id/etUsername"
        android:layout width="wrap content"
        android:layout height="48dp"
        android:layout alignBaseline="@+id/tvName"
        android:layout alignBottom="@+id/tvName"
        android:layout alignParentEnd="true"
        android:layout marginEnd="23dp"
        android:ems="10"
        android:hint="Enter Name"
        android:inputType="textPersonName" />
    <TextView
        android:id="@+id/tvPass"
        android:layout width="wrap content"
        android:layout height="wrap content"
        android:layout alignEnd="@+id/tvName"
        android:layout below="@+id/etUsername"
        android:layout marginTop="32dp"
        android:text="Password"
        android:textSize="18sp" />
    <EditText
        android:id="@+id/etPassword"
        android:layout width="wrap content"
        android:layout height="48dp"
        android:layout alignBaseline="@+id/tvPass"
        android:layout alignStart="@+id/etUsername"
        android:layout alignBottom="@+id/tvPass"
```

```
android:ems="10"
        android:hint="Enter Password"
        android:inputType="textPassword" />
    <Button
        android:id="@+id/button"
        android:layout width="wrap content"
        android:layout height="wrap content"
        android:layout below="@+id/etPassword"
        android:layout centerHorizontal="true"
        android:layout marginTop="38dp"
        android:text="LOGIN"/>
<TextView
    android:id="@+id/tvLoginStatus"
    android:layout width="wrap content"
    android:layout height="wrap content"
    android:layout below="@id/button"
    android:layout centerHorizontal="true"
    android:layout marginTop="100sp"
    />
</RelativeLayout>
Java Code:
package com.example.myapplication practical6;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.text.Editable;
import android.text.TextWatcher;
import android.widget.Button;
import android.widget.EditText;
import android.widget.TextView;
public class MainActivity extends AppCompatActivity {
    EditText etUsername, etPassword;
    Button btnStatus;
    TextView tvLoginStatus;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity main);
        etUsername = (EditText) findViewById(R.id.etUsername);
        etPassword = (EditText) findViewById(R.id.etPassword);
        btnStatus = (Button) findViewById(R.id.button);
        tvLoginStatus = (TextView)
findViewById(R.id.tvLoginStatus);
        etPassword.addTextChangedListener(TextChange);
```

```
etUsername.addTextChangedListener(TextChange);
        check();
   private TextWatcher TextChange=new TextWatcher()
        @Override public void beforeTextChanged(CharSequence
charSequence, int i, int i1, int i2)
        @Override public void onTextChanged(CharSequence
charSequence, int i, int i1, int i2)
        @Override public void
        afterTextChanged(Editable editable)
            check();
    };
   public void check()
        if(etUsername.getText().toString().equals("yusuf") &&
etPassword.getText().toString().equals("12345"))
            btnStatus.setEnabled(true);
        }
        else
            btnStatus.setEnabled(false);
    }
}
```



Create an Android Application that will change color of the College Name on click of Push Button and change the font size, font style of text view using xml.

Xml Code:

```
<?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">
    <TextView
        android:id="@+id/textView1"
        android:layout width="wrap content"
        android:layout height="wrap content"
        android:text="GH Raisoni Jalgaon"
        android:layout centerInParent="true"
        android:textStyle="bold"
        android:textSize="36sp"/>
    <Button android:id="@+id/button"</pre>
        android:layout width="wrap content"
        android:layout height="wrap content"
        android:layout centerInParent="true"
        android:layout marginStart="30dp"
        android:layout marginTop="5dp"
        android:layout below="@id/textView1"
        android:layout marginEnd="30dp"
        android:text="Push" />
</RelativeLayout>
JavaCode:
```

```
package com.example.myapplication practical7;
import androidx.appcompat.app.AppCompatActivity;
import android.graphics.Color;
import android.graphics.Typeface;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.TextView;
public class MainActivity extends AppCompatActivity {
    Button pushButton;
    @Override
```

```
protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity main);
        pushButton=(Button) findViewById(R.id.button);
        TextView textView1 = findViewById(R.id.textView1);
        textView1.setTextColor(Color.BLUE);
        pushButton.setOnClickListener(new
View.OnClickListener()
            @Override public void
            onClick(View view)
            {
textView1.setTypeface(textView1.getTypeface(), Typeface.BOLD IT
ALIC);
textView1.setTextColor(Color.parseColor("#006400"));
              textView1.setTextSize(50);
        });
    }
```





Create a simple Application that demonstrates the Life Cycle of Activity.

XmlCode:

```
<?xml version="1.0" encoding="utf-8"?>
<androidx.constraintlayout.widget.ConstraintLayout</pre>
xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:app="http://schemas.android.com/apk/res-auto"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout width="match parent"
    android:layout height="match parent"
    tools:context=".MainActivity">
    <TextView
        android:layout width="wrap content"
        android:layout height="wrap content"
        android:text="Hello World!"
        app:layout constraintBottom toBottomOf="parent"
        app:layout constraintEnd toEndOf="parent"
        app:layout constraintStart toStartOf="parent"
        app:layout constraintTop toTopOf="parent" />
    <Button
        android:id="@+id/toast"
        android:layout width="143dp"
        android:layout height="63dp"
        android:layout marginBottom="44dp"
        app:layout constraintBottom toBottomOf="parent"
        app:layout constraintEnd toEndOf="parent"
        app:layout constraintHorizontal bias="0.515"
        app:layout constraintStart toStartOf="parent" />
</androidx.constraintlayout.widget.ConstraintLayout>
JavaCode:
package com.example.lifecycle of activity;
import android.annotation.SuppressLint;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
```

```
setContentView(R.layout.activity main);
        notify("On Create");
    }
    @Override
   protected void onPause() {
        super.onPause();
        notify("onPause");
    }
    @Override
    protected void onResume() {
        super.onResume();
        notify("onResume");
    }
    @Override
   protected void onStop() {
        super.onStop();
        notify("onStop");
    }
    @Override
   protected void onDestroy() {
       super.onDestroy();
        notify("onDestroy");
    }
    @Override
   protected void onRestoreInstanceState (Bundle
savedInstanceState) {
        super.onRestoreInstanceState(savedInstanceState);
        notify("onRestoreInstanceState");
    }
    @Override
    protected void onSaveInstanceState(Bundle outState) {
        super.onSaveInstanceState(outState);
        notify("onSaveInstanceState");
    private void notify(String methodName) {
        String name = this.getClass().getName();
        String[] strings = name.split("\\.");
        Toast.makeText(getApplicationContext(),
                methodName + "" + strings[strings.length - 1],
                Toast.LENGTH LONG) .show();
}
```



Create a simple application, which reads a positive number from the user and displays its factorial value in another activity.

Main_activity.xml_code:

```
<?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:padding="16dp"
    tools:context=".MainActivity">
    <EditText
        android:id="@+id/numberInput"
        android:layout width="381dp"
        android:layout height="62dp"
        android:hint="Enter a number"
        android:inputType="number" />
    <Button
        android:id="@+id/calculateButton"
        android:layout width="wrap content"
        android:layout height="wrap content"
        android:layout below="@id/numberInput"
        android:layout marginTop="122dp"
        android:onClick="calculateFactorial"
        android:text="Calculate" />
</RelativeLayout>
```

Activity result.xml code:

```
<LinearLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout width="match parent"
    android:layout height="match parent"
    android:orientation="vertical"
    android:gravity="center">
    <TextView
        android:id="@+id/factorialResult"
        android:layout width="225dp"
        android:layout height="61dp"
        android:textSize="24sp"
```

```
android:textStyle="bold" />
</LinearLayout>
MainActivity.java_Code:
package com.example.myapplication practical9;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.view.View;
import android.os.Bundle;
import android.widget.EditText;
public class MainActivity extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity main);
    public void calculateFactorial(View view) {
        EditText editText = findViewById(R.id.numberInput);
        String input = editText.getText().toString();
        int number = Integer.parseInt(input);
        Intent intent = new Intent(this,
activity result.class);
        intent.putExtra("number", number);
        startActivity(intent);
    }
```

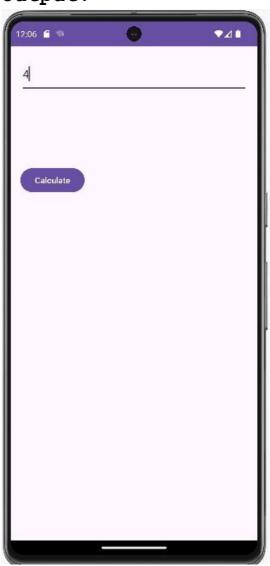
activity result. Java code:

```
package com.example.myapplication_practical9;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.TextView;

public class activity_result extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_result);
        int number = getIntent().getIntExtra("number", 0);
        long factorial = calculateFactorial(number);
```

```
TextView textView =
findViewById(R.id.factorialResult);
    textView.setText("Factorial of " + number + " is " +
factorial);

}
private long calculateFactorial(int n) {
    if (n == 0 || n == 1)
        return 1;
    else
        return n * calculateFactorial(n - 1);
}
```





Create an Android app, that reads the student's Details (Name, Surname, Class, Gender, Hobbies, Marks) and displays all information in another activity in table format on click of the submit button.

Activity main.xml code:

```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout width="match parent"
    android:layout height="match parent"
    android:orientation="vertical"
    android:padding="16dp">
    <EditText
        android:id="@+id/editTextName"
        android:layout width="match parent"
        android:layout height="48dp"
        android:hint="Name" />
    <EditText
        android:id="@+id/editTextSurname"
        android:layout width="match parent"
        android:layout height="48dp"
        android:hint="Surname" />
    <EditText
        android:id="@+id/editTextClass"
        android:layout width="match parent"
        android:layout height="48dp"
        android:hint="Class" />
    < Radio Group
        android:id="@+id/radioGroupGender"
        android:layout width="match parent"
        android:layout height="wrap content"
        android:orientation="horizontal">
        < Radio Button
            android:id="@+id/radioButtonMale"
            android:layout width="wrap content"
            android:layout height="wrap content"
            android:text="Male"/>
```

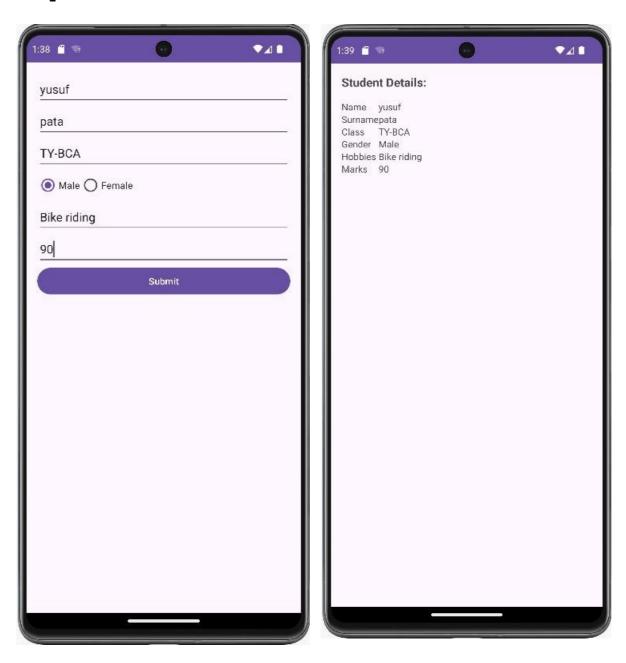
```
< Radio Button
            android:id="@+id/radioButtonFemale"
            android:layout width="wrap content"
            android:layout height="wrap content"
            android:text="Female"/>
    </RadioGroup>
    <EditText
        android:id="@+id/editTextHobbies"
        android:layout width="match parent"
        android:layout height="48dp"
        android:hint="Hobbies" />
    <EditText
        android:id="@+id/editTextMarks"
        android:layout width="match parent"
        android:layout height="48dp"
        android:hint="Marks" />
    <Button
        android:id="@+id/buttonSubmit"
        android:layout width="match parent"
        android:layout height="wrap content"
        android:text="Submit"/>
</LinearLayout>
Activity display.xml code:
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
xmlns:android="http://schemas.android.com/apk/res/android"
    android:layout width="match parent"
    android:layout height="match parent"
    android:orientation="vertical"
    android:padding="16dp">
    <TextView
        android:id="@+id/textViewDetails"
        android:layout width="match parent"
        android:layout height="wrap content"
        android:textSize="18sp"
        android:textStyle="bold"
        android:layout marginBottom="16dp"/>
    <TableLayout
        android:id="@+id/tableLayoutDetails"
        android:layout width="match parent"
        android:layout height="wrap content">
    </TableLayout>
</LinearLayout>
```

Main Activity.java code:

```
package com.example.myapplication practical10;
import androidx.appcompat.app.AppCompatActivity;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.RadioButton;
import android.widget.RadioGroup;
public class MainActivity extends AppCompatActivity {
    EditText editTextName, editTextSurname, editTextClass,
editTextHobbies, editTextMarks;
    RadioGroup radioGroupGender;
    RadioButton radioButtonMale, radioButtonFemale;
    Button buttonSubmit;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity main);
        editTextName = findViewById(R.id.editTextName);
        editTextSurname = findViewById(R.id.editTextSurname);
        editTextClass = findViewById(R.id.editTextClass);
        editTextHobbies = findViewById(R.id.editTextHobbies);
        editTextMarks = findViewById(R.id.editTextMarks);
        radioGroupGender =
findViewById(R.id.radioGroupGender);
        radioButtonMale = findViewById(R.id.radioButtonMale);
        radioButtonFemale =
findViewById(R.id.radioButtonFemale);
        buttonSubmit = findViewById(R.id.buttonSubmit);
        buttonSubmit.setOnClickListener(new
View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String name =
editTextName.getText().toString();
                String surname =
editTextSurname.getText().toString();
                String studentClass =
editTextClass.getText().toString();
                String hobbies =
```

```
editTextHobbies.getText().toString();
                String marks =
editTextMarks.getText().toString();
                String gender = radioButtonMale.isChecked() ?
"Male" : "Female";
                Intent intent = new Intent (MainActivity.this,
Activity display.class);
                intent.putExtra("name", name);
                intent.putExtra("surname", surname);
                intent.putExtra("class", studentClass);
                intent.putExtra("hobbies", hobbies);
                intent.putExtra("marks", marks);
                intent.putExtra("gender", gender);
                startActivity(intent);
            }
        });
    }
Activity display.java code:
package com.example.myapplication practical10;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.widget.TableLayout;
import android.widget.TableRow;
import android.widget.TextView;
public class Activity display extends AppCompatActivity {
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity display);
        Bundle extras = getIntent().getExtras();
        if (extras != null) {
            String name = extras.getString("name");
            String surname = extras.getString("surname");
            String studentClass = extras.getString("class");
            String hobbies = extras.getString("hobbies");
            String marks = extras.getString("marks");
            String gender = extras.getString("gender");
            TextView textViewDetails =
findViewById(R.id.textViewDetails);
            textViewDetails.setText("Student Details:");
```

```
TableLayout tableLayoutDetails =
findViewById(R.id.tableLayoutDetails);
            addRowToTable(tableLayoutDetails, "Name", name);
            addRowToTable(tableLayoutDetails, "Surname",
surname);
            addRowToTable(tableLayoutDetails, "Class",
studentClass);
            addRowToTable(tableLayoutDetails, "Gender",
gender);
            addRowToTable(tableLayoutDetails, "Hobbies",
hobbies);
            addRowToTable(tableLayoutDetails, "Marks", marks);
        }
    private void addRowToTable(TableLayout tableLayout, String
label, String value) {
        TableRow tableRow = new TableRow(this);
        TextView textViewLabel = new TextView(this);
        textViewLabel.setText(label);
        TextView textViewValue = new TextView(this);
        textViewValue.setText(value);
        tableRow.addView(textViewLabel);
        tableRow.addView(textViewValue);
        tableLayout.addView(tableRow);
    }
}
```



Create an Android Application that Demonstrate Radio Button.

Xml Code:

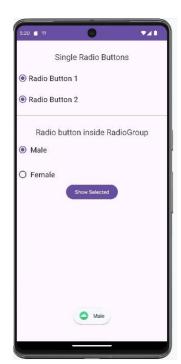
```
<?xml version="1.0" encoding="utf-8"?>
<LinearLayout
    xmlns:android="http://schemas.android.com/apk/res/android"
    xmlns:tools="http://schemas.android.com/tools"
    android:layout width="match parent"
    android:layout height="match parent"
android:orientation="vertical"
    tools:context=".MainActivity">
    <TextView
        android:id="@+id/textView1"
        android:layout width="fill parent"
        android:layout height="wrap content"
        android:layout marginTop="30dp"
        android:gravity="center horizontal"
        android:textSize="22dp"
        android:text="Single Radio Buttons" />
    < Radio Button
        android:id="@+id/radioButton1"
        android:layout width="fill parent"
        android:layout height="wrap content"
        android:layout gravity="center horizontal"
        android:text="Radio Button 1"
        android:layout marginTop="20dp"
android:textSize="20dp"
        />
    < Radio Button
        android:id="@+id/radioButton2"
        android:layout width="fill parent"
        android:layout height="wrap content"
        android:text="Radio Button 2"
        android:layout marginTop="10dp"
        android:textSize="20dp" />
    <View
        android:layout width="fill parent"
        android:layout height="1dp"
        android:layout marginTop="20dp"
        android:background="#B8B894" />
    <TextView android:id="@+id/textView2"
        android:layout width="fill parent"
        android:layout height="wrap content"
        android:layout marginTop="30dp"
        android:gravity="center horizontal"
        android:textSize="22dp" android:text="Radio
button inside RadioGroup" />
```

```
< Radio Group
        android:layout width="wrap content"
        android:layout height="wrap content"
        android:id="@+id/radioGroup">
        < Radio Button
            android:id="@+id/radioMale"
            android:layout width="fill parent"
            android:layout height="wrap content"
            android:text=" Male"
            android:layout marginTop="10dp"
            android:checked="false"
            android:textSize="20dp" />
        < Radio Button
            android:id="@+id/radioFemale"
            android:layout width="fill parent"
            android:layout height="wrap content"
            android:text=" Female"
            android:layout marginTop="20dp"
            android:checked="false"
            android:textSize="20dp" />
    </RadioGroup> <Button
    android:layout width="wrap content"
    android:layout height="wrap content"
    android:text="Show Selected"
    android:id="@+id/button"
    android:onClick="onclickbuttonMethod"
    android:layout gravity="center horizontal" />
</LinearLayout>
Java Code:
package com.example.myapplication practical11;
import androidx.appcompat.app.AppCompatActivity;
import android.os.Bundle;
import android.graphics.Color;
import android.graphics.Typeface;
import android.view.View;
import android.widget.Button;
import android.widget.RadioButton;
import android.widget.RadioGroup;
import android.widget.TextView;
import android.widget.Toast;
public class MainActivity extends AppCompatActivity {
    Button button;
    RadioButton genderradioButton;
```

RadioGroup radioGroup;

```
@Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity main);
        radioGroup=(RadioGroup) findViewById(R.id.radioGroup);
    public void onclickbuttonMethod(View v) {
        int selectedId =
                radioGroup.getCheckedRadioButtonId();
        genderradioButton =
                 (RadioButton) findViewById(selectedId);
        if (selectedId == -1)
            Toast.makeText(MainActivity.this, "Nothing
selected",
                    Toast.LENGTH SHORT).show();
        }
        else
            Toast.makeText (MainActivity.this,
genderradioButton.getText(),
                    Toast.LENGTH SHORT) .show();
    }
```

output:



Design Following Screens Using Radio Buttons & Checkboxes. Display the selected text using Toast.

XmlCode:

```
<?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">
    <TextView android:id="@+id/tvRq"
        android:layout width="match parent"
        android:layout height="wrap content"
        android:layout alignParentTop="true"
        android:layout centerHorizontal="true"
android:gravity="center"
        android:text="Rate This Lesson"
android:textAppearance="?android:attr/textAppearanceMedium" />
    < Radio Group
        android:layout width="match parent"
        android:layout height="wrap content"
        android:layout_below="@+id/tvRg"
        android:layout centerHorizontal="true"
        android:orientation="horizontal"
        android:showDividers="beginning|middle|end"
        android:layout marginTop="10dp"
        android:id="@+id/radioGroup" >
        <RadioButton
            android:id="@+id/rb1"
            android:layout width="wrap content"
            android:layout height="wrap content"
            android:text="EXCELLENT" android:checked="false"
            />
        < Radio Button
            android:id="@+id/rb2"
            android:layout width="wrap content"
            android:layout height="wrap content"
            android:text="GOOD"
            android:checked="true" />
        < Radio Button
            android:id="@+id/rb3"
            android:layout width="wrap content"
            android:layout_height="wrap content"
            android:text="OKAY"
            android:checked="false" />
```

```
< Radio Button
            android:id="@+id/rb4"
            android:layout width="wrap content"
            android:layout height="wrap content"
            android:text="POOR"
            android:checked="false" />
    </RadioGroup> <TextView android:id="@+id/tvCb"</pre>
    android:layout width="match parent"
    android:layout height="wrap content"
    android:layout below="@+id/radioGroup"
    android:gravity="center" android:text="Give Your
Suggestions
Here." android:layout marginTop="65dp"
android:textAppearance="?android:attr/textAppearanceMedium"/>
    <CheckBox
        android:layout width="match parent"
        android:layout height="wrap content"
        android:text=" I really enjoy this lesson."
        android:id="@+id/cb1"
        android:layout below="@+id/tvCb"
        android:layout centerHorizontal="true"
        android:checked="false"/>
    <CheckBox android:layout width="match parent"</pre>
        android:layout height="wrap content" android:text="I
will prefer this lesson over any other."
        android:id="@+id/cb2"
        android:layout below="@+id/cb1"
        android:layout centerHorizontal="true"
        android:checked="false"/>
    <CheckBox
        android:layout width="match parent"
        android:layout height="wrap content"
        android:text="I would like to hear more from you."
        android:id="@+id/cb3"
        android:layout below="@+id/cb2"
        android:layout centerHorizontal="true"
        android:checked="false"/>
    <CheckBox
        android:layout width="match parent"
        android:layout height="wrap content" android:text="I
am satisfied
with the content and full description." android:id="@+id/cb4"
        android:layout below="@+id/cb3"
        android:layout centerHorizontal="true"
android:checked="false"/>
    <But.t.on
        android:layout width="wrap content"
        android:layout height="wrap content"
```

```
android:text="SUBMIT"
    android:id="@+id/btnSubmit"
    android:layout_below="@+id/cb4"
    android:layout_centerHorizontal="true"
    android:layout_marginTop="10dp"/>
</RelativeLayout>
```

JavaCode:

```
package com.example.myapplication practical12;
import androidx.appcompat.app.AppCompatActivity;
import android.graphics.Color;
import android.graphics.Typeface;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.CheckBox;
import android.widget.RadioButton;
import android.widget.RadioGroup;
import android.widget.TextView;
import android.widget.Toast;
import android.os.Bundle;
public class MainActivity extends AppCompatActivity {
    RadioGroup radioGroup;
    RadioButton selectedRadioButton;
    Button buttonSubmit;
    CheckBox cb1, cb2, cb3, cb4;
    @Override
    protected void onCreate(Bundle savedInstanceState) {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.activity main);
        buttonSubmit =
                (Button) findViewById(R.id.btnSubmit);
radioGroup =
                (RadioGroup) findViewById(R.id.radioGroup);
cb1 =
                (CheckBox) findViewById(R.id.cb1); cb2 =
(CheckBox)
                findViewById(R.id.cb2); cb3 = (CheckBox)
                findViewById(R.id.cb3); cb4 = (CheckBox)
                findViewById(R.id.cb4);
        buttonSubmit.setOnClickListener(new
View.OnClickListener()
        { @Override public void
        onClick(View view)
            selectedRadioButton =
(RadioButton) findViewById (radioGroup.getCheckedRadioButtonId()
);
```

```
String yourVote =
selectedRadioButton.getText().toString();
            Toast.makeText(MainActivity.this, "Selected Radio
Button is:" + yourVote , Toast.LENGTH LONG).show();
            selectedRadioButton = (RadioButton)
findViewById(radioGroup.getCheckedRadioButtonId());
            String checkBoxChoices = "";
            if
        (cb1.isChecked())
            checkBoxChoices += cb1.getText().toString() +
"\tYES";
        else
            checkBoxChoices += cb1.getText().toString() +
"\tNO";
            if (cb2.isChecked())
                checkBoxChoices += cb2.getText().toString() +
"\tYES";
            else{
                checkBoxChoices += cb2.getText().toString() +
"\tNO";
            if (cb3.isChecked())
                checkBoxChoices += cb3.getText().toString() +
"\tYES";
            }
            else
                checkBoxChoices += cb3.getText().toString() +
"\tNO";
            if (cb4.isChecked())
                checkBoxChoices += cb4.getText().toString() +
"\tYES";
            }
            else
                checkBoxChoices += cb4.getText().toString() +
"\tNO";
            Toast.makeText(MainActivity.this, "Selected Radio
Button is:" +
                            yourVote + "\n CheckBox Choices:
\n "+ checkBoxChoices ,
```

```
Toast.LENGTH_LONG).show();
}
});
```

