Q1.Construct an Android application to accept a number and calculate and Display Factorial of a given number in TextView.

```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">


    <EditText

        Android:id="@+id/numberInput"

        Android:layout_width="match_parent"

        Android:layout_height="wrap_content"

        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="16dp"

        Android:text="Calculate Factorial" />


    <TextView

        Android:id="@+id/resultText"

        Android:layout_width="wrap_content"

        Android:layout_height="wrap_content"
```

Android:layout_below="@id/calculateButton"

Android:layout_marginTop="16dp"

Android:text="Factorial: "

Android:textSize="18sp" />

</RelativeLayout>

Main.java

```
Import android.os.Bundle;

Import android.view.View;

Import android.widget.Button;

Import android.widget.EditText;

Import android.widget.TextView;


Import androidx.appcompat.app.AppCompatActivity;


Public class MainActivity extends AppCompatActivity {

    Private EditText numberInput;

    Private Button calculateButton;

    Private TextView resultText;


    @Override
    Protected void onCreate(Bundle savedInstanceState) {
        Super.onCreate(savedInstanceState);
        setContentView(R.layout.activity_main);

        numberInput = findViewById(R.id.numberInput);
        calculateButton = findViewById(R.id.calculateButton);
```

```java
        resultText = findViewById(R.id.resultText);


        calculateButton.setOnClickListener(new View.OnClickListener() {
            @Override
            Public void onClick(View v) {
                calculateFactorial();
            }
        });
    }


Private void calculateFactorial() {
    String input = numberInput.getText().toString();
    If (input.isEmpty()) {
        resultText.setText("Please enter a number");
        return;
    }


    Int number = Integer.parseInt(input);
    Long factorial = calculateFactorial(number);
    resultText.setText("Factorial: " + factorial);
}


Private long calculateFactorial(int n) {
    If (n == 0) {
        Return 1;
    }
    Return n * calculateFactorial(n – 1);
```

```
        }
}
```

Q2. Create an Android application, which show Login Form. After clicking LOGIN button display the "Login Successful…" message if username and Password is same else display "Invalid Login" message in Toast Control.

```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">

    <EditText
        Android:id="@+id/editTextUsername"
        Android:layout_width="match_parent"
        Android:layout_height="wrap_content"
        Android:hint="Username"
        Android:layout_margin="16dp"/>

    <EditText
        Android:id="@+id/editTextPassword"
        Android:layout_width="match_parent"
        Android:layout_height="wrap_content"
        Android:hint="Password"
        Android:inputType="textPassword"
        Android:layout_below="@id/editTextUsername"
        Android:layout_margin="16dp"/>
```

```xml
<Button

    Android:id="@+id/buttonLogin"

    Android:layout_width="wrap_content"

    Android:layout_height="wrap_content"

    Android:text="LOGIN"

    Android:layout_below="@id/editTextPassword"

    Android:layout_centerHorizontal="true"

    Android:layout_marginTop="24dp"/>


</RelativeLayout>
```

Main.java

```java
Import android.os.Bundle;

Import android.view.View;

Import android.widget.Button;

Import android.widget.EditText;

Import android.widget.Toast;


Import androidx.appcompat.app.AppCompatActivity;


Public class MainActivity extends AppCompatActivity {


    Private EditText editTextUsername, editTextPassword;

    Private Button buttonLogin;


    @Override

    Protected void onCreate(Bundle savedInstanceState) {
```

```java
Super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);

editTextUsername = findViewById(R.id.editTextUsername);
editTextPassword = findViewById(R.id.editTextPassword);
buttonLogin = findViewById(R.id.buttonLogin);

buttonLogin.setOnClickListener(new View.OnClickListener() {
    @Override
    Public void onClick(View v) {
        Login();
    }
});
}

Private void login() {
    String username = editTextUsername.getText().toString().trim();
    String password = editTextPassword.getText().toString().trim();

    // Check if username and password are the same
    If (username.equals(password)) {
        // Login successful
        Toast.makeText(this, "Login Successful…", Toast.LENGTH_SHORT).show();
    } else {
        // Invalid login
        Toast.makeText(this, "Invalid Login", Toast.LENGTH_SHORT).show();
    }
```

```
    }
}
```