Lab Activity 1: Simple Greeting App (Java & XML)

A. Activity Title

"Hello User!" – Basic Android App using Java and XML

B. Learning Objectives

By the end of this lab, the student should be able to:

1. Create a simple Android project in Android Studio using **Java**.
2. Design a basic **UI layout using XML** (TextView, EditText, Button).
3. Use `findViewById()` to connect XML components to Java code.
4. Handle a **Button click event** to display a personalized greeting.

C. Prerequisites

Students should have:

- Android Studio already installed.
- Basic knowledge of:
  - Java syntax (variables, methods, strings).
  - XML basics (tags, attributes).
- A physical Android device or emulator configured (optional but recommended).

D. Task Description

Create an Android app named **`HelloUserApp`** that:

- Displays:
  - A title: *"Welcome to Android Development"*
  - An input field for the user's name.
  - A button labeled **"Greet Me"**.
  - A TextView where the greeting message will appear.
- When the user types their name and taps **"Greet Me"**, the app should show:

  "Hello, [Name]! Welcome to Android Development."

Example: If the user types **Hannabelle**, the TextView should display:

```
Hello, Hannabelle! Welcome to Android Development.
```

E. Step-by-Step Instructions

1. Create a New Project

1. Open **Android Studio → New Project**.
2. Choose **Empty Activity**.
3. Set:
   - **Name:** `HelloUserApp`
   - **Language:** `Java`
   - **Minimum SDK:** e.g., `API 21: Android 5.0 (Lollipop)` or higher
4. Click **Finish**.

---

2. Design the Layout (XML)

Open:
`app > res > layout > activity_main.xml`

Replace the existing content with this **basic XML layout**:

```
<?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/tvTitle"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Welcome to Android Development"
        android:textSize="20sp"
        android:textStyle="bold"
        android:layout_gravity="center_horizontal"
        android:paddingBottom="16dp" />

    <EditText
        android:id="@+id/etName"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:hint="Enter your name" />

    <Button
```

```
        android:id="@+id/btnGreet"
        android:layout_width="wrap_content"
        android:layout_height="wrap_content"
        android:text="Greet Me"
        android:layout_marginTop="16dp" />

    <TextView
        android:id="@+id/tvGreeting"
        android:layout_width="match_parent"
        android:layout_height="wrap_content"
        android:text=""
        android:textSize="18sp"
        android:layout_marginTop="24dp" />

</LinearLayout>
```

---

3. Implement the Logic in Java

Open:
`app > java > your.package.name > MainActivity.java`

Update the code as follows:

```
package com.example.hellouserapp;

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;

public class MainActivity extends AppCompatActivity {

    private EditText etName;
    private Button btnGreet;
    private TextView tvGreeting;

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

        // Connect XML views to Java
        etName = findViewById(R.id.etName);
        btnGreet = findViewById(R.id.btnGreet);
        tvGreeting = findViewById(R.id.tvGreeting);

        // Set click listener for button
        btnGreet.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                String name = etName.getText().toString().trim();
                if (name.isEmpty()) {
                    tvGreeting.setText("Please enter your name.");
                } else {
                    String message = "Hello, " + name + "! Welcome to Android 
Development.";
                    tvGreeting.setText(message);
                }
            }
        });
    }
}
```

Note: Make sure the `package` name at the top matches your actual project package.

F. Expected Output

- The app shows:
  - A title TextView.
  - An EditText asking for the user’s name.
  - A “Greet Me” button.
  - A TextView that initially is empty.
- When the user enters a name and taps the button, the greeting message appears.

Short Laboratory Questions:

In MS-Word, answer the following questions:

Submit your answers with screenshots:

1. What is the purpose of `setContentView(R.layout.activity_main);`?
2. Explain what `findViewById()` does.
3. Why do we use `setOnClickListener()` on the button?
4. Modify the app so that if no name is entered, a **Toast message** is displayed instead of changing the TextView. (Optional challenge)

H. Submission Requirements

Students must submit:

1. **Screenshot** of the running app:
   - Before entering a name.
   - After entering a name and pressing **“Greet Me”**.

2. **Zipped project folder** (Java + XML files).
3. Short answers to the **Laboratory Questions**.