1. Construct an Android app that toggles a light bulb on and off when the user clicks on toggle button.

To construct an Android app that toggles a light bulb on and off when the user clicks on a toggle button, you can follow these steps:

1. Create a new Android project in Android Studio.

2. Design the user interface with a toggle button and an image view to represent the light bulb.

3. Write the Java code to handle the toggle button click event and toggle the state of the light bulb.

Here's a basic implementation:

1. \*\*Layout File (`activity\_main.xml`):\*\*

```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">

<ToggleButton

android:id="@+id/toggleButton"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:text="Toggle"

android:layout\_centerHorizontal="true"

android:layout\_marginTop="20dp"/>

<ImageView

android:id="@+id/lightBulb"

android:layout\_width="wrap\_content"

android:layout\_height="wrap\_content"

android:layout\_below="@id/toggleButton"

android:layout\_centerHorizontal="true"

android:src="@drawable/light\_off"

android:layout\_marginTop="20dp"/>

</RelativeLayout>

```

2. \*\*Java Code (`MainActivity.java`):\*\*

```java

import androidx.appcompat.app.AppCompatActivity;

import android.os.Bundle;

import android.view.View;

import android.widget.CompoundButton;

import android.widget.ImageView;

import android.widget.ToggleButton;

public class MainActivity extends AppCompatActivity {

private ToggleButton toggleButton;

private ImageView lightBulb;

@Override

protected void onCreate(Bundle savedInstanceState) {

super.onCreate(savedInstanceState);

setContentView(R.layout.activity\_main);

toggleButton = findViewById(R.id.toggleButton);

lightBulb = findViewById(R.id.lightBulb);

toggleButton.setOnCheckedChangeListener(new CompoundButton.OnCheckedChangeListener() {

@Override

public void onCheckedChanged(CompoundButton buttonView, boolean isChecked) {

if (isChecked) {

lightBulb.setImageResource(R.drawable.light\_on);

} else {

lightBulb.setImageResource(R.drawable.light\_off);

}

}

});

}

}

```

3. \*\*Drawable Resources:\*\*

Place two images representing the light bulb in the `res/drawable` folder: `light\_on.png` and `light\_off.png`.

Now, when the toggle button is clicked, it will toggle the state of the light bulb image between "on" and "off". Make sure to replace `light\_on.png` and `light\_off.png` with your actual light bulb images.