Project Assignment: Traffic Light System & Servo Motor using Tinkercad

Objective:
You and your partner will work together to create two different projects:

1- A **Traffic Light System** that switches between red, yellow, and green lights every 3 seconds.

2- A **Servo Motor System** that moves a servo motor to 180 degrees, waits for 3 seconds, and then moves again 45 degree.

Part 1: Traffic Light System

Questions to Answer:

1- **What components do you need to build the traffic light system in Tinkercad?**
List all the components you will use (e.g., Arduino, LEDs, resistors, etc.).

2- **How will you connect the LEDs to the Arduino?**
Describe how you will wire the red, yellow, and green LEDs to the Arduino. Include the pins you will use.

3- **What should happen in your code?**
Explain how your code will control the traffic light. How will each light turn on for 3 seconds, and how will it switch to the next color?

4- **What does the code for the traffic light system do?**
Write and explain the code you will use for controlling the traffic light system. Be sure to explain how the timing works for each light.

5- **How do you know the traffic light system is working correctly?**
After testing your circuit, explain how you will confirm the traffic light is switching between colors every 3 seconds.

Part 2: Servo Motor

Questions to Answer:

1- **What is the purpose of using a servo motor in your project?**
Describe what the servo motor does and how it will move between 0 and 180 degrees.

2- **How will you connect the servo motor to the Arduino?**
Explain the connections between the servo motor and the Arduino. Which pin will you use for controlling the servo?

3- **What should happen in your code?**
How will your code make the servo motor move to 180 degrees, wait for 3 seconds, and then return to 0 degrees?

What does the code for the servo motor do?
Write and explain the code you will use to control the servo motor. Include how you will move it back and forth.

How do you know the servo motor is moving correctly?
After testing your servo motor, explain how you will make sure the servo moves from 0 to 180degrees and back, waiting for 3 seconds each time.