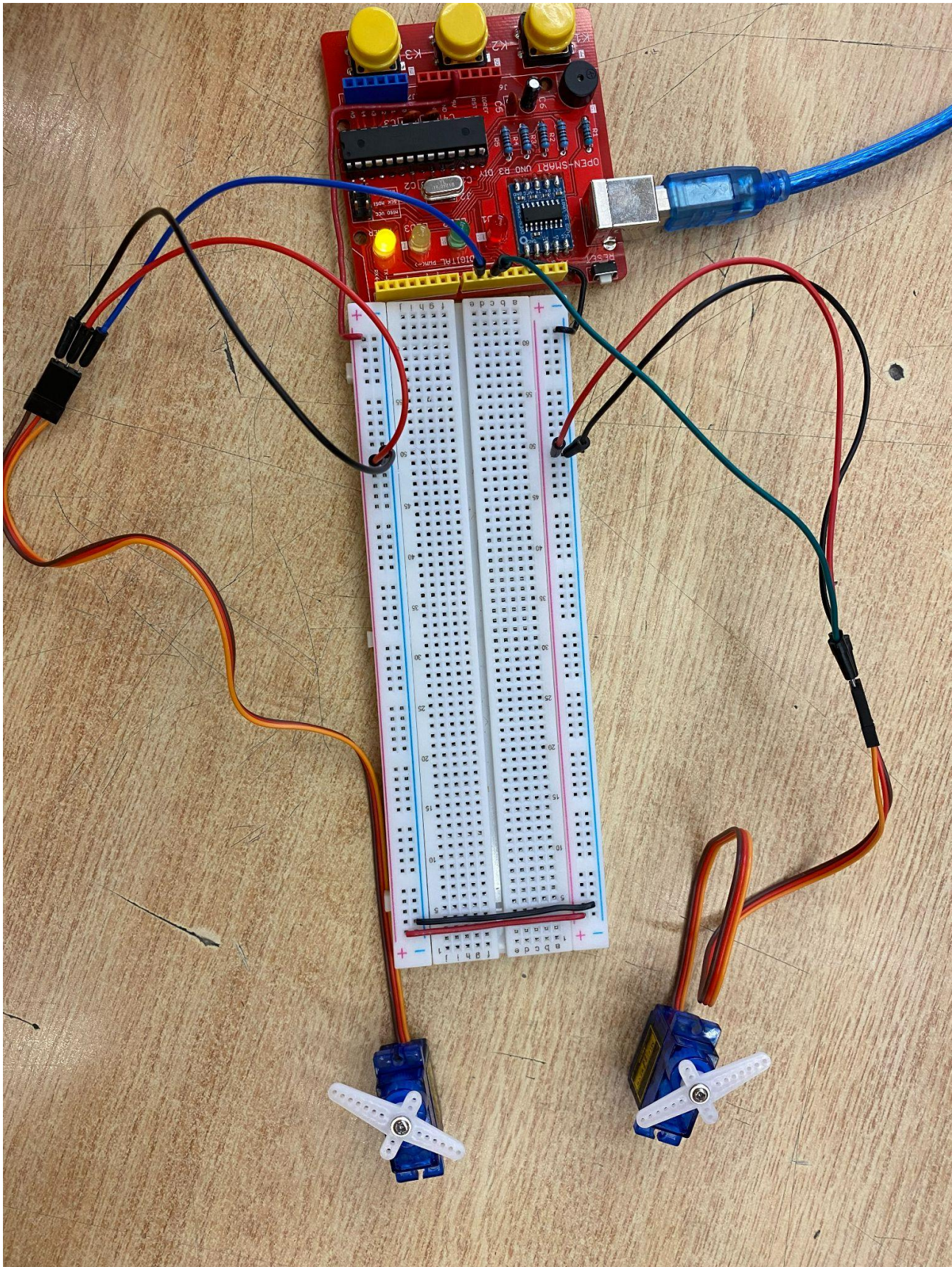| LVL	Criteria
R	
1	
2	
3	
4	**"build and wire"[3]** ☐ circuit is correct, routed cleanly and easy to follow[1½] ☐ all full voltage wire red and all gnd wires black ☐ signal wire colours chosen to allow easier tracing of circuit[½] **tinkerCAD[2]** ☐ all components mounted on breadboard and do not block view of other components[½] ☐ wires horizontal or vertical only with 90 degree bends[½] ☐ wires do not cross in front or behind other components or component terminals and do not run on top of one another[½] ☐ wires and component do not share the same hole on the breadboard and wires do not cross when possible[½] **in person[2]** ☐ all full voltage and gnd wires are solid core, flat to breadboard, horizontal or vertical with 90 degree bends ☐ solid core wires stripped 6-8mm[½] ☐ no bare wire visible [½] **"programming"[3]** ☐ final "test your understanding" complete and working correctly[1½] ☐ code commenting is accurate and complete (including title)[½] ☐ program structure and spacing is logical and demonstrates organization[½] ☐ code text submission is `courier new font` and is coloured to allow easier identification of comments[½] **"inspection questions"[1]** ☐ demonstrates full understanding of circuit and interfacing concepts in conversation with teacher
4+	**"enhancements"[1]** ☐ minimized number and length of wires and wire crossings[½] ☐ circuit enhancement complete and working correctly[½]

Build image:

code:

```
/*
Names: Siddarth & Mostafa
Dates: May 11, 2022
Description: Code for interfacing lab 11 - Servos
*/

#include <Servo.h> // including servo library (allows for servo control)
Servo servo1, servo2; // initializes both servo motors

void setup()
{
    servo1.attach(10); //sets the pin for the first servo motor to 10
    servo2.attach(9); //sets the pin for the second servo motor to 9
}

void loop()
{
    servo1.write(90); //sets both servos to 90 degrees
    servo2.write(90);
    delay(2000); //delay for 2 seconds

    servo1.write(180); //sets first servo to 180 degrees
    servo2.write(0); //sets second servo to 0 degrees
    delay(2000); //delay for 2 seconds

    servo1.write(0); //sets first servo to 0 degrees
    servo2.write(180); //sets second servo to 180 degrees
    delay(2000); //delay for 2 seconds

    //sweep 1
    for(int position = 0; position < 180; position += 2)
    {
        servo1.write(position); //sends first servo the position
        servo2.write(180-position); // second servo receives 180 - position
                                    // which causes it to be opposite in motion to
                                    // the first servo
```

```
        delay(111); // delay for 111 ms (this loop runs 180/2 = 90 times)
                    // over 10000 ms that is  approx. 111 ms per iteration
    }


    //sweep 2
    for(int position = 180; position >= 0; position -= 1)
    {
        servo1.write(position); //sends first servo the position
        servo2.write(180-position); /* second receives opposite position
        delay(55); // delay for 55 ms (runs 181 times) over 10 s that becomes approx
                   // 55 ms per iteration
    }
}
```