Robotics

Servo Motor

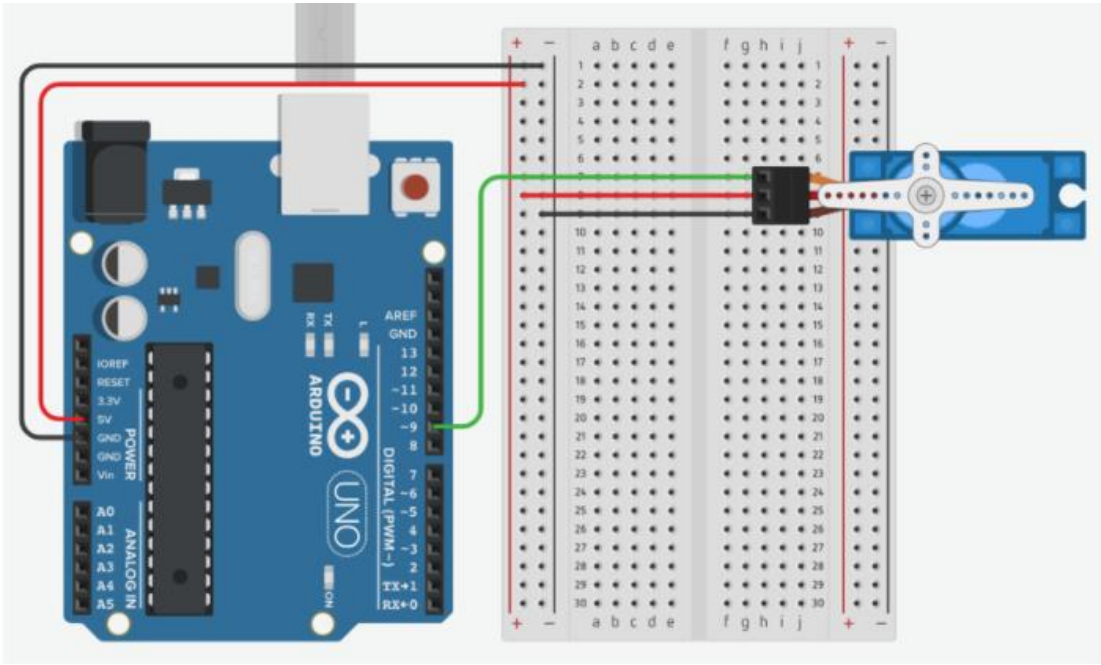
School of Computing, Gachon University

Youngmin Oh

Basics

●Servo Motor (마이크로 서보 in tinkercad)

- ○ A servomotor is a rotary actuator or linear actuator that allows for precise control of angular or linear position, velocity and acceleration.
- ○ Servo motors have three wires: power, ground, and signal.
  - – red : 5V
  - – black or brown : GND
  - – yellow, orange or white : input



Functions [cont.]

- **#include <Servo.h>**
  - Call the library
- **Servo *object***
  - Define a object of type Servo
  - Syntax
    - Servo *object*;
- ***object*.attach()**
  - Attach the Servo variable to a pin.
    - The Servo library supports only servos on only two pins: 9 and 10.
  - Syntax
    - *object*.attach(pin)
  - Parameters
    - *object* : a *object* of type Servo
    - pin: the number of the pin that the servo is attached to

Functions [cont.]

- ***object*.write()**
  - Writes a value to the servo, controlling the shaft accordingly. On a standard servo, this will set the angle of the shaft (in degrees), moving the shaft to that orientation. On a continuous rotation servo, this will set the speed of the servo.
  - Syntax
    - *object*.write(*angle*)
  - Parameters
    - *object* : a object of type Servo
    - *angle*: the value to write to the servo, from 0 to 180
  - Example

```
void setup() {
  myservo.attach(9);
  myservo.write(90);          // set servo to mid-point
}
```

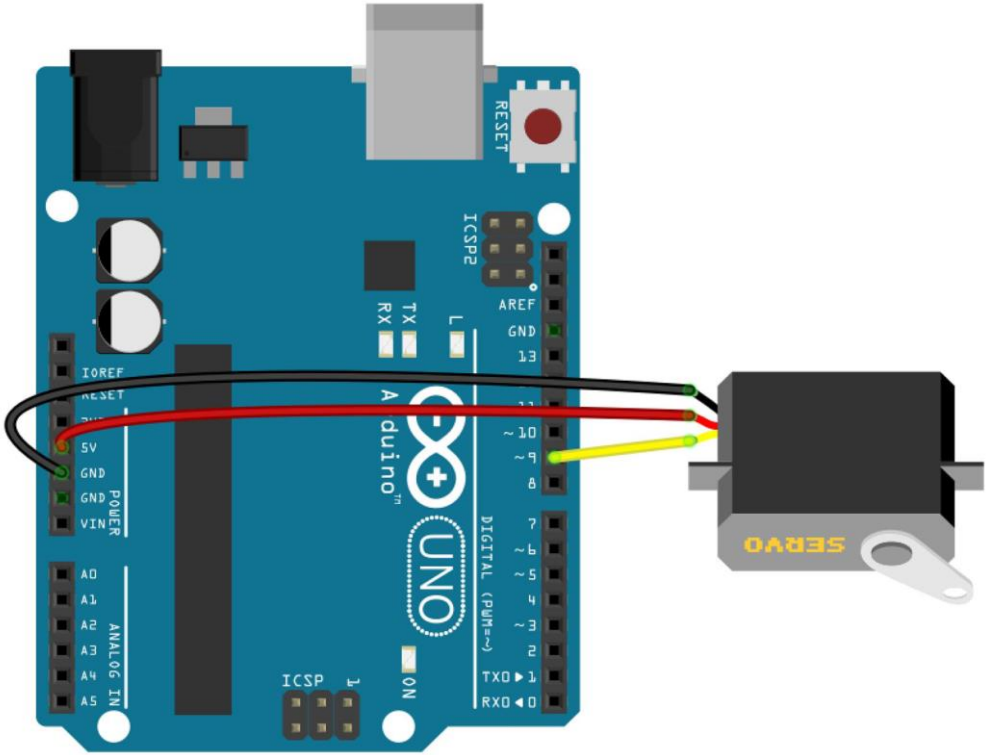
Example

●Example

```
#include <Servo.h>   // 서보모터 라이브러리를 불러옵니다.
Servo myservo1;      // 서보모터에 myservo1라고 이름을 붙여줍니다.
Servo myservo2;      // 서보모터에 myservo2라고 이름을 붙여줍니다.
void setup() {
  myservo1.attach(9);  // myservo1을 9번으로 선언하고, 작동할 준비를 합니다.
  myservo2.attach(10); // myservo2를 10번으로 선언하고, 작동할 준비를 합니다.
}
void loop() {
  myservo1.write(30);  // myservo1을 30도가 되도록 회전합니다.
  myservo2.write(150); // myservo2를 150도가 되도록 회전합니다.
  delay(1000);         // 1초동안 기다립니다.
  myservo1.write(150); // myservo1을 150도가 되도록 회전합니다.
  myservo2.write(30);  // myservo2를 30도가 되도록 회전합니다.
  delay(1000);         // 1초동안 기다립니다.
}
```

Lab 1. Servo motor

- Sweeps the shaft of a servo motor back and forth across 180 degrees.



Lab 2. Servo motor + Potentiometer

- **Control the position of a servo motor with your Arduino and a potentiometer.**
  - The potentiometer should be wired so that its two outer pins are connected to power (+5V) and ground, and its middle pin is connected to analog input 0 on the board.