Hope Foundation's
Finolex Academy of Management & Technology, Ratnagiri
Department of MCA
MCALE232 Internet of Things Lab

Practical 9

Aim: - To interface **Servo Motor** with Arduino.

Components Required :

Arduino Board, Bread Board, Servo Motor, Resistors, Connecting wires, 10K Ohm potentiometer

Theory:

The principle of the servo motor is based on Pulse Width modulation (PWM). It means that the duration of pulses applied to the specific control pin controls the angle of rotation of the motor.

The construction of the servo motor is similar to a DC motor. It means that it has a rotor, stator, and control assemblies. It has closed-loop feedback for controlling the torque and speed.

The advantages of a servo motor are listed below:

- o   High efficiency
- o   High output power
- o   Small size
- o   Good power
- o   High precision
- o   rapid acceleration of loads

The applications of servo motors are machinery, automated manufacturing, robotics, radio controller airplanes, etc. The controller is considered as an essential part of the servo motor.

Principle

The project allows us to control the shaft at angles between 0 and 180 degrees. We can also set the rotation of the shaft at different speeds.

Servo motor has three terminals signal, power, and ground.

The power pin of the servo motor is connected to the PWM pin of the Arduino board. Here, we have connected the power terminal to pin 9 of the Arduino UNOR3 board.

Implementation :

The steps to set up the connection are listed below:

- o Connect the signal terminal of the servo motor to the 5V pin of the Arduino board.
- o Connect the power terminal of the servo motor to pin 9 of the Arduino board. We can connect the power terminal of the motor to any digital PWM pin on the Arduino board.
- o Connect the ground terminal of the servo motor to the GND pin of the Arduino board.
- o One outer pin of the Potentiometer is connected to the ground (**GND**), and other external pin is connected to **5V** of the Arduino board.
- o The middle terminal of the Potentiometer is connected to the analog input pin A0 of the board.

Circuit Diagram:
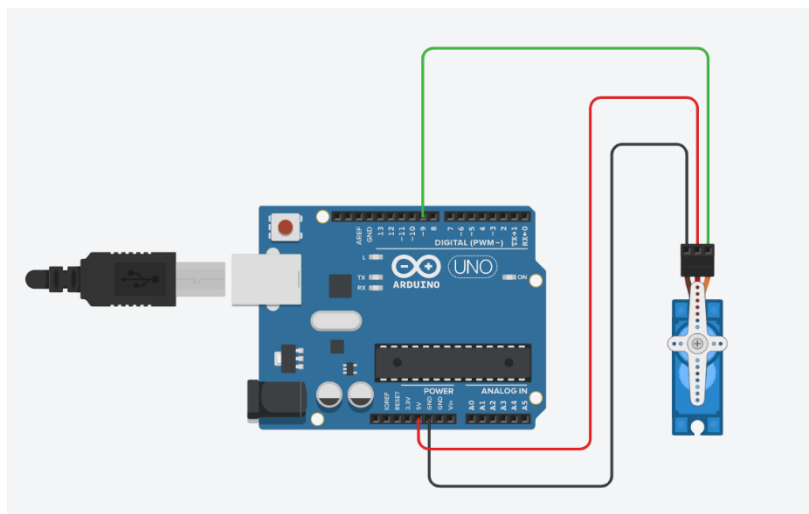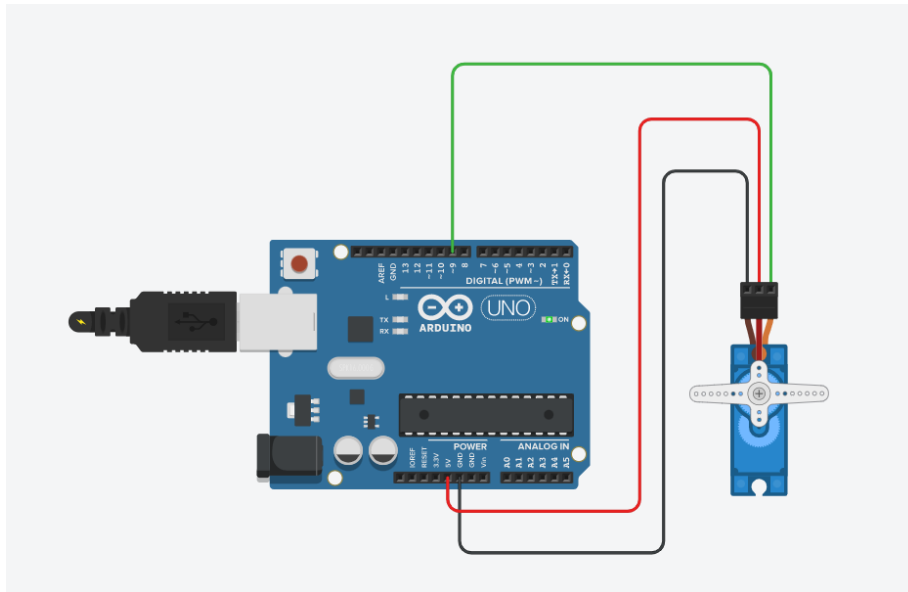
Code:

```
// C++ code
//
#include <Servo.h>

Servo servo_9;

void setup()
{
  servo_9.attach(9, 500, 2500);
}

void loop()
{
  servo_9.write(90);
  delay(1000); // Wait for 1000 millisecond(s)
  servo_9.write(0);
  delay(1000); // Wait for 1000 millisecond(s)
}
```

Output :

Conclusion: Thus we studied the interfacing of Light Dependent resistor and how the resistance changes depending on the light.