**TASK 1**

Demonstrated in lab

**TASK 2**

// include the servo library

#include <Servo.h>

Servo myServo; // create a servo object

int const potPin = A0; // analog pin used to connect the potentiometer

int potVal; // variable to read the value from the analog pin

int angle; // variable to hold the angle for the servo motor

int led\_pin = 3;

void setup() {

myServo.attach(9); // attaches the servo on pin 9 to the servo object

Serial.begin(9600); // open a serial connection to your computer

pinMode(led\_pin,OUTPUT);

}

void loop() {

potVal = analogRead(potPin); // read the value of the potentiometer

// print out the value to the serial monitor

Serial.print("potVal: ");

Serial.print(potVal);

// scale the numbers from the pot

angle = map(potVal, 0, 1023, 0, 179);

// print out the angle for the servo motor

Serial.print(", angle: ");

Serial.println(angle);

// set the servo position

myServo.write(angle);

// wait for the servo to get there

int brightness = map(angle, 0, 179, 0, 255);

analogWrite(led\_pin,brightness);

// if (angle <=89 ){

// analogWrite(led\_pin,0);

// }else if(angle >= 90 && angle <=178){

// analogWrite(led\_pin,50);

// }else if(angle >= 179 ){

// analogWrite(led\_pin,100);

// }

//

delay(15);

}

**TASK 3**

// include the servo library

#include <Servo.h>

Servo myServo; // create a servo object

int const potPin = A0; // analog pin used to connect the potentiometer

int potVal; // variable to read the value from the analog pin

int angle; // variable to hold the angle for the servo motor

int led\_pin = 3;

int red\_pin = 5;

void setup() {

myServo.attach(9); // attaches the servo on pin 9 to the servo object

Serial.begin(9600); // open a serial connection to your computer

pinMode(led\_pin,OUTPUT);

pinMode(red\_pin,OUTPUT);

}

void loop() {

potVal = analogRead(potPin); // read the value of the potentiometer

// print out the value to the serial monitor

Serial.print("potVal: ");

Serial.print(potVal);

// scale the numbers from the pot

angle = map(potVal, 0, 1023, 0, 179);

// print out the angle for the servo motor

Serial.print(", angle: ");

Serial.println(angle);

int brightness = map(angle, 0, 179, 0, 255);

analogWrite(led\_pin,brightness);

// set the servo position

myServo.write(angle);

// wait for the servo to get there

if (angle <=10 || angle > 169){

analogWrite(red\_pin,255);

}else{

analogWrite(red\_pin,0);

}

delay(15);

}

**TASK 4**

// include the servo library

#include <Servo.h>

Servo myServo; // create a servo object

int const potPin = A0; // analog pin used to connect the potentiometer

int potVal; // variable to read the value from the analog pin

int angle; // variable to hold the angle for the servo motor

int led\_pin = 3;

int red\_pin = 5;

int s1 = 6;

int s1State = 0;

void setup() {

myServo.attach(9); // attaches the servo on pin 9 to the servo object

Serial.begin(9600); // open a serial connection to your computer

pinMode(led\_pin, OUTPUT);

pinMode(red\_pin, OUTPUT);

}

void loop() {

s1State = digitalRead(s1);

potVal = analogRead(potPin); // read the value of the potentiometer

// print out the value to the serial monitor

Serial.print("potVal: ");

Serial.print(potVal);

// scale the numbers from the pot

angle = map(potVal, 0, 1023, 0, 179);

// print out the angle for the servo motor

Serial.print(", angle: ");

Serial.println(angle);

int brightness = map(angle, 0, 179, 0, 255);

if (s1State == HIGH) {

analogWrite(led\_pin, brightness);

// set the servo position

myServo.write(angle);

// wait for the servo to get there

if (angle <= 10 || angle > 169) {

analogWrite(red\_pin, 255);

} else {

analogWrite(red\_pin, 0);

}

}

delay(15);

}