#include <AFMotor.h>

AF\_Stepper motor(200,2); //connect motor to port 2 ( M3 and M4)

const int sensorPin = A0; // pin number where we connect the photoresistor

const int button = 11; // pin number where we connect button

int buttonPressed = 0 ;// variable for reading the push button

int detect\_block = 300; // value to compare with photoresistor reading

// to detect the block

int light = 0; // variable for photoresistor reading

long start\_time = 0, end\_time= 0, time\_ms = 0;

int speed\_calculate ; // speed that we use to calculate distance

int length\_lego = 0; // length of the lego

void setup() {

Serial.begin(9600);

pinMode(button, INPUT);

pinMode(sensorPin, INPUT);

motor.setSpeed(15); //15 rpm

}

void loop() {

buttonPressed = digitalRead(button); // reading the state of the push button

if(buttonPressed == HIGH) //pressed

{

/\* NOTE : we're cannot use use motor.step as a condition. I will find a way to move the motor

\* and check the condition at the same time

\* because if I do motor.step(200, FORWARD, MICROSTEP);

\* it will wait until the motor stop moving and then go to the next line

\*/

if(motor.step(200, FORWARD, MICROSTEP))

{

light = analogRead(sensorPin);

while ( light < detect\_block); // wait to detect block (do nothing while waiting)

start\_time = millis(); //record the start time

while (light > detect\_block); // wait to detect laser again

end\_time = millis();

}

time\_ms = start\_time - end\_time;

// in millisecond, decide later if we need to convert it to second

length\_lego = time\_ms\*speed\_calculate;

// calculate the lego length

Serial.println("The length of the block is ");

Serial.print(length\_lego);

Serial.print("cm");

motor.step(200, BACKWARD, MICROSTEP); // move back to start position

}

}