LAB REPORT #6

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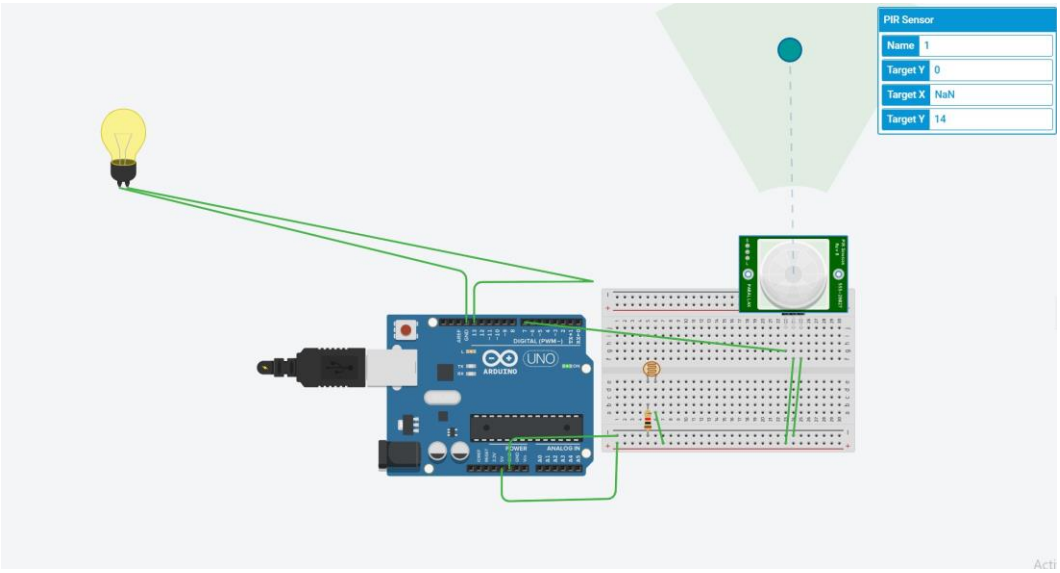
Screenshot and components

Screenshot:



PSR - Photosensitive Resistor that changes resistance of the circuit based on the light its sensor receives. The more intense the light it receives, the lower the resistance it will output itself. This is used to detect light level in the area.

PIR - Parallax Passive Infrared Motion Sensor that detects motions and returns a HIGH when there is a change in heat level and LOW otherwise.

Analog Pins - These read electrical inputs ranging from 0V- 5V and return a number 0 -1023 based on the input.

Process:

I first set up the hardware as seen in the photo in lab6 instruction. Then in the loop method, I followed the logic guide in the instruction. Motion is detected when the digitalRead(motionPin) returns a 1. The motionPin should pick up the motion if the ball in its range is moved around. If there is motion, I would check if there is heat caused by light which is based on the PIR. If the PSR detects light, the resistance would decrease and the voltage would increase based on the light intensity the PSR receives. The Analog Pin would review the voltage and convert to an integer. If the analog pin gives an integer less than 200, then we can consider there was no light emitted or the area is still too dark, thus turning on the light bulb. This happens when a person is

walking as they are not emitting light. However, if there was a car driving into the driveway, there would be no need to turn on the light since the car already has light. If there is no motion, turn off the light bulb.

Result:

I moved the ball around in the PIR area and printed out a message if there was motion detected or not with a deploy of 2 seconds. Since 200 was too low as a requirement for dark light by the analog pin, there was mostly light detected already and the light bulb did not turn on as often. When I increased to 700, the light bulb turned on more.

I learned how the PSR works and how we can utilize it in the Arduino analog pins. When the PSP gives higher resistance, the voltage would increase and the analog pins would give a lower integer from 0-1023 and we can detect the heat level from the integer. I also learned how to use the PIR by just moving around the ball in its range and it would detect motion in the area. I also learned how to read an output from the analog pin using analogRead(). int lightPin = A0; // Analog pin for CdS Photoresistor (light sensor) int motionPin = 7; // Pin for input from PIR Sensor (motion sensor) int nightLight = 13; // Pin for output to light bulb int waitTime = 2000;// How long should the light stay on once motion has been detected?

```
void setup() {
  Serial.begin(9600);

  pinMode(nightLight, OUTPUT);
  pinMode(lightPin, INPUT);
  pinMode(motionPin, INPUT);

  digitalWrite(nightLight, LOW); //make sure the light is off
}
```

```
void loop() {
        /* look at lab instructions for logic
        *
        * be sure to make use of analogRead()
        */ digitalWrite(12, HIGH); bool
  motion = digitalRead(motionPin); if
  (motion) {
        Serial.println("motion detected"); if
    (analogRead(lightPin) < 200){ Serial.println(" NO
    LIGHT detected"); digitalWrite(nightLight,
    HIGH);}} else { digitalWrite(nightLight, LOW);
        Serial.println(" no motion detected");
    }

    delay(waitTime);


}
```