LAB REPORT 6

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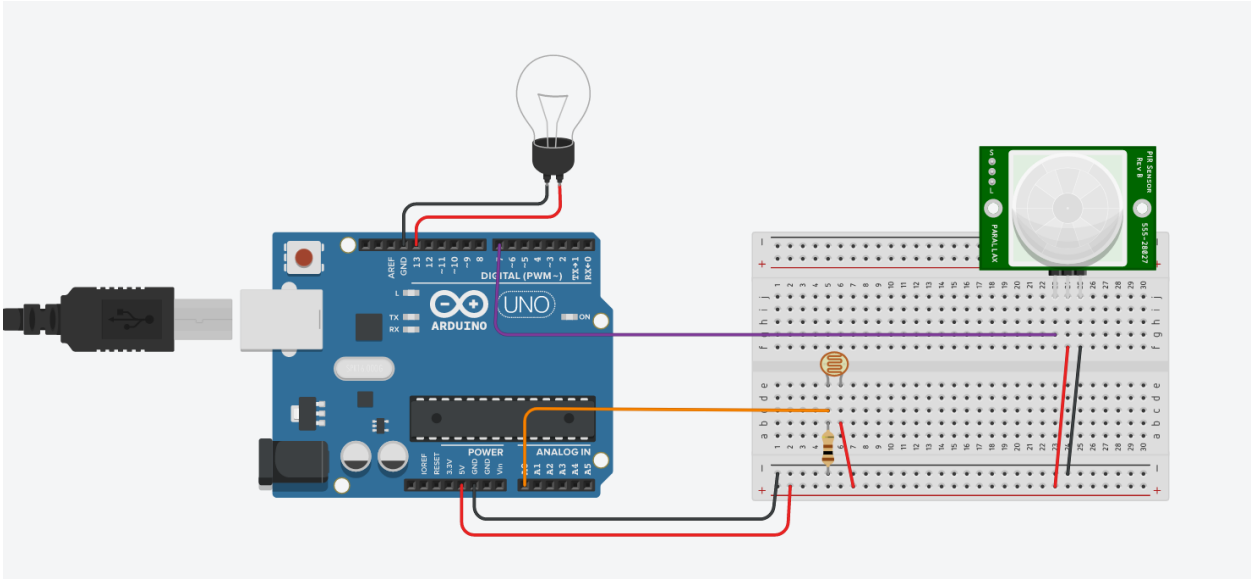
(Date) 4/17/21

Screenshot + components:

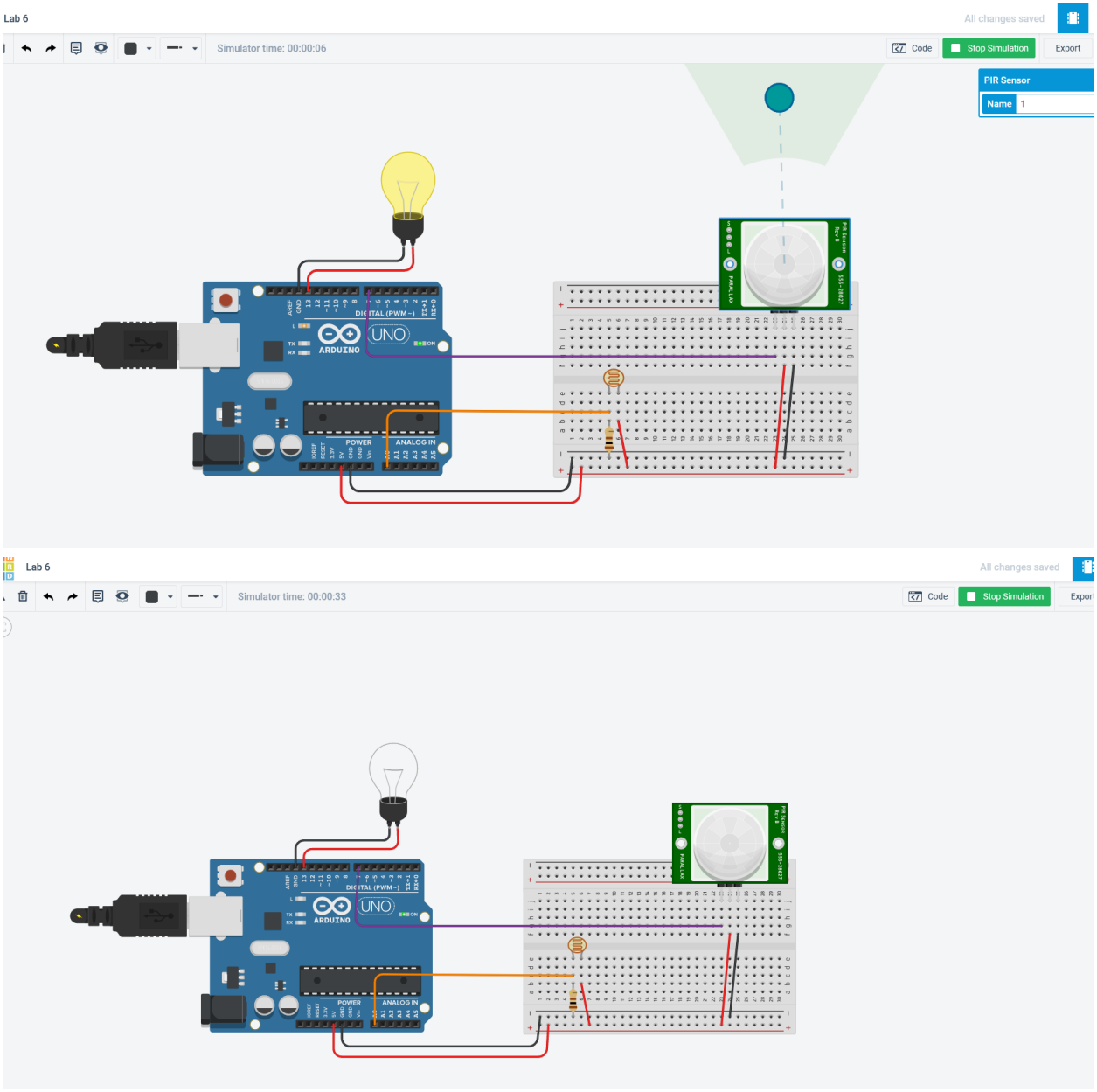


- Light Bulb: used to visually show when motion was detected or not.
- Infrared Motion Sensor: used to detect motion by checking heat.
- Photoresistor: a resistor that changes resistance based on light detection.

Summary:

In this lab I created a circuit that could detect motion based on heat and visually show it using a light bulb. I created the circuit based on the one given in the instructions. This was overall the easiest part of the lab. The more challenging section was the code. Here I created an if - else statement to turn on or off the light bulb based on the motion value detected. Before entering that statement I had to get the value of the light (whether it was on or off) and the value of the motion sensor (motion detected or not). Using these pieces of information I was able to complete the if-else statement and make the circuit work as intended.

Results:



Conclusions:

I learned that motion can be detected by using heat. I also learned that there are resistors that can change their resistance values based on light.

A mistake that I made was when trying to get the motion value. I thought I was supposed to use the analogRead() function. After some research online I learned that I just had to use digitalRead(). Another mistake was that I almost forgot to include the if (light < 200) statement because I did not notice anything visually wrong with the results of my circuit when I did not have it in the code.

Code:

```
int lightPin = A0;   // Analog pin for CdS Photoresistor (light sensor) 0 - 1023
int motionPin = 7;  // Pin for input from PIR Sensor (motion sensor) HIGH or LOW
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()
  */
  int motion = digitalRead(motionPin);    // get motion val
  int light = analogRead(lightPin);     // get light val
  if (motion == HIGH) {                                 // motion detected
          if (light < 200) {                            // light is off
          digitalWrite(nightLight, HIGH);    // turn light on
          delay(waitTime);                              // keep light on
          }
  }
  else {                                                        // motion not detected
          digitalWrite(nightLight, LOW);              // turn light off
  }
  delay(200);
}
```

Rubric:

Each lab is graded out of 10. Labs are due at midnight a week after they are assigned. Labs turned in late receive a max of 7 points:

Item	Points worth
Code correctness	3
Submission form correct	3
Report contains accurate information	2
Some effort put into report*	2

*No answer is too short to properly address the lab report section and I can tell you tried at least just a little.