Course Name: PRIN ELECT ENG I LAB

Course Number and Section: **14:332:223:01**

Experiment: Lab 5 Report

Lab Instructor: ANASTASIOS KLENIATIS

Date Performed: 12/19/2024

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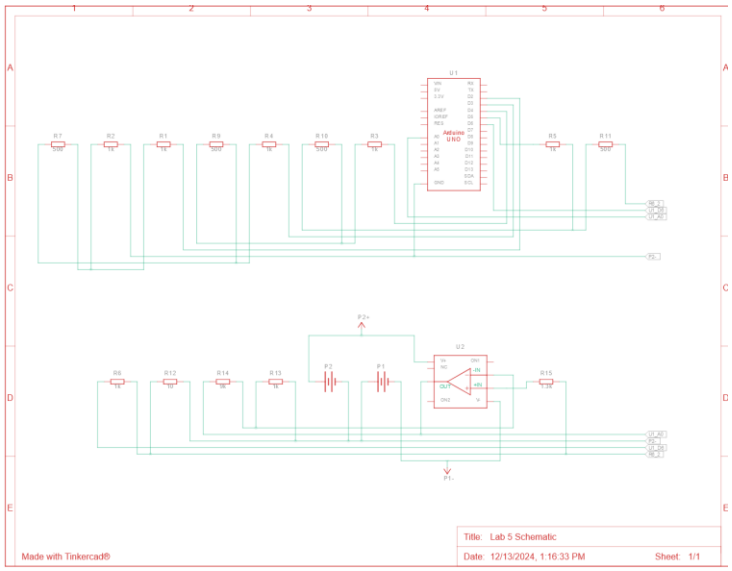
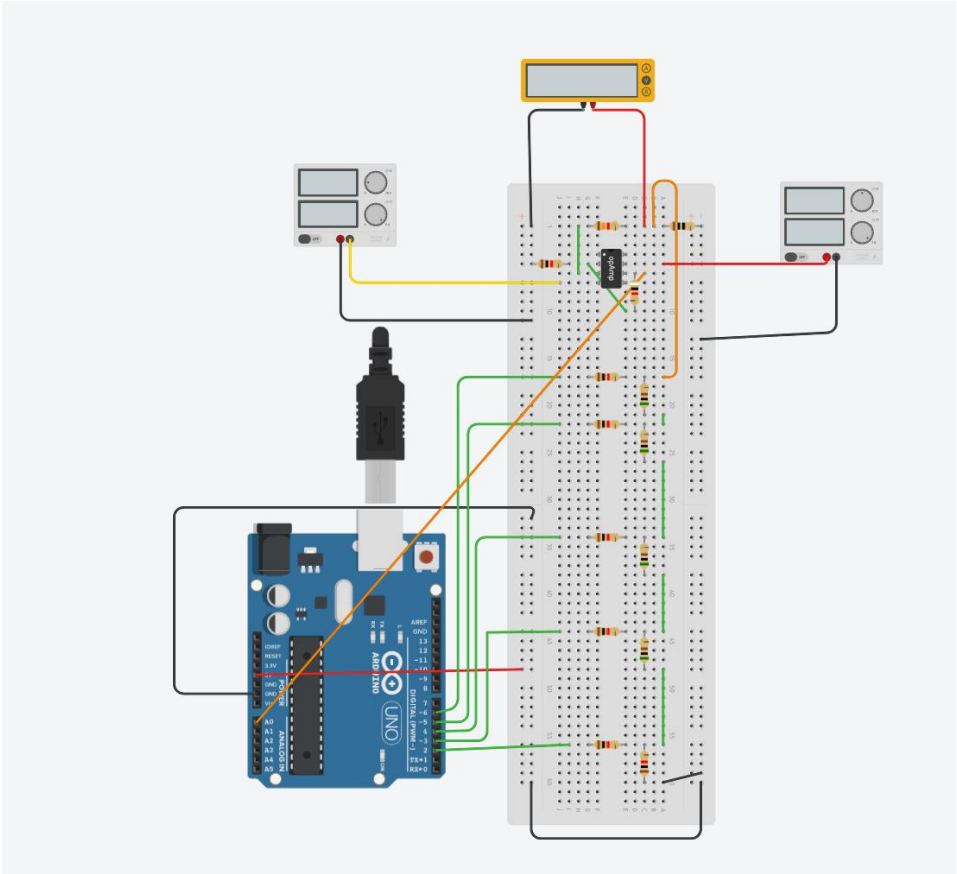
1. 



2.

```
float voltage;
```

```
float resistance = 1300.0;
float current;
float setpoint = 0.010;
float regulation = 0.00025;

void setup() {
 DDRD = B01111100; //pin 2-6 as outputs
 PORTD = 0b00000000;

 Serial.begin(9600);
}

void loop() {
 voltage = analogRead(A0)/204.6;
 //voltage = map(voltage, 0, 1023, 0, 5);
 current = (voltage / resistance);
 current = current*10;

 Serial.print("current (A):");
 Serial.print(current,8);
 Serial.println();
 Serial.print("voltage (V):");
 Serial.print(voltage,8);
 Serial.println();

 if(((current+regulation)>setpoint)||((current-regulation)>setpoint)){
   PORTD--;
```

```
 }

 if(((current+regulation)<setpoint)||((current-regulation)<setpoint)){
   PORTD++;
 }
 Serial.println(PORTD);
 delay(10);
}
```

3. We had to modify our design a few times. The most notable was having to put an extra rung on the resistor ladder to have a better resolution.
4. The biggest challenge was getting the code to work correctly. We had to print almost every variable to debug the code.
5. The circuit should work as intended and adjust the current as the load changes. If the load varied too quickly, the op amp might not be able to switch fast enough, and a delay would be introduced.