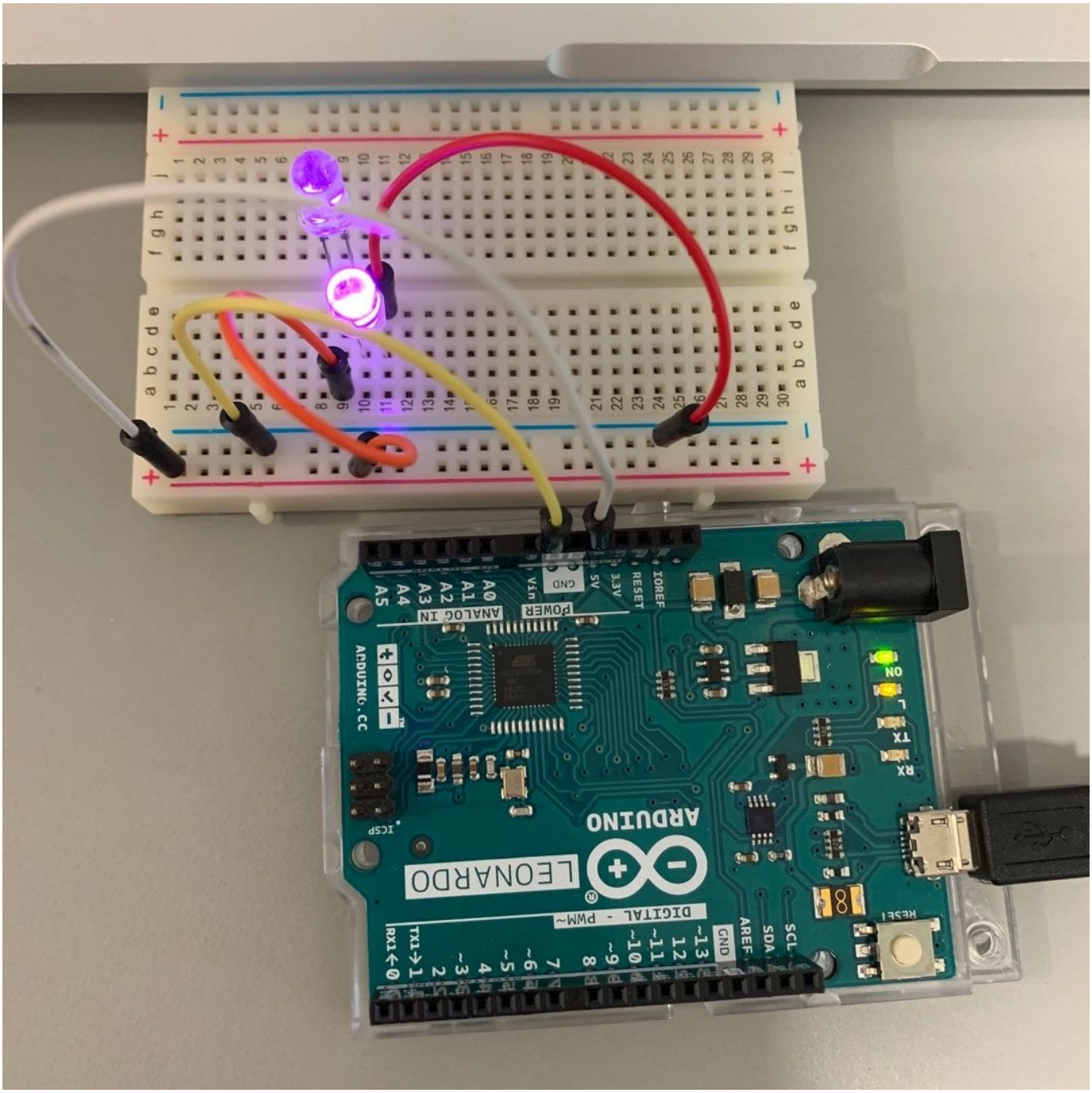
Week 02 Lab Report

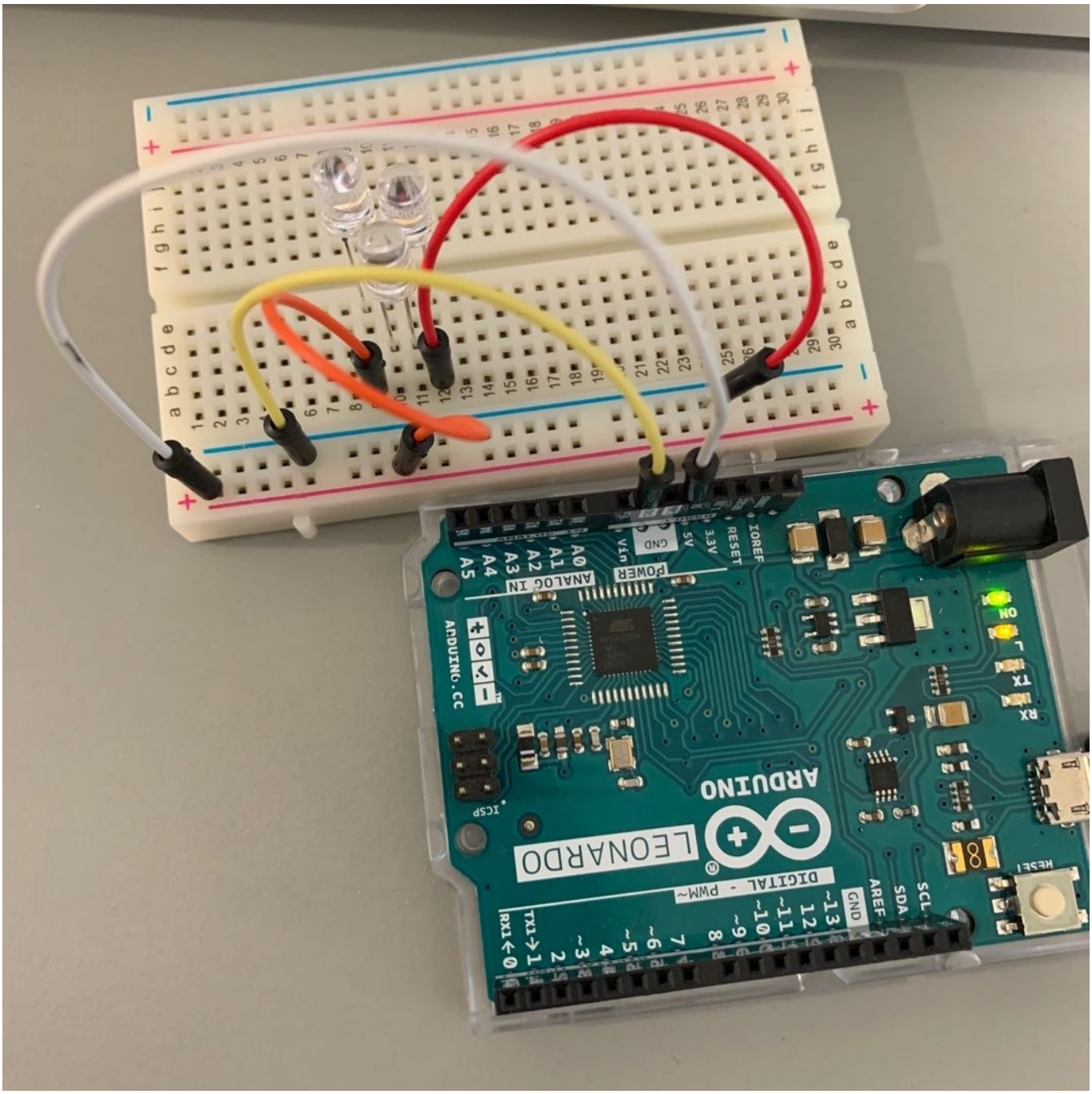
Lab 00 - Leds in Serial and Parallel

Experiment results: Maximum 2 White LEDs in serial and more than 24 in parallel.

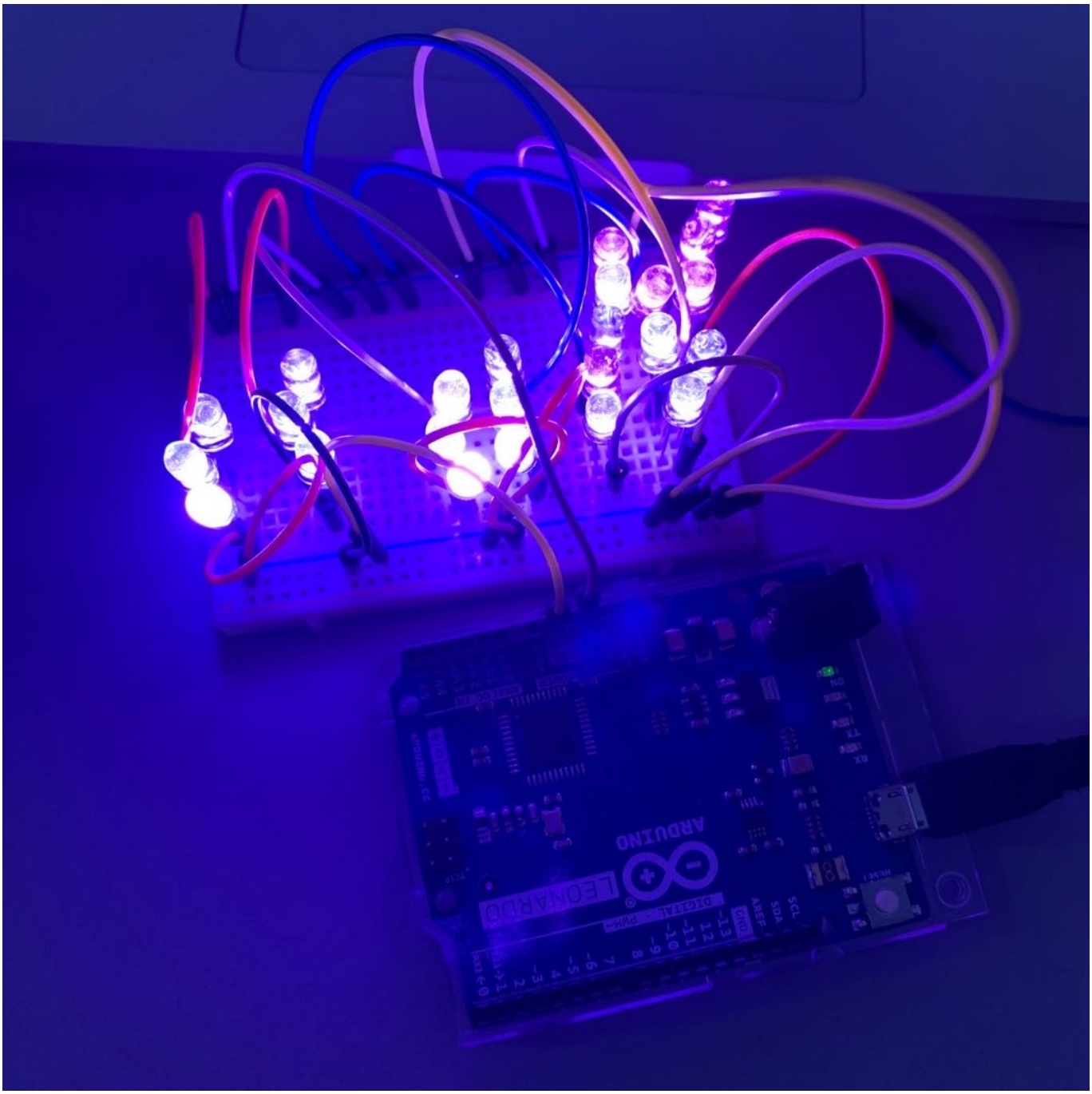
This lab experiment discuss about the load of a circuit. My computer output is 5V,4.5W and a battery is 1.5V, max.2.4W. I learned to always keep in mind the voltage and maximum power of a power source of a device.



Two LEDs on in serial.



Three LEDs off in serial.



24 LEDs on in parallel.

Lab 01 - Serial Data

A little Wee Story

```
void setup() {
Serial.begin(9600);
Serial.println("Tell me what you think");
}
void loop() {
if(Serial.available())
```

```
{ int a = random(0,3);

 = {"hello ", "thanks ", "haha "};

Serial.print(message[a]);

String s = Serial.readString();

Serial.println(s);

}
```

Lab 02- Potentiometers (Knobs)

A potentiometer is useful in directly changing the resistance in a circuit. The example inspires me a lot in converting the change of resistance into change in digital signals, ie, time intervals.

Lab 03 - Light Dependent Resistors

An LDR detects the surrounding lighting and changes its resistance. I powered up the circuits and played with the light in relation to the input data.

Lab 04 - Playing with Common Sensors

My team received temperature sensor TMP36 for this session. I built up the two circuit as the link on wesite shows. And use the code online to test how the sensor works.

The temperature sensor detects tempterature and act as a votage divider, the output of 'middle leg' varies due to temperature. Temperature is calculated mathematicaly. I tested with temperature from room temperature (about 25℃) to hot water about (80℃).

The temperature sensor is connected to 5V and 3.3V respectively. 5V is the default voltage and I learned to set external reference voltage of 3.3V in codes.

Issues I faced include the abnormal heating of the sensor. This issue occurs twice and was solved after reconnecting the same circuit. I need to be prepared to disconnect immediately the next time I use this TMP36 sensors.