Exercise 11: Output temperature to LCD-screen

Equipment

For this exercise you will need:

- 1 x Arduino Uno
- 1 x TMP36GZ *or* LM35DZ
- 1 x LCD-screen with I2C module
- Wires

Messy code? Use **ctrl+T**

Reading

Chapter 13

Setup

- Install the LiquidCrystal_I2C library by Frank de Brabander from within the Arduino IDE and include it in your sketch

```
#include <LiquidCrystal_I2C.h>
```

- Connect the temperature sensor.
- Connect the four pins on the LCD to the Uno.

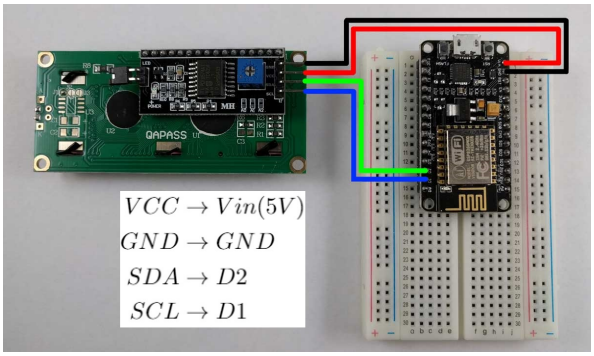

Figure 2: **I2C connection**

Questions & Exercises

11a: What is I2C?
11b: How can you save computational power when printing on the LCD?
11c: Write a program which:

- Reads the temperature using the temperature sensor.
- Print the temperature to the LCD.
- Show some warning when the sensor gets too hot (e.g. *!!!*).
- *Optional* Make at least ten measurements of the temperature between each time the display is updated. Have the temperature be an average of your measurements. This should make the shown temperature more stable.

Hint

If you have trouble finding the address of the LCD, you can use this code to find it (Usually the address is 0x27). You can use the code to test if the Arduino can "see" the LCD.