

Lab 4 for CSE121, Spring'23

Due Date: 05/10/23

This lab is worth 20 Points. The overall objective of this task is to develop a new C++ library in ESP32 to control the display (I2C) and use the same I2C to access the temperature/humidity sensor that we used in a previous lab.

It is VERY important to submit the [report.pdf](#). If this file is missing, you lose ½ of the points.

Lab 4.1: Solder pins (5 points)

Go to bells and pick the new pin header. The goal of this task is to solder the header so that you can do the I2C and Vdd control for the display.

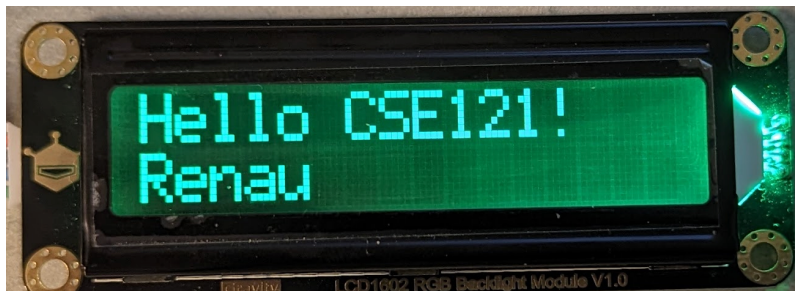
Lab 4.2: Display library (10 points)

You can clone the https://github.com/DFRobotdl/DFRobot_LCD

This library was for Arduino, but we have an ESP32C3, so it does not work. The idea is to respect the same API (DFRobot_LCD.h) but to rework completely the internals (only use ESP32 calls like we have been doing during class). Some hints:

- This is a C++ library, so the ESP32 project should be C++.
- The Print should be removed.
- The Wire should be replaced for the ESP32 “sort of equivalent”

Once your project is done, it should print “Hello CSE121!” in the 1st line and the 2nd show your last name.

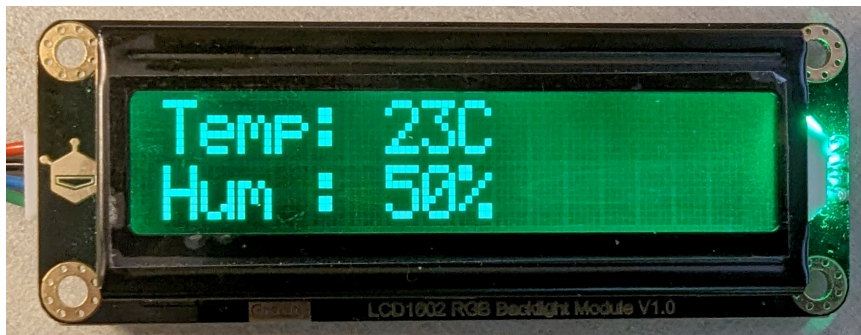


The app main should look like this (not exactly this).

```
while(true) {  
  lcd.init();  
  
  lcd.setRGB(0, 255, 0);  
  
  lcd.printstr("Hello CSE121!");  
  lcd.setCursor(0,1);  
  lcd.printstr("Renau");  
}
```

Lab 4.3: Integrate humidity and temperature (5 points)

Using the display, read the humidity sensor and the temperature. It should show the temperature in Celcius (1st line). The value should update each second.



What/How to submit

Same instructions as lab1. Upload the zip with the code and report.pdf to Canvas.