Experiment 010 LCD

#WeAreAllMakers

OVERVIEW

In this experiment you will control how to connect a serial LCD to the 321Maker Shield.

-OUTCOMES

By the end of this experiment you will be able to:

- Install an Arduino library.
- Connect a serial device to the Arduino.

REQUIREMENTS

- Arduino-Compatible board
- 321Maker Things Shield
- USB Cable
- Arduino Software
- A serial 1602 LCD
- 4 DuPont Female-to-female cables.

PREREQUISITES

- Getting Started Tutorial: http://321maker.com/start
- Source Code: https://git.io/vPwOz
- LCD Library: http://bit.ly/2dVVQa4

VIDEO TUTORIAL

http://youtube.com/indevelopment

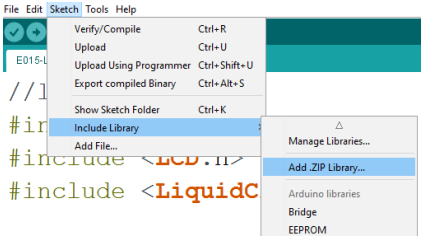
BACKGROUND

1602 Serial LCD is a 16 character by 2 row LCD with an I2C serial backpack. I2C is the same protocol that is used with USB devices.

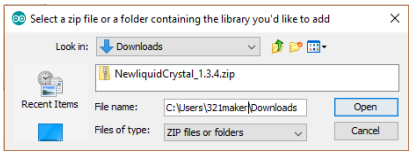
LEVEL 1 PROCEDURE

- [ ] Connect your serial LCD to the 321Maker shield. Using 4 Dupont wires. Connect the devices as follows.

321Maker	Serial LCD
GND	GND
VCC	VCC
SDA	SDA
SCL	SCL



- [ ] Connect your Arduino to your computer using the USB port. Open the Arduino software.
- [ ] Download and install the new LCD library. Click on this link: http://bit.ly/2dVVQa4



- [ ] From within the Arduino software choose. **Sketch, include Library, Add .ZIP Library**
- [ ] Browse to your downloads folder and select the **NewliquidCrystal_1.3.4.zip** file.

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- [ ] Download the **LCD** program code from here: https://git.io/vPwOz
- [ ] Copy and paste the program code into the Arduino software editor.
- [ ] Make sure you have the correct Arduino Board port setup.
- [ ] Click the upload button in the upper left corner to compile and upload the code to the Arduino device. If you see an Orange error in the bottom of your screen, then something went wrong.
- [ ] Congratulations, your LCD should be displaying 321 Maker. If not go to line 16 in the program code and change the I2C address from 0x3f to 0x27. Then re-upload your code.

LEVEL 2 PROGRAM MODIFICATION

- [ ] Add the following lines inside the loop function.

```
lcd.setCursor(0,0);
 lcd.print("Your Name Here");
 lcd.setCursor(0,1);
 lcd.print("3");
 delay(1000);
 lcd.print("2");
 delay(1000);
 lcd.print("1");
 delay(1000);
 lcd.print(" Maker");
```

LEVEL 3 ADVANCED APPLICATION

- [ ] Write a program that will display your name, then when the user presses sw1 (d2) your favorite hobby or interest will be displayed. Then if they push sw1 (d2) again, the display will show what you want for lunch. Finally if sw1 (d2) is pushed again then the display reset and display your name again.
- [ ] Write a program that prints your name and have it shift your name back and forth across the LCD.

LEVEL 4 PROJECT CHALLENEGE

- [ ] Write a program that will display temperature, humidity, and light values on the LCD screen.