LCD Display

Overview

In this lesson, you will learn how to wire up and use an alphanumeric LCD display. The display has an LED backlight and can display two rows with up to 16 characters on each row. You can see the rectangles for each character on the display and the pixels that make up each character. The display is just white on blue and is intended for showing text.

In this lesson, we will run the Arduino example program for the LCD library

Component Required:

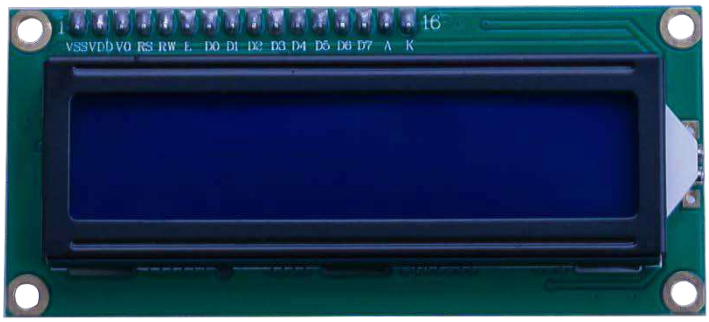
1 x Mega2560 R3

1 x LCD1602 module

1 x 830 tie-points Breadboard

1 x 1k ohm resistors

13 x M-M wires (Male to Male jumper wires)



Component Introduction

LCD1602

Introduction to the pins of LCD1602:

VSS: A pin that connects to ground

VDD: A pin that connects to a +5V power supply

VO: A pin that adjust the contrast of LCD1602

RS: A register select pin that controls where in the LCD's memory you are writing data to. You can select either the data register, which holds what goes on the screen, or an instruction register, which is where the LCD's controller looks for instructions on what to do next.

R/W: A Read/Write pin that selects reading mode or writing mode

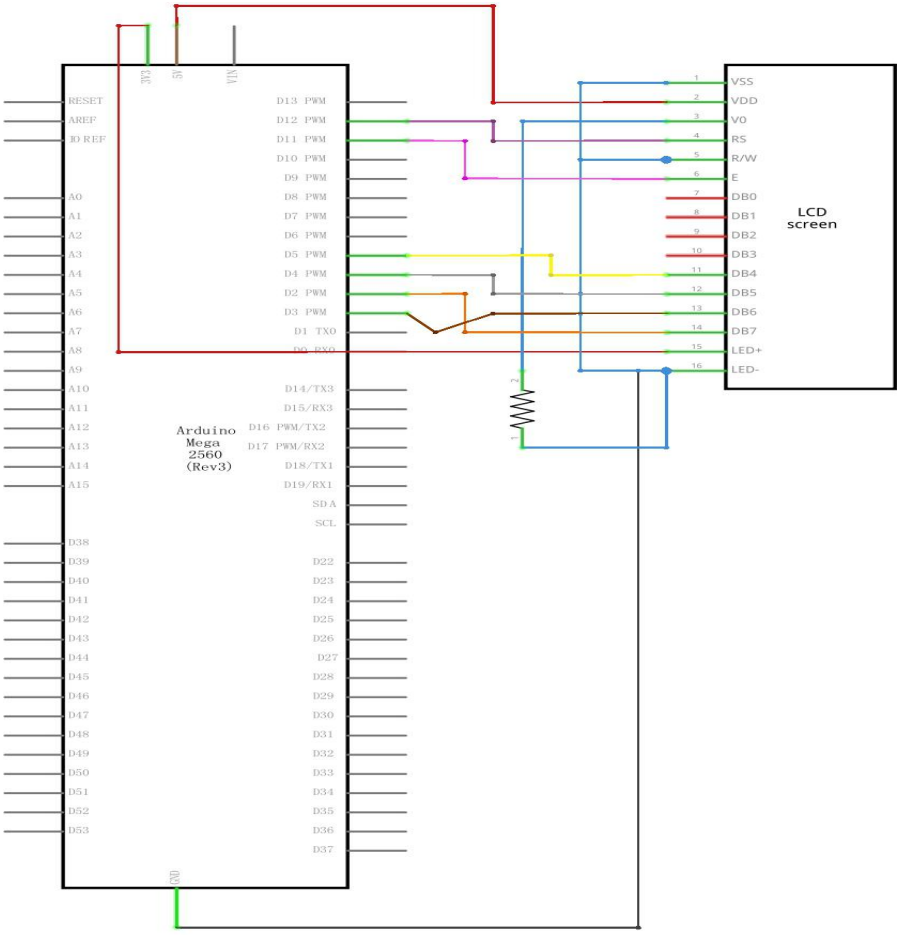
E: An enabling pin that, when supplied with low-level energy, causes the LDC module to execute relevant instructions.

D0-D7： Pins that read and write data

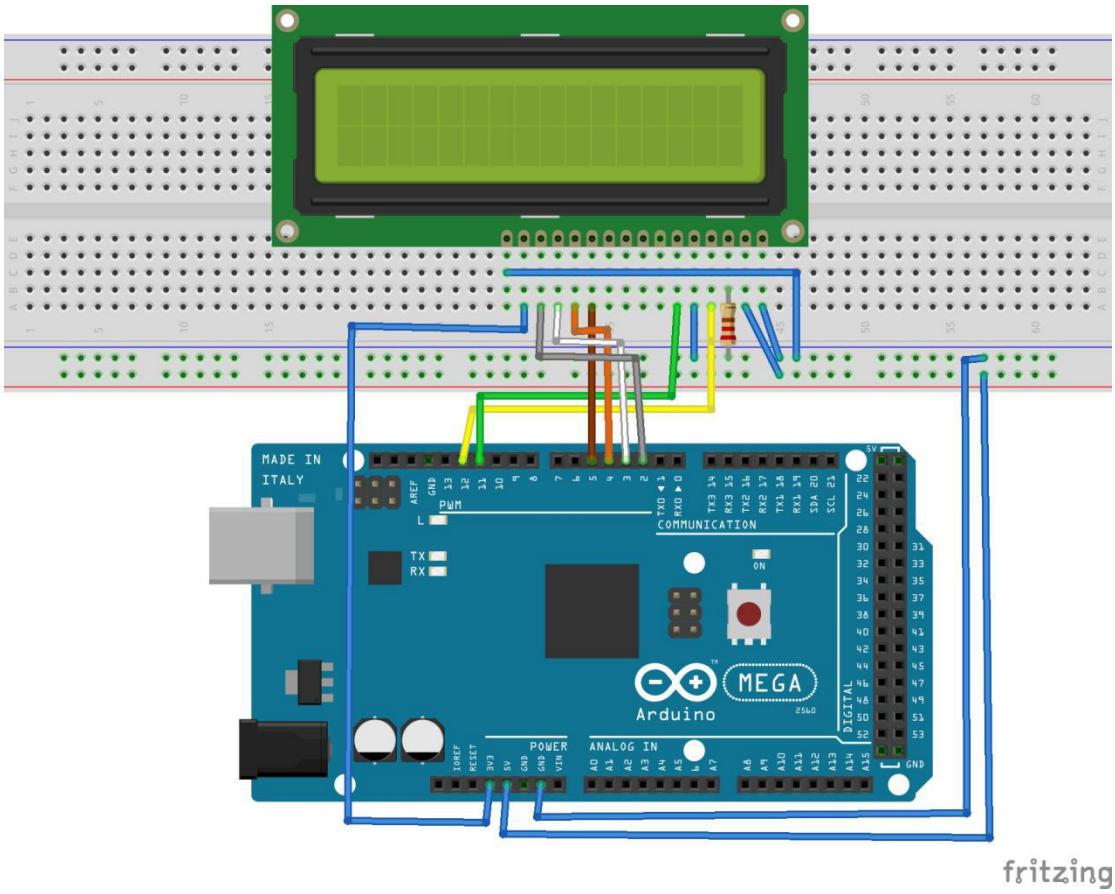
A and K: Pins that control the LED backlight

Connection

Schematic



Wiring diagram



The LCD display needs six Arduino pins, all set to be digital outputs. It also needs 5V ,GND and 3.3V connections.

Code

After wiring, please open the program in the code folder- "LCD Display" and click UPLOAD to upload the program. See "Blink" for details about program uploading if there are any errors.

Upload the code to your Arduino board and you should see the message 'hello, world' displayed, followed by a number that counts up from zero.

The first thing of note in the sketch is the line:

```
#include <LiquidCrystal.h>
```

This tells Arduino that we wish to use the Liquid Crystal library.

Next we have the line that we had to modify. This defines which pins of the Arduino are to be connected to which pins of the display.

```
LiquidCrystal lcd(12, 11, 5, 4, 3, 2);
```

In the 'setup' function, we have two commands:

```
lcd.begin(16, 2);
lcd.print("hello, world!");
```

The first tells the Liquid Crystal library how many columns and rows the display has.

The second line displays the message that we see on the first line of the screen.

In the 'loop' function, we aso have two commands:

```
lcd.setCursor(0, 1);
lcd.print(millis() / 1000);
```

The first sets the cursor position (where the next text will appear) to column 0 & row 1. Both column and row numbers start at 0 rather than 1.

The second line displays the number of milliseconds since the Arduino was reset.