

Project 7 LCD Screen Driver

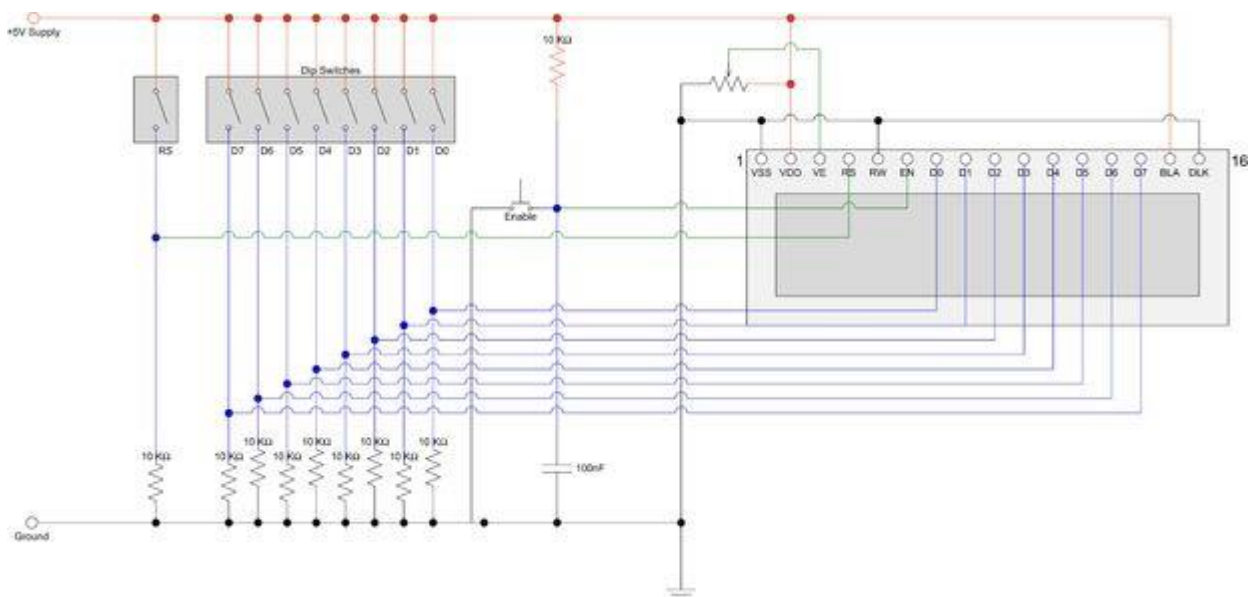
Requirements

- Micro:bit
- Edge Connector £6 and Breadboard or Micro:bit Prototype board £16
- LCM1602 LCD screen (£3 on Ebay)
- 10 1k Resistors
- Some Jumper wires
- LCD example driver code from website

Aim

Demonstrate ability to drive and LCD screen using a BBC-Micro:bit by “bit bashing”

Wiring



Use the diagram above to wire up your BBC Micro:bit to the LCD board.

- You are replacing the RS dip switch with a digital connector to your Micro:bit (I used Pin 12)
- Replace the Enable button with a digital connector to your Micro:bit (I used Pin 10)
- Replace D 7 – D0 with digital connections to your Micro:bit I used the connections listed below

D0 – Pin 0

D1 – Pin 1

D2 – Pin 2

D3 – Pin 3

D4 – Pin 4

D5 – Pin 6

D6 – Pin 7

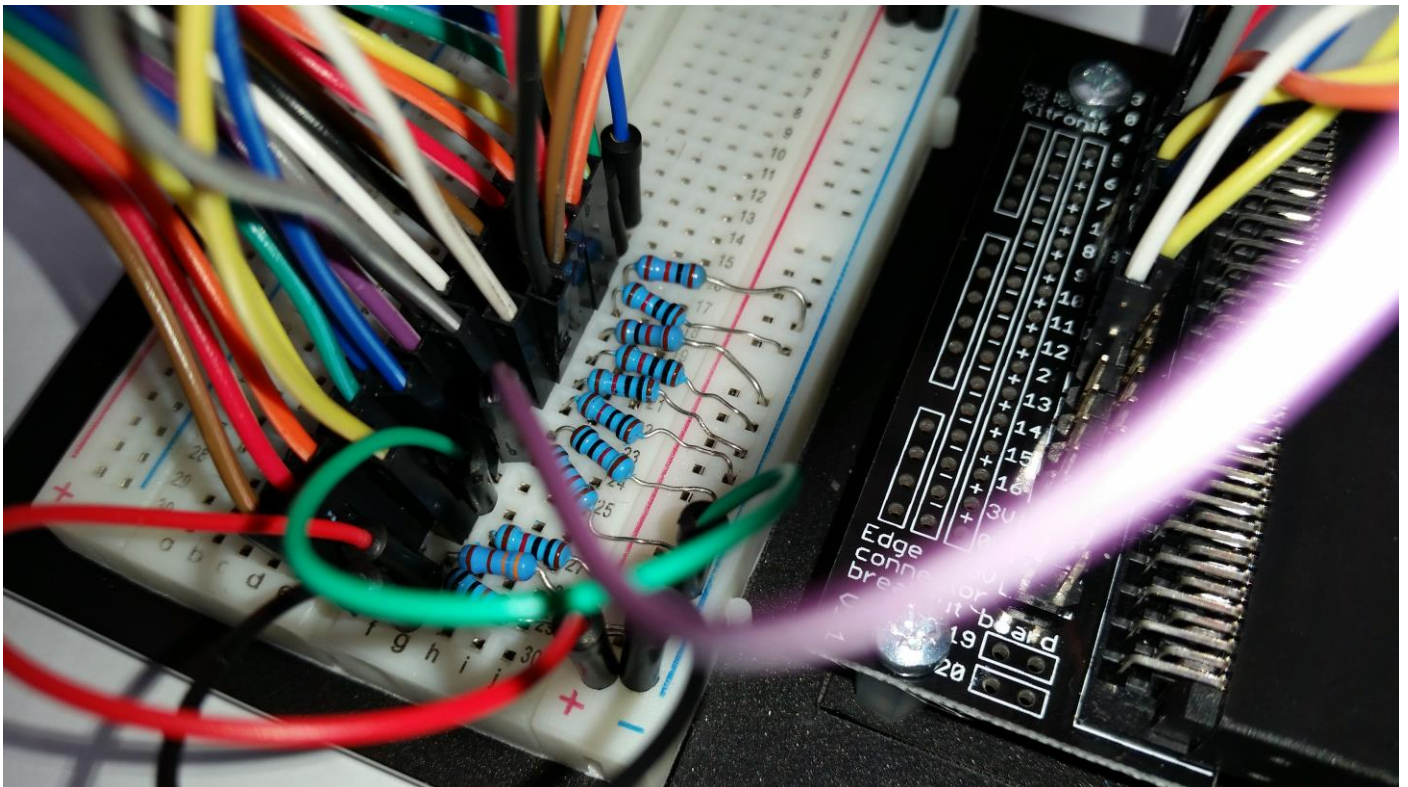
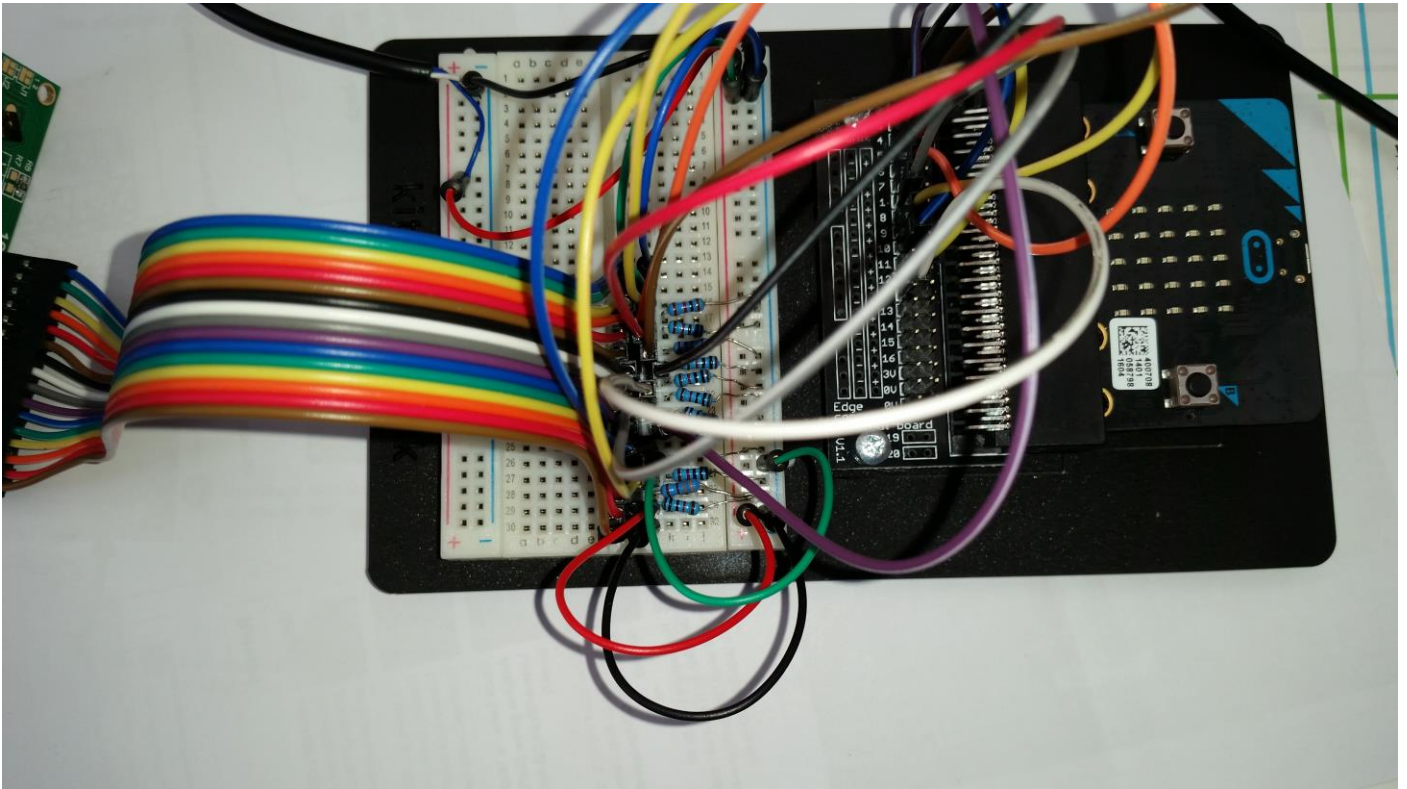
D7 – Pin 9

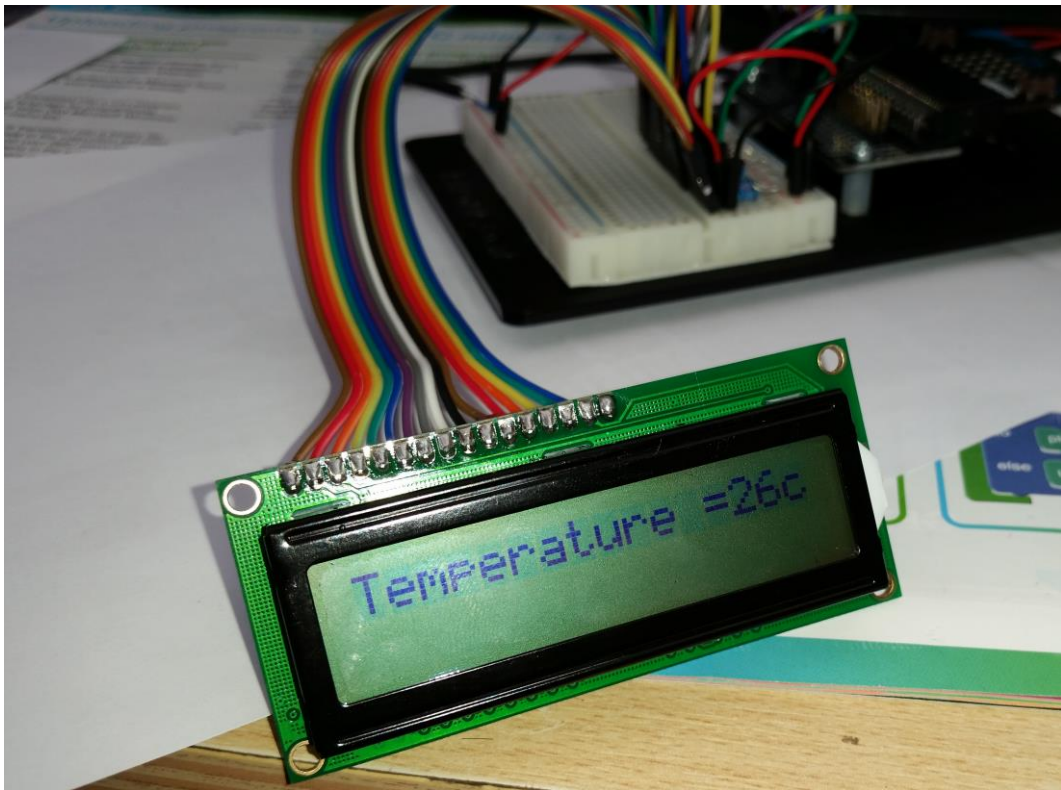
- The diagram shows 10k resistors for D0 – D7 and RS I used 1K resistors as they were all I had and it worked perfectly
- I replaced the variable resistor for the VE connection (Contrast Adjustment with a fixed 1k & 330 ohm resistor and the screen contrast was ok)

Diagram taken from <http://www.instructables.com/id/How-to-drive-a-character-LCD-displays-using-DIP-sw/step3/The-circuit/>

A picture of my layout

The picture below is my Micro:bit wired up. It's a bit of a birds nest but if you follow the diagram above you can't go far wrong





Code

```
80 """ : @10111111'
81 }
82
83
84 #Clear screen function
85 def cls(RS,PINS):
86     RS= 0
87     PINS= [0,0,0,0,0,0,1]
88     Write2Pins(RS,PINS)
89
90 ##Function to write to the LCD pins
91 #Depending on how you wire your LCD you can change the pinxx value to the pin you have connected.
92 def Write2Pins (RS,PINS):
93     #set enable to write
94     E=1
95
96
97     pin12.write_digital(RS)#RS
98
99     pin9.write_digital(PINS[0])#D7
100     pin7.write_digital(PINS[1])#D6
101     pin6.write_digital(PINS[2])#D5
102     pin4.write_digital(PINS[3])#D4
103
104     pin3.write_digital(PINS[4])#D3
105     pin2.write_digital(PINS[5])#D2
106     pin1.write_digital(PINS[6])#D1
107     pin0.write_digital(PINS[7])#D0
108
109     #write
110     pin10.write_digital(E)#E
111     #reset enable to off
112     E=0
113
```

micro:bit™

Instructions

1. Type in your Python program
2. Click 'Download' and save the file
3. Plug in your BBC micro:bit, it'll show up as USB storage
4. Drag the saved file onto the BBC micro:bit
5. That's it!

MicroPython + python

- I've tried to write a fairly concise drive for the Micro:bit. I'm sure it can be improved on and please feel free to do so but please give credit to the initial work in your extension.
- A copy is <http://www.microbitsandbobs.co.uk/downloads/lcd3.00.py> or as an import file <https://www.microbit.co.uk/fdpmsp> it does everything I needed it to for a proof on concept and I've included a sample program to turn the panel and Micro:bit into a temperature sensor.
- There is some documentation in the comments – feel free to add functionality or email me if you have any problems that I've not documented