

# Six Nations Polytechnic

## STEM/STEAM - Tech Wednesdays

### Feb 2018 – Class #1 – Extra



Markus van Kempen

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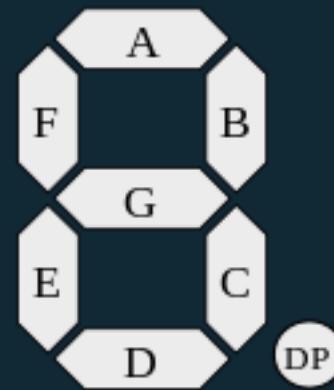
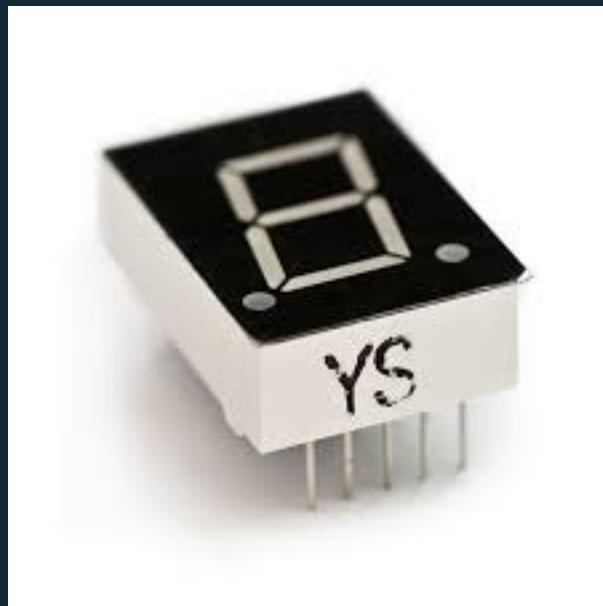
T: @markusvankempen



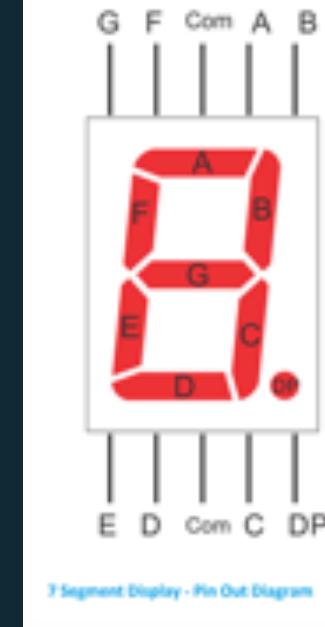
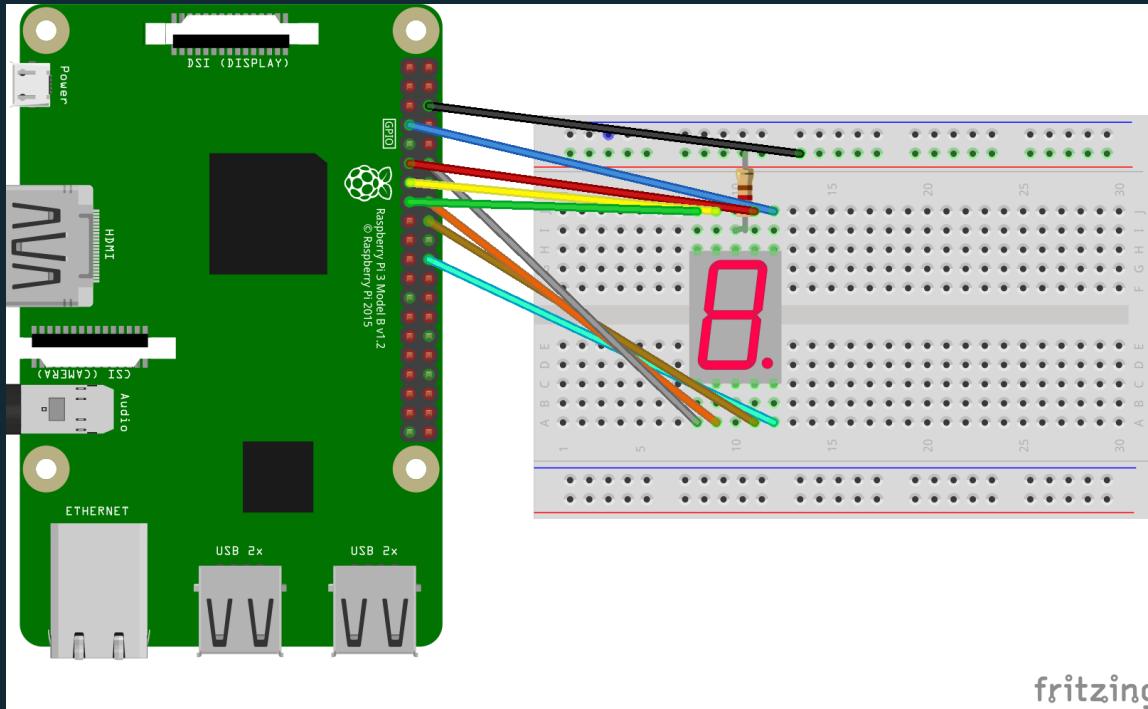
[https://en.wikipedia.org/wiki/Six\\_Nations\\_Polytechnic](https://en.wikipedia.org/wiki/Six_Nations_Polytechnic)



## 7-Segment LCD



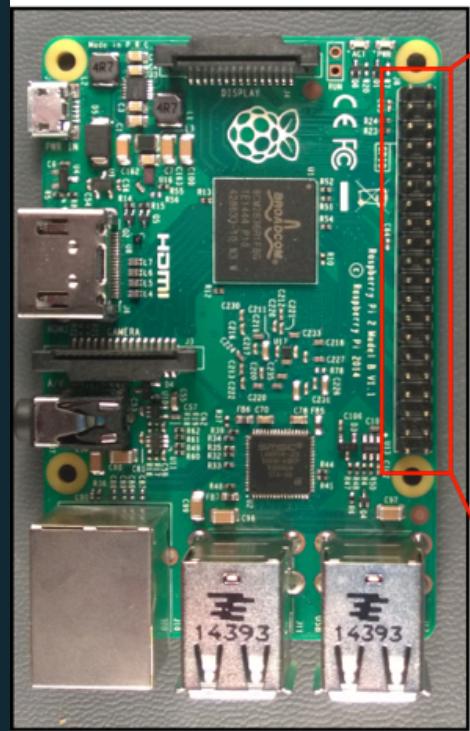
## Setup the breadboard with the 7Seg LED/LCD



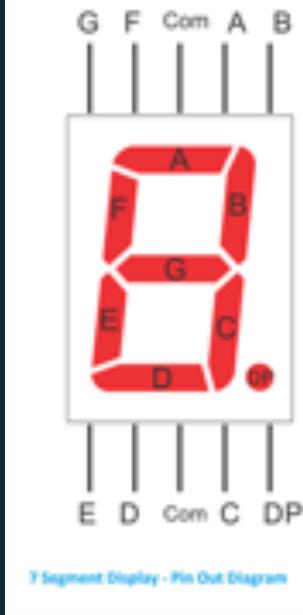
A= PIGIO 17,  
B= 4,  
C= 23,  
D= 24,  
E= 25,  
F= 27,  
G= 22,  
DP= 18

COM=GND like PIN6,39

# PI Layout



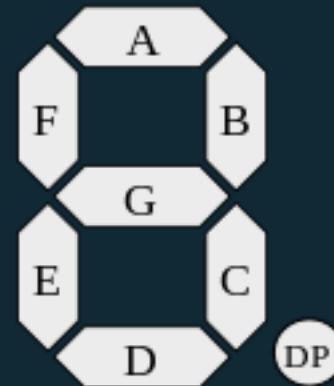
Alternate Function	
I2C1 SDA	3.3V PWR
I2C1 SCL	GPIO 2
	GPIO 3
	GPIO 4
	GND
	GPIO 17
	GPIO 27
	GPIO 22
	3.3V PWR
SPI0 MOSI	GPIO 10
SPI0 MISO	GPIO 9
SPI0 SCLK	GPIO 11
	GND
Reserved	27
	GPIO 5
	GPIO 6
	GPIO 13
SPI1 MISO	GPIO 19
	GPIO 26
	GND
Alternate Function	
	2 5V PWR
	4 5V PWR
	6 GND
	8 UART0 TX
	10 UART0 RX
	12 GPIO 18
	14 GND
	16 GPIO 23
	18 GPIO 24
	20 GND
	22 GPIO 25
	24 GPIO 8
	26 GPIO 7
	28 Reserved
	30 GND
	32 GPIO 12
	34 GND
	36 GPIO 16
	38 GPIO 20
	40 GPIO 21
	SPI0 CS0
	SPI0 CS1
	SPI1 CS0
	SPI1 MOSI
	SPI1 SCLK



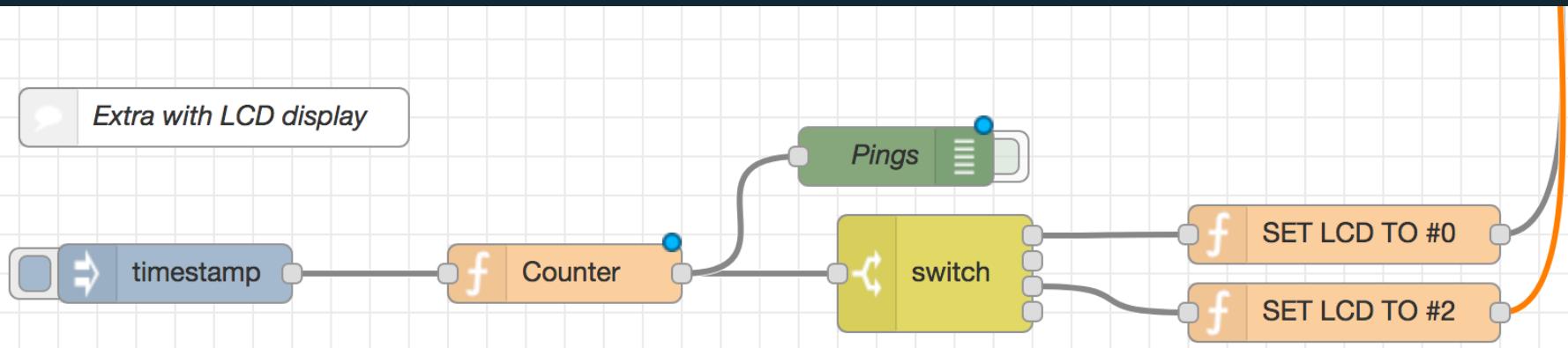
A= GPIO 17,  
B= 4,  
C= 23,  
D= 24,  
E= 25,  
F= 27,  
G= 22,  
DP= 18  
COM=GND like PIN (gray) 14,6,39

# Node-RED

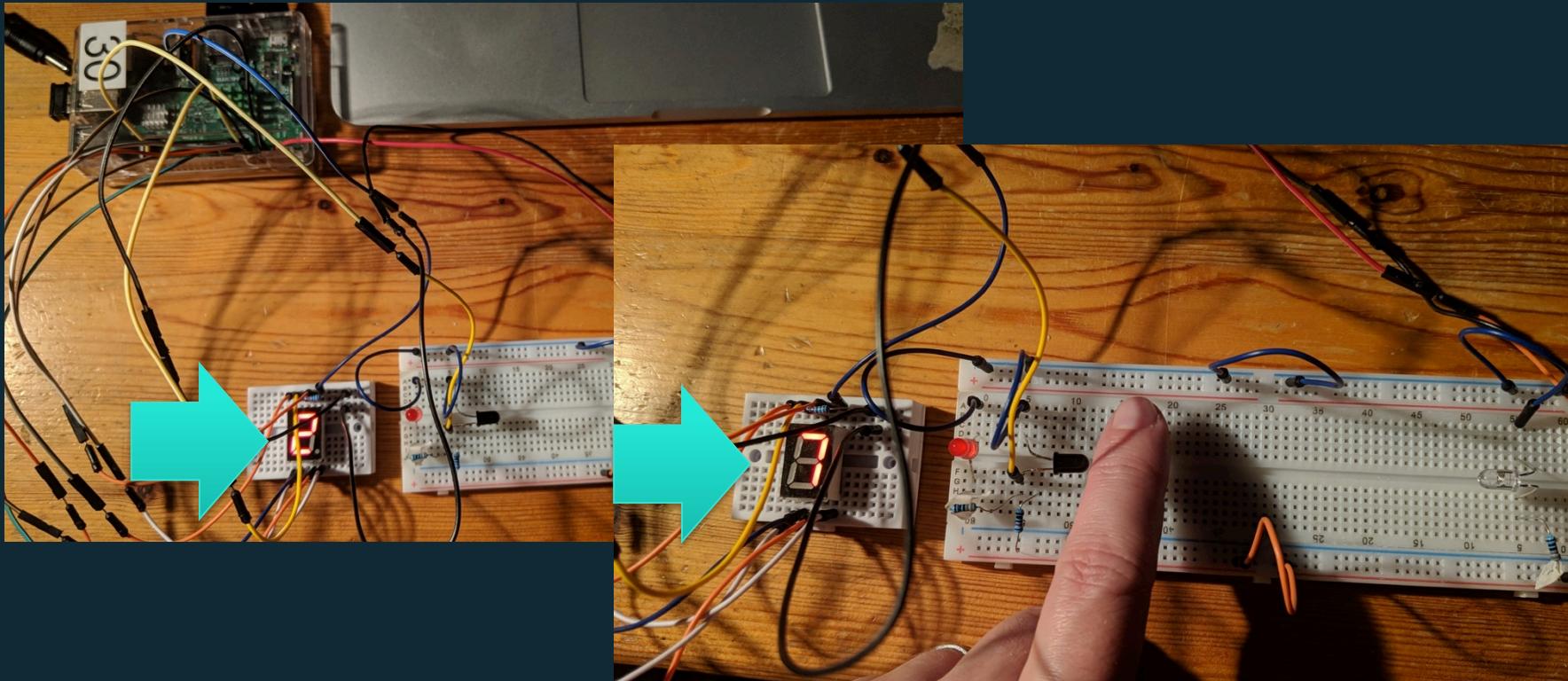
```
// You can send a command to the candle which address each panel  
// below would display #2  
var newmsg = {"cmd" : "set7SLED",  
    "A":1,  
    "B":1,  
    "C":0,  
    "D":1,  
    "E":1,  
    "F":0,  
    "G":1,  
    "DP":0  
}  
  
msg.eventOrCommandType = "set7SLED"  
msg.payload=newmsg ;  
return msg;
```



## Node-Red Flow could start like



## Result LCD should show Numbers



## Reference

Node-Red Flow & Presenation for the class are at

<https://github.com/SixNationsPolytechnic/>

The IoT Code for the PI and Candle can be found here

<https://github.com/markusvankempen/playbulb>

## Videos

<https://github.com/SixNationsPolytechnic/>





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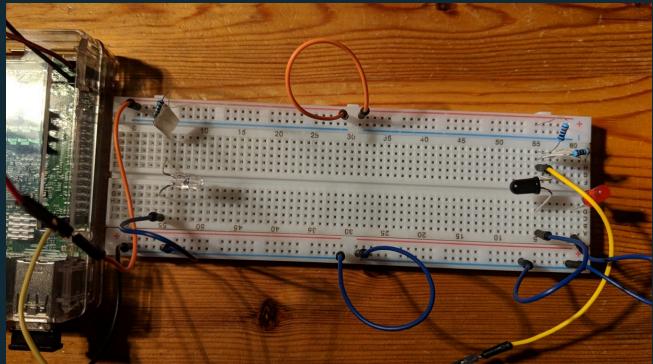
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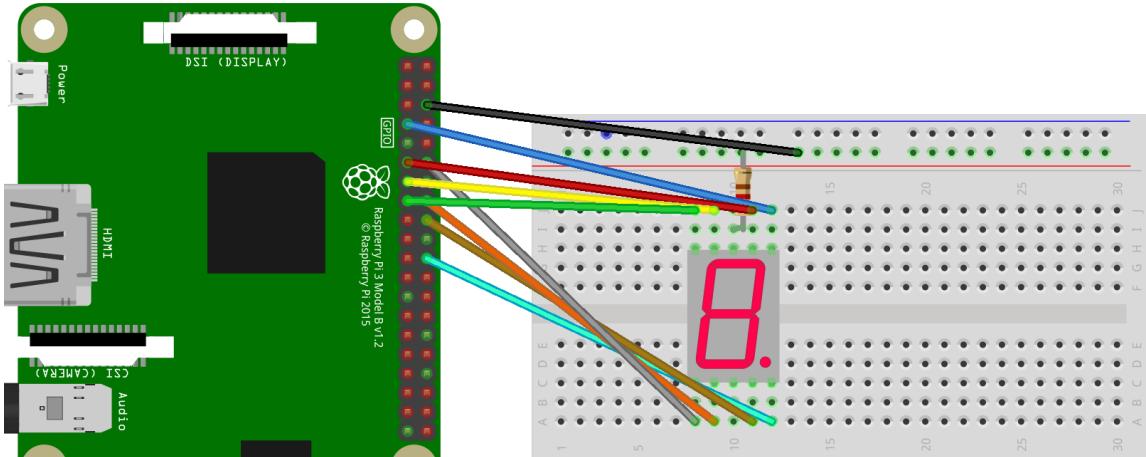


# Burglar Alarm

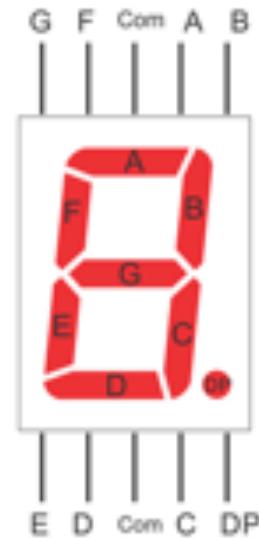
Setting up the electronics



# Setup the breadboard with the 7Seg LED/LCD



fritzing



7 Segment Display - Pin Out Diagram

A= PIGPIO 17,  
B= 4,  
C= 23,  
D= 24,  
E= 25,  
F= 27,  
G= 22,  
DP= 18  
COM=GND like PIN6,39