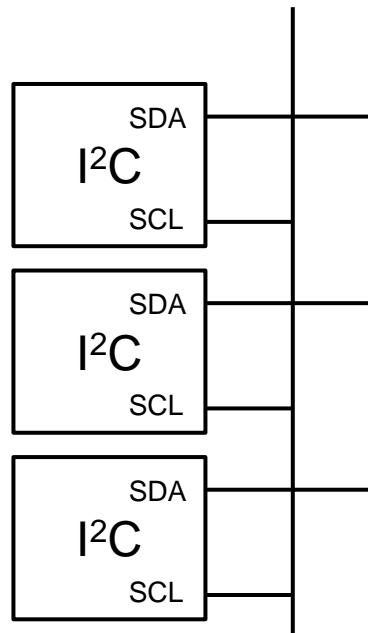


- 1 – I<sup>2</sup>C (TWI) modules use open drain outputs. Multiple I<sup>2</sup>C modules can be connected in parallel as shown below. What additional component(s) must be added to this design for it to operate? 10 pts

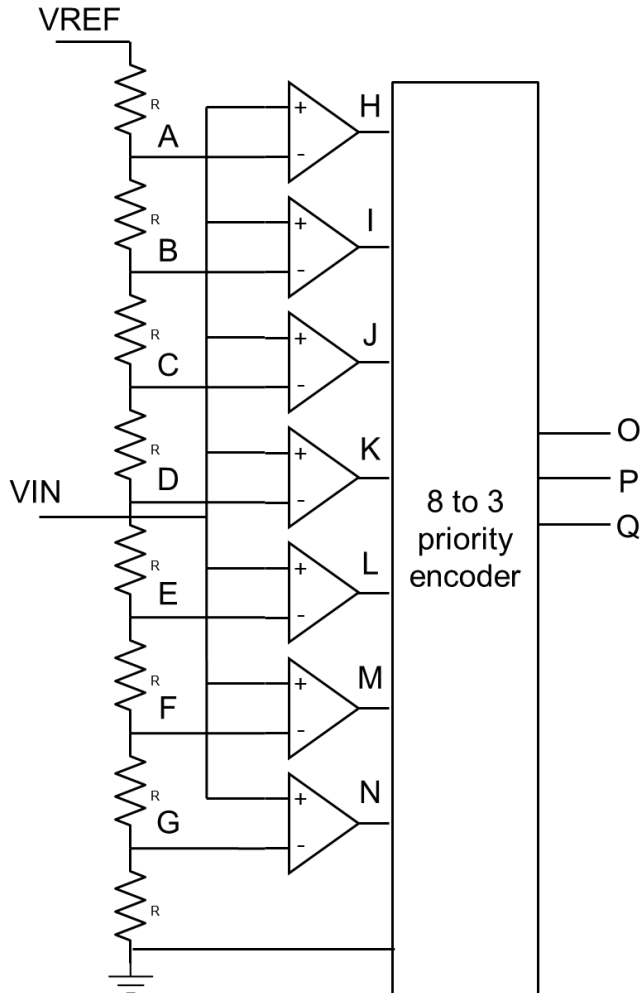


2 – Fill in the table below – assume an 8bit SAR A/D with a 3.1V reference

50 pts

Input Voltage (absolute)	Output Code HEX	D/A Output Voltage
0.013		
<del> </del>	25	
<del> </del>		0.000
1.3		
1.82		
<del> </del>	B9	
<del> </del>		0.000
3		
3.05		
<del> </del>	FF	
4.5		

3 – Below is a simplified schematic for a 3 bit Flash ADC. Provide voltages for each node given the voltages below 40 pts



VREF 3.3 V

VIN 1.5 V

voltage

A	V
B	V
C	V
D	V
E	V
F	V
G	V

logic level

H	
I	
J	
K	
L	
M	
N	

logic level

O	
P	
Q	