CS 240 SI Worksheet
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Session #8
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Floating Point + Pensieve Processing Review

1. Convert the following decimal numbers into 6-bit floating point representations; round if necessary: (k = 3, n = 2)

   a. -2.6
   M = 2.6/2 = 1.3 **frac = 01_2**
   E = 1 bias = 3 **exp = 1+3 = 4 = 100_2** **110001_2**

   b. 7
   M = 7/4 = 1.75 **frac = 11_2**
   E = 2 bias = 3 **exp = 5 = 101_2** **010111_2**

   c. 0.27
   exp = 000 **bias = 3** **frac = 01_2** **000001_2**

2. Fill in the following table with patterns (formulas, if any) for types of floating points.
   I'm not providing solutions here because I think it is important for you to summarize the properties of floating points yourself -- could be useful for the test

	Description	**exp**	**frac**	**E**	**M**
Normalized					1.xxx...x
Denormalized					
Special	0			n/a	n/a
	+/- infinity			n/a	n/a
	NaN		!= 000...0	n/a	n/a

3. What is the maximum nonnegative 8-bit floating point number (k = 4, n = 3)? (Besides infinity…)
   01110111_2 **exp = 1110_2 = 14** **bias = 2^{4-1}-1 = 7** **E = exp - bias = 7**
   frac = 111_2 **M = 1.111 = 1 ⅞** **V = (1 ⅞) * 10^7**