Assignment #4
coen210
2022 spring

Problem 1

Consider a 7-bit floating point representation based on the IEEE floating point format. There is 1 bit sign. 3-bit exponent, 3-bit fractional. Fill in the following encodings for some interesting numbers.

Description	Binary Encoding
Zero	0 000 000
Smallest Positive (nonzero)	
Largest denormalized	
Smallest positive normalized	
One	
Largest finite number	
NaN	
Infinity	

answer:

Description	Binary Encoding
Zero	0 000 000
Smallest Positive (nonzero)	0 000 001
Largest denormalized	0 000 111
Smallest positive normalized	0 001 000
One	0 011 000
Largest finite number	0 110 111
NaN	0 111 111
Infinity	0 111 000

Problem 2

Consider a 8 bit floating point representation with a 3-bit significand, 4-bit exponent, a sign bit, and a bias value = 7. The implementation supports the IEEE-754 standard. Fill in the empty cells in the following table.

Description	Value	s	exponent	significand
zero	0.0			
closest positive to zero				
largest positive				
-5	−5.0			

answer:

```
zero   0.0    0     0000  000
cpt0   2^-9   0     0000  001
lp     240    0     1110  111
na     -5.0   1     1001  010
```

Description	Value	s	exponent	significant
zero	**0.0**	**0**	**0000**	**000**
closest positive to zero	**2^-9**	**0**	**0000**	**001**
largest positive	**240**	**0**	**1110**	**111**
-5	**-5.0**	**1**	**1001**	**010**