

# CSE 351 Reference Sheet (Midterm 1)

Binary	Decimal	Hex
0000	0	0
0001	1	1
0010	2	2
0011	3	3
0100	4	4
0101	5	5
0110	6	6
0111	7	7
1000	8	8
1001	9	9
1010	10	A
1011	11	B
1100	12	C
1101	13	D
1110	14	E
1111	15	F

## IEEE 754 FLOATING-POINT STANDARD

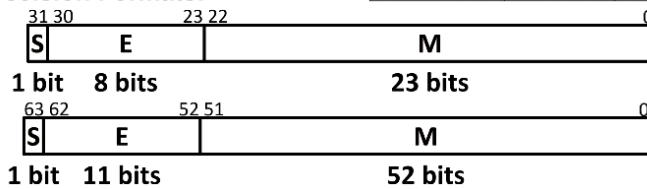
Value:  $\pm 1 \times \text{Mantissa} \times 2^{\text{Exponent}}$

Bit fields:  $(-1)^S \times 1.M \times 2^{(E-\text{bias})}$

where Single Precision Bias = 127,  
Double Precision Bias = 1023.

### IEEE Single Precision and

### Double Precision Formats:



### IEEE 754 Symbols

E	M	Meaning
all zeros	all zeros	$\pm 0$
all zeros	non-zero	$\pm$ denorm num
1 to MAX-1	anything	$\pm$ norm num
all ones	all zeros	$\pm \infty$
all ones	non-zero	NaN

C type	Size (bytes)
char	1
short	2
int	4
long	8

$2^0$	$2^1$	$2^2$	$2^3$	$2^4$	$2^5$	$2^6$	$2^7$	$2^8$	$2^9$	$2^{10}$
1	2	4	8	16	32	64	128	256	512	1024