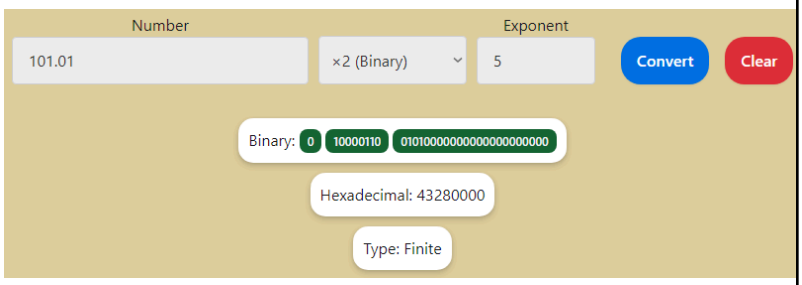
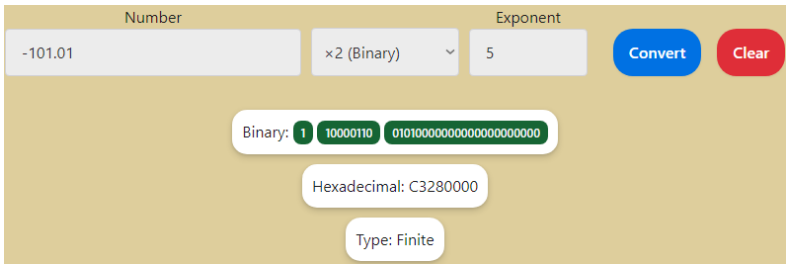
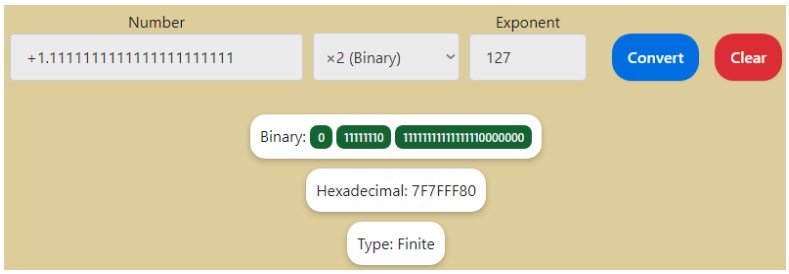
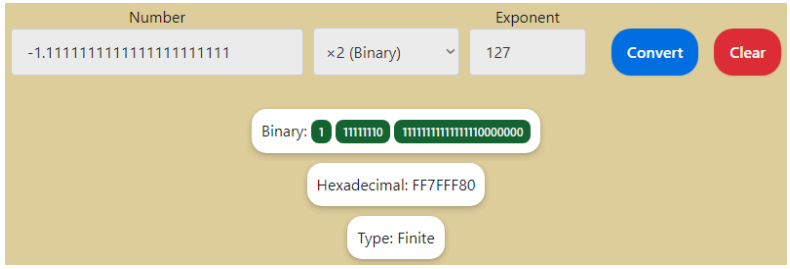
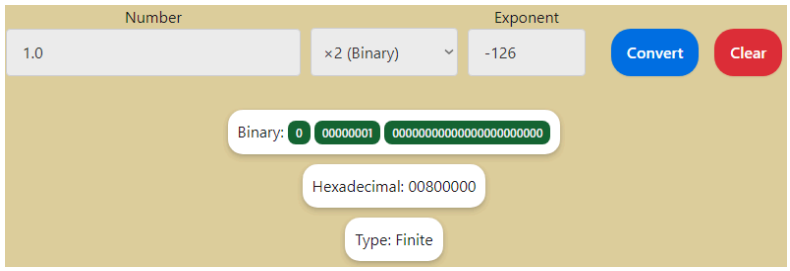
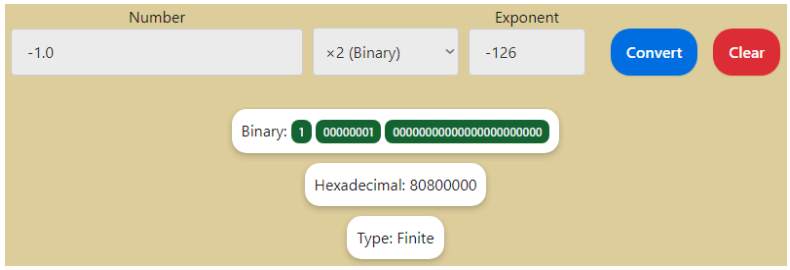
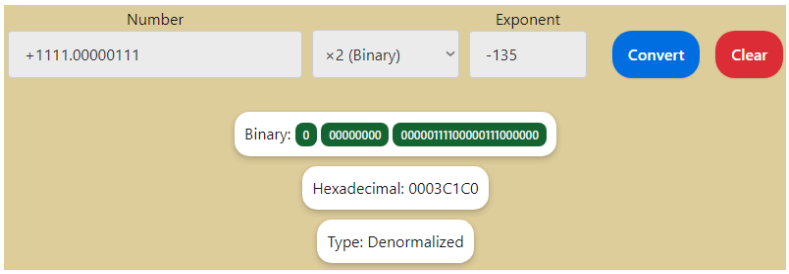
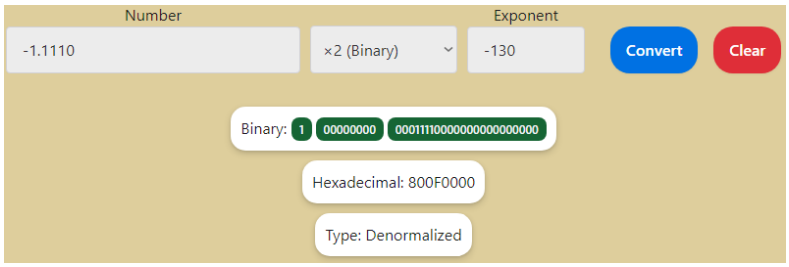
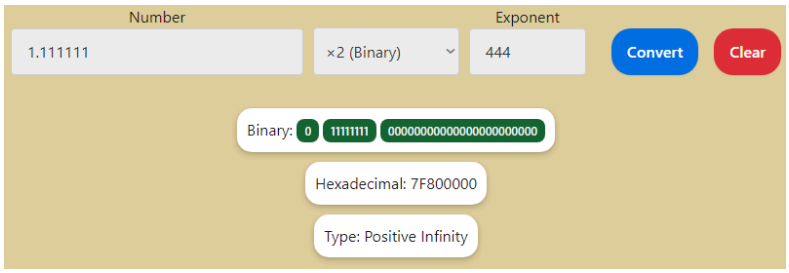
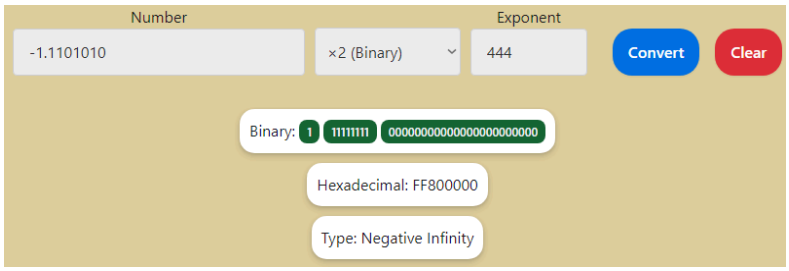
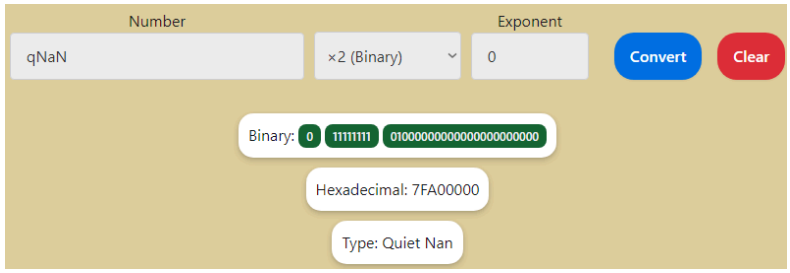
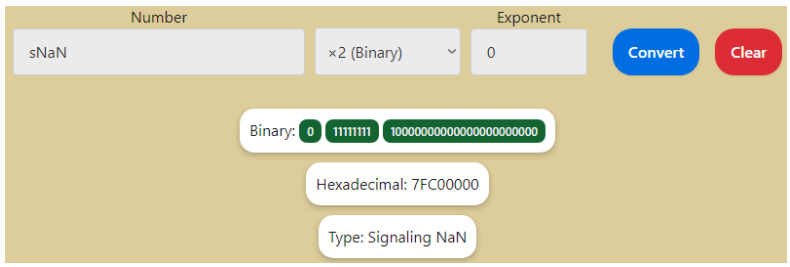
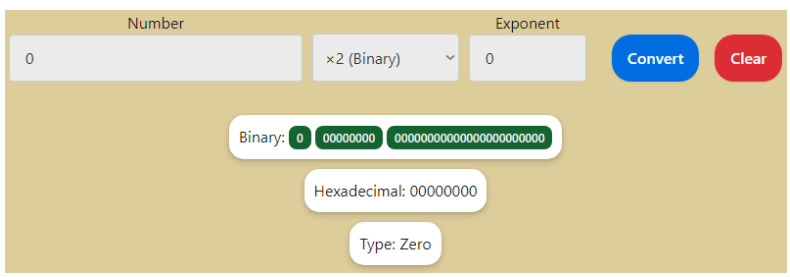
CSARCH2
S13 - Group 6

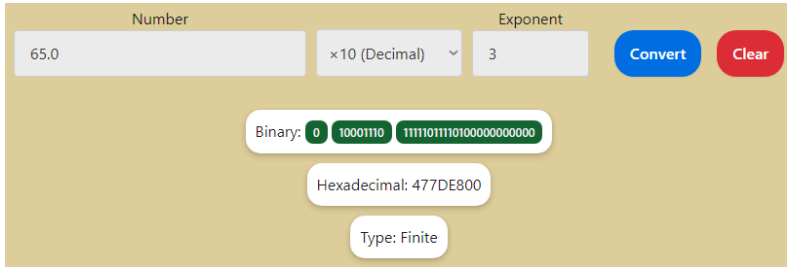
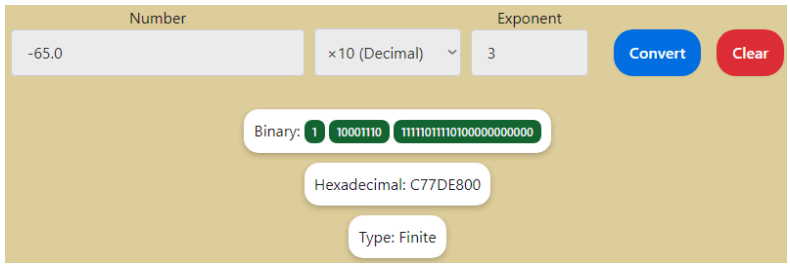
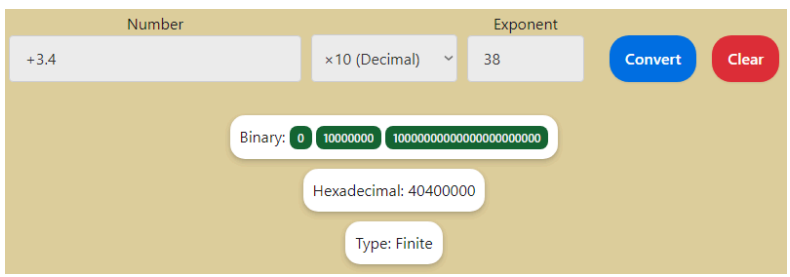
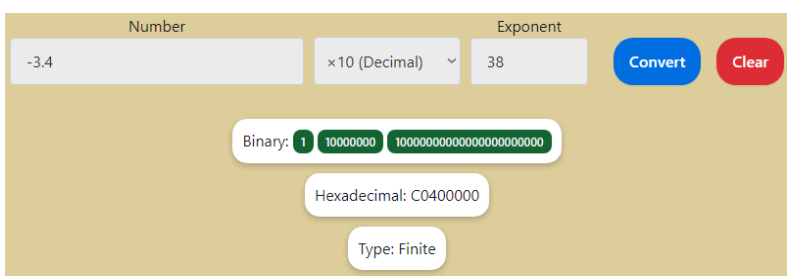
IEEE-754 Binary-32 Floating-Point Converter
Program Output Screenshots of Test Cases

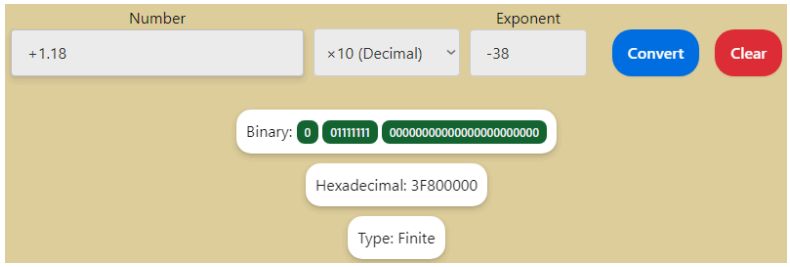
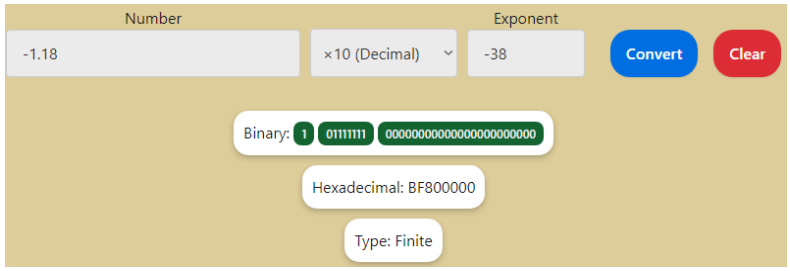
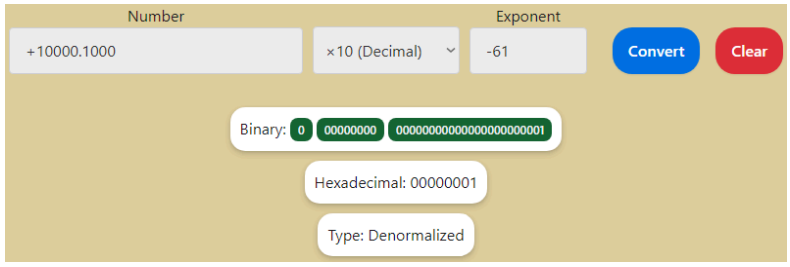
BASE-2 (BINARY)	
[Positive Normal] Number: 101.01 Exponent: 5 Expected Output: Sign Bit: 0 Exponent: 10000110 Mantissa: 010 1000 0000 0000 0000 0000 Hexadecimal: 43280000 Type: Finite	
[Negative Normal] Number: -101.01 Exponent: 5 Expected Output: Sign Bit: 1 Exponent: 10000110 Mantissa: 010 1000 0000 0000 0000 0000 Hexadecimal: C3280000 Type: Finite	
[Positive Largest Normal] Number: +1.11111111111111111111111 Exponent: 127 Expected Output: Sign Bit: 0 Exponent: 11111110 Mantissa: 111 1111 1111 1111 1000 0000 Hexadecimal: 7F7FFF80 Type: Finite	

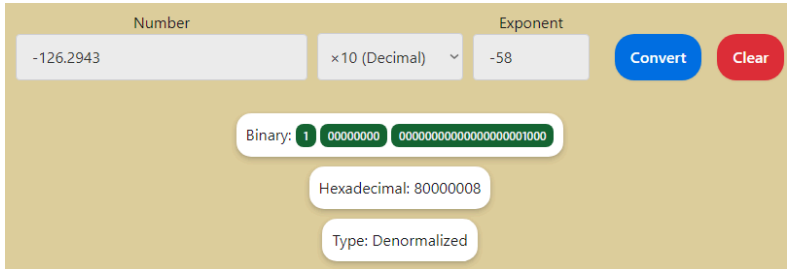
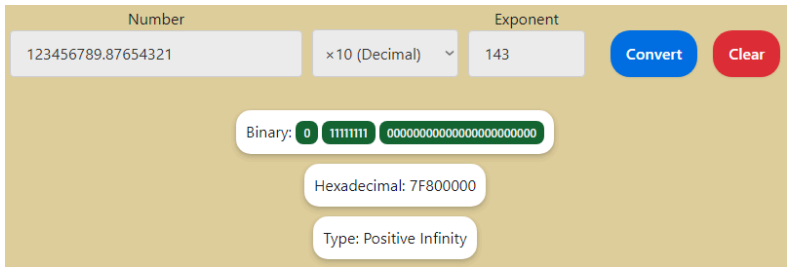
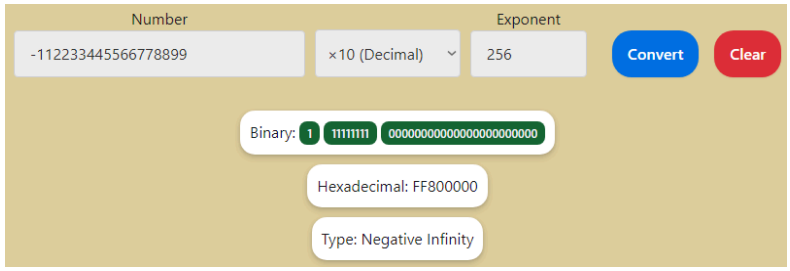
[Negative Largest-Magnitude Normal] Number: -1.11111111111111111111111 Exponent: 127 Expected Output: Sign Bit: 1 Exponent: 11111110 Mantissa: 111 1111 1111 1111 1000 0000 Hexadecimal: FF7FFF80 Type: Finite	
[Positive Smallest Normal] Number: +1.0 Exponent: -126 Expected Output: Sign Bit: 0 Exponent: 00000001 Mantissa: 000 0000 0000 0000 0000 0000 Hexadecimal: 00800000 Type: Finite	
[Negative Smallest Normal] Number: -1.0 Exponent: -126 Expected Output: Sign Bit: 1 Exponent: 00000001 Mantissa: 000 0000 0000 0000 0000 0000 Hexadecimal: 80800000 Type: Finite	

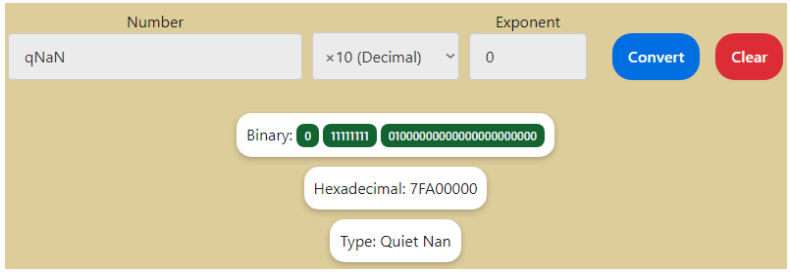
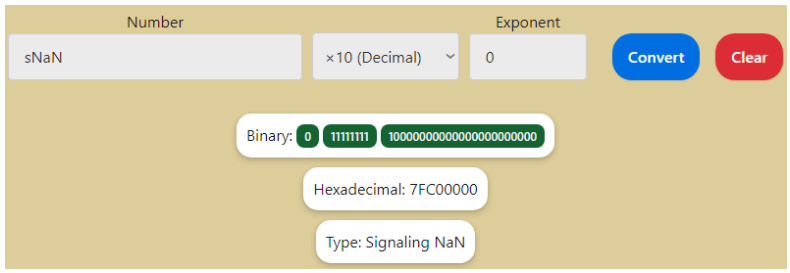
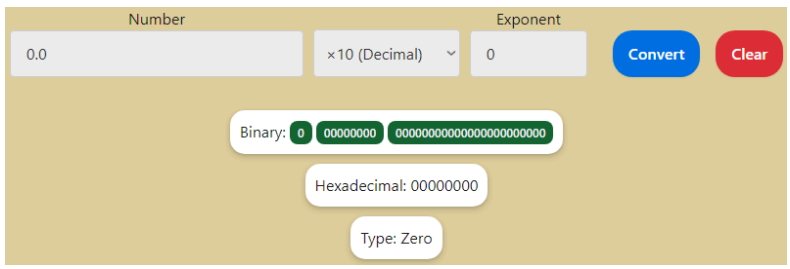
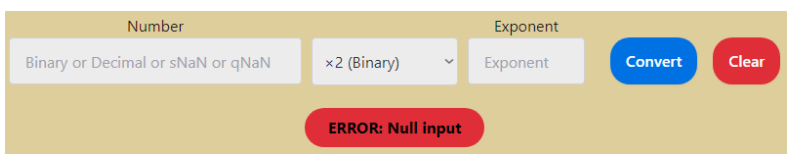
[Positive Denormalized] Number: +1111.00000111 Exponent: -135 Expected Output: Sign Bit: 0 Exponent: 00000000 Mantissa: 000 0011 1100 0001 1100 0000 Hexadecimal: 0003C1C0 Type: Denormalized	
[Negative Denormalized] Number: -1.1110 Exponent: -130 Expected Output: Sign Bit: 1 Exponent: 00000000 Mantissa: 000 1111 0000 0000 0000 0000 Hexadecimal: 800F0000 Type: Denormalized	
[Positive Infinity] Number: +1.111111 Exponent: 444 Expected Output: Sign Bit: 0 Exponent: 11111111 Mantissa: 000 0000 0000 0000 0000 0000 Hexadecimal: 7F800000 Type: Positive Infinity	
[Negative Infinity] Number: -1.1101010 Exponent: 444 Expected Output: Sign Bit: 1 Exponent: 11111111 Mantissa: 000 0000 0000	

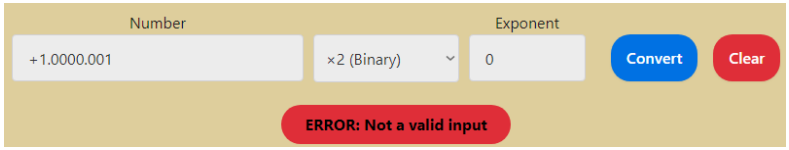
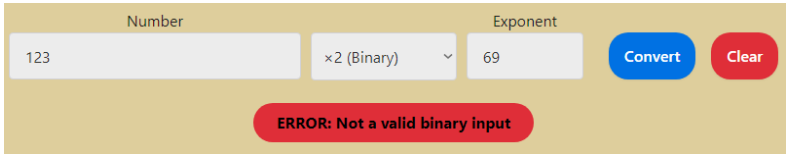
0000 0000 0000 Hexadecimal: FF800000 Type: Negative Infinity	
[qNaN] Number: qNaN Exponent: 0 Expected Output: Sign Bit: 0 Exponent: 11111111 Mantissa: 010 0000 0000 0000 0000 0000 Hexadecimal: 7FA00000 Type: Quiet NaN	
[sNaN] Number: sNaN Exponent: 0 Expected Output: Sign Bit: 1 Exponent: 11111111 Mantissa: 100 0000 0000 0000 0000 0000 Hexadecimal: 7FC00000 Type: Signaling NaN	
[Zero] Number: 0 Exponent: 0 Expected Output: Sign Bit: 0 Exponent: 00000000 Mantissa: 000 0000 0000 0000 0000 0000 Hexadecimal: 00000000 Type: Zero	
BASE-10 (DECIMAL)	

[Positive Normal] Number: +65.0 Exponent: 3 Expected Output: Sign Bit: 0 Exponent: 10001110 Mantissa: 111 1101 1110 1000 0000 0000 Hexadecimal: 477DE800 Type: Finite	
[Negative Normal] Input: -65.0 x 10^3 Expected Output: Sign Bit: 1 Exponent: 10001110 Mantissa: 111 1101 1110 1000 0000 0000 Hexadecimal: C77DE800 Type: Finite	
[Positive Largest Normal] Number: +3.4 Exponent: 38 Expected Output: Sign Bit: 0 Exponent: 10000000 Mantissa: 100 0000 0000 0000 0000 0000 Hexadecimal: 40400000 Type: Finite	
[Negative Largest-Magnitude Normal] Number: -3.4 Exponent: 38 Expected Output: Sign Bit: 1 Exponent: 10000000 Mantissa: 100 0000 0000	

0000 0000 0000 Hexadecimal: C0400000 Type: Finite	
[Positive Smallest Normal] Number: +1.18 Exponent: -38 Expected Output: Sign Bit: 0 Exponent: 01111111 Mantissa: 000 0000 0000 0000 0000 0000 Hexadecimal: 3F800000 Type: Finite	
[Negative Smallest-Magnitude Normal] Number: -1.18 Exponent: -38 Expected Output: Sign Bit: 1 Exponent: 01111111 Mantissa: 000 0000 0000 0000 0000 0000 Hexadecimal: BF800000 Type: Finite	
[Positive Denormalized] Number: +10000.1000 Exponent: -61 Expected Output: Sign Bit: 0 Exponent: 00000000 Mantissa: 000 0000 0000 0000 0000 0001 Hexadecimal: 00000001 Type: Denormalized	

[Negative Denormalized] Number: -126.2943 Exponent: -58 Expected Output: Sign Bit: 1 Exponent: 00000000 Mantissa: 000 0000 0000 0000 0000 1000 Hexadecimal: 80000008 Type: Denormalized	
[Positive Infinity] Number: 123456789.87654321 Exponent: 143 Expected Output: Sign Bit: 0 Exponent: 11111111 Mantissa: 000 0000 0000 0000 0000 0000 Hexadecimal: 7F800000 Type: Positive Infinity	
[Negative Infinity] Number: -112233445566778899 Exponent: 256 Expected Output: Sign Bit: 1 Exponent: 11111111 Mantissa: 000 0000 0000 0000 0000 0000 Hexadecimal: FF800000 Type: Positive Infinity	

[qNaN] Number: qNaN Exponent: 0 Expected Output: Sign Bit: 0 Exponent: 11111111 Mantissa: 010 0000 0000 0000 0000 0000 Hexadecimal: 7FA00000 Type: Quiet NaN	
[sNaN] Number: sNaN Exponent: 0 Expected Output: Sign Bit: 1 Exponent: 11111111 Mantissa: 100 0000 0000 0000 0000 0000 Hexadecimal: 7FC00000 Type: Signaling NaN	
[Zero] Number: 0.0 Exponent: 0 Expected Output: Sign Bit: 0 Exponent: 00000000 Mantissa: 000 0000 0000 0000 0000 0000 Hexadecimal: 00000000 Type: Zero	
ERROR-CHECKING	
[Null Input] Input: (null) Expected Output: ERROR: Null Input	

[Invalid Input] Input: +1.0000.001 Expected Output: ERROR: Not a valid input	
[Invalid Binary Input] Input: 123 Expected Output: ERROR: Not a valid binary input	
[Invalid Decimal Input] Input: A2F4 Expected Output: ERROR: Not a valid decimal input