

IEEE 754 Conversions



Canine-Table

Github

POSIX Nexus serves as a comprehensive cross-language reference hub that explores the implementation and behavior of POSIX-compliant functionality across a diverse set of programming environments. Built atop the foundational IEEE Portable Operating System Interface (POSIX) standards, this project emphasizes compatibility, portability, and interoperability between operating systems.

Abstract

Contents

Mantissa	II
3.1415	II



Mantissa

3.1415

Exponent

Bit	Power of 2	Value	Decimal
1	2^7	1	128
2	2^6	0	0
3	2^5	0	0
4	2^4	0	0
5	2^3	0	0
6	2^2	0	0
7	2^1	0	0
8	2^0	0	0



Mantissa

Bit	Power of 2	Value	Decimal
1	2^{-1}	1	0.5
2	2^{-2}	0	0.0
3	2^{-3}	0	0.0
4	2^{-4}	1	0.0625
5	2^{-5}	0	0.0
6	2^{-6}	0	0.0
7	2^{-7}	1	0.0078125
8	2^{-8}	0	0.0
9	2^{-9}	0	0.0
10	2^{-10}	0	0.0
11	2^{-11}	1	0.00048828125
12	2^{-12}	1	0.000244140625
13	2^{-13}	1	0.0001220703125
14	2^{-14}	0	0.0
15	2^{-15}	1	0.000030517578125
16	2^{-16}	0	0.0
17	2^{-17}	1	0.00000762939453125
18	2^{-18}	0	0.0
19	2^{-19}	1	0.0000019073486328125
20	2^{-20}	0	0.0
21	2^{-21}	1	0.000000476837158203125
22	2^{-22}	0	0.0
23	2^{-23}	1	0.00000011920928955078125
24	2^{-24}	0	0.0
25	2^{-25}	0	0.0



Final Value Reconstruction

Operation	Result
Sign	+1
Mantissa	1.5707499980926513671875
Exponent	$2^1 = 2$
Final Value	$+1.5707499980926513671875 \times 2 =$ 3.141499996185302734375