IEEE 754-1985

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Zero

The number zero is represented specially:

sign = 0 for positive zero, 1 for negative zero.
biased exponent = 0.
fraction = 0.

Positive and negative infinity

Positive and negative infinity are represented thus:

sign = 0 for positive infinity, 1 for negative infinity.
biased exponent = all 1 bits.
fraction = all 0 bits.

NaN

Some operations of floating-point arithmetic are invalid, such as dividing by zero or taking the square root of a negative number. The act of reaching an invalid result is called a floating-point *exception.* An exceptional result is represented by a special code called a NaN, for "Not a Number". All NaNs in IEEE 754-1985 have this format:

sign = either 0 or 1.
biased exponent = all 1 bits.
fraction = anything except all 0 bits (since all 0 bits represents infinity).