Subject: Re: About the bits reserved for float variable
Posted by Paul Van Delst[1] on Fri, 21 May 2004 14:44:35 GMT
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Nuno Oliveira wrote:
> I looking at the Chapter 5 of the Bulding Aplication.
>
> It says, for float variables that it's a 32 bits number in the range of
> +/-10^38 withe approximately six or seven decimal places of significance.
> What I'm missing here? How can a number 32 bit number range between -10^38
> and +10^38?

Some of the bits are used for the significand, and some of the bits are used for the exponent. For IEEE 754 arithmetic, a single precision, 32-bit, number uses 23 bits for the significand (plus one for the sign bit), and 8 for the exponent. With 8 bits for the exponent, it can range from -127 to 128. 2^-127 ~ 10^-38, 2^128 ~ 10^38.

Similarly for double precision (64 bit) where the significand is 52 bits long and the exponent 11 bits giving a range of ~10^(+/-)308.

Don't quote anything I've said above as being anything other than a 2-bit (ha ha) explanation of a somewhat complicated topic by someone (me) who only understands the very basics.

paulv