Subject: Re: About the bits reserved for float variable
Posted by Chris Lee on Fri, 21 May 2004 14:36:01 GMT
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In article <c8l0c4jle1@pegasus.fccn.pt>, "Nuno Oliveira"
<nmoliveira@fc.ul.pt> 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?
>

For an 32 bit floating point number, the first bit is the sign bit. the
next 8 bits are the exponent, the last 23 bits are the mantissa (IEEE)

The exponent has 8 bits, it can do -128 -> 128 in base 2,
2^128 = 3.4 x 10^38
2^-128 = ...10^-38

The 23 bits of the mantissa represent a number between 0 and 2 (scaled).
2^23 = 8388608, a 7 digit number

There's an equation to convert them on the IEEE website I think.

Chris.