Subject: Re: Puzzle with floating point underflow
Posted by Karl Schultz on Thu, 23 Aug 2001 15:29:40 GMT
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What is probably happening here is that the floating point system stored the result in denormalized form in an attempt to do the best thing it could in this underflow situation. In denormalized form, the number is shifted right within the mantissa, while still using the maximum magnitude allowed in the exponent. This is trading off precision for range, but it is always better to keep the exponent correct, if possible. Note that the precision maintained in your example is less than the usual 5 or 6 decimal digits.

"Martin Schultz" <martin.schultz@dkrz.de> wrote in message news:ylwwv3v1bdw.fsf@faxaelven.dkrz.de...
>
> Hi all,
>
>
> How can a float number be something e-42 if the system says it can only
> represent numbers down to 1.e-38 in a float????????
>
> test= 8.1047657d-42
> IDL> tmp=float(test)
> % Program caused arithmetic error: Floating underflow
> % Detected at MGS_RGRID::REGRID 203 /pf/m/m218003/home/IDL/lib/mgs_newobjects
> /mgs_rgrid__define.pro
> IDL> help,tmp
> TMP FLOAT = 8.10511e-42