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Subject: Re: Patch to userlib/deriv.pro to add MAX\_VALUE keyword

Posted by [nowicki](#) on Mon, 27 Dec 1993 10:50:23 GMT

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In Article <thompson.757008292@serts.gsfc.nasa.gov>

thompson@serts.gsfc.nasa.gov (William Thompson) writes:

> rfinch@water.ca.gov (Ralph Finch) writes:

>

>> Following context diff, when run through patch, will add the MAX\_VALUE

>> keyword to the userlib function deriv.pro. However, I still believe

>> it would be better if IDL had the fundamental notion of missing values

>> built-in to their basic mathematics; IEEE NaN might be a good choice.

>> If IDL understood NaN's, you wouldn't even need keywords for missing

>> values or max\_value (presuming that most usage of MAX\_VALUE really is

>> for missing values).

>

> However, not all computer platforms use the IEEE standard. A notable exception

> is Digital's VAX platform, which represents a large proportion of IDL's

> users--in fact IDL came out of the VAX/PDP world before it was ported to Unix,

> etc. As far as I know, there's no equivalent concept to NaNs in the VAX

> architecture.

>

> Bill Thompson

>

> P.S. Although Digital's Alpha workstations support both the VAX and IEEE

> floating point standards, my understanding is that IDL uses the VAX floating

> point representation, at least within OpenVMS, for backwards compatibility with

> the VAX/VMS architecture. I'm not sure which is used in OSF/1, although it

> would seem most advantageous to use the IEEE format for compatibility with

> MIPS/Ultrix workstations. I'm also not certain whether there's a performance

> tradeoff between using VAX and IEEE floating point numbers on the Alpha.

I can expand on some of the above. The AXP (Alpha) architecture supports BOTH VAX (F and G) and IEEE (S and T) real formats. The conversion is done in PAL code, (the equivalent of microcode on the CPU.) OpenVMS IDL 3.5.0 uses VAX real formats for I/O, I can't state for sure if the internal representation is VAX (although, I'm pretty sure it is.)

OSF/1 uses IEEE exclusively, but I believe there's a compiler switch which allows the reading and writing of VAX format in HLL's.

As far as I can tell, the performance tradeoff is null due to the use of PAL code routines for conversion.

-Greg

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