Subject: Re: Feature, or bug?
Posted by Lajos Foldy on Sun, 20 May 2012 12:08:12 GMT
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On Saturday, May 19, 2012 9:20:40 PM UTC+2, whdaffer wrote:
> Found an interesting, ummm, feature.
>
> I frequently use the following construct.
>
> if n_elements(a) * n_elements(b) * ... * n_elements(z) eq 0 then
> begin
> Message,'....'
> endif
>
> with a catch block to do my preliminary argument processing.
>
> It turns out, there are circumstances where this product can equal 0,
> even when all the n_element()'s return non-zero numbers
>
> To see this, consider...
>
> IDL> print, long(27072)^6
> 0
>
> Any more than 5 arrays with 27072 elements followed by whatever else
> and that construct will always evaluate to 0. I had 6, plus a few that
> had fewer elements.
>
> I also tried a case where I put the arrays with fewer alements up
> front. It failed too.
>
> IDL> a=(b=(c=(d=(e=(f=fltarr(27072))))))
> IDL> print,(n_elements(fltarr(10)) *n_elements(1) *n_elements(a))
> *n_elements(b) * n_elements(c) *n_elements(d) *
> n_elements(e)*n_elements(f) & print,check_math()
> 0
> 0
>
> and check_math says all is okay (If I understand check_math correctly)
>
>
>
> Doesn't seem to be a 32-bit/64-bit issue, I replicated it on a 64-bit
> machine.
>
>
>
>

> IDL> help,!version
> ** Structure !VERSION, 8 tags, length=76, data length=76:
>   ARCH   STRING   'x86'
>   OS   STRING   'linux'
>   OS_FAMILY   STRING   'unix'
>   OS_NAME   STRING   'linux'
>   RELEASE   STRING   '8.1'
>   BUILD_DATE   STRING   'Mar 9 2011'
>   MEMORY_BITS   INT   32
>   FILE_OFFSET_BITS
>   INT   64
> IDL>
>
>
> Since n_elements returns a long (not even a ulong, which, when you
> think about it for a second, it really should, but that wouldn't have
> helped me, in my particular case because that had the same behavior) I
> guess the upshot is: don't use that construct!
>
> Safer would be
>
> if (n_elements(a) eq 0)*... then begin ...
>
> I just never imagined that I could multiply nonzero integers together
> and get a zero!
>
> whd
>
> whd27072)^6

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27072^6 is 393660688903146891330453504, too big for a long integer, so the last 32 bits are kept (27072^6 modulo 2^32). 393660688903146891330453504 = 91656271578545424 * 2^32, so the result is zero. It's a feature of integer representation. check_math does not report integer overflow.

regards,
Lajos
