
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:

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> Found an interesting, ummm, feature.
>
> I frequently use the following construct.
>
> if n_elements(a) * n_elements(b) * ... * n_elements(z) eq 0 then
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>   Message,'....'
> endif
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> with a catch block to do my preliminary argument processing.
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> even when all the n_element()'s return non-zero numbers
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> To see this, consider...
>
> IDL> print, long(27072)^6
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>
> 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.
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> front. It failed too.
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> 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()
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> machine.
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```

> 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
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>
> 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
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>
> Safer would be
>
> if (n_elements(a) eq 0)*... then begin ...
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> and get a zero!
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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

Subject: Re: Feature, or bug?
Posted by [whdaffer](#) on Mon, 21 May 2012 16:31:30 GMT
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On May 20, 5:08 am, fawltylangu...@gmail.com wrote:

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so the result is zero. It's a feature of integer representation. `check_math` does not report integer
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Hmmmm... Well `check_math _does_` claim that it will report integer
overflow, in bit 1.

But I wouldn't be using `check_math` to check for that condition in the
construct I was using anyway, so it's moot that `check_math` apparently
falls down on the job, at least in this case.

Thanks for the explanation.

whd

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> regards,
> Lajos

Subject: Re: Feature, or bug?

Posted by [Lajos Foldy](#) on Mon, 21 May 2012 17:13:08 GMT

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>> regards,
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The `check_math` help says: "Some hardware/operating system combinations may not report all of the math errors listed." Integer overflow is listed, but not checked and reported :-)

Integer overflow is "undefined behaviour" in standard C, so it can not be done in a portable way. The glibc manual says:

FPE_INTOVF_TRAP

Integer overflow (impossible in a C program unless you enable overflow trapping in a hardware-specific fashion).

regards,
Lajos

Subject: Re: Feature, or bug?
Posted by [whdaffer](#) on Wed, 23 May 2012 19:32:06 GMT
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On May 21, 10:13 am, fawltylangu...@gmail.com wrote:

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>>> regards,
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> The `check_math` help says: "Some hardware/operating system combinations may not report all of the math errors listed." Integer overflow is listed, but not checked and reported :-)

Why yes! So it does. And just one line after the table where it claims to report integer overflows!

The right hand giveth, and the left taketh away, I guess ;-)

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> Integer overflow is "undefined behaviour" in standard C, so it can not be done in a portable way. The glibc manual says:
>
> FPE_INTOVF_TRAP
>
> Integer overflow (impossible in a C program unless you enable overflow trapping in a hardware-specific fashion).

Which, means, effectively, that `check_math` for integer overflow is worthless since I doubt that ITT or whatever they're called this week is going to enable overflow trapping in a hardware-specific fashion.

Is the situation similar for the other errors?

whd
