Subject: modulo operator
Posted by spluque on Fri, 08 Nov 2013 22:54:30 GMT
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Hi,

I'm a little confused by the following:

```
IDL> print, 1200 MOD 0.1
   0.0999821
IDL> print, (1200 * 10.0) MOD (0.1 * 10)
      0.00000
```

I expected this to be 0 either way. What am I missing?

Thanks,
Seb

Subject: Re: modulo operator
Posted by David Fanning on Fri, 08 Nov 2013 23:09:21 GMT
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spluque@gmail.com writes:

> I'm a little confused by the following:
>
> IDL> print, 1200 MOD 0.1
>   0.0999821
> IDL> print, (1200 * 10.0) MOD (0.1 * 10)
>   0.00000
>
> I expected this to be 0 either way. What am I missing?

Almost certainly the way numbers are represented on computers:

   http://www.idlcoyote.com/math_tips/sky_is_falling.html

Cheers,

David

--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.idlcoyote.com/
Sepore ma de ni thue. ("Perhaps thou speakest truth.")

Subject: Re: modulo operator
Posted by Craig Markwardt on Sat, 09 Nov 2013 03:36:39 GMT
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On Friday, November 8, 2013 5:54:30 PM UTC-5, spl...@gmail.com wrote:
> Hi,
>
>
>
> I'm a little confused by the following:
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>
>
> IDL> print, 1200 MOD 0.1
>
> 0.0999821
>
> IDL> print, (1200 * 10.0) MOD (0.1 * 10)
>
> 0.00000
>
>
>
> I expected this to be 0 either way. What am I missing?

See David's post.
Then try the same experiment with double precision everywhere instead.

IDL> print, 1200d MOD 0.1d

IDL> print, (1200d * 10d) MOD (0.1d * 10d)

Craig

Subject: Re: modulo operator
Posted by spluque on Sat, 09 Nov 2013 15:53:14 GMT
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On Friday, November 8, 2013 9:36:39 PM UTC-6, Craig Markwardt wrote:
> On Friday, November 8, 2013 5:54:30 PM UTC-5, spl...@gmail.com wrote:
>
>> Hi,
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>> I'm a little confused by the following:
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>>
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>> IDL> print, 1200 MOD 0.1
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>
>
>
> IDL> print, 1200d MOD 0.1d
>
>
>
> IDL> print, (1200d * 10d) MOD (0.1d * 10d)
>

Thank you both for these pointers. I didn't expect the difference to be so large due to these

numerical representation issues. So what is the canonical way to guard against this?

Seb

Subject: Re: modulo operator
Posted by tom.grydeland on Sun, 10 Nov 2013 22:05:38 GMT
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On Saturday, November 9, 2013 4:53:14 PM UTC+1, Sebastian Luque wrote:

> Thank you both for these pointers. I didn't expect the difference to be so large due to these numerical representation issues. So what is the canonical way to guard against this?

If you want to work with an integral number of tenths, multiply by 10 and do your mod's in integer math before dividing by 10 again.

> Seb

--T
