Subject: Re: WRONG RESULTS WITH IDL
Posted by Richard G. French on Tue, 05 May 1998 07:00:00 GMT
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>> sin(12345678901.12345678901) = -03727 9004 9960 8007
>>
>> where IDL get:
>>
>> IDL> x = double(12345678901.12345678901)

**********^^^^^^^ This line converts a number with single
precision to a double precision value, but it does not keep
all of the digits listed. You need to make the number double
precision explicitly by adding a D0 at the end:
x=12345678901.12345678901D0

If you print x instead of sin(x), you will see that you have not
retained all of the listed digits of precision

Subject: Re: WRONG RESULTS WITH IDL
Posted by Thomas A. McGlynn on Tue, 05 May 1998 07:00:00 GMT
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Frank Loewenthal wrote:
>
> Hi Folks
>
> For calculation of beam-propagation I use IDL. But now I realize that
> for large arguments, even with double-precision, IDL gives wrong
> results:
> For example:
>
> sin(12345678901.12345678901) = -03727 9004 9960 8007
>
> where IDL get:
>
> IDL> x = double(12345678901.12345678901)
> IDL> print, sin(x)
> 0.098761418
>
> Can somebody confirm this result, and does anybody know the solution
> to overcome this problem?
>
> Best regards
>
> Frank

You're misunderstanding how to create a double precision literal in
IDL. E.g.:

```
IDL> x=12345678901.12345678901
IDL> print,sin(x)
     0.0987614
IDL> x=12345678901.12345678901d0
IDL> print,sin(x)
     -0.37327885
```

In the first case the literal value is interpreted in single
precision and then assigned to x. To preserve
the precision you need to indicate that it's a double
precision value.

Regards,
Tom McGlynn
tam@silk.gsfc.nasa.gov

Subject: Re: WRONG RESULTS WITH IDL
Posted by Andy Loughe on Tue, 05 May 1998 07:00:00 GMT
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Maybe this helps to explain the "sin()" difference...

```
print, 12345678901.12345678901D, format='(f30.15)'
   12345678901.123456954956055

print, double(12345678901.12345678901), format='(f30.15)'
   12345678848.000000000000000
```

Apparently when converting the real to double in the second case,
there is a great loss in precision since the original real number
culdn't properly store a number that large.

Caesar E. Ordonez wrote:
>
> I did the following:
>
> IDL> x = 12345678901.12345678901D
> IDL> print,sin(x)
>   -0.37327885

--
Andrew F. Loughe |
afl@cdc.noaa.gov

University of Colorado, CIRES Box 449 |
http://cdc.noaa.gov/~afl
Boulder, CO 80309-0449 | phn:(303)492-0707
fax:(303)497-7013
 ---------- ----------
"I do not feel obliged to believe that the same God who has endowed us with
sense, reason, and intellect has intended us to forego their use."
-Galileo

Subject: Re: WRONG RESULTS WITH IDL
Posted by Caesar E. Ordonez on Tue, 05 May 1998 07:00:00 GMT
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I did the following:

IDL> x = 12345678901.12345678901D
IDL> print,sin(x)
    -0.37327885

Frank Loewenthal wrote:

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>
> For calculation of beam-propagation I use IDL. But now I realize that
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