
Subject: Re: Inaccuracies

Posted by [bowman](#) on Mon, 13 Nov 1995 08:00:00 GMT

[View Forum Message](#) <> [Reply to Message](#)

In article <30A7BC4D.7018@cdc.noaa.gov>, Andy Loughe <afl@cdc.noaa.gov> wrote:

```
> IDL> a = findgen(15)*.2 - 1.4  
> IDL> print, total(a)  
> 7.15256e-07
```

~7 significant figures is what you expect from single precision arithmetic.

```
> IDL> a = dindgen(15)*(.2D)-1.4D  
> IDL> print, total(a, /double)  
> 4.4408921e-15
```

~15 is what you expect from double precision.

You can do this:

```
IDL> i = LINDGEN(15)*2L - 14L  
IDL> print, i  
-14      -12      -10      -8      -6      -4  
-2        0        2        4        6        8  
10       12       14  
IDL> c = DOUBLE(i)/DOUBLE(10)  
IDL> print, c  
-1.4000000   -1.2000000   -1.0000000   -0.80000000  
-0.60000000   -0.40000000   -0.20000000   0.00000000  
0.20000000    0.40000000    0.60000000    0.80000000  
1.0000000    1.2000000    1.4000000
```

which gives you an exact 0 (division of 0 by anything should(!) be exactly 0), but the other terms are not necessarily exact, and you still get

```
IDL> print, total(c)  
2.2204460e-16
```

which is the best you can hope for.

That's floating point arithmetic ...

Regards, Ken Bowman

--

Kenneth P. Bowman, Assoc. Prof. 409-862-4060
Department of Meteorology 409-862-4132 fax
Texas A&M University bowman@csrp.tamu.edu

College Station, TX 77843-3150

Page 2 of 2 ---- Generated from [comp.lang.idl-pwave archive](#)