Subject: Re: mean() function
Posted by Kenneth P. Bowman on Wed, 11 Jan 2006 03:22:54 GMT
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In article <dq1gv6$v05$1@news.nems.noaa.gov>,
 Paul Van Delst <Paul.vanDelst@noaa.gov> wrote:

> Kenneth Bowman wrote:
>> In article <1136932449.216202.42760@g44g2000cwa.googlegroups.com>,
>> biocpu@yahoo.com wrote:
>>
>>
>>> y = fltarr(1008879)+35
>>
>>
>> Looks like roundoff error to me
>>
>> IDL> y = fltarr(1008879)+35
>> IDL> print, mean(y)
>> 35.0497
>> IDL> print, mean(y, /double)
>> 35.000000
>> IDL> y = dblarr(1008879)+35
>> IDL> print, mean(y)
>> 35.000000
>
> Huh. I don't see this in single precision (see other post). What version of
> IDL did you use?
>
> paulv

The version I posted (quoted above) is

{ ppc darwin unix Mac OS X 6.2 Jun 20 2005 32 32}

If I run it on my PowerBook (now sadly obsolete ;-)), which is running
6.1

{ ppc darwin unix Mac OS X 6.1 Jul 14 2004 32 32}

I get exactly what was in the original post (he was running 6.0 on IRIX)

IDL> y = fltarr(1008879) + 35
IDL> print, mean(y)
35.5249
IDL> print, mean(y, /double)
35.000000
IDL> print, version

I suppose math libraries or compilers changed between 6.1 and 6.2.

Once the values you are adding differ by 6-7 orders of magnitude,
precision is completely lost for single precision floats.

```
IDL> print, total(replicate(1.0, 10^7))
  1.00000e+07
IDL> print, total(replicate(1.0, 10^8))
  1.67772e+07
IDL> print, total(replicate(1.0D0, 10^8))
   1.0000000e+08
```

Cheers, Ken
