
Subject: Re: Strange behavior of /cumulative keyword in total()
Posted by [David Fanning](#) on Tue, 04 Nov 2008 13:38:23 GMT
[View Forum Message](#) <> [Reply to Message](#)

Chris writes:

```
> Can anybody explain this?
>
> arr = fltarr( 500000) + .1
> cumul = total(array, /cumulative)
>
> print, (cumul - shift(cumul, 1)) [1 : 10]
> print, (cumul - shift(cumul,1)) [499990:499999]
>
>>  0.100000  0.100000  0.100000  0.100000  0.100000  0.100000
>  0.100000  0.100000  0.100000  0.100000
>
>
>>  0.101562  0.101562  0.101562  0.101562  0.101562  0.101562
>  0.101562  0.101562  0.101562  0.101562
>
> Plotting cumul - shift(cumul,1) is even weirder. I can understand the
> net error of cumul growing over time, as floating point precision
> errors accumulate. However, shouldn't the error between any two
> entries in a cumulative sum not accumulate over the array?
```

Two words: double precision.

```
IDL> arr = fltarr( 500000) + .1D
IDL> cumul = total(arr, /cumulative, /double)
IDL>
IDL> print, (cumul - shift(cumul, 1)) [1 : 10]
    0.10000000  0.10000000  0.10000000  0.10000000
0.10000000  0.10000000  0.10000000  0.10000000
0.10000000  0.10000000
IDL> print, (cumul - shift(cumul,1)) [499990:499999]
    0.10000000  0.10000000  0.10000000  0.10000000
0.10000000  0.10000000  0.10000000  0.10000000
0.10000000  0.10000000
```

Cheers,

David

--

David Fanning, Ph.D.

Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: <http://www.dfanning.com/>
Sepore ma de ni thui. ("Perhaps thou speakest truth.")
