Subject: Re: Dealing with Large data arrays, reducing memory and ASSOC
Posted by Kenneth Bowman on Thu, 14 Jun 2007 18:52:07 GMT
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In article <1181828486.257277.182530@q19g2000prn.googlegroups.com>,
bill.dman@gmail.com wrote:

> On Jun 14, 8:33 am, Ambrosia_Everlovely
> <ambrosia_everlov...@hotmail.com> wrote:
>> Hi,
>> I have a fairly large datacube, DC(x,y,t)=DC(512,512,2048) and I want
>> to perform an FFT in the t direction. Now I can do,
>> FFTDC=fft(DC,-1,dim=3) which takes an excessive amount of memory (19 G
>> + 50 G virtual) and slows the whole system down.
>> Since this must be a fairly common practice amongst astronomers, can
>> anyone provide - or link to - a small IDL algorithm which will allow
>> me to use ASSOC or reduce the memory in some way? I have also tried
>> TEMPORARY, but this doesn't seem to help at all.
>>
>> Thankyou!!!!
>
> Assuming you are using single precision, you can limit memory needed
> to about 6GB with
>
> fftdc = complexarr(512,512,2048)
> for i=0,511 do for j=0,511 do fftdc[i,j,0] = fft(dc[i,j,*],-1)
>
> this should help if your machine has more than 6GB for you to use.

I don't think this will work as written. The trick of zero-subscripting
on the LHS of an assignment works for the leading dimensions only.

```
IDL> x = findgen(4,4)
IDL> print, x
     0.00000     1.00000     2.00000     3.00000
     4.00000     5.00000     6.00000     7.00000
     8.00000     9.00000     10.0000     11.0000
     12.0000     13.0000     14.0000     15.0000
IDL> x[0,2] = replicate(99.0, 4)
IDL> print, x
     0.00000     1.00000     2.00000     3.00000
     4.00000     5.00000     6.00000     7.00000
     99.0000     99.0000     99.0000     99.0000
     12.0000     13.0000     14.0000     15.0000
```

If you try this with a trailing dimension you get this

```
IDL> x = findgen(4,4)
```

```
IDL> x[2,0] = replicate(99.0, 4)
% Out of range subscript encountered: X.
% Execution halted at: $MAIN$
```

To make your expression work, you would have to write

fftdc[i,j,*] = fft(dc[i,j,*],-1)

which results in some performance penalty.

Ken Bowman
