Subject: Re: arithmetic operation on array
Posted by Phillip Miller on Mon, 12 Aug 2013 23:17:58 GMT
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On 2013-08-12 23:08:38 +0000, Phillip Miller said:

> On 2013-08-12 22:22:14 +0000, Phillip Bitzer said:
>
>> OK, I'll bite. There are three ways I can think to do this off the top
>> of my head:
>> 1) Do a loop, like Phillip said (what a fantastic name :-))
>> 2) Rebin, like David said
>> 3) Use the mysterious "add an extra dimension" method
>> (https://groups.google.com/d/msg/comp.lang.idl-pvwave/Vu9rzqc kBNQ/HvkK_QnJrsgJ
>> and more recently
>> https://groups.google.com/d/msg/comp.lang.idl-pvwave/dM8XXas Eio0/d3__pvX7svMJ)
>>
>>
>> Here are the sample code I used:
>>
>> data = RANDOMU(1L, 360, 180, 456)
>> avg = MEAN(data, DIM=3)
>> mData1 = FLTARR(360, 180, 456)
>>
>> tic & for i=0, 455 do mData1[*,*,i] = data[*,*,i] - avg & toc
>>
>> mData2 = FLTARR(360, 180, 456)
>>
>> tic & mData2 = data - Rebin(avg, 360, 180, 456) & toc
>> tic & data = TEMPORARY(data) - Rebin(avg, 360, 180, 456) & toc ;just
>> for completeness
>>
>> data = RANDOMU(1L, 360, 180, 456) ;redefine data - we changed it above
>> mData3 = FLTARR(360, 180, 456)
>>
>> tic & mData3 = data - avg[*, *, 0] & toc
>>
>> I used mData (modified data) arrays so I can check I get the same
>> answer, regardless of the method.
>>
>> The four times I get are, in order relative to the above:
>> % Time elapsed: 0.12749481 seconds.
>> % Time elapsed: 0.33231401 seconds.
>> % Time elapsed: 0.33304191 seconds.
>> % Time elapsed: 0.019619942 seconds.
>>
>> So, it seems the mysterious extra dimension method is the fastest, by
>> an order of magnitude. Whoa.

>>
>> For prosperity,
>> IDL> print, !VERSION
>> { x86_64 darwin unix Mac OS X 8.2.2 Jan 23 2013 64 64}
>
> Excellent, thanks for the tip.
> I tried it on my 360x180x1000 double precision array and got the
> similar results as you, though not quite an order of magnitude
> difference between it and the "improved" loop method, the mysterious
> extra dimension method was indeed the fastest

Hmm, perhaps I spoke too soon. The result of the extra dimension
method has lost the third dimension.
After I run that code, I get
IDL> help, mdata3
MDATA3 FLOAT = Array[360, 180]
