Subject: Re: using the WHERE function on a portion of an array
Posted by greg.addr on Tue, 04 Mar 2008 19:38:26 GMT
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On Mar 4, 8:23 pm, becky_s <rda.se...@gmail.com> wrote:
> Dear all,
>
> Please lend me your great expertise to help me solve this problem I
> have with the WHERE function.
>
> I have a 3d array of heights, A, and another 3d array of observations
> at those heights, B. I have a third 3d array, C. I would like
> C[0,*,*] to contain values of B only if the corresponding value of A
> is between 0 and 1; C[1,*,*] would have values of B only if 1<=A<2,
> etc.
>
> I thought this could be done via a WHERE function call, such as:
> indices = WHERE(A[0,*,*] ge 4 AND A[0,*,*] lt 5, count)
> if count gt 0 then C[4,indices] = B[0,indices]
>
> but this does not work. Printing A[0,indices], I can see that these
> values are not b/w 4 and 5.
>
> On the other hand, if I set each level I am looking at to its own 2d
> array, i.e.,
> leva = A[0,*,*]
> levb = B[0,*,*]
> levc = C[4,*,*]
> use these values in the same code written above, and add the statement
> at the end that C[4,*,*] = levc, then it works just fine. However, A
> and B are actually very large, so this isn't an option.
>
> I'm guessing I do not understand some key part of the WHERE function.
> Would someone please shine some light on this for me? Thanks in
> advance.
> Becky

If I've understood your problem correctly, I'd make one more array to
use for your comparisons:

```
sz=size(A)
d=rebin(findgen(sz[0]),sz[0],sz[1],sz[2])
```

and then do the whole job in one step:

```
q=where((A ge d) and (A lt d+1.))
C[q]=B[q]
```

regards,
Greg

Subject: Re: using the WHERE function on a portion of an array
Posted by greg.addr on Tue, 04 Mar 2008 19:39:51 GMT
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On Mar 4, 8:38 pm, greg.a...@googlemail.com wrote:
> On Mar 4, 8:23 pm, becky_s <rda.se...@gmail.com> wrote:
>
>
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> sz=size(A)
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>
> and then do the whole job in one step:
>
> q=where((A ge d) and (A lt d+1.))
> C[q]=B[q]
>
> regards,
> Greg

Sorry, that should be:

sz=size(A,/dim)

Subject: Re: using the WHERE function on a portion of an array
Posted by Jean H. on Tue, 04 Mar 2008 20:15:49 GMT
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> I thought this could be done via a WHERE function call, such as:
> indices = WHERE(A[0,*,*] ge 4 AND A[0,*,*] lt 5, count)

so, indices refers to A[0,*,*], which is a 2D array.

> if count gt 0 then C[4,indices] = B[0,indices]

Now you are try to apply your 2D array in a 3D one, which can not work properly.
To access your 3D array, you must either have a 3D index, or have a 1D index.

So in your case, you want to write in C, on the 5th plane:
indices1D_C = indices + (n_elements(C[0,*,*]) * 4
And you want to read B on the 1st plane:
indices1D_B = indices

and then C[indices1D_C] = B[indices1D_B]

Jean

> On the other hand, if I set each level I am looking at to its own 2d
> array, i.e.,
> leva = A[0,*,*]
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> levc = C[4,*,*]

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> advance.
> Becky

Subject: Re: using the WHERE function on a portion of an array
Posted by becky_s on Tue, 04 Mar 2008 22:17:06 GMT
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On Mar 4, 2:15 pm, Jean H <jghas...@DELTHIS.ucalgary.ANDTHIS.ca>
wrote:

> Now you are try to apply your 2D array in a 3D one, which can not work
> properly.
> To access your 3D array, you must either have a 3D index, or have a 1D
> index.
>
> So in your case, you want to write in C, on the 5th plane:
> indices1D_C = indices + (n_elements(C[0,*,*]) * 4
> And you want to read B on the 1st plane:
> indices1D_B = indices
>
> and then C[indices1D_C] = B[indices1D_B]
>

Jean,
Well, that is pretty slick! I knew there had to be some problem with
all my 2d to 3d dimension switching I was doing.

I did have to modify your solution somewhat, though. I ended up with
(I also generalized my previous code somewhat):

```
indices = WHERE(A[i,*,*] ge j AND A[i,*,*] lt (j+1), count)
if count gt 0 then begin
  indices1D_C = indices*n_elements(C[*,0,0]) + j
  indices1D_B = indices*n_elements(A[*,0,0]) + i
  C[indices1D_C] = B[indices1D_B]
endif
```

Thanks again.
