Subject: For loop avoidance - getting indices of real space
Posted by simulana on Thu, 23 Aug 2012 20:58:48 GMT
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I have read and re-read until cross-eyed this post: http://www.idlcoyote.com/tips/forloops.html

And yet, I still can't quite grasp at how I can solve my for loop problem. I think it might involve the use of modulo (MOD), but I'm not sure how. My question is, how can you grab the indices (i,j,k) of a 3D array in real space, and throw them into basically 3 1D arrays that is just a list of all the cells in the "proper" order (column-major).

Here is an example of what I mean:

```
pro testreader

xcells=15
ycells=10
zcells=20
ncells=xcells*ycells*zcells

data=dindgen(xcells,ycells,zcells)
coord=intarr(ncells,3)

index=0L
for k=0,zcells do begin
  for j=0,ycells do begin
    for i = 0,xcells do begin
      coord(index,0)=i
      coord(index,1)=j
      coord(index,2)=k
      index=index+1
    endfor
  endfor
endfor

end
```

This is a really simple version of a complex problem I have. I have sets of different size boxes from an AMR MHD code, and I need to keep track of their indices, but I just want a list of all of the cells, not to drag around a bunch of smaller arrays or try to concatenate them into one giant sparse array (waste of space). I'm certain that someone must have had this problem before, but I can't find any other suggestions on this forum.

Subject: Re: For loop avoidance - getting indices of real space
Posted by JDS on Tue, 28 Aug 2012 21:41:28 GMT
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On Thursday, August 23, 2012 4:58:48 PM UTC-4, simu...@gmail.com wrote:
> I have read and re-read until cross-eyed this post: http://www.idlcoyote.com/tips/forloops.html

Just for the record, that particular post was made almost entirely in jest: sometimes a for loop is indeed what you want.

JD

Subject: Re: For loop avoidance - getting indices of real space
Posted by simulana on Fri, 21 Sep 2012 20:06:04 GMT
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On Tuesday, August 28, 2012 5:41:29 PM UTC-4, JDS wrote:
> On Thursday, August 23, 2012 4:58:48 PM UTC-4, simu...@gmail.com wrote:
>
>> I have read and re-read until cross-eyed this post: http://www.idlcoyote.com/tips/forloops.html
>
>
>
> Just for the record, that particular post was made almost entirely in jest: sometimes a for loop is indeed what you want.
>
>
>
> JD

Almost entirely you say, but in my case entirely accurate. I reduced the runtime of my code from 10 minutes to 2 minutes by using the above arrays to find my indices instead of for loops, which seems significant to me, considering I need to run it over and over again. I was getting really bored.

In general I find that it's easy to loose focus on a problem if your runtime is approximately between 4 min - 2 hours. You feel like it's too short of a time to switch focus to another project and be productive at all. So, yay for code optimization.

In response to Yngvar:

I also had the problem that I had to add a constant value to each i,j,k specified by another array xBounds that gives the lower left corner of each grid. Since I was basically concatenating all the data from each grid, I could figure out how to add this lower left corner value to each data point before the reform.
