Subject: Re: Improving a piece of code with arrays and for-loops Posted by Vince Hradil on Thu, 08 Feb 2007 17:53:40 GMT

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On Feb 8, 7:23 am, "Halfdan" <halfd...@gmail.com> wrote:
> Hello
>
> I have been looking at my same piece of IDL-code for quite a while now
> and I have yet not found any good method to improve it. I want to
> improve the speed and rid the code of the nested for-loops. Maybe
> there is someone here who has good ideas and is willing to point me in
> the right direction?
>
 The problematic code is below. It is a part of a method to estimate
> wind gusts in output from an atmospheric model. The i and i
> dimensions are the x- and y-locations of the model-points in the
> horizontal and s are the model level heights in the vertical (starting
> from the model top and growing towards the surface).
>
> The code works in the vertical, starting from the surface (largest
> value of s) and works upwards (towards smaller s) to where the value
> of the variable tke is less than tkelvl or tke diff is less than a
> very small number. The code has to do the following three things:
>
> 1. Choose the greatest value of wsp (windspeed) where the value of
> int diff exceeds 0.
> 2. Choose the greatest value of wsp where the value of int_diffver
> exceeds 0.
> 3. Choose the greatest value of wsp.
>
 This has to be repeated for every grid-point in the horizontal (I have
> to assume that I have very little a priori knowledge of the behaviour
  of any of my variables at any gridpoint and model height).
>
> Any ideas on improving this?
>
> Thanks in advance,
> Halfdan
  ps. The problematic code:
>
>
      for i=1,ni-2 do begin
>
        for i=1, ni-2 do begin
>
           s = ns-1
>
           REPEAT BEGIN
>
             if int_diff(i,j,s) GE 0. AND wsp(i,j,s) GT fgtmp(i,j,
>
> 0) then $
               fqtmp(i,j,0) = wsp(i,j,s)
>
```

First thing that comes to mind is the invert the loop order. Granted I've spent about 30 s looking at this, though.

Subject: Re: Improving a piece of code with arrays and for-loops Posted by Vince Hradil on Thu, 08 Feb 2007 17:59:11 GMT

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On Feb 8, 11:53 am, "hradilv" <hrad...@yahoo.com> wrote:
> On Feb 8, 7:23 am, "Halfdan" <halfd...@gmail.com> wrote:
>
>
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>> the right direction?
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>> from the model top and growing towards the surface).
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>> The code works in the vertical, starting from the surface (largest
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```

```
>
>> This has to be repeated for every grid-point in the horizontal (I have
>> to assume that I have very little a priori knowledge of the behaviour
>> of any of my variables at any gridpoint and model height).
>> Any ideas on improving this?
>> Thanks in advance,
>> Halfdan
>> ps. The problematic code:
       for i=1,ni-2 do begin
>>
          for j=1, nj-2 do begin
>>
             s = ns-1
>>
             REPEAT BEGIN
>>
               if int_diff(i,j,s) GE 0. AND wsp(i,j,s) GT fgtmp(i,j,
>> 0) then $
                fgtmp(i,i,0) = wsp(i,i,s)
>>
               if wsp(i,j,s) GT fgtmp(i,j,1) then $
>>
                fgtmp(i,j,1) = wsp(i,j,s)
>>
               if int diffver(i,j,s) GE 0. AND wsp(i,j,s) GT
>>
>> fgtmp(i,j,2) then $
                fgtmp(i,j,2) = wsp(i,j,s)
>>
               s=s-1
>>
             ENDREP UNTIL tke(i,j,s) LT tkelvl(i,j) OR
>>
>> tke_diff(i,j,s) LT eps
          endfor
       endfor
>>
> First thing that comes to mind is the invert the loop order. Granted
> I've spent about 30 s looking at this, though.
```

Another thing that comes to mind is trying to make a "mask" of the of the layers and applying that mask:

instead of if $int_diff[i,j,s]$ gt 0, use $id_mask = int_diff[*,*,s] > 0$ then $idx = where(id_mask gt 0, count)$ - then change only those idx points.

Subject: Re: Improving a piece of code with arrays and for-loops Posted by Halfdan on Fri, 09 Feb 2007 12:01:42 GMT View Forum Message <> Reply to Message

Thank you for the advice.

I always manage to mix up the order of the indices in

the for loops. No matter how often I write them.

I will try the "mask"-method. I had thought of something in this direction but never managed to get the method and the code right

ha