Subject: How to make IDL faster
Posted by parkkw on Wed, 29 Oct 2003 05:35:56 GMT
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Hello
I write message first time.
If I want to compare trmm satellite data with ground point data,
I used to this line.

geo(0,207,2985) : trmm latitute
geo(1,*,*) : trmm longitute
lat : ground location(latitute)
lon : ground location(longitute)
rain : automatic weather system rainfall data
highf(0,207,2985) : trmm brightness temperature data

```
for i=0,207 do begin
  for j=1200,1700 do begin
    for k=0,di(0)-1 do begin

if geo(0,i,j) gt lat(k)-0.04 and geo(0,i,j) lt lat(k)+0.04 and $
  geo(1,i,j) gt lon(k)-0.04 and geo(1,i,j) lt lon(k)+0.04 then begin
    printf,lun3,loc(k),lon(k),lat(k),rain1(k),rain(k),highf(0,i, j)
endif

endfor
endfor
endfor
```

When I caculate 26 trmm data, I wait almost 2hour.
How can I change this program?
Help me.

Subject: Re: How to make IDL faster
Posted by MKatz843 on Wed, 29 Oct 2003 19:18:17 GMT
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```
>  for i=0,207 do begin
>    for j=1200,1700 do begin
>      for k=0,di(0)-1 do begin
>
>  if geo(0,i,j) gt lat(k)-0.04 and geo(0,i,j) lt lat(k)+0.04 and $
>    geo(1,i,j) gt lon(k)-0.04 and geo(1,i,j) lt lon(k)+0.04 then begin
>      printf,lun3,loc(k),lon(k),lat(k),rain1(k),rain(k),highf(0,i, j)
>  endif
>
>  endfor
```

> endfor
> endfor
>
> How can I change this program?
> Help me.

This is minor, but you can get a small speed advantage by taking out
the begin...end where possible. For example your code could be

```
for i=0,207 do $
  for j=1200,1700 do $
    for k=0,di(0)-1 do $
      if geo(0,i,j) gt lat(k)-0.04 and geo(0,i,j) lt lat(k)+0.04 and $
         geo(1,i,j) gt lon(k)-0.04 and geo(1,i,j) lt lon(k)+0.04 $
          then  printf,lun3,loc(k),lon(k),lat(k),rain1(k),rain(k),highf(0,i, j)
```

It makes a small difference but it can help. You have to use
begin...end only when there is more than one line of code to execute.
Here, you can string them together.

You could change

```
if geo(0,i,j) gt lat(k)-0.04 and geo(0,i,j) lt lat(k)+0.04 and $
   geo(1,i,j) gt lon(k)-0.04 and geo(1,i,j) lt lon(k)+0.04
```

to this

```
if (abs(geo(0,i,j) - lat(k)) LT 0.04) and $
   (abs(geo(1,i,j) - lon(k)) LT 0.04) then . . .
```

Here I am thinking that you minimize the number of times you have to
go to the geo() array and get the (0,i,j) element.

M. Katz

Subject: Re: How to make IDL faster
Posted by mchinand on Wed, 29 Oct 2003 19:42:23 GMT
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In article <4a097d6a.0310291118.2ceed6d5@posting.google.com>,
M. Katz <MKatz843@onebox.com> wrote:
>
> if geo(0,i,j) gt lat(k)-0.04 and geo(0,i,j) lt lat(k)+0.04 and $
>   geo(1,i,j) gt lon(k)-0.04 and geo(1,i,j) lt lon(k)+0.04
>
> to this
>

> if (abs(geo(0,i,j) - lat(k)) LT 0.04) and $
>   (abs(geo(1,i,j) - lon(k)) LT 0.04) then . . .
>
> Here I am thinking that you minimize the number of times you have to
> go to the geo() array and get the (0,i,j) element.
>
> M. Katz

Do both conditional clauses always get evaluated, even if the first one is false? If so, it might be faster to add a second if statement:

```
if (abs(geo(0,i,j) - lat(k)) LT 0.04) then $
 if (abs(geo(1,i,j) - lon(k)) LT 0.04) then print, loc(k), etc...
```

I haven't tried this on a large dataset, but it might be worth investigating.

--Mike

--
Michael Chinander
m-chinander@uchicago.edu
Department of Radiology
University of Chicago

Subject: Re: How to make IDL faster
Posted by Ken Knapp on Wed, 29 Oct 2003 21:28:19 GMT
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My two cents:
Only loop over the rainfall data (k). Use rebin and reform to create large (and constant) arrays, then simply difference the arrays to find where the lat and lon matchup:

```
nelem = 207
nscan = 2985

trmmlat = reform(geo(0,*,*))
trmmlon = reform(geo(1,*,*))
trmmtb  = reform(highf(0,*,*))

for k=0,di(0)-1 do begin
   ;remap the 1 lat value to match the trmmlat coordinates
   lat = rebin(reform([lat(k)]),1,1),nelem,nscan)
   lon = rebin(reform([lon(k)]),1,1),nelem,nscan)
   match = where(abs(lat-trmmlat) lt 0.04 and $
```

```
            abs(lon-trmmlon) lt 0.04,nmatch)
   if (nmatch gt 0) then begin
     for im=0,nmatch-1 do begin
       print,loc(k),lon(k),lat(k),rain1(k),$
         rain(k),trmmtb(match(im))
     endfor
   endif
endfor
```

Park Kyung Won wrote:

```
>  Hello
>  I write message first time.
>  If I want to compare trmm satellite data with ground point data,
>  I used to this line.
>
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>  geo(1,*,*) : trmm longitute
>  lat : ground location(latitute)
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>  rain : automatic weather system rainfall data
>  highf(0,207,2985) : trmm brightness temperature data
>
>  for i=0,207 do begin
>     for j=1200,1700 do begin
>        for k=0,di(0)-1 do begin
>
>  if geo(0,i,j) gt lat(k)-0.04 and geo(0,i,j) lt lat(k)+0.04 and $
>     geo(1,i,j) gt lon(k)-0.04 and geo(1,i,j) lt lon(k)+0.04 then begin
>       printf,lun3,loc(k),lon(k),lat(k),rain1(k),rain(k),highf(0,i, j)
>  endif
>
>  endfor
>  endfor
>  endfor
>
>  When I caculate 26 trmm data, I wait almost 2hour.
>  How can I change this program?
>  Help me.
```

Subject: Re: How to make IDL faster
Posted by parkkw on Thu, 30 Oct 2003 00:35:05 GMT
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parkkw@mail1.pknu.ac.kr (Park Kyung Won) wrote in message
news:<eceee805.0310282135.5448e3af@posting.google.com>...

> Hello
> I write message first time.
> If I want to compare trmm satellite data with ground point data,
> I used to this line.
>
> geo(0,207,2985) : trmm latitute
> geo(1,*,*) : trmm longitute
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> geo(1,i,j) gt lon(k)-0.04 and geo(1,i,j) lt lon(k)+0.04 then begin
> printf,lun3,loc(k),lon(k),lat(k),rain1(k),rain(k),highf(0,i, j)
> endif
>
> endfor
> endfor
> endfor
>
> When I caculate 26 trmm data, I wait almost 2hour.
> How can I change this program?
> Help me.

Thank you for your answer.
I have mistake.

geo(0,*,*) : trmm latitute
geo(1,*,*) : trmm longitute
lat : ground location(latitute)
lon : ground location(longitute)
rain : automatic weather system rainfall data
highf(0,207,2985) : trmm brightness temperature data

k : number of ground station

Subject: Re: How to make IDL faster
Posted by the_cacc on Sat, 01 Nov 2003 02:49:43 GMT
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MKatz843@onebox.com (M. Katz) wrote in message
news:<4a097d6a.0310291118.2ceed6d5@posting.google.com>...

>
> This is minor, but you can get a small speed advantage by taking out
> the begin...end where possible. <snip>
>

This is truly scraping the barrel. I guess cutting out all white-space
might help too??

Subject: Re: How to make IDL faster
Posted by Robert Moss on Sun, 02 Nov 2003 17:17:30 GMT
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Yes, but not as much as using only one character variable names. :P

trouble wrote:
> MKatz843@onebox.com (M. Katz) wrote in message
news:<4a097d6a.0310291118.2ceed6d5@posting.google.com>...
>
>> This is minor, but you can get a small speed advantage by taking out
>> the begin...end where possible. <snip>
>>
>
> This is truly scraping the barrel. I guess cutting out all white-space
> might help too??

Subject: Re: How to make IDL faster
Posted by the_cacc on Mon, 03 Nov 2003 18:37:16 GMT
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Robert Moss <rmmoss@cox.net> wrote in message
news:<J_apb.135922$k74.131604@lakeread05>...
> Yes, but not as much as using only one character variable names. :P
>

Heck with it, recode in assembler.
