Subject: Re: Strange array subscripting error
Posted by robintw on Tue, 07 Jul 2009 09:38:27 GMT
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UPDATE:

In fact, it seems to be even stranger than I thought. It's now crashing at 32389, even when I've made the array size 32403 rather than 32400. Any ideas? This seems very strange...

Robin
University of Southampton, UK

Subject: Re: Strange array subscripting error
Posted by greg.addr on Tue, 07 Jul 2009 09:55:20 GMT
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On Jul 7, 11:27 am, robintw <r.t.wil...@rmplc.co.uk> wrote:
> Hi,
>
> I'm getting the error "% Out of range subscript encountered: VALUES.",
> but I can't work out why. I have three arrays (azimuths, zeniths and
> values) each of which is set to a size of 360 * 90 (which is 32400). I
> then have a loop which populates these arrays with values, but when
> the loop gets to 32398 it stops and gives the error above.
>
> I really can't understand what's going on here. I've made sure that
> the variable I'm using to keep the array_index in is a long, in case
> above 32398 it was going over a limit in a standard integer, but that
> didn't help. The only way I've found to get round it is to manually
> add three to my array declaration (ie. change it to fltarr((360*90) +
> 3)). That is obviously a very ugly hack, and ends up with me having
> some blank unused array values at the end.
>
> Does anybody have any ideas why this is happening and what I can do
> about it? I've attached the code below:
>
> PRO BRUNGER_HOOPER_MODEL, a0, a1, a2, a3, azimuths=azimuths,
> zeniths=zeniths, values=values, s_theta, s_phi
> sun_theta = s_theta*!DTOR
> sun_phi = s_phi*!DTOR
>
> ; Initialise arrays
> array_size = (360*90) + 3 ; BUG ALERT! When set to 360*90 (32400) it
> seems to overrun at 32398, this is an ugly fix
>
> azimuths = intarr(array_size)

```
>    zeniths = intarr(array_size)
>    values = fltarr(array_size)
>
>    FOR phi=0, 360-1 DO BEGIN
>      FOR theta=0, 90-1 DO BEGIN
>        ; Convert the current phi and theta to radians
>        view_phi = phi*!DTOR
>        view_theta = theta*!DTOR
>
>        value = CALCULATE_SKY_VALUE(a0, a1, a2, a3, view_theta,
> view_phi, sun_theta, sun_phi)
>
>        array_index = long((90*phi) + theta)
>
>        ; Put the value into the array
>        values[array_index] = value
>        azimuths[array_index] = phi
>        zeniths[array_index] = theta
>
>      ENDFOR
>    ENDFOR
>
>    ; Normalise the values
>    values = values / MAX(values)
>  END
```

If I comment out your calculate sky function it works fine on my machine. I can't see anything wrong with your index calculations. You didn't say in which line the error occurs - could it be in a loop in your function?

Is there a reason that you avoid 2-D arrays?

regards,
Greg

Subject: Re: Strange array subscripting error
Posted by robintw on Tue, 07 Jul 2009 10:05:49 GMT
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Thanks for the help Greg. I've done some more investigation and found that if I run just that function it works fine (even when the CALCULATE_SKY_VALUE function isn't commented out), but when I run it from within my program it causes this error...most of the time.

In the last 10 minutes of playing with it, it's worked a few times, but hasn't the others.

I'll carry on playing with it, but I really don't know what's causing it.

If anyone's got any other ideas about what's causing this then I'd be delighted to hear them.

Robin

Subject: Re: Strange array subscripting error
Posted by robintw on Tue, 07 Jul 2009 10:15:45 GMT
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Another update:

I realised I forgot to answer some of your questions. The line that the error is occurring on is the "values[array_index] = value" line. I've found that it works fine in a couple of situations:

* If I run it (with nothing commented out) by itself as a function

or

* If I run it from the rest of my program with the CALCULATE_SKY_VALUE function commented out and replaced with "value = 1".

I can't see how these two observations fit together. It can't be a fundamental problem with the CALCULATE_SKY_VALUE function because otherwise it would fail even when I ran it by itself as a function, but then again it only works when called from the rest of my program when that function is commented out.

The rest of the program is only providing a couple of bits of input to this function, but I'll investigate those and get back to you.

Robin

Subject: Re: Strange array subscripting error
Posted by robintw on Tue, 07 Jul 2009 10:46:31 GMT
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I've managed to sort it now. Thanks for the help. I think trying to explain myself to people on this group helped me to formulate my thoughts and work out what was wrong.

It turned out that I was passing an array in somewhere rather than a scalar, and that was confusing the rest of my program which was expecting a single value but got an array!

Thanks again,

Robin

Subject: Re: Strange array subscripting error
Posted by pgrigis on Tue, 07 Jul 2009 23:37:11 GMT
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robintw wrote:
> Hi,
>
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> but I can't work out why. I have three arrays (azimuths, zeniths and
> values) each of which is set to a size of 360 * 90 (which is 32400). I
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> above 32398 it was going over a limit in a standard integer, but that
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> sun_theta = s_theta*!DTOR
> sun_phi = s_phi*!DTOR
>
> ; Initialise arrays
> array_size = (360*90) + 3 ; BUG ALERT! When set to 360*90 (32400) it
> seems to overrun at 32398, this is an ugly fix
>
> azimuths = intarr(array_size)
> zeniths = intarr(array_size)
> values = fltarr(array_size)
>
> FOR phi=0, 360-1 DO BEGIN
> FOR theta=0, 90-1 DO BEGIN

```
>       ; Convert the current phi and theta to radians
>       view_phi = phi*!DTOR
>       view_theta = theta*!DTOR
>
>       value = CALCULATE_SKY_VALUE(a0, a1, a2, a3, view_theta,
>  view_phi, sun_theta, sun_phi)
>
>       array_index = long((90*phi) + theta)
```

This statement looks very dangerous. While it won't
actually overflow in your example, it comes very close
to it. instead of applying long() to the result, phi and theta
should be longs from the start (i.e. for phi=0L,360...).
If you want to see why, try the difefrence between:
IDL> print,long(256^2)
IDL> print,256L^2

The former is probably going to mess you up, while the latter
is fine.

This is good advice, even if that was not the cause of your problem :)

Ciao,
Paolo

```
>
>       ; Put the value into the array
>       values[array_index] = value
>       azimuths[array_index] = phi
>       zeniths[array_index] = theta
>
>     ENDFOR
>   ENDFOR
>
>   ; Normalise the values
>   values = values / MAX(values)
>  END
```

Subject: Re: Strange array subscripting error
Posted by robintw on Wed, 08 Jul 2009 08:43:52 GMT
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Thanks for the advice, Paolo. I'll change that now.

Cheers,