Subject: Re: Interesting WHERE function gotcha
Posted by Craig Markwardt on Fri, 07 Feb 2003 02:35:31 GMT
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David Fanning <david@dfanning.com> writes:

```
>
> How about this:
>
>    Help, veggie_letter, letter
>       VEGGIE_LETTER   BYTE      = Array[4]
>       LETTER          BYTE      = Array[1]
>
> "LETTER, a byte *array*!? You don't suppose..." Try this:
>
>    index = WHERE( (Byte(array))[0,*] EQ (Byte('a'))[0], count)
>    Print, count
>       2
>
> Hummm. V-e-r-y interesting...
>
> Now I know how to fix the problem, but I don't know exactly
> what the problem is. (Although this is not so different
> from most computer problems, when you come to think of it.)
> Is the problem that the BYTE function always makes a byte
> *array* when extracting string arguments? Or is it that
> the WHERE function acts in a, uh, non-intuitive way when
> there are two vectors in a boolean expression?
```

Hi David!

You are being bitten by the "feature" that I love so much. Namely
that in IDL, when you do "X OPERATION Y", and X and Y are both arrays,
then the expression is trimmed to the smaller of the two arrays.

So it's not anything special regarding WHERE, or boolean expressions,
but rather that VEGGIE_LETTER EQ LETTER evaluates to a 1-element
array. One element, because LETTER only has one element:

```
  IDL> help, veggie_letter EQ letter
  <Expression>    BYTE      = Array[1]
```

There are many times that I wish that IDL has an easier way to get the
ASCII value of a character.

By the way, why not do this instead?

```
  index = where( strmid(array,0,1) EQ 'a')
```

This avoids the whole issue of converting to a different
representation, and it just looks less gobbledygooky.

Happy guacamole,
Craig

--
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Craig B. Markwardt, Ph.D.   EMAIL: craigmnet@cow.physics.wisc.edu
Astrophysics, IDL, Finance, Derivatives | Remove "net" for better response
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Subject: Re: Interesting WHERE function gotcha
Posted by David Fanning on Fri, 07 Feb 2003 03:06:31 GMT
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Craig Markwardt (craigmnet@cow.physics.wisc.edu) writes:

> By the way, why not do this instead?
>
>   index = where(strmid(array,0,1) EQ 'a')

Well, basically, because it didn't make nearly as
interesting a story. :-)

Cheers,

David

--
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Coyote's Guide to IDL Programming: http://www.dfanning.com/
Toll-Free IDL Book Orders: 1-888-461-0155

Subject: Re: Interesting WHERE function gotcha
Posted by JD Smith on Fri, 07 Feb 2003 16:04:22 GMT
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On Thu, 06 Feb 2003 19:35:31 -0700, Craig Markwardt wrote:

> David Fanning <david@dfanning.com> writes:
>>

>> How about this:
>>
>>   Help, veggie_letter, letter
>>   VEGGIE_LETTER   BYTE   = Array[4]
>>   LETTER   BYTE   = Array[1]
>>
>> "LETTER, a byte *array*!? You don't suppose..." Try this:
>>
>>   index = WHERE((Byte(array))[0,*] EQ (Byte('a'))[0], count) Print,
>>   count
>>   2
>>
>> Hummm. V-e-r-y interesting...
>>
>> Now I know how to fix the problem, but I don't know exactly what the
>> problem is. (Although this is not so different from most computer
>> problems, when you come to think of it.) Is the problem that the BYTE
>> function always makes a byte *array* when extracting string arguments?
>> Or is it that the WHERE function acts in a, uh, non-intuitive way when
>> there are two vectors in a boolean expression?
>
> Hi David!
>
> You are being bitten by the "feature" that I love so much. Namely that
> in IDL, when you do "X OPERATION Y", and X and Y are both arrays, then
> the expression is trimmed to the smaller of the two arrays.
>
> So it's not anything special regarding WHERE, or boolean expressions,
> but rather that VEGGIE_LETTER EQ LETTER evaluates to a 1-element array.

Yes, the tension between single element arrays and scalars is felt
deeply, even within the core IDL development group. It's a
regrettable legacy which must, unfortunately, be preserved for
compatibitlity. There are, however, minor changes and improvements:
e.g., with v5.6, KEYWORD_SET now considers a single element array TRUE
only if its single element is non-zero; i.e. it's treated just like a
scalar for this (and only this) function.

JD

Subject: Re: Interesting WHERE function gotcha
Posted by Stein Vidar Hagfors H[2] on Mon, 10 Feb 2003 17:21:46 GMT
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JD Smith <jdsmith@as.arizona.edu> writes:

> On Thu, 06 Feb 2003 19:35:31 -0700, Craig Markwardt wrote:

[...]

> Yes, the tension between single element arrays and scalars is felt
> deeply, even within the core IDL development group. It's a
> regrettable legacy which must, unfortunately, be preserved for
> compatibitlity. There are, however, minor changes and improvements:
> e.g., with v5.6, KEYWORD_SET now considers a single element array TRUE
> only if its single element is non-zero; i.e. it's treated just like a
> scalar for this (and only this) function.

Uh... improvement? I beg to differ. Not only does it introduce a single mysterious case where the legacy compatibility fails (when someone relies on the previous truth that "when it's defined as an array, it's set!") (I hope I never have to debug a code experiencing this!), but it introduces even one more level of exception to how singular arrays are treated.... Okay, so trailing singular dimensions are disappearing or are ignored, except when it's the last dimension to survive the slaughter, *except* that this one nifty function that we wrote specifically to say that anything not a scalar zero means "set" is right now doing a vote on whether to consider your singular dimension worthy of noticing... Ugh..!

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Stein Vidar Hagfors Haugan
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