
Subject: Re: Array indexing surprises

Posted by [Michael Galloy](#) on Tue, 07 Sep 2010 23:32:29 GMT

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On 9/7/10 4:01 PM, Larry Kneller wrote:

```
> I received this question from a guy I work with.
>
> The main thing I can't explain here is that if I index an array with
> too big
> a number where the index is an array, then it behaves as though there
> is
> no problem.
>
> Here is an example program to illustrate:
>
>
> pro jrdc_colors
>
> color=['red','white','blue']
>
> icol=[3]
> print,color[icol] ; blue
>                ; NO ERROR, NO CRASH IN IDL 7 or 8!
>
> icol2 = [-3,-2,-1,0,1,2,3,4]
> print,color[icol2] ; red red red white blue blue blue
>
> print,color[-3] ; blue
> print,color[-2] ; white
> print,color[-1] ; red
>
> print,color[3] ; ERROR IN IDL 7 AND 8
> end
>
> I don't know whether this is a bug or it is working as
> planned. It seems like the first two examples in this
> code will cause problems with where statements.
```

Using out-of-bounds indices when indexing by an array or by a scalar are handled differently. When indexing by an array, the default behavior is to substitute 0 for negative indices and the last valid index for indices larger than that.

This behavior can be changed for a given routine by placing

```
compile_opt strictarrsubs
```

in that routine. Then indexing an array by an array with out-of-bounds

values will be an error.

For indexing by negative scalars, the behavior changed in IDL 8.0. Indexing by negative values is an error in pre-IDL 8.0, but in IDL 8.0, `a[ind]` is handled as `a[n_elements(a) - ind]`. Note that this could still be out-of-bounds if `ind` is greater than the number of elements in `a`:

```
~$ idl
```

```
IDL Version 8.0, Mac OS X (darwin x86_64 m64). (c) 2010, ITT Visual  
Information Solutions
```

```
IDL> a = findgen(10)
```

```
IDL> print, a[-1]
```

```
9.00000
```

```
IDL> print, a[-10]
```

```
0.00000
```

```
IDL> print, a[-11]
```

```
% Attempt to subscript A with <INT ( -11)> is out of range.
```

```
% Execution halted at: $MAIN$
```

Indexing by positive out-of-bounds scalars is always an error.

Mike

--

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