Subject: Re: Array indexing "Feature"
Posted by David Fanning on Wed, 12 Dec 2001 22:12:24 GMT
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Andrew Cool (andrew.cool@dsto.defence.gov.au) writes:

> One of my colleagues has noted something apparently screwy in the
> indexing of
> arrays.
>
> e.g. a = indgen(10)
> print, a(9) -> you get 9
> print, a(10) -> you get an error, as expected for a zero-based
> index
>
> but if you access the array with the index as a vector, it seems to
> truncate the index to the maximum allowable:
>
> print, a([10]) -> you get 9
> print, a([666]) -> you get 9
>
> Similarly:
>
> print, a(-1) -> you get an error
> print, a([-1]) -> you get 0
>
> This feature holds good for IDL 5.2 and 5.4 on OpenVMS and for 5.5 on
> Windows.
>
> Where, Oh where in the manuals does it describe this?

This has been a feature of IDL since about IDL 0.5, or thereabouts.

I first encountered it in about 1988 in some chapters
Ray Sterner of JHUAPL was putting together for a book about
IDL. He found it incredibly useful for array bound error
checking. But I don't think I have ever read about it in any
documentation. My guess is that after the IDL 1.0
documentation was finished, and RSI had hired a real
technical writer, that he could never figure out
a way to explain the situation that didn't sound
really lame. So he just left it out. :-)

Cheers,

David
--
David W. Fanning, Ph.D.

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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: Array indexing "Feature"
Posted by Craig Markwardt on Wed, 12 Dec 2001 22:28:04 GMT
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Andrew Cool <andrew.cool@dsto.defence.gov.au> writes:

> Hi All,
>
> One of my colleagues has noted something apparently screwy in the
> indexing of
> arrays.
>
> e.g. a = indgen(10)
> print, a(9) -> you get 9
> print, a(10) -> you get an error, as expected for a zero-based
> index
>
> but if you access the array with the index as a vector, it seems to
> truncate the index to the maximum allowable:

See "Using Arrays as Subscripts" in the manual. I believe this
behavior has been true since the dawn of SYSTIME().

Craig

--
---------- ----------
Craig B. Markwardt, Ph.D. EMAIL: craigmnet@cow.physics.wisc.edu
Astrophysics, IDL, Finance, Derivatives | Remove "net" for better response
---------- ----------

Subject: Re: Array indexing "Feature"
Posted by Paul van Delst on Wed, 12 Dec 2001 22:44:59 GMT
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Craig Markwardt wrote:
>
> Andrew Cool <andrew.cool@dsto.defence.gov.au> writes:
>
>> Hi All,

>>
>>  One of my colleagues has noted something apparently screwy in the
>> indexing of
>>  arrays.
>>
>>  e.g.  a = indgen(10)
>>  print, a(9)  -> you get 9
>>  print, a(10)  -> you get an error, as expected for a zero-based
>> index
>>
>>  but if you access the array with the index as a vector, it seems to
>> truncate the index to the maximum  allowable:
>
> See "Using Arrays as Subscripts" in the manual. I believe this
> behavior has been true since the dawn of SYSTIME().

Huh. How 'bout that?

```
IDL> a = indgen(10)
IDL> x=[-100,3, 4, 5]
IDL> print, a(x)
      0       3       4       5
```

but only for array subscripts,

```
IDL> print, a[-100]
% Attempt to subscript A with <INT      (    -100)> is out of range.
% Execution halted at:  $MAIN$
```

Seems logical....<insert chirping cricket sounds here>.....in an IDL sorta way.

paulv

--
Paul van Delst  Religious and cultural
CIMSS @ NOAA/NCEP  purity is a fundamentalist
Ph: (301)763-8000 x7274  fantasy
Fax:(301)763-8545  V.S.Naipaul

---

Subject: Re: Array indexing "Feature"
Posted by Jeff Jones on Wed, 12 Dec 2001 23:03:22 GMT
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Andrew Cool wrote:

> Hi All,

>
>  One of my colleagues has noted something apparently screwy in the
> indexing of
>  arrays.
>
>  e.g.  a = indgen(10)
>  print, a(9)  -> you get 9
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>  print, a(-1)  -> you get an error
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>
>  This feature holds good for IDL 5.2 and 5.4 on OpenVMS and for 5.5 on
> Windows.
>
>  Where, Oh where in the manuals does it describe this?
>
>  Andrew

It's funny -- my office mate noticed the same thing just yesterday.

It _is_ documented, in the section on "Array Subscripts" in "Building IDL Applications". (The exact page depends on the version of the doc. My v5.0 book has it on page 62.)

---

Subject: Re: Array indexing "Feature"
Posted by Andrew Cool on Thu, 13 Dec 2001 00:10:55 GMT
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Paul van Delst wrote:
>
> Craig Markwardt wrote:
>>
>> Andrew Cool <andrew.cool@dsto.defence.gov.au> writes:
>>
>>> Hi All,
>>>
>>>  One of my colleagues has noted something apparently screwy in the

>>>  indexing of
>>>       arrays.
>>>
>>>       e.g.    a = indgen(10)
>>>               print, a(9)       -> you get 9
>>>               print, a(10)     -> you get an error, as expected for a zero-based
>>>  index
>>>
>>>       but if you access the array with the index as a vector, it seems to
>>>  truncate the index to the maximum         allowable:
>>
>>  See "Using Arrays as Subscripts" in the manual.  I believe this
>>  behavior has been true since the dawn of SYSTIME().
>
>  Huh. How 'bout that?
>
>  IDL> a = indgen(10)
>  IDL> x=[-100,3, 4, 5]
>  IDL> print, a(x)
>         0       3       4       5
>
>  but only for array subscripts,
>
>  IDL> print, a[-100]
>  % Attempt to subscript A with <INT      (    -100)> is out of range.
>  % Execution halted at:  $MAIN$
>
>  Seems logical....<insert chirping cricket sounds here>.....in an IDL sorta way.
>
>  paulv
>

Thanks David, Craig & Paul...

 I did actually search every which way through the online v5.4 "Help"
 before posting the query.

 Thanks to Jeff, I've gone back to my *paper* v4.0 User's Guide and
found on 5-5 that :-

 "If an element of a subscript array is less than or equal to zero, the
first element
  of the subscripted variable is selected. If an element of the
subscript is greater
  than or equal to the last subscript in the subscripted variable
(N,above), the last
  element is selected."

Sounds fair - if only they'd keep that text in the bloody Help!

But what sort of person attempts to subscript an array without checking the bounds
in the first place? Sounds like sloppy practice to me.

Anyways, Y'all have a good Christmas. I'll be thinking of you Paul, freezing your
buns off in Yankee Land while prawns & cold beer are Order of the Day back in OZ.

Cheers,

Andrew


---------- ---------
Andrew D. Cool .->-.
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Defence Science & Technology Organisation 100% recycled
PO Box 1500, Salisbury electrons
South Australia 5108

Phone : 061 8 8259 5740 Fax : 061 8 8259 6673
Email : andrew.cool@dsto.defence.gov.au
---------- ---------


---

Subject: Re: Array indexing "Feature"
Posted by Kristine Hensel on Thu, 13 Dec 2001 00:31:21 GMT
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Andrew Cool wrote:
> Anyways, Y'all have a good Christmas. I'll be thinking of you Paul,
> freezing your
> buns off in Yankee Land while prawns & cold beer are Order of the Day
> back in OZ.

Unless you're in Hobart, where it snowed a couple days ago.

Kristine, perilously close to Tasmania


--
Kristine Hensel e-mail: kristine@esands.com
Environmental Systems & Services phone: +61-(0)3-9835-7901
20 Council St., Level 3 fax: +61-(0)3-9835-7900
Hawthorn East, VIC, Australia 3124

Subject: Re: Array indexing "Feature"
Posted by David Fanning on Thu, 13 Dec 2001 00:48:38 GMT
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Kristine Hensel (kristine@esands.com) writes:

> Unless you're in Hobart, where it snowed a couple days ago.

Still, a snowy day in Hobart kicking around the
Battery Hill area is better than a whole lot of
warm days somewhere else. :-)

Cheers,

David

--
David W. Fanning, Ph.D.
Fanning Software Consulting
Phone: 970-221-0438, E-mail: david@dfanning.com
Coyote's Guide to IDL Programming: http://www.dfanning.com/
Toll-Free IDL Book Orders: 1-888-461-0155

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Subject: Re: Array indexing "Feature"
Posted by Paul van Delst on Thu, 13 Dec 2001 14:17:38 GMT
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Andrew Cool wrote:
>
> Anyways, Y'all have a good Christmas. I'll be thinking of you Paul, freezing your
> buns off in Yankee Land while prawns & cold beer are Order of the Day back in OZ.

Come February, matey, I'll be nursing a cold one on the balcony of the Cottesloe Hotel watching the sun set over the ocean.

Ahhh.....

paulv

--
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Fax:(301)763-8545 V.S.Naipaul

---

Subject: Re: Array indexing "Feature"
Posted by Liam E. Gumley on Thu, 13 Dec 2001 15:23:58 GMT
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Andrew Cool wrote:
> One of my colleagues has noted something apparently screwy in the
> indexing of
> arrays.
>
> e.g. a = indgen(10)
> print, a(9) -> you get 9
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>
> This feature holds good for IDL 5.2 and 5.4 on OpenVMS and for 5.5 on
> Windows.
>
> Where, Oh where in the manuals does it describe this?

For what it's worth, this behavior is documented in "Practical IDL Programming" on page 30 (section 2.4 "Array Indexing").

Cheers,
Liam
Practical IDL Programming
http://www.gumley.com/

Subject: Re: Array indexing "Feature"
Posted by k-bowman on Thu, 13 Dec 2001 16:35:11 GMT
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As has been pointed out, this ... ah ... feature has the side effect that sometimes IDL checks array subscript bounds and sometimes it does not, depending on the nature of the index.

It would be nice if it were possible to use a compile switch to turn

subscript checking on for array subscripts, at the obvious cost of some performance.

Ken

---

Subject: Re: Array indexing "Feature"
Posted by Pavel A. Romashkin on Mon, 17 Dec 2001 17:40:38 GMT
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Jeff Jones wrote:
>
> It's funny -- my office mate noticed the same thing just yesterday.

I think this is what David loves IDL for - learning something new every day. Who cares if its been there forever, its new for us :)

Cheers,
Pavel

---