
Subject: Re: simple array math question

Posted by [marc schellens\[1\]](#) on Mon, 20 Jan 2003 06:55:50 GMT

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Jeff Guerber wrote:

> On 16 Jan 2003, Craig Markwardt wrote:

>

>

>> Heinz Stege <reply_to_posting@arcor.de> writes:

>>

>>> On Thu, 16 Jan 2003 14:05:27 -0600, "Sean Raffuse" <sean@me.wustl.edu>

>>> wrote:

>>>

>>>

>>>> >>a=[[1,2,3],[4,5,6],[7,8,9]]

>>>> >

>>>> >>b=[1,2,3]

>>>> >

>>>> What is the best (read, fastest) way to multiply b by each individual row of
>>>> a? I would like to return a result of:

>>>>

>>>> [[1,4,9],[4,10,18],[7,14,27]]

>>>

>>>

>>> result=a*b(*,intarr(3))

>>

>> WOW! I've never seen that! It scares me how cool that is. :-)

>>

>> Craig

>

>

> That IS way cool, but, uh, would someone mind explaining just what's
> going on? I'm not getting it. It seems to only depend on the total
> number of elements in the indexing array, not on its values (or even
> dimensionality):

>

> IDL> b=[4,5,6]

> IDL> print,b[*,[10,10,10]]

> 4 5 6

> 4 5 6

> 4 5 6

> IDL> print,b[*,[1000,1000]]

> 4 5 6

> 4 5 6

> IDL> print,b[*,[10,10,10],[10,10,10]]

> 4 5 6

> 4 5 6

> 4 5 6

```

>      4      5      6
>      4      5      6
>      4      5      6
> IDL> help,b[*,[[10,10,10],[10,10,10]]]
> <Expression>  INT      = Array[3, 6]
> IDL>
>
> Oh, you can apply it multiple times, too:
>
> IDL> print,b[*,[10,10,10,10],[10,10]]
>      4      5      6
>      4      5      6
>      4      5      6
>      4      5      6
>
>      4      5      6
>      4      5      6
>      4      5      6
>      4      5      6
> IDL> help,b[*,[10,10,10,10],[10,10]]
> <Expression>  INT      = Array[3, 4, 2]
> IDL>
>

```

If you index an array in IDL with another array,
IDL always eats it, and sets the index to the bounds of the
array.

e.g:

```

IDL> print,indgen(5)-1
    -1    0    1    2    3
IDL> a=indgen(3)
IDL> print,a[indgen(5)-1]
    0    0    1    2    2

```

so the result is:

a[0], a[0], a[1], a[2], a[2]

this works for all dimensions, so in you case

b[*,[10,10,10,10],[10,10]]

is the same as

b[*,[0,0,0,0],[0,0]]

because b is

B INT = Array[3]

which is in IDL the same as:

```
Array[3,0,0,0,0,0,0,0]
```

hope that helped,
marc
