Subject: Re: Matlab Syntax
Posted by Nigel Wade on Tue, 18 Nov 2003 10:16:23 GMT
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David Fanning wrote:
> Folks,
>
> Speaking of Matlab syntax (which I am beginning to like,
> by the way), here is one I find confusing. Any Matlab
> users out there in IDL-land?
>
> y(2*x(IDX==0))=[];
>
> IDX is a vector, I think. The variables x and y
> are vectors for sure. I realize IDL doesn't
> have a null array, but my best guess about this
> translation is something like this.
>
> I = Where(IDX EQ 0, count)
> IF count GT 0 THEN y[2*x[I]] = !Values.F_NAN
>
> Is that close?

Assigning an element to [] is a simple way to delete it.
e.g.

```
 >> a=[1,2,3,4]
a =
     1     2     3     4
 >> a(3)=[]
a =
     1     2     4
```

--
Nigel Wade, System Administrator, Space Plasma Physics Group,
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Subject: Re: Matlab Syntax
Posted by David Fanning on Thu, 20 Nov 2003 20:38:48 GMT
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Folks,

I need more Matlab help. Here is the line I am struggling with:

```
invAI = inv(A + gamma * diag(ones(1,N)));
```

A is a matrix and gamma is the scalar 1.0.

Here is the output from Matlab when I print A and invAI:

```
A =
     8    -5     1     1    -5
    -5     8    -5     1     1
     1    -5     8    -5     1
     1     1    -5     8    -5
    -5     1     1    -5     8

invAI =

    0.3158    0.2105    0.1316    0.1316    0.2105
    0.2105    0.3158    0.2105    0.1316    0.1316
    0.1316    0.2105    0.3158    0.2105    0.1316
    0.1316    0.1316    0.2105    0.3158    0.2105
    0.2105    0.1316    0.1316    0.2105    0.3158
```

I have the matrix A in my IDL session:

```
IDL> print, array
      8.00000    -5.00000     1.00000     1.00000    -5.00000
     -5.00000     8.00000    -5.00000     1.00000     1.00000
      1.00000    -5.00000     8.00000    -5.00000     1.00000
      1.00000     1.00000    -5.00000     8.00000    -5.00000
     -5.00000     1.00000     1.00000    -5.00000     8.00000
```

But I get the wrong answers when I invert. Here is my translation of the Matlab inverse line:

```
invARRAY = Invert((ARRAY + gamma) ## Diag_Matrix(Replicate(1,npts)) )
```

Here is what I get:

```
     0.185455    0.0581818   -0.0509091   -0.0509091    0.0581818
    0.0581818     0.185455    0.0581818   -0.0509091   -0.0509091
   -0.0509091    0.0581818     0.185455    0.0581818   -0.0509091
   -0.0509091   -0.0509091    0.0581818     0.185455    0.0581818
    0.0581818   -0.0509091   -0.0509091    0.0581818     0.185455
```

I'm pulling my hair out here! Can someone help?

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: Matlab Syntax
Posted by David Fanning on Thu, 20 Nov 2003 20:52:52 GMT
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David Fanning writes:

> I need more Matlab help.

Aaaaahhhhha. Never mind. Seeing it in print somewhere
other than in the normal setting illuminated the problem
immediately. Don't you love the way you have to embarrass
yourself to gain enlightenment. :-)

Cheers,

David

--
David W. Fanning, Ph.D.
Fanning Software Consulting, Inc.
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

Subject: Re: Matlab Syntax
Posted by Mark Hadfield on Thu, 20 Nov 2003 20:56:21 GMT
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David Fanning wrote:
> Folks,
>
> I need more Matlab help. Here is the line I am
> struggling with:

I find randomly adding IDL transpose() calls helps.

No I am not joking. The relation between index (i,j) order and printing (row, column) order is not the same in IDL as in Matlab.

There's a good WWW page about it somewhere.

Oops, sorry, I didn't follow your advice of the other day to spend several minutes thinking before posting. (For heaven's sake, David, if I did that I would never post anything.) Please ignore it.

--
Mark Hadfield "Ka puwaha te tai nei, Hoea tatou"
m.hadfield@niwa.co.nz
National Institute for Water and Atmospheric Research (NIWA)

Subject: Re: Matlab Syntax
Posted by Bruce Bowler on Thu, 20 Nov 2003 20:58:05 GMT
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On Thu, 20 Nov 2003 13:38:48 -0700, David Fanning put fingers to keyboard and said:

> Folks,
>
> I need more Matlab help. Here is the line I am
> struggling with:
>
> invAI = inv(A + gamma * diag(ones(1,N)));

Adds 1 to each element of the diagonal

> invARRAY = Invert((ARRAY + gamma) ## Diag_Matrix(Replicate(1,npts)))

adds 1 to each element of the array...

You need to decide which it is you want to do :-)

Bruce

--
+------------------+------------------------------------ ------------+
Bruce Bowler | Praise makes good men better and bad men worse. -
1.207.633.9600 | Thomas Fuller
bbowler@bigelow.org |
+------------------+------------------------------------ ------------+

Subject: Re: Matlab Syntax
Posted by Mark Hadfield on Thu, 20 Nov 2003 21:09:22 GMT
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David Fanning wrote:
> Aaaaahhhhha. Never mind. Seeing it in print somewhere
> other than in the normal setting illuminated the problem
> immediately. Don't you love the way you have to embarrass
> yourself to gain enlightenment. :-)

Yeah. Do it all the time.

BTW that WWW page I mentioned is on your site:

http://www.dfanning.com/misc_tips/colrow_major.html

--
Mark Hadfield "Ka puwaha te tai nei, Hoea tatou"
m.hadfield@niwa.co.nz
National Institute for Water and Atmospheric Research (NIWA)

Subject: Re: Matlab Syntax
Posted by James Kuyper on Thu, 20 Nov 2003 21:44:21 GMT
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David Fanning wrote:
>
> Folks,
>
> I need more Matlab help. Here is the line I am
> struggling with:
>
> invAI = inv(A + gamma * diag(ones(1,N)));
>
> A is a matrix and gamma is the scalar 1.0.
>
> Here is the output from Matlab when I print
> A and invAI:
>
> A =
> 8 -5 1 1 -5
> -5 8 -5 1 1
> 1 -5 8 -5 1
> 1 1 -5 8 -5
> -5 1 1 -5 8
>

> invAI =
>
> 0.3158 0.2105 0.1316 0.1316 0.2105
> 0.2105 0.3158 0.2105 0.1316 0.1316
> 0.1316 0.2105 0.3158 0.2105 0.1316
> 0.1316 0.1316 0.2105 0.3158 0.2105
> 0.2105 0.1316 0.1316 0.2105 0.3158
>
> I have the matrix A in my IDL session:
>
> IDL> print, array
> 8.00000 -5.00000 1.00000 1.00000 -5.00000
> -5.00000 8.00000 -5.00000 1.00000 1.00000
> 1.00000 -5.00000 8.00000 -5.00000 1.00000
> 1.00000 1.00000 -5.00000 8.00000 -5.00000
> -5.00000 1.00000 1.00000 -5.00000 8.00000
>
> But I get the wrong answers when I invert. Here is
> my translation of the Matlab inverse line:
>
> invARRAY = Invert((ARRAY + gamma) ## Diag_Matrix(Replicate(1,npts)))

I know nothing special about Matlab, but the matlab equation seems
pretty clear. I assume that inv() and Invert() do the same thing, and
that diag() and Diag_Matrix() serve the same purpose, and that ones(1,N)
does the same thing as Replicate(1,npts). If so, then unless I'm
massively confused (which is possible), shouldn't that be:

invARRAY = Invert((ARRAY + gamma * Diag_Matrix(Replicate(1,npts))))