Subject: Re: Where is the largest point ?
Posted by btt on Wed, 08 Aug 2001 20:13:43 GMT
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Hi,

Take a peek at the MAX function (check the online help)

maxVal = Max(Arrat, maxIndex)

maxVal will return the maximum value
maxIndex will return the index of the maximum value within the array.
If there is more than one value qualifying as MAX, then only the index
of the first maxVal encountered is returned in maxIndex.

Ben

Guillaume Dargaud wrote:
>
> I'm still pretty basic at IDL and a lot of the _no loop_ concepts escape me
> entirely (I'm too used to C and such).
> If I have a 2D matrix, how do I find where is the maximum ?
> Say:
>
> Mat=FltArr(NbX, NbY)
> ...
> [Xmax, YMax] = Where(Mat eq Max(Mat))
>
> or something like that ?
> --
> Guillaume Dargaud
> Colorado State University - Dept of Atmospheric Science
> http://rome.atmos.colostate.edu/
> "If those folks in Kansas are right about evolution never having happened,
> I sure hope it happens soon." - Michael Sheinbaum.

--
Ben Tupper
Bigelow Laboratory for Ocean Sciences
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Subject: Re: Where is the largest point ?
Posted by tam on Wed, 08 Aug 2001 20:50:44 GMT
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There's a bit of black magic regarding how IDL treats arrays. Any multi-dimensional array can be treated as a 1-d array and in a number of contexts IDL always treats arrays that way.

Suppose you have a two-D 500x400 array. When you use it in the max function, IDL treats it as a 1-D 200000 element array, so you just get back a scalar value for maxIndex. To get the 2-d indices just use:

```
ix = maxIndex % 500
iy = maxIndex / 500  -- note that we use the X size in both lines.
```

The same thing happens with the where function. E.g., suppose you want to know all of the values where your array is 0.

```
w = where(array eq 0)
```

Now w is an array of the indices into the array but again treating it as a 1-D array. [It just has a single element -1 if there are no values satisfying the criteria]. Often its fine to just access the array as if it were 1-d, e.g,

```
array[w] = 0.1
```

but if you need to get the x and y indices (e.g., in a distance calculation), then you want to do

```
px = w%nx
py = w/nx
```

where nx is the number of elements in a single line.

Now px and py will be arrays with the same length as w and you can use array[w] or array[px,py] interchangeably.

Hope this helps more than it confuses,

Good luck,
Tom McGlynn

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Subject: Re: Where is the largest point ?
Posted by Guillaume Dargaud on Wed, 08 Aug 2001 21:03:52 GMT
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> There's a bit of black magic regarding how IDL treats arrays. Any
> multi-dimensional array can be treated as a 1-d array and in
> a number of contexts IDL always treats arrays that way.
Thanks for the detailed explanation.
It's good to know but not much worse than other languages (take C that only
has 1D arrays or arrays of arrays).
--
Guillaume Dargaud
Colorado State University - Dept of Atmospheric Science

http://rome.atmos.colostate.edu/
"The scientific theory I like best is that the rings of Saturn are composed entirely of lost airline luggage." - Mark Russell.