Subject: Re: formatting array output?
Posted by K. Bowman on Thu, 30 Jan 2003 14:25:03 GMT
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In article <3E394CDD.8F9B0C65@mail.utexas.edu>,
 Murat Maga <maga@mail.utexas.edu> wrote:

> Hi All,
> I have an integer array (2000x1000) which I would like to write in file
> in the typical matrix convention. I think IDL breaks the line at 80th
> column and everything starts to look quite messy.
> To format an array output, do I use the print/printf, or are there any
> other tricks good to know?
> Best,
> Murat

Use a portable binary format like netcdf or hdf. You aren't really
planning to read the file, are you?

```
id  = NCDF_OPEN('newfile')
d1  = NCDF_DIMDEF(id, 'dim1', 2000)
d2  = NCDF_DIMDEF(id, 'dim2', 1000)
vid = NCDF_VARDEF(id, 'matrix', [d1, d2], /LONG)
NCDF_CONTROL, id, /ENDEF
NCDF_VARPUT, id, 'matrix', matrix
NCDF_CLOSE, id
```

Ken Bowman

Subject: Re: formatting array output?
Posted by James Kuyper on Thu, 30 Jan 2003 16:37:01 GMT
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Murat Maga wrote:
>
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I presume that this file is being written in ASCII rather than binary
format for portability reasons, and not for human readability. When a
single line of the matrix contains a thousand or more elements, it's a

pretty safe bet that humans won't be reading it. I've never heard of a display devise big enough to display a single row of that matrix all on one line.

That being the case, why do you care where it breaks the line? It's easy enough to write code that reads the file in a way that treats the newline characters the same as other whitespace characters. That's true not only in IDL, and also in several other languages that I know.

However, if you do indeed want to do this, print/printf does indeed seem to be the way to go. The only "tricks" I'm aware of are repeat counts and format reversion:

```
array = fltarr(2000,1000)
readf,infile,array
printf,outfile,'$(2000F)', array
```

These feel like tricks to someone coming from a C background; but for Fortran programmers it seems quite normal.

Subject: Re: formatting array output?
Posted by Paul Van Delst[1] on Thu, 30 Jan 2003 16:39:54 GMT
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James Kuyper wrote:
>
> Murat Maga wrote:
>>
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>> other tricks good to know?

Assuming ASCII output, use the WIDTH keyword in the OPENW statement. Explicit format strings are handy too.

paulv

--
Paul van Delst
CIMSS @ NOAA/NCEP/EMC
Ph: (301)763-8000 x7274
Fax:(301)763-8545

Subject: Re: formatting array output?
Posted by James Kuyper on Thu, 30 Jan 2003 16:41:21 GMT
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Kenneth Bowman wrote:
>
> In article <3E394CDD.8F9B0C65@mail.utexas.edu>,
> Murat Maga <maga@mail.utexas.edu> wrote:
>
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>
> Use a portable binary format like netcdf or hdf. ...

While netcdf or hdf are both supported by IDL, he might be producing output which might need to be read using a system which doesn't support netcdf, or hdf. ASCII text is still the most widely portable format.

Subject: Re: formatting array output?
Posted by James Kuyper on Thu, 30 Jan 2003 20:29:31 GMT
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Murat Maga wrote:
...
> printf, 2, '$(2000F)'
> command is actually all i need. But I have one other silly question,
> what if the size of the array is parametric? I tried to put the variable
> name but that didnt work. Just for the record, I come from neither C nor
> fortran school. No programming skills, unfortunately. I measure bones

arrayform = '$(' + strtrim(columns,1) + 'F)'
printf, 2, arrayform, array

Subject: Re: formatting array output?
Posted by Mark Hadfield on Thu, 30 Jan 2003 20:34:09 GMT
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"Murat Maga" <maga@mail.utexas.edu> wrote in message
news:3E39A27F.3DC7F39D@mail.utexas.edu...

>>> I have an integer array (2000x1000) which I would like to write in
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>>> at 80th column and everything starts to look quite messy.

> Thanks for the answers everybody. Yes I do need to use an ASCII
> format, HDF is not an option for me. I also need to parse the file
> manually -at least partially-, that is the other reason.

How about writing the array dimensions on the first line of the file,
followed by array @ 1 element per line? It's easy to parse
programmatically, easy to parse manually, and you are not tempted to
muck around getting everything to line up.

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

Subject: Re: formatting array output?
Posted by Murat Maga on Thu, 30 Jan 2003 22:09:03 GMT
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Kenneth Bowman wrote:
>
> In article <3E394CDD.8F9B0C65@mail.utexas.edu>,
> Murat Maga <maga@mail.utexas.edu> wrote:
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> NCDF_VARPUT, id, 'matrix', matrix
> NCDF_CLOSE, id
>

> Ken Bowman

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printf, 2, '$(2000F)'
command is actually all i need. But I have one other silly question, what if the size of the array is parametric? I tried to put the variable name but that didnt work. Just for the record, I come from neither C nor fortran school. No programming skills, unfortunately. I measure bones :-)
Best,
Murat

Subject: Re: formatting array output?
Posted by thompson on Fri, 31 Jan 2003 16:12:55 GMT
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Murat Maga <maga@mail.utexas.edu> writes:

> Kenneth Bowman wrote:
>>
>> In article <3E394CDD.8F9B0C65@mail.utexas.edu>,
>> Murat Maga <maga@mail.utexas.edu> wrote:
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>> vid = NCDF_VARDEF(id, 'matrix', [d1, d2], /LONG)
>> NCDF_CONTROL, id, /ENDEF
>> NCDF_VARPUT, id, 'matrix', matrix
>> NCDF_CLOSE, id

>>
>> Ken Bowman

> Thanks for the answers everybody. Yes I do need to use an ASCII format,
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> what if the size of the array is parametric? I tried to put the variable
> name but that didnt work. Just for the record, I come from neither C nor
> fortran school. No programming skills, unfortunately. I measure bones
> :-)
> Best,
> Murat

The simplest way to do that in IDL is to create the format string on the fly,
e.g.

format = '$(' + strtrim(n,2) + 'F)'
printf, 2, format=format, ...

You can use the SIZE function to determine what N should be, e.g.

sz = size(array)
format = '$(' + strtrim(sz[1],2) + 'F)'
printf, 2, format=format, array

William Thompson

Subject: Re: formatting array output?
Posted by David Fanning on Fri, 31 Jan 2003 16:41:20 GMT
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Murat Maga (maga@mail.utexas.edu) writes:

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> in the typical matrix convention. I think IDL breaks the line at 80th
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> other tricks good to know?

Years ago, before all of us were born (circa 1875), computer
programs weren't written in a text editor. They were written
on punch cards. You hammered away at a big typewriter-like
console with really big keys. You had to slam them pretty good,
because the arms of the keys had to punch a chad out of the

card. Hanging chads were quite a serious problem in those days (I.e., it wasn't just the future of our country that depended upon it, it was an extra day or two running back and forth to the computer center that was at stake!).

Anyway, those cards had 80 columns and the number 80 has been indelibly imprinted on computer operations ever since. If you want your output "line" to have, say, 20000 columns (suitable for 2000 values, each having a width of 10 characters), you would use the WIDTH keyword when you open the file:

```
OPENW, 1, 'myfile.txt', Width=20000
```

Now you can put your data into the file in the way you like:

```
FOR j=0,999 DO PRINTF, 1, data[*,j], Format='(I10)'
```

When you look at it in a text editor, however, you might find that the editor word-wraps at 80 characters. :-(

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