Subject: Re: Casting floating point number into e-notation
Posted by thompson on Fri, 09 Jun 1995 07:00:00 GMT

cavanaug@uars1.acd.ucar.edu (Charles Cavanaugh) writes:

> Please, please, please somebody tell me what I'm doing wrong with
> my attempt to cast a floating point value into e-notation (using
> our old buddy IDL) :

> IDL> a = 3.567
> IDL> print, size(a)
>   0   4   1
> IDL> print, a
>   3.56700
> IDL> b = strtrim (a, 2)
> IDL> print, size(b)
>   0   7   1
> IDL> print, b
> 3.56700
> IDL> print, format = '(e11.4)', a
> 3.5670e+00
> IDL> print, format = '(e11.4)', b
> 3.5670e+00
> IDL> c = 0.0
> IDL> reads, format = '(e11.4)', a, c
> IDL> print, size(c)
>   0   4   1
> IDL> print, c
>   3.56700
> IDL> reads, format = '(e11.4)', b, c
> IDL> print, size(c)
>   0   4   1
> IDL> print, c
>   3.56700
> IDL> c = ''
> IDL> reads, format = '(e11.4)', a, c
> IDL> print, size(c)
>   0   7   1
> IDL> print, c
>   3.5670000
> IDL> reads, format = '(e11.4)', b, c
> IDL> print, size(c)
>   0   7   1
> IDL> print, c
>   3.5670000

> The print command works as expected when given a format, but when reads is
> used, the variable "c", afraid of being labelled as an e-type by his f-type
> friends, refuses, with all his strength, to be cast into e-notation. Why?
>

What I can't figure out is why you're using READS to cast something as a string
variable. I expect what's happening is the following:

 1. READS uses the FORMAT specification to determine how to read the
     string and convert it into one or more numerical values.

 2. If the input parameter isn't a string, then IDL first makes it a
     string and then reads it back out as a number again. This is
     polite of it, but leads to confusion. It does not use the FORMAT
     specification when converting it into the string, because the
     FORMAT is for reading, not writing.

 3. After reading the parameter according to the format specification,
     it recasts the output into the correct data type. If necessary, it
     recasts it into a string, but again it doesn't use the format
     specification to do that, because that's not what it's for.

To see why it doesn't use the FORMAT expression to format the output, consider
the following statements.

 IDL> A = ''
 IDL> B = 0
 IDL> READS, 'XY=345' , A, B, FORMAT='(A2,1X,I3)'

If it needed to recast the B value back into a string for some reason, it
wouldn't be able to use the FORMAT statement to do that because it wouldn't be
valid.

Bill Thompson

Subject: Re: Casting floating point number into e-notation
Posted by Tim Hammond on Fri, 09 Jun 1995 07:00:00 GMT
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cavanaug@uars1.acd.ucar.edu (Charles Cavanaugh) wrote:
>
> Please, please, please somebody tell me what I'm doing wrong with
> my attempt to cast a floating point value into e-notation (using
> our old buddy IDL) :
>

I'm not sure if this is exactly what you were asking, but to read a float
value into a string in exponential form you can simply use:

IDL> a=3.567
IDL> b=strtrim(string(a,format='(e11.4)'),2)
IDL> print,b
3.5670e+00
IDL> help,b
B   STRING   = '3.5670e+00'

If you actually want to force the numbers themselves to appear in this
format whatever their value then I'm afraid I can't help, sorry...

All the best,

Tim Hammond.