Subject: Re: histogram crashes
Posted by Craig Markwardt on Wed, 15 Nov 2000 08:00:00 GMT
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There have been varying reports in the newsgroup of bugs in HISTOGRAM
over the past year involving versions 5.2-5.3, for Linux or Win NT,
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a lot of these. I would report it to RSI for sure!

Craig

"R.G.S." <rgs1967@hotmail.com> writes:

> Greetings all,
>
> I have a situation where histogram is crashing on me, in what seems to be
> a strange manner. (IDL 5.3.1, on WinNT 4 Workstation SP 5)
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> Here is info on my data (latitudes):
> LAT   FLOAT   = Array[76, 1624]
> IDL> help,lat(*)
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> range of latitudes: -65.8900   79.9300
> min = :   20.0000
> There are NAN values in the array.
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> Here is the offending call to histogram:
> hlat = histogram(lat(*),binsize = float(deltalat), min
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> is required.
>
> Anyone run across this before, and are there any fixes?

>
>
> Cheers,
> bob stockwell
> stockwell (at) co-ra.com
>
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>
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>

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Craig B. Markwardt, Ph.D. EMAIL: craigmnet@cow.physics.wisc.edu
Astrophysics, IDL, Finance, Derivatives | Remove "net" for better response
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Subject: Re: histogram crashes
Posted by Paul Krummel on Thu, 16 Nov 2000 08:00:00 GMT
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Hi Bob,
I posted a bug report to RSI late last year about problems with
histogram and NaNs. I also posted a copy of it to this newsgroup.
However, the problem I came across didn't crash IDL, just gave me
incorrect results.
They acknowledged it was a bug introduced when the NaN keyword
was implemented (IDL 5.0?). They said it would be fixed in IDL 5.4
and I believe it has been.
Anyway, here is my original post for your reference.
Cheers, Paul

Original Post
Bug: HISTOGRAM with reverse indices AND NaN - 23 Dec 1999
Hi All,
I just submitted this as a bug report to RSI.
I use IDL 5.3 (and 5.2) on a windows NT 4 SP5 platform.
I have been using the histogram procedure with reverse_indices to
perform bin averaging for quite a few years now.
Recently I had some data with NaN's in it so I implemented the NaN
keyword. I started getting screwy results. If there were a large
number of NaN's my averaging routine would fall over due to an
incorrect indice in the reverse_indice itself (see below).
Anyway thought you might be interested in this!
Cheers Paul

I am running IDL 5.3 on the platform mentioned above.
I have discovered what I think is a bug in the histogram function.
It occurs when using the reverse_indices keyword AND the NaN keyword.
The reverse indices that are returned are incorrect if there is
missing data (NaN).
The procedure below should demonstrate this. I also tested this on an
SGI running IRIX 6.5 and IDL 5.2.

```
; ++
pro hist_ri_fail
;
; ++++
; quick procedure to demonstrate where the
; histogram reverse indices fail when data
; contains NaNs. Counter not incremented
; correctly?.
;
;  PBK 23 Dec 1999.
;
; ++++
; make an array
a=findgen(100)
;
; Set every 3rd point to NaN
a[where(a mod 3 eq 0.)]=!values.f_nan
;
print,'a:',a
;
; do the histogram and return reverse indices.
count_mid=histogram(a, binsize=10, reverse_indices=r, $
                    min=0., max=99., /NaN)
;
; ++++
; find number of Nan's and print some values
zz=where(finite(a,/nan), cnt_nan)
print,'cnt nan:',cnt_nan
print,'cnt mid:',count_mid
print,'n rev ind:',n_elements(r)
print,'rev ind:',r
;
; ++++
end
; ++
```

```
a:       NaN      1.00000    2.00000      NaN    4.00000
   5.00000       NaN    7.00000    8.00000       NaN    10.0000
   11.0000       NaN    13.0000    14.0000       NaN    16.0000
```

```
   17.0000      NaN  19.0000  20.0000      NaN  22.0000
   23.0000      NaN  25.0000  26.0000      NaN  28.0000
   29.0000      NaN  31.0000  32.0000      NaN  34.0000
   35.0000      NaN  37.0000  38.0000      NaN  40.0000
   41.0000      NaN  43.0000  44.0000      NaN  46.0000
   47.0000      NaN  49.0000  50.0000      NaN  52.0000
   53.0000      NaN  55.0000  56.0000      NaN  58.0000
   59.0000      NaN  61.0000  62.0000      NaN  64.0000
   65.0000      NaN  67.0000  68.0000      NaN  70.0000
   71.0000      NaN  73.0000  74.0000      NaN  76.0000
   77.0000      NaN  79.0000  80.0000      NaN  82.0000
   83.0000      NaN  85.0000  86.0000      NaN  88.0000
   89.0000      NaN  91.0000  92.0000      NaN  94.0000
   95.0000      NaN  97.0000  98.0000      NaN
cnt nan:       34
cnt mid:        6       7       7       6       7
        7       6       7       7       6
n rev ind:      77
rev ind:       11      51      24      31      37
        44      51      57      64      71      77
         0       1       2       3       4       5
        10      11      13      14      16      17
        19      21      24      27      30      33
        36      39      42      45      48      51
        54      57      60      63      66      69
        72      75      78      81      84      87
        90      93      96      99      61      62
        64      65      67      68      70      71
        73      74      76      77      79      80
        82      83      85      86      88      89
        91      92      94      95      97      98
```

From the output you will see that the reverse indices are not correct
and quite screwy!
The second number of the reverse indices should be 17 not 51 (17+34),
so the count of the number of NaN's has been added to this second
indice. The rest of the pointer numbers (first 11 elements of r for
this case) look fine. The first 6 actual indices (r[11:16]) are wrong,
it appears to be just 0 to 5!
The next 7 indices (r[17:23]) are correct!
Then, most of the NaN indices are listed (r[24:50], 50=24+34-7-1).
The rest of the indices are correct.
There is no way to recover all the correct indices from this.
The output from histogram itself (count_mid in the example) appears to
be fine. The toal number of reverse indices (77) is also correct, but
as shown above the indices themselves are incorrect.

Cheers Paul

In article <UbBQ5.198$sD6.190493@den-news1.rmi.net>,
  "R.G.S." <rgs1967@hotmail.com> wrote:
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Posted by R.G.S. on Thu, 16 Nov 2000 08:00:00 GMT
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Craig Markwardt <craigmnet@cow.physics.wisc.edu> wrote in message
news:onr94cmr7e.fsf@cow.physics.wisc.edu...
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> a lot of these. I would report it to RSI for sure!
>
> Craig

Hi Craig,
thanks for the response. I will create a test script and report it
to IDL, and maybe post it here too.
I did search Deja for histogram crashed, and found a report
on RedHat Linux crashes, but unfortunately no solutions.

Cheers,
bob