Subject: Re: bug in histogram()?
Posted by rob on Fri, 28 Oct 1994 00:23:28 GMT
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In article <mwt.783168149@mssly3.mssl.ucl.ac.uk> mwt@mssl.ucl.ac.uk (Matt Trow) writes:
> Has anyone ever experienced a problem with IDL's histogram function?
>
> I am using the min= max= binsize= named variables in the histogram()
> argument list.
>
> It seems I get an extra empty bin at the end of the returned array if
> binsize >= 1, but not if it is < 1.
>
> Is this a bug?

A couple of years ago I wrote a wrapper for using the strange HISTOGRAM
function that should help. It could be rewritten/improved (I definitely
knew less IDL at the time..., e.g., didn't know about MESSAGE), but I'll
send it as is.

Note that sizeof() is a wrapper for SIZE(), and here you can simply
replace calls of the form

```
 n = sizeof(array, 1)
  with
 n = (size(array))(1)
```

Cheers,

Rob

```
pro hist, array, title, $
 x1=x1, x2=x2, y1=y1, y2=y2, v1=v1, v2=v2, yr1=yr1, yr2=yr2, $
 binsize=binsize, currw=currw, noverb=noverb, warnoff=warnoff
;+
;
; procedure:  hist
;
; purpose:  plot a histogram of an array
;
; author:  rob@ncar, 9/92
;
; notes:  works for 1-D and 2-D arrays
;
 ;=============================================================
==================
;
; Check number of parameters.
```

```
;
if n_params() lt 1 then begin
 print
 print, "usage:  hist, array [, title]"
 print
 print, " Plot a histogram of an array."
 print
 print, " Arguments"
 print, "  array  - input array"
 print, "  title  - plot title (def=none)"
 print
 print, " Keywords"
 print, "  x1  - starting column index (def=0)"
 print, "  x2  - ending column index (def=last one)"
 print, "  y1  - starting row index (def=0)"
 print, "  y2  - ending row index (def=last one)"
 print, "  v1  - minimum value to consider (def=min)"
 print, "  v2  - maximum value to consider (def=max)"
 print, "  yr1  - starting Y range for plot (def=0)"
 print, "  yr2  - ending Y range for plot (def=~max)"
 print, "  binsize  - size of histogram bin (def=1)"
 print, "  currw  - if set, use current window"
 print, "      (def=open new window)"
 print, "  noverb  - if set, turn off run-time print"
 print, "      (def=print run-time information)"
 print, "  warnoff  - turn off warning message (def=on)"
 print
 return
endif
;-
;
; Check number of dimensions of array.
;
ndim = sizeof(array, 0)
if (ndim lt 1) or (ndim gt 2) then begin
 print
 print, 'Hist array must be 1-D or 2-D.'
 print
 return
endif
;
; Get subset of array to use.
;
nx = sizeof(array, 1)
if n_elements(x1) eq 0 then x1 = 0
if n_elements(x2) eq 0 then x2 = nx - 1
if ndim eq 1 then  a = array(x1:x2)
;
```

```
if ndim eq 2 then begin
 ny = sizeof(array, 2)
 if n_elements(y1) eq 0 then y1 = 0
 if n_elements(y2) eq 0 then y2 = ny - 1
 a = array(x1:x2, y1:y2)
endif
;
; Set other parameters.
;
if n_elements(binsize) eq 0 then binsize = 1.0
if n_params() ne 2 then title = ''
binsize2 = binsize / 2.0
minv = min(a, max=maxv)
;
; Set the range of values to consider for the histogram.
;
if n_elements(v1) eq 0 then v1 = minv
if n_elements(v2) eq 0 then v2 = maxv
if binsize gt (v2 - v1) then begin
 print
 print, 'binsize too large for value range'
 print, ' binsize = ', binsize, ', v1 = ', v1, ', v2 = ', v2
 print
 return
endif
;
; Calculate histogram, the y-coords.
;
h = histogram(a, min=v1, max=v2, binsize=float(binsize))
;
; Set the y-range for the plot.
;
if n_elements(yr1) eq 0 then yr1 = 0
if n_elements(yr2) eq 0 then yr2 = max(h)
yrange = [yr1, yr2]
;
; Set the x-coords for the plot.
;
num = n_elements(h)
num1 = num - 1
; (Must add half of binsize because only see half of first bin
;  with "PLOT, PSYM=10"; actually see only half of last bin too.)
x = v1 + binsize * findgen(num) + binsize2
xr1 = min(x, max=xr2)
; (Show the full width of the first and last bins on the X-axis, even
;  though the curve itself will start and stop short of this range.)
xrange = [xr1-binsize2, xr2+binsize2]
;
```

```
; Print verbose information.
;
if not keyword_set(noverb) then begin
 print
 print, 'Bin Centers (array "x"):'
 print, x
 print
 print, 'Bin Heights (array "h"):'
 print, h
 print
 print, '  num bins:  ' + stringit(num)
 print, '   binsize:  ' + stringit(binsize)
 print, 'minv, maxv:  ' + stringit(minv) + ', ' + stringit(maxv)
 print, '    v1, v2:  ' + stringit(v1) + ', ' + stringit(v2)
 print, '  yr1, yr2:  ' + stringit(yr1) + ', ' + stringit(yr2)
 print, ' first bin:  ' + stringit(v1) + ' <= value < ' + $
    stringit(v1 + binsize)
 print, '  last bin:  ' + stringit(xr2-binsize2) + ' <= value < ' + $
    stringit(xr2 + binsize2)
endif
print
;
; Print warning information.
;
if not keyword_set(warnoff) then begin
 print, 'Note - only half of histogram drawn for first and last bins !'
 print
endif
;
; Optionally open a new window.
;
if not keyword_set(currw) then  window, /free
;
; Plot the histogram.
;
plot, x, h, xrange=xrange, yrange=yrange, psym=10, xstyle=1, $
 title=title, charsize=1.2
;
end

--
this is rob's test sig
```