Subject: Re: Searching in a sorted array Posted by Martin Schultz on Mon, 26 Apr 1999 07:00:00 GMT View Forum Message <> Reply to Message

| Tri VU KHAC wrote: | |
|---|--|
| > Hi folks, | |
| > | |
| > sorted array | ent replying to a criteria in an unique & |
| > to this request. | n make an efficient Finder function replying e last element smaller than or equal 100 in a |
| > | C++, you must use the recursive function or |
| repeat, for, while.My question is, does IDL haveWhy this ? Well, because of | ve a built-in function for doing this. |
| > Thank you for your suggestic | on. |
| > Best regards,> | |
| > Tri. | |
| Please fidn attached a little bin months ago for another reques Martin. | ary search routine that I hacked a few t on this group. Hope, it helps, |
| | |
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| e-mail: mgs@io.harvard.edu Internet-homepage: http://www | -as.harvard.edu/people/staff/mgs/ |
| ; \$ld: search.pro,v 1.10 1999/0 | _ |
| ;;+ ; NAME: ; SEARCH (function) | |

PURPOSE:

Perform a binary search for the data point closest to a given value. Data must be sorted.

CATEGORY:

Math

CALLING SEQUENCE:

index = SEARCH(DATA, VALUE)

INPUTS:

DATA -> a sorted data vector

VALUE -> the value to look for

KEYWORD PARAMETERS:

none.

OUTPUTS:

The function returns the index of the nearest data point.

SUBROUTINES:

REQUIREMENTS:

NOTES:

This routine is much faster than WHERE or MIN for large arrays. It was written in response to a newsgroup request by K.P. Bowman.

EXAMPLE:

test = findgen(10000) print,search(test,532.3) ; prints 532

MODIFICATION HISTORY:

mgs, 21 Sep 1998: VERSION 1.00

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; Bugs and comments should be directed to mgs@io.harvard.edu
; with subject "IDL routine search"
function search,data,value
   ; search first occurence of value in data set
  ; data must be sorted
   ; simple error checking on data and value
  if (n_elements(value) eq 0) then begin
     message, 'Must supply sorted data array and value), /CONT
     return
  endif
  ndat = n_elements(data)
  try = fix(0.5*ndat)
  step = 0.5*try
  ; find index of nearest points
  while (step gt 1) do begin
     if (data[try] gt value) then $
       try = try-step $
     else $
       try = try+step
     step = fix(0.5*(step+1))
  endwhile
  ; now get the data point closest to value
   ; can only be one out of three (try-1, try, try+1)
  dummy = min( abs(value-data[try-1:try+1]), location )
  return,try+location-1
end
File Attachments
```

1) search.pro, downloaded 80 times