Subject: Re: Search routines
Posted by bowman on Fri, 18 Sep 1998 07:00:00 GMT
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In article <3602D89B.15BF8C2D@ssec.wisc.edu>, Liam Gumley
<Liam.Gumley@ssec.wisc.edu> wrote:

> Kenneth P. Bowman wrote:
>> IDL has a pretty good SORT routine, but no SEARCH routine that I have been
>> able to find (that is, a procedure to find the index of the closest/first
>> match in an ordered list). Once again, this can be done with loops, but
>> such an implementation would almost certainly be much slower than a
>> built-in function. Since searching and sorting are such basic operations,
>> does anyone know why there is no SEARCH in IDL?
>
> How about the MIN function, e.g.
>
> array = findgen(100)
> value = 37.2
> result = min(abs(value - array), location)
> help, location

Again, I'm sure this is an order-N operation, as MIN has to check every
element, just like WHERE. It has no knowledge that the list is ordered.

Ken

--
Kenneth P. Bowman, Professor 409-862-4060
Department of Meteorology 409-862-4466 fax
Texas A&M University bowmanATcsrp.tamu.edu
College Station, TX 77843-3150 Change the AT to @

Subject: Re: Search routines
Posted by Liam Gumley on Fri, 18 Sep 1998 07:00:00 GMT
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Kenneth P. Bowman wrote:
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How about the MIN function, e.g.

```
array = findgen(100)
value = 37.2
result = min( abs( value - array ), location )
help, location
```

Cheers,
Liam.

Liam E. Gumley
Space Science and Engineering Center, UW-Madison
1225 W. Dayton St., Madison WI 53706, USA
Phone (608) 265-5358, Fax (608) 262-5974
http://cimss.ssec.wisc.edu/~gumley

Subject: Re: Search routines
Posted by landsman on Fri, 18 Sep 1998 07:00:00 GMT
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> I realize that WHERE will do the job, but at very low efficiency. WHERE
> makes no assumptions about the list being ordered. It seems to me it has
> to check every element of the array, requiring N steps for an N-element
> array. This is even worse than a linear search of an ordered list, which
> would require an average of N/2 steps. A simple bisection search would be
> LOG2(N) on average, which is, of course, very advantageous for large N.
>

The procedure tabinv.pro in http://idlastro.gsfc.nasa.gov/pub/ftp/math

will perform a vectorized binary search of a monotonic array.

Wayne Landsman landsman@mpb.gsfc.nasa.gov

Subject: Re: Search routines
Posted by bowman on Fri, 18 Sep 1998 07:00:00 GMT
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In article <MPG.106c1a47e9769edd9896bd@news.frii.com>, davidf@dfanning.com
(David Fanning) wrote:

> I thought that was the point of the WHERE function. :-)

I realize that WHERE will do the job, but at very low efficiency. WHERE
makes no assumptions about the list being ordered. It seems to me it has

to check every element of the array, requiring N steps for an N-element array. This is even worse than a linear search of an ordered list, which would require an average of N/2 steps. A simple bisection search would be LOG2(N) on average, which is, of course, very advantageous for large N.

In article <36027091.59F@plato.sr.unh.edu>, Alexander Proussevitch <alexp@plato.sr.unh.edu> wrote:

> Of course, there is such a routine. Check
>
> UNIQ !!!! It does any kind of search for you.

UNIQ seems to suffer from the same problem as WHERE, and I'm not sure what use it is with floating point numbers.

Still looking ... ;-)

Ken

--
Dr. Kenneth P. Bowman, Professor 409-862-4060
Department of Meteorology 409-862-4466 fax
Texas A&M University bowmanATcsrp.tamu.edu
College Station, TX 77843-3150 Replace AT with @

Subject: Re: Search routines
Posted by Alexander Proussevitc on Fri, 18 Sep 1998 07:00:00 GMT
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> Ken Bowman
>
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> Dr. Kenneth P. Bowman, Professor 409-862-4060
> Department of Meteorology 409-862-4466 fax
> Texas A&M University bowmanATcsrp.tamu.edu
> College Station, TX 77843-3150 Replace AT with @

Hi Kenneth:

Of course, there is such a routine. Check

UNIQ !!!! It does any kind of search for you.

-Alex P.

---------- ------
Alexander A. Proussevitch alex.proussevitch@unh.edu
Research Scientist

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Morse Hall, Room 357,
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Subject: Re: Search routines
Posted by davidf on Fri, 18 Sep 1998 07:00:00 GMT
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Kenneth P. Bowman (bowman@null.edu) writes:

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I thought that was the point of the WHERE function. :-)

Cheers,

David

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Phone: 970-221-0438, Toll-Free Book Orders: 1-888-461-0155
Coyote's Guide to IDL Programming: http://www.dfanning.com/
