## Subject: search routine Posted by Laurens on Fri, 01 Jun 2007 10:47:28 GMT View Forum Message <> Reply to Message

Hi folks,

From Martin Schultz (posted in 1999) I found the following array-search algorithm which seems to do a fine job.

Except that i'm not able to catch the first element in the array.

## Example:

```
Array = [0,80,100,120,180,300]
result = search, Array, 4.53
```

It should return index 0, if I understand it correctly, but it returns 1 instead. Now I don't quite follow the logic of the function, so maybe someone for which it's easy to see can help me in the right direction?

```
> 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
```

Thnx! Laurens

```
Subject: Re: search routine
Posted by cmancone on Fri, 01 Jun 2007 14:58:57 GMT
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```

```
On Jun 1, 10:27 am, Paolo Grigis <pgri...@astro.phys.ethz.ch> wrote:
> Laurens wrote:
>> Paolo Grigis wrote:
>
>>> Laurens wrote:
>>>> Hi folks,
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>>> From Martin Schultz (posted in 1999) I found the following
>>> array-search algorithm which seems to do a fine job.
>>>> Except that i'm not able to catch the first element in the array.
>>>> Example:
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>>>> returns 1 instead. Now I don't guite follow the logic of the
>>> function, so maybe someone for which it's easy to see can help me in
>>>> the right direction?
>>> You could use the built-in function value locate instead:
>>> result=value_locate(array,4.53)
>>> which returns 0.
>>> Ciao.
>>> Paolo
>> though i'm noticing that it takes its ground number to be returned.
>> If my array has [0,10,20,30] and i'm searching for 18, it will return
>> 10. Now its just that would want to get 20 instead of 10:)
>
> well, in that case, just increase the index of the returned
> value by one (though you'd better check that it wasn't the
> *last* element...).
```

```
Ciao,Paoloregards, Laurens
```

Just to make sure it's clear, built in functions (value\_locate) are always better - I was just pondering how it might be done if there wasn't a built in function. It's always fun to work out a problem anyway, even if there's already a correct answer.

Subject: Re: search routine
Posted by Laurens on Fri, 01 Jun 2007 15:24:37 GMT
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```
Paolo Grigis wrote:
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>>>
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>>> result=value_locate(array,4.53)
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>>> which returns 0.
>>>
```

```
>>> Ciao,
>>> Paolo
>>>
>> though i'm noticing that it takes its ground number to be returned.
>> If my array has [0,10,20,30] and i'm searching for 18, it will return
>> 10. Now its just that would want to get 20 instead of 10 :)
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> well, in that case, just increase the index of the returned
> value by one (though you'd better check that it wasn't the
> *last* element...).
>
> Ciao.
> Paolo
>> regards, Laurens
haha, that sounds like a plausible solution, but that would get a result
of 13 to become the 3rd index (2), when it should be the second.. It
just needs to mean the result before it compares the value, but i assume
that's not something which can be done without rewriting it?
```

Cheers, Laurens

Subject: Re: search routine
Posted by Paolo Grigis on Fri, 01 Jun 2007 15:39:53 GMT
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```
cmancone@ufl.edu wrote:

> On Jun 1, 10:27 am, Paolo Grigis <pgri...@astro.phys.ethz.ch> wrote:

> [...]

> Just to make sure it's clear, built in functions (value_locate) are

> always better
```

Oh, you're lucky to have such a faith! ;-) I am a bit more skeptical about that...

I think it is a good thing to ponder the virtue of routines that comes with IDL, and sometimes they \*do\* leave some space for improvement...

- > I was just pondering how it might be done if there
- > wasn't a built in function. It's always fun to work out a problem
- > anyway, even if there's already a correct answer.

Yes, I totally agree, the problem is that usually when \*I\* do try and reinvent the wheel, it come out square-shaped. But bumpy rides can be fun too :-)

Ciao, Paolo