
Subject: Looking for more ideas on code ...
Posted by [jeyadev](#) on Mon, 30 Sep 2002 20:26:50 GMT
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I have a question about how best (style and function, if possible!) to write code for a function that has limits that have to be treated in a special way. Consider the function

$$f(x) = \sin(x)/x$$

as an example. Now, if x is always a scalar, then on just tests to see if it is zero, and then handle that special case using a if .. then .. else construct. But, what if x can also be scalar? I have the following code that works:

```
-----  
function sinc, y  
  
if(n_elements(y) eq 1) then begin          ; y is a scalar  
    if(y eq 0.0) then profile = 1.0 else begin  
        profile = sin(y)/y  
    endelse  
endif else begin                          ; y is a vector  
    zeros = where(y eq 0.0, ind)  
    if(ind gt 0) then y(zeros) = 1.0e-10    ; set zeroes to a small quantity  
    profile = sin(y)/y  
endelse  
  
profile = profile*profile/a0  
  
return, profile  
  
end  
  
-----
```

I guess the one can always set

```
profile(zeros) = 1.0
```

to handle the more general cases. But, the real question is there a better way than

```
zeros = where(y eq 0.0, ind)  
if(ind gt 0) then y(zeros) = "special values"
```

```
notzeros = where(y ne 0.0, ind)
if(ind gt 0) then y(notzeros) = "general definition"
```

I do understand that one should not compare reals, etc., but I will clean up the numerics later.

thanks
sj

--

Surendar Jeyadev jeyadev@wrc.xerox.bounceback.com

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Subject: Re: Looking for more ideas on code ...
Posted by [meinel](#) on Wed, 02 Oct 2002 14:13:45 GMT
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jeyadev@wrc.xerox.bounceback.com (Surendar Jeyadev) wrote in message
news:<anac2a\$53h\$1@news.wrc.xerox.com>...

```
> function sinc, y
>
>
> if(n_elements(y) eq 1) then begin           ; y is a scalar
>   if(y eq 0.0) then profile = 1.0 else begin
>     profile = sin(y)/y
>   endelse
> endif else begin                           ; y is a vector
>   zeros = where(y eq 0.0, ind)
>   if(ind gt 0) then y(zeros) = 1.0e-10      ; set zeroes to a small quantity
>   profile = sin(y)/y
> endelse
>
> profile = profile*profile/a0
>
>
> return, profile
>
> end
```

Neat tricks! But, how about the one-line solution:

```
profile = (sin(y) + (y EQ 0))/(y + (y EQ 0))
```

Ed M

Subject: Re: Looking for more ideas on code ...
Posted by [thompson](#) on Wed, 02 Oct 2002 14:24:10 GMT
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jeyadev@wrc.xerox.bounceback.com (Surendar Jeyadev) writes:

```
> In article <onr8fbugea.fsf@cow.physics.wisc.edu>,
> Craig Markwardt <craigmnet@cow.physics.wisc.edu> wrote:
>>
>> jeyadev@wrc.xerox.bounceback.com (Surendar Jeyadev) writes:
>>
>>> ....
>>>
>>> -----
>>>
>>> function sinc, y
>>>
>>>
>>> if(n_elements(y) eq 1) then begin           ; y is a scalar
>>>   if(y eq 0.0) then profile = 1.0 else begin
>>>     profile = sin(y)/y
>>>   endelse
>>> endif else begin                           ; y is a vector
>>>   zeros = where(y eq 0.0, ind)
>>>   if(ind gt 0) then y(zeros) = 1.0e-10      ; set zeroes to a small quantity
>>>   profile = sin(y)/y
>>> endelse
>>>
>>> profile = profile*profile/a0

> My mistake there. I am actually after sinc^2 ..... but it
> has not caused any harm!
>
>>> return, profile
>>>
>>> end
>>>
>>
>> Second of all, you can simplify your logic a little, by pre-filling
>> the array with the "special case:"
>>
>> profile = y*0 + 1.  ;; Tricky way to get array filled with zeroes
>> wh = where(y NE 0, ct)
>> profile(wh) = sin(y(wh))/y(wh)

> Nice one that, when the only exceptional value is the same for
> all "problem" points.
```

The only suggestion I would make would be to change the last line to

if ct gt 0 then profile(wh) = sin(y(wh))/y(wh)

I've been bitten by that one on countless occasions.

William Thompson

Subject: Re: Looking for more ideas on code ...

Posted by [Craig Markwardt](#) on Wed, 02 Oct 2002 15:13:39 GMT

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thompson@orpheus.nascom.nasa.gov (William Thompson) writes:

[Markwardt:]

>>> profile(wh) = sin(y(wh))/y(wh)

>

[Jeyadev :]

>> Nice one that, when the only exceptional value is the same for

>> all "problem" points.

>

> The only suggestion I would make would be to change the last line to

>

> if ct gt 0 then profile(wh) = sin(y(wh))/y(wh)

>

> I've been bitten by that one on countless occasions.

Right, and I *always* check the count returned from WHERE, except, it seems, when posting to the newsgroup... Thanks for catching that.

Craig

--

Craig B. Markwardt, Ph.D. EMAIL: craigmnet@cow.physics.wisc.edu
Astrophysics, IDL, Finance, Derivatives | Remove "net" for better response

Subject: Re: Looking for more ideas on code ...

Posted by [David Fanning](#) on Wed, 02 Oct 2002 15:26:45 GMT

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Craig Markwardt (craigmnet@cow.physics.wisc.edu) writes:

> Right, and I *always* check the count returned from WHERE, except, it

> seems, when posting to the newsgroup... Thanks for catching that.

Uh, I always thought the rule was that anything we post to the newsgroup is *pseudo* code. :-(

Cheers,

David

--

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Coyote's Guide to IDL Programming: <http://www.dfanning.com/>

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Subject: Re: Looking for more ideas on code ...
Posted by [jeyadev](#) on Wed, 02 Oct 2002 20:26:22 GMT

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In article <onlm5gq3fg.fsf@cow.physics.wisc.edu>,
Craig Markwardt <craigmnet@cow.physics.wisc.edu> wrote:
>
> thompson@orpheus.nascom.nasa.gov (William Thompson) writes:
> [Markwardt:]
>>>> profile(wh) = sin(y(wh))/y(wh)
>>
> [Jeyadev :]
>>> Nice one that, when the only exceptional value is the same for
>>> all "problem" points.
>>
>> The only suggestion I would make would be to change the last line to
>>
>> if ct gt 0 then profile(wh) = sin(y(wh))/y(wh)
>>
>> I've been bitten by that one on countless occasions.
>
> Right, and I *always* check the count returned from WHERE, except, it
> seems, when posting to the newsgroup... Thanks for catching that.

I was wondering about that as the code snip that I posted did check for this. I did think that you had a good reason for that!

--

Surendar Jeyadev jeyadev@wrc.xerox.bounceback.com

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Subject: Re: Looking for more ideas on code ...
Posted by [jeyadev](#) on Wed, 02 Oct 2002 20:28:17 GMT
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In article <63342373.0210020613.369d1459@posting.google.com>,
Ed Meinel <meinel@aero.org> wrote:

>
> Neat tricks! But, how about the one-line solution:
>
> $\text{profile} = (\sin(y) + (y \text{ EQ } 0)) / (y + (y \text{ EQ } 0))$

Touche! *That* is neat.

--

Surendar Jeyadev jeyadev@wrc.xerox.bounceback.com

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