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
```

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jeyadev@wrc.xerox.bounceback.com

Subject: Re: Looking for more ideas on code ... Posted by meinel on Wed, 02 Oct 2002 14:13:45 GMT View Forum Message <> Reply to Message

```
jeyadev@wrc.xerox.bounceback.com (Surendar Jeyadev) wrote in message
news:<anac2a$53h$1@news.wrc.xerox.com>...
> function sinc. v
>
> 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(v)/v
>>> 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 View Forum Message <> Reply to Message

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

EMAIL: craigmnet@cow.physics.wisc.edu Craig B. Markwardt, Ph.D. 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 View Forum Message <> Reply to Message

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

--

David W. Fanning, Ph.D.

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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:

>

> profile =
$$(\sin(y) + (y EQ 0))/(y + (y EQ 0))$$

Touche! *That* is neat.

--

Surendar Jeyadev jeyadev@wrc.xerox.bounceback.com

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