
Subject: Very basic IDL vector question

Posted by [kubota](#) on Tue, 03 May 2016 06:27:51 GMT

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I am trying to understand the operation of an IDL program. There are several lines using vectors which I do not understand.

The first line is:

```
fc = call_function(fun,xc)
```

Here, xc is a vector.

Is fc a scalar or vector, being that xc is a vector?

If fc is a scalar, which element of xc is being used for the function calculation?

If fc is a vector, does that mean that the vector fc is filled with all the function evaluations of the x values in xc?

Thanks for any assistance.

Subject: Re: Very basic IDL vector question

Posted by [Helder Marchetto](#) on Tue, 03 May 2016 08:35:48 GMT

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On Tuesday, May 3, 2016 at 7:27:53 AM UTC+1, kubota wrote:

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>

> Thanks for any assistance.

Hi,

the call_function() function calls a function called with the name of your string (I suppose) "fun" and passes xc as a parameter. The return value of the function will be put into fc.

Consider these two functions:

```
function testTotal, arr
return, total(arr)
end
```

```
function testDouble, arr
return, arr*2
end
```

If you now call:
fun = 'testTotal'
xc = findgen(10)
fc = call_function(fun,xc)

then you will get a single value (scalar) in fc equal to the total of xc (in this case 45.0).
If you call:

```
fun = 'testDouble'
xc = findgen(10)
fc = call_function(fun,xc)
```

Then in fc you get an array:

```
IDL> print, fc
  0.000000  2.00000  4.00000  6.00000  8.00000  10.0000  12.0000  14.0000
 16.0000  18.0000
```

I hope it helps.

Cheers,
Helder

Subject: Re: Very basic IDL vector question
Posted by [kubota](#) on Tue, 03 May 2016 12:08:08 GMT
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Hi Helder, you've made the two possible answers for fc (scalar or vector) very clear by your two examples. Thank you.

Continuing on, if the two function calls were, for some reason, called in reverse order, with the testDouble call done first, then fc will become an array with values, 0, 2, 4,.. 18.
If we then call testTotal with the same xc values (0 to 9), how does fc deal with the scalar result given that it is (currently) an array? Does fc change from an array to a scalar, with the result 45? If so, I presume all the previous (0,2,4, .. 18) 10 array values are lost at that moment?

Thanks again.

Subject: Re: Very basic IDL vector question
Posted by [Helder Marchetto](#) on Tue, 03 May 2016 12:32:07 GMT
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On Tuesday, May 3, 2016 at 1:08:11 PM UTC+1, kubota wrote:

> Hi Helder, you've made the two possible answers for fc (scalar or vector) very clear by your two examples. Thank you.

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>

> Thanks again.

I think that the question you're asking is "is the parameter xc passed by reference or value?" What this asks is if the function you're calling will in the process affect the original data contained in xc (passed by reference) or not (passed by value).

Have a look at this article for clarification:

http://www.harrisgeospatial.com/docs/parameter_passing_mechanism.html

If you're unsure, test like this:

```
fun = 'testTotal'  
xc = findgen(10)  
print, 'before', xc  
fc = call_function(fun,xc)  
print, 'after', xc
```

of course for both functions.

Cheers,
Helder

Subject: Re: Very basic IDL vector question
Posted by [kubota](#) on Tue, 03 May 2016 13:22:21 GMT
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My intention is to maintain xc, a 10 element array (0 to 9), with the 10 values of 0,1,2,..9.

Then by calling testDouble, fc becomes a 10 element array (0 to 9) with the 10 values of 0,2,4,6, .. 18 as before.

Now a call is made to testTotal using the same xc values as above. What is the resulting (new) state of fc? Does fc change from being a 10-element array to a scalar (45)? I presume the xc values will not be affected by these two calls.

With my thanks
