Subject: Re: help with WHERE( ) function
Posted by Phillip Bitzer on Wed, 26 Aug 2015 23:45:31 GMT
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On Wednesday, August 26, 2015 at 11:14:33 AM UTC-5, g.na...@gmail.com wrote:
> Hi
>
> I have created 4 masks to count the number of elements which are non zero. I used the
WHERE function to count the number but it seems that it doesn't count the nonzero elements of
the 4 masks.
>
> I typed the following
>
> ind = where((mask1 eq 1) and (mask2 eq 1) and (mask3 eq 1) and (mask4 eq 1),count)
> print, count
>
> And I got count 0.
>
> When I typed
> ind = where(mask1 eq 1, count)
> I got count 908. Which looks that it works for one mask but not for four of them.
>
> Can anyone help with this?

As usual, taking things step by step will help you. :-)

First, understand what mask1 EQ 1 gives you - it's an array of ones and zeros, and the array has
the same dimensions as mask1 . So, you have 908 elements in mask1 that have ones.

When you do this:
(mask1 eq 1) and (mask2 eq 1)

you are "and"ing the two arrays of ones and zeros. This is done element by element. This is the
important part. So, this result will also be an array of ones and zeros - elements in which both
masks are equal to one will be one (1 AND 1 = 1), and zero otherwise (1 AND 0 = 0, 0 AND 1=0)

Then, you find *where* your argument is true. In this case, this will be where the "and"ed array is
one. Which means this returns the indices where all the masks are equal to one.

Basically, you show that there are no elements in the four arrays in which all the masks are one.

An important debug skill is to simplify your problem to see what your code is really doing, using
smallish data you can easily "see."

Take this example:
x=BYTARR(4, 4)
y=BYTARR(4, 4)

Go ahead and flip a few elements:
x[1, 1] = 1 & x[1,2] = 1
y[2, 2] = 1

You should be able to take these step by step to see what each part of your code does:
print, x EQ 1
print, X EQ 1 AND y EQ 1

Put it all together:

ind = WHERE(x EQ 1 AND y EQ 1, count)
----count is zero - no elements are both one

Flip another element:
y[1, 2] = 1
ind = WHERE(x EQ 1 AND y EQ 1, count)

Now, count is 1 since element [1, 2] is one in both arrays.

What the heck, go ahead and flip another one:
y[1, 1] = 1
ind = WHERE(x EQ 1 AND y EQ 1, count)

Now, count is two since both [1, 2] and [1, 1] is equal to one in both arrays.

If you want to simply "count the number of elements which are non zero", then just do a WHERE on each mask and sum the counts.

Finally, if your masks only contain ones and zeros, there's nothing gained by doing x EQ 1.
ind = WHERE(x AND y, count)