Subject: Re: Yet again, The Sky is Falling!
Posted by yp on Thu, 08 Mar 2007 19:11:42 GMT

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On Mar 8, 6:22 pm, David Fanning <n...@dfanning.com> wrote:
> yp writes:
>> Why is such discrepancy? In my problem the accuracy after 3rd decimal
>> point is not so important, however, after seeing the results I lose
>> confidence on IDL's capability on Real number arithmetic!
>
>> May be I am missing something?
>
> Well, maybe because I can't see it, but I'm immediately
> suspicious of what is going on in OPERATION. If you
> perform these two calls in the opposite order do you
> get the same result? That is, do you know for a fact
> that A, B, and F are not changing? (You have compared
> them before and after?)
>
> If it was some other number, perhaps, but zero!? It seems
> to me all computers can represent 0 accurately. :-)
>
> Cheers,
>
> David
> --
> David Fanning, Ph.D.
> Fanning Software Consulting, Inc.
> Coyote's Guide to IDL Programming:http://www.dfanning.com/
> Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Thanks David, for your suggestion. I am pretty sure that none of the
argunet values change before or after the "Operation". And yes, the
discrepancy occurs both ways...

Here is the section from my running script.

```
;-------------
PRO test_brdf

wave = [412.5, 442.5, 490., 510., 560., 620., 660.] ;A (static)
nwave = n_elements(wave)    ;B (static)
sza = 45.0D     ;C (static)
vza = 1.078D     ;D (static)
dphi = 0.0D     ;E (static)
chl = 0.03D     ;F (static)
null = 0.0D
```

```
print,'BEFORE: ', wave, nwave, sza, vza, dphi, chl
foq = (foq0 = (dblarr(nwave)))

  for i=0, n_elements(chl)-1 do begin
    int_LUT, wave, nwave, 0.0D, 0.0D, 0.0D, chl[i], foq0 ;Case1
    ; int_LUT, wave, nwave, null, null, null, chl[i], foq0 ;Case2
    int_LUT, wave, nwave, sza[i], vza[i], dphi[i], chl[i], foq

    print,'AFTER: ',wave, nwave, sza, vza, dphi, chl
    help,BRDF

    print,'BRDF: ',double(foq0[*]) / double(foq[*])
  endfor
END
;----------

#1
----------------------------------------
IDL> test_brdf
BEFORE:      412.500      442.500      490.000      510.000
560.000      620.000      660.000
           7      45.000000      1.0780000      0.00000000
0.030000000

Loading f/Q table

AFTER:      412.500      442.500      490.000      510.000
560.000      620.000      660.000
           7      45.000000      1.0780000      0.00000000
0.030000000

f/Q:      0.087899996     0.092399998      0.10349999
0.10879999      0.11449999      0.11319999      0.11339999

BRDF:       1.0250284       1.0281385       1.0367150
1.0450368       1.0480349       1.0547704       1.0573193
FOQ             DOUBLE    = Array[7]
----------------------------------------

#2
----------------------------------------
IDL> test_brdf

BEFORE:      412.500      442.500      490.000      510.000
560.000      620.000      660.000
           7      45.000000      1.0780000      0.00000000
0.030000000
```

```
Loading f/Q table

AFTER:      412.500      442.500      490.000      510.000
560.000      620.000      660.000
           7      45.000000      1.0780000      0.00000000
0.030000000

f/Q:      0.087899996     0.092399998      0.10349999
0.10879999      0.11449999      0.11319999      0.11339999

BRDF:        1.0247013       1.0279051       1.0365066
1.0447065       1.0477210       1.0543894       1.0569390
FOQ             DOUBLE    = Array[7]
-----------------------------------------
```

In my previous example, "Operation" = int_LUT and it does not change any of the variables during execution or after. I don't suspect that anything wrong happening inside "int_LUT". For any one case and for same combination of the arguments:- if I run the code for several times, I get same and consistent result each time. But when I switch between passing the argument by value and by variable, I see the discrepancy. Weird!