Subject: Re: Turning off math error checking for a code block
Posted by k-bowman on Fri, 18 Jan 2002 22:47:42 GMT

View Forum Message <> Reply to Message

In article <Ln_18.43167$WQ1.6917653@news6-win.server.ntlworld.com>, "Martin Downing" <martin.downing@ntlworld.com> wrote:

> craig wrote:
>> I have found that an operation on an array which contains NANs is
>> slowed down considerably. I think it is because each operation causes
>> a floating point exception which is handled in the OS. I use WHERE
>> most of the time when this comes up. Occassionally I get "floating
>> exception" messages, but big whoop.

Actually, I don't think it is faster. The program below creates an array with 10^6 elements with about 10% of the values set to NaN. The goal is to set all the finite values of the array less than x_min to NaN.

I tried two methods
   1) turning off error messages and doing a single WHERE, and
   2) doing one WHERE to find the finite values and a second WHERE to find the values less than x_min.

The problem is that the two WHERE's require creating an intermediate array and repeated indirect indexing. It may be possible to do the second method more efficiently, but I don't see how.

The code below produces

```
IIDL> TEST_FINITE
Turn off error checking, t =      0.082054019
Do WHERE twice,          t =       1.7191260
```

so, turning off error messages seems to be much faster.

Also, I prefer that my codes produce floating point errors only when there really are floating point errors. I don't want to get in the habit of ignoring FP error messages.

Ken

```
PRO TEST_FINITE

n       = 1024L*1024L
nmiss   = 100L*1024L
x       = RANDOMN(seed, n)              ;Create 10^ random numbers
miss    = LONG(n*RANDOMU(seed, nmiss))   ;Generate 10^5 random indices
x[miss] = !VALUES.F_NAN                 ;Set random indices to missing
```

```
x_min   = 0.0


t           = SYSTIME(/SECONDS)
error       = CHECK_MATH(/PRINT)
save_except = !EXCEPT
!EXCEPT     = 0
i           = WHERE(x LT x_min, ni)
error       = CHECK_MATH()
!EXCEPT     = save_except
PRINT, 'Turn off error checking, t = ', SYSTIME(/SECONDS) - t


t = SYSTIME(/SECONDS)
i = WHERE(FINITE(x), ni)
IF (ni GT 0) THEN BEGIN
   y = x[i]
   j = WHERE(y LT x_min, nj)
   IF (nj GT 0) THEN BEGIN
      y[j] = !VALUES.F_NAN
      x[i] = y
   ENDIF
ENDIF
PRINT, 'Do WHERE twice,          t = ', SYSTIME(/SECONDS) - t

END
```