Subject: Re: limits of 'invert'
Posted by Foldy Lajos on Wed, 16 Nov 2005 18:01:33 GMT
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Hi,

as an example, run time for simple matrix multiplication is proportional
to n^3. For your sizes, this would give a factor of 10^6. A 150x150 array
can reside in the CPU cache, so add another 10 for the big array => 10^7.
If "immediate" = 0.1 s, then 10^7 * 0.1 s is about two weeks.

And if you run out of physical memory, swapping to disk can add another
factor of 100 :-(

regards,
lajos

On Wed, 16 Nov 2005, queiny wrote:

> Dear IDL & Maths experts:
>
> Is there a limit for the 'invert' or 'la_invert', program to calculate
> the inversion of a square matrix, provided by IDL?
>
> When my matrix is 150x150, 'invert' return immediatelly, but when it is
> '15000x15000', 'invert' runs for more than a day. I am wondering
> whether it is in some infinite loop, or it simply needs that long.
>
> What is the reasonable upper limit that 'invert' or 'la_inver' can
> operate?
>
> Thanks,
>
> Q
>
>

Subject: Re: limits of 'invert'
Posted by K. Bowman on Wed, 16 Nov 2005 19:07:18 GMT
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In article <1132162119.050786.109730@g47g2000cwa.googlegroups.com>,
 "queiny" <queiny98@yahoo.com> wrote:

> Dear IDL & Maths experts:
>

> Is there a limit for the 'invert' or 'la_invert', program to calculate
> the inversion of a square matrix, provided by IDL?
>
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>
> What is the reasonable upper limit that 'invert' or 'la_inver' can
> operate?
>
> Thanks,
>
> Q

Matrix inversion is an O(n^3) operation, so the second case should require ~100^3 times as long as the first, that is, ~10^6 times as long. (There are ~10^5 seconds/day.)

Also, storing a 15000 x 15000 array requires ~900 MB, so you may very well be swapping to disk, which will slow things down by another couple of orders of magnitude.

I suggest that you consult a good introductory numerical analysis book.

Cheers, Ken Bowman

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Subject: Re: limits of 'invert'
Posted by queiny on Wed, 16 Nov 2005 20:16:20 GMT
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Thank Lajos and Ken! I do need to review the basic concepts.

This group provide much more help than just IDL..

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Subject: Re: limits of 'invert'
Posted by Paolo Grigis on Thu, 17 Nov 2005 08:38:56 GMT
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queiny wrote:
> Thank Lajos and Ken! I do need to review the basic concepts.
You don't even need to buy expensive books, check out:

http://www.library.cornell.edu/nr/bookcpdf.html

it's all there in pdf format!

Ciao,
Paolo

>
> This group provide much more help than just IDL..
>