Subject: Re: Large Numbers
Posted by Jeremy Bailin on Tue, 10 Feb 2009 04:28:27 GMT

On Feb 6, 6:35 pm, Paolo <pgri...@gmail.com> wrote:
> Well, if you deal with very large numbers,
> you can do all the computations
> with the logarithm of the numbers.
>
> Simple, no?
>
> Ciao,
> Paolo
>
> David Fanning wrote:
>> Folks,
>
>> I made a big mistake and signed up for an Applied Statistics
>> class this semester. Now I pretty much spend every free
>> waking moment doing stats homework. :-(
>
>> Anyway, for lunch today I decided to grab a sandwich and
>> give my youngest some support by calculating how many
>> girls he had to ask out to have an 80% chance of getting
>> a date for Saturday night.
>
>> I made some conservative assumptions (I learned later
>> my ideas about the college social scene apply more to the
>> 1970s than they do to today), and off I went writing a
>> couple of short IDL programs to do the calculations for
>> the Binomial and Geometry Distributions, etc. All pretty
>> straightforward.
>
>> But then I started getting screwy results. (This, in itself,
>> is not all that unusual in this particular class. In fact, I've
>> begun to consider it something of a minor miracle if I'm within
>> an order of magnitude of the right answer.) But even I know
>> that negative probabilities don't show up until the second
>> semester. What in the world!?
>
>> It turns out that the recursive function I naively wrote to
>> process a factorial calculation was overflowing my long
>> integers, even with a simple calculation like 20! (twenty
>> factorial). Yowser!
>
>> Now, of course, the formula I was using has a large
>> factorial number divided by another large factorial
>> number, so the *actual* number I wanted to use in the

>> calculation is not that big. But it begs the question:
>> what strategy do computer scientists use to deal with
>> one very, very big number divided by another very, very
>> big number?
>
>> I've solved my immediate problem for my little toy problem
>> by using LONG64 variables. But this can't be the right solution.
>> Does anyone know?
>
>> 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.")
>
>

What I've run into a few times lately is taking sums and differences
of very large numbers. Logarithms are not so useful in those cases...
anyone have any general useful techniques (beyond the usual "re-phrase
your equations to only calculate the differences between sums instead
of the sums themselves")?

-Jeremy.