

Re: Fibonacci[1,000,000,000] contains 208,987,640 decimal digits

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From: Fred the Wonder Worm (ftww_at_maths.usyd.edu.au)

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In article <cf9fus\$hs2\$1@spacebar.ucc.usyd.edu.au>, Fred the Wonder Worm <ftww@maths.usyd.edu.au> wrote:

>
> [...] *The version I would use (for $n > 0$) is:*
>
> *$\text{Ceiling}(n * \text{Log}[10](\phi) - \text{Log}[10](\text{Sqrt}(5)))$*
>
> *where $\phi = (1 + \text{Sqrt}(5))/2$.*

[...]

>> *N. Sloane get now a comment to A068070 with the corrected sequence*
>> *{0,2,21,209,2090,20899,208988,2089877,20898764,208987640,2089876402,*
>> *20898764025,208987640250,2089876402500,20898764024998,208987640249979,*
>> *2089876402499787,20898764024997873,208987640249978734,...}.*
>
> *The first value is clearly not correct -- the formula does not work*
> *for $n = 0$ as the contribution from $1/\phi^n$ in the usual formula is*
> *not negligible. Your values for $n = 10$ and $n = 17$ are also incorrect;*
> *they should be 2089876403 and 20898764024997874 respectively. The*
> *others are correct.*
>
> [*The current data in the online encyclopaedia as I write this is*
> *wrong for $n = 8, 9$ and 16 .]*

A slight correction to my post. I have used 'n' with two different meanings, right next to each other even. :(In the formula and the $1/\phi^n$ comment it is intended to refer to the index of the Fibonacci number being computed; the other uses were for the sequence index, where n corresponds to the 10^n th Fibonacci number (and thus 10^n in the formula).

My apologies for such sloppiness and any confusion this causes.

Cheers,

sci.math.symbolic: Re: Fibonacci[1,000,000,000] contains 208,987,640 decimal digits

Geoff.

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