Subject: Re: FP humor
Posted by mirek on Thu, 19 Aug 2021 15:39:23 GMT
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BTW, these are while working on new double<->String conversion routines.

Things are really complicated if you want to do it with absolute possible precision and fast.

E.g. for introduction:

https://www.ryanjuckett.com/printing-floating-point-numbers/

Now I have a nice algorithm tested with 300 billions of samples without an issue. However, I would possibly need help with following problem:

The heart of algorithm is FP with ~60 bit variable mantissa multiplication with 128 bits mantissa constants (this is basically to compute correct pow10), resulting in 128FP number. To prove that there are no input values that would lead to error (which would be less than 2^-70 anyway), I would need to prove that for no variable mantissa bitpattern and no constant, lower 64 bits are never in middle range (half +/- 4), except when they need to be (which is a bit hard to define.. but it is when mantissa has lower bits zero).

Anybody interested in helping with this?