

Two digit schemes for the online construction of height-balanced trees

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Consider the number $n = 373$. In decimal notation, we represent n as the digit sequence 373_{10} ; in (standard) binary notation, it is 101110101_2 . If we also allow 2 as a digit, but insist that the sum of the digits is $1 + \lfloor \log_2 n \rfloor$, we get the representation 21102021_2 .

This latter representation turns out to be useful in the online construction of height-balanced (or AV-L) binary search trees from ordered lists. In this talk, we explain what “*online construction of height-balanced trees*” means, and how an efficient algorithm flows out of the above alternate binary notation.

Time permitting, I will also present another online algorithm based on a Fibonacci number system.

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