

Dear Editor:

In response to Gotwals' letter:

He's right, of course. Stack overflow, or an attempt to load a register that is not empty, is an "invalid operation" and triggers an interrupt, so that ?OVERFLOW can be economically implemented as part of the exception handler rather than tested every time one loads the stack. WL FORTH-79 aborts on stack overflow.

I am only moderately embarrassed by having overlooked this. Both MMSFORTH and HS/FORTH seem to have missed it also, and MacForth doesn't need it, which exhausts the dialects I have personal experience with. I raised this question of detecting stack overflow at both the 1985 and 1986 Rochester Conferences, without meeting anyone who could set me straight, and in 1986 one implementor was quite proud of having built the stack extension I proposed - but without taking advantage of the interrupt.

I submit that this is a basic flaw in Forth, since no *real* computer language would let me program it from a foundation of complete ignorance. Back when the 8086 was new, I attended a training session at Intel's Chelmsford office, and later asked them for literature relevant to the 8087. They sent a six-inch stack, mostly about ISIS and in-circuit emulators. The only remotely helpful item was a single sheet listing 8087 mnemonics: no indication of what they did, no mention of operands or register structure, just bare names. Armed with this and a realization from 8085 days that if it could be done backwards, Intel did it backwards (1234 comes out 34 12; "move A to B" comes out MOV B A, etc.), and some working, if obscure, examples in MMSFORTH, I started experimental 8087-assembler programming. *And Forth let me get away with it!*

At the urging of the reviewers of our paper (who also overlooked this crucial interrupt), I read Statz's excellent book *8087 Programming and Applications* (Brady, NY; 2nd ed., 1985) learning enough to write ?OVERFLOW but, alas, missing the invalid operation in Appendix 2, "destination register is not tagged empty" (p. 269). Forth will profit from the fact that Gotwals has called our attention to this useful feature of the 8087.

Sincerely,

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