

Re: A question on Newton's Method

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I can't believe you'd advise a noob to use a compiler which is still getting 5 bug reports per day. How can you sleep at night?

beliavsky@xxxxxxx wrote:

> What "computer-specific problems" do you avoid by using OCaml instead
> of Fortran? Do you mean "platform-specific"?

No, I mean problems with your numerical code which have nothing to do with maths. My main concern here is non-determinism from:

1. Out of bounds
 2. Uninitialised variables
 3. Aliasing
-

As this is one students seem to have the most problems with. Most compiler bugs probably also fall into this category. Memory leaks are obviously another important class of hassle which most numerical programmers shouldn't have to deal with.

Another concern is the intractability of most problems in Fortran which, in this case, means the lack of availability of the basic data structures and algorithms. If he doesn't want to have to deal with modulo arithmetic then there are arbitrary-precision integers and rationals (Num in OCaml, the native format in Mathematica, and a major hassle in Fortran). If he wants to perform set operations on a "set of numbers" then there should be library functions (Set module in OCaml, Union etc. in Mathematica, and a major hassle in Fortran).

An interactive programming environment is also particularly important when starting out. Mathematica has an awesome graphical environment (the "notebook" front end) and OCaml has it's top-level.

Finally, the ability to visualise your results is hugely beneficial. This is obviously easiest with Mathematica, followed by OCaml (the built-in Graphics module, or the lablGL OpenGL bindings) and then Fortran.

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- **Follow-Ups:**
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 - ◇ From: beliaivsky

- **References:**
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 - ◇ From: Jon Harrop
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