Subject: Re: What does an optimal scientific programming language/environment need?
Posted by phil chastney on Mon, 22 Sep 2003 15:19:13 GMT
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"grunes" <grunes@yahoo.com> wrote in message
news:2c0d6c85.0309191029.3efe3a99@posting.google.com...
>
> <heavy-handed snip>
>
> 6. Close enough to standard mathematical notation to be mostly
> debuggable by inspection. But must have ASCII transliteration so
> people can use there own editors if they don't like mine.

mmm -- I'm not at all sure I see math notation as fitting my idea of "debuggable by inspection" -- in fact, math notation frequently requires excessively many rules to disambiguate -- the one that blighted my early introduction to statistics is "sigma x-squared", which is either the sum of the squares, or the square of the sum, but to this day, I'm not sure which -- and what is the value of 3**3**3 (or, if you prefer, 3^3^3)? -- there appears to be no consensus on this one

> 7. Can add the declaration statements that make efficiency possible.

oh yes, three times yes !!!

declarations can show what type the arguments are expected to be -- if possible, the language should be constructed so as to allow static type-checking, as seen in functional languages -- and/or the routine should check the types of the actual arguments at runtime -- and while we're at it, it might as well check the type of the result

secondly, it may be possible to state the expected size and shape of the actual arguments and/or the result, which would permit more efficient allocation of memory -- even just knowing the _maximum_ size could still be useful

and finally, what about the invariant conditions, as defined in Z? -- testing these conditions can be a real pain (think about the invariants involved in inserting an element into a sorted list), but if such tests could be provided by the developer (or, better yet, generated automatically), then they could, if necessary, be turned off after testing is deemed complete

this is a rather broader view of declarations than that found in most languages, but it would surely be a significant advance?

oh well, dream on, I guess -- regards . . . /phil