

Re: something to chat about, lisp and Mathematica for list processing.

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- *From:* Daniel Lichtblau <dani@xxxxxxxxxxx>
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On Jun 16, 1:26 pm, "Nasser Abbasi" <n...@xxxxxxxxxxx> wrote:

I thought everyone was bored this weekend, so I am strating a new language-war topic :) (dont you love these topics?)

Lisp was one of the earliest programming languages I fell in love with, I guess because I was fascinated with studying AI then (the language before it was Fortran, and after lisp I fell in love with Pascal, then ...etc.)

But I have not used lisp for many many years now.

From http://en.wikipedia.org/wiki/Lisp_programming_language it says : The name Lisp derives from "List Processing".

And now I am using Mathematica more (for school work), and saw this in Mathematica docs:

"Widely recognized as the world's most powerful list manipulation language, Mathematica ..."

Topic for discussion: From only the list processing/manipulation point of view, and nothing else, what would you consider the advantages/disadvantages of one over the other?

I am sure by now, any kind of list processing task that can be done by one language, most likely can just as well be done in the other.

So the question is not really asking about syntax or how many extra key strokes needed to do the same list 'manipulation', but more along the lines if there exist something inheritably more advantages of one language over the other *when it comes to list processing*. I think one can argue than too many [[[[]]]] are harder to read than (((()))) and I would probably agree, but I remember also when I programmed in lisp I had problems making sure the closing))) matched the starting ((((, any way...I am thinking more along the lines of a language design issues related to list processing which might make one more suited for list processing than another.

May be someone here has more insight into both and educate us.

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Nasser

I'm not going to address the main question but rather discuss some underlying issues. I'll state in advance that this is my opinion only, not necessarily shared by my employer.

Mathematica "lists" are akin to what might be called, arrays, vectors, or tables elsewhere. Lisp lists are linked lists. These are very different from the point of view of data structures and algorithms thereon. Certainly I think Mathematica does wonderful things with its List expression (and pretty much all other expressions). But a linked list is, in my view, something that relies on the notion of a "pointer" in order to be implemented and behave in a reasonable way. This is something that one can emulate in various ways in Mathematica, but the behavior is not always as good as might be desired.

Compounding this, I think, is the Mathematica notion of "infinite evaluation". Some methods of linked list emulation might have asymptotic complexity misbehavior due to reevaluation attempts that might not be forestalled in all cases where they ought.

To an extent this might address the actual question. Mathematica is good at working with its List structure. It is less proficient, though by no means unable, to handle emulation of the sort of linked list structure of Lisp.

Caveat: I last used Lisp more than 30 years ago. If I got it all wrong, in the words of Ruth Buzzy, "Never mind".

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