

Adopt-An-Algorithm Project Guidelines

April 9, 2003

1 Guidelines

In general, model your algorithm description document after the Heapsort example. Some elements of that example are required, while others are optional.

Format Structure your \LaTeX document as a section, within which the information is presented in a \LaTeX description environment. The first sentence of the section preceding the description environment should be "Section authors:" followed by the names of the team members.

Concept diagram Also before the description environment include a local concept diagram that shows a few of the concepts in the immediate neighborhood of your algorithm. Prepare this in a separate `.dot` file processed into an `.epic` file using the `dot` target in the `Makefile`.

Required description items Within the description environment the following items are required:

Refinement of:

Prototype:

Input: May be omitted if it would be the same as already described at a more abstract level in the concept hierarchy (as is the case for Heapsort, whose Input and Output descriptions are given at the level of Sequence Sorting Algorithm).

Output: Same comment as for Input.

Effects: Description of what the algorithm does, beyond what is described in the input-output relation. Again, if there is a description at a more abstract level, give a link to it and don't repeat it here (but give a brief summary here).

Asymptotic complexity:

- Average case (random data):
- Worst case:

Complexity in terms of operation counts:

- One or more table(s) of measured counts for average case (random data)

Optional description items Also include at least **two** of the following kinds of information.

Formulas for average case derived by curve fitting to measured counts.

Worst case operation counts if you know a way of generating input data that drives the algorithm to its worst case.

Formulas for worst case derived by curve fitting to measured counts.

Iterator trace plot(s) Heapsort's plot doesn't change very much, so only one is given, but for some algorithms there is a big difference between average case and worst case plots and thus more than one plot should be presented.

Algorithm animation(s) This can be link(s) to existing animation(s) if you find good ones available on other Web sites, or to one your team develops.

Pseudocode Not necessary, but desirable especially in case there is more than one algorithm being described, as is the case for example with the algorithms in STL for rotation of a sequence (three different algorithms, one if you just have forward iterators, a more efficient more if you have bidirectional iterators, and a still more efficient one if you have random access iterators).