

A Q Example Algorithm

Supplementary material for Contract Based Programming

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This document shows a Q algorithm, similar to the ones that are analyzed in reports delivered in this course. It serves as an example of how it could be expressed in LaTeX. Here is the `sort` algorithm from the lecture notes:

```
sort: [ [ b: array [0...N] of int;
        b: [ true, perm(b,b0) ∧ sorted(b) ]
      [
        n: int;
        n := 0;
        do n ≠ N →
          [
            m,j: int;
            m,j := n,n+1;
            do j ≠ N →
              if b[j] < b[m] → m := j
                b[j] ≥ b[m] → skip
              fi
              j := j+1
            od
            b[n], b[m] := b[m], b[n];
            n := n+1
          ]
        od
      ]
    ]
```

Looking at the `LATEX` source code and `cmds.tex` you can see the following: The algorithm is expressed as an environment `\begin{Alg}... \end{Alg}`, where the `begin` part takes five arguments that make up the environment and the specification. The body of the algorithm goes between `begin` and `end`, and the `AL..`, macros are used to select an indentation level according to the number of `Ls` and. Similarly, lines in `if` and `do` statements are wrapped in `\IL` and `\DL`. The variants with an added `c` such as `\ILc` are intended to contain code; the others are intended to contain expressions in math mode, and code must then be enclosed in `\Code{..}`.