

SOLUTION NOTES

Software Engineering II (4-mark question) 2003 Paper 2 Question 1(c) (LCP)

This question covers Lecture 2 (Loop Design) of Software Engineering II.

A sentinel can be used in a loop to find the first array element satisfying a given property. A sentinel is an artificial value, inserted after the last real datum in an array, which satisfies that property. Thus, it ensures that the search will be successful. It simplifies the loop's termination condition, which makes the loop clearer and lets it execute faster. It also makes it easier to determine the outcome of the search: by a final if-statement rather than by jumps out of the loop. Obviously we must take care that the array has room for the additional element.

In the code below, the “real” array elements are in positions $0, \dots, K - 1$.

```
A[K] := 0.0;
I := 0;
while A[I] < 0.0 do I := I+1;
if I=K then (*...not found in array*)
else (*here A[I] is a real non-negative array element*)
```