

Fundamental Algorithms

Exercise 1

Prove that the running time of an algorithm is $\Theta(g(n))$, if and only if its worst-case running time is $O(n)$, and its best-case running time is $\Omega(n)$.

Exercise 2

Show that the computation of the minimum of n different integers requires at least $n - 1$ comparisons.

Exercise 3

Prove or disprove the following statement:

If we sort each row of a matrix, and, after that, sort each column of the matrix, the rows of the matrix will still be sorted afterwards.