

EPITECH

Algorithm

Part 1

We will use the master theorem to calculate the complexity:

$a = 2$, the number of subproblems

$b = 2$, the size of each subproblem (input / 2)

$d = 1$, because we have a linear running time

This gives us $T(n) = 2T(n/2) + O(n)$

According to the master theorem, $a = b^d$, this means our algorithm complexity is $O(n \log(n))$. It runs in polynomial time.

Part 2

We choose to use as heuristic the number of edges on each vertex.

Part 3

A Eulerian path is present on when each vertex has an equal number of edges. The path goes through each vertex once. The resulting line graph will transform all these edges in vertex. This will give us a path going through each vertex once : a Hamiltonian path. This mean the line graph of a Eulerian graph is a Hamiltonian graph.