


Algorithmics	Student information	Date	Number of session
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Activity 1. Prim's algorithm

I have implemented Prim's algorithm with an $O(n^3)$ theoretical complexity, even though it can be implemented with an $O(n^2)$ complexity, I did not know how to implement it with that complexity. The algorithm consists of three nested loops, which are constantly looking for the cheapest edge departing from one of the nodes that have already been visited. These are the times we obtain for different sizes of n :

n	t Prim	Theoretical times
256	307	307
512	2575	2456
1024	21095	19648
2048	170507	157184
4096	1379069	1257472

It is clear that the times of the algorithm match the theoretical ones, even though the ones measured are a bit higher, since the instructions inside the loops aren't exactly $O(1)$ complexity, and the constant of the complexity of the algorithm could be different from one.