


Algorithmics	Student information	Date	Number of session
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Activity 1. [PRIM ALGORITHM]

YOU ARE REQUESTED TO:

Implement a Prim.py module, so that after entering the name of a file, it calculates and writes the optimal solution on the screen.

Explain the time complexity of the implemented algorithm.

My implementation of the Prim algorithm has a time complexity of $O(n^3)$ due to it having 3 nested loops.

Implement a PrimTimes.py module that creates random graphs of various sizes and calculates the time it takes for the algorithm made in the previous section to solve the problem, so that the following table can be filled in.

n	Time (ms)
256	254
512	1980
1024	19447
2048	171212
4096	OoT

Does the previously calculated complexity follow the times in the table?

Given the complexity of $O(n^3)$ we applied the corresponding formula to the obtained times: For an $n=2048$ we measured a time of 171212ms. By applying the formula for an $n = 1024$ a theoretical time of 21401ms is obtained. The measured time is close enough so that we can confidently affirm that the implementation follows the theoretical complexity.