✖

End of Week Quiz

✓   4/5 вопросов верно

Continue Course (/learn/advanced-data-structures/supplement/q2TbC/week-5-introduction)

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Not Verified   You didn't verify this quiz. Retake with verification to be eligible for a Course Certificate.

✔ **1.**

What is the tightest bound Big-O running time of the brute force solution to the traveling salesperson problem (TSP), where n is the number of nodes in the graph?

○ $O(2^n)$

○ $O(n^k)$

○ $O(n!)$

> **Отлично!**
> You can find the explanation for why in Core: TSP Algorithm Running Time

○ $O(n^2)$

✔ 2.

If you know that a problem is considered NP Hard, that means:

○   You can be sure there is no polynomial time - $O(n^k)$ - solution.

○   You can be sure there is a polynomial time - $O(n^k)$ - solution.

○   You can be sure that the problem is at least as hard as a set of problems where there is no *known* polynomial - $O(n^k)$ - solution.
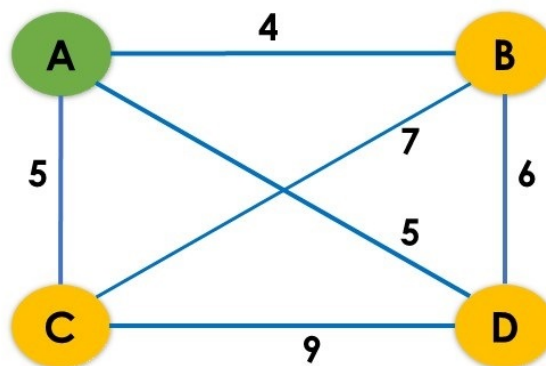
Отлично!
Great response! That's exactly what it means.

✔ 3.

For which of the graphs below would the greedy algorithm (nearest neighbor) NOT find the best solution to the Travelling Salesperson Problem assuming A is the start vertex. Again, each node must be visited once and you must return back to A.
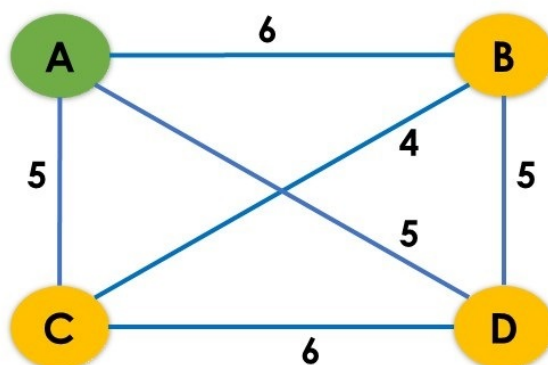
○

Отлично!
Nicely done! Greedy would find the non optimal path of A->B->D->C->A when A->C->B->D->A is better.

○

○
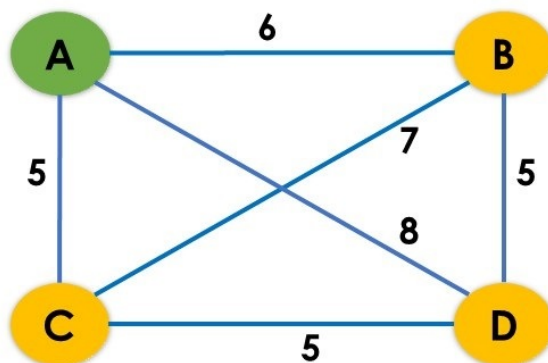
✖ 4.

Which of the following is true about the 2-opt heuristic as explained this week?

○ 2-opt is an approach which may improve a non-optimal solution to the TSP problem and is guaranteed to do no worse than the original non-optimal solution

○   2-opt is an approach which is guaranteed to improve a non-optimal solution to the TSP problem to create an optimal solution for the TSP problem

○   2-opt is an approach which may improve a non-optimal solution to the TSP problem but may end up producing a solution worse than the original non-optimal solution

> **Извините, это неверно.**
> Please review: Core: TSP Hueristics

✔ 5.

A Hamiltonian graph is one where there's *some* path through the graph which visits every vertex exactly once. An Eulerian graph is one where there's *some* path through the graph which traverses every edge exactly once.

Which of the following is true about Hamiltonian and Eulerian graphs?

(Select all that apply.)

☐   Every Hamiltonian graph is Eulerian, because every Hamiltonian path uses each edge at most once.

> **Отлично!**
> See the examples in the Core: Eulerian video.

☐   Each graph is either Hamiltonian or Eulerian.

> **Отлично!**
> See the examples in the Core: Eulerian video.

☐   There can be a graph that is Hamiltonian but not Eulerian.

> **Отлично!**
> See the examples in the Core: Eulerian video.