✖

Graph definitions and implementation

✓ 8/10 вопросов верно

Контрольный опрос успешно пройден!

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✓ 1.

Consider the following adjacency matrix representation of a directed graph (represented as code for nicer formatting):

```
1 0 0 1
0 1 0 1
0 0 1 0
0 1 1 1
```

How many edges are in this graph?

8

Отлично!
Great! The sum of the entries in the matrix represents the number of edges in the graph.

✓ 2.

Consider the same adjacency matrix representation of a directed graph (represented as code for nicer formatting):

```
1 0 0 1
0 1 0 1
0 0 1 0
0 1 1 1
```

How many vertices in this graph have a self-loop, i.e. an edge that starts in a vertex and ends at the same vertex it started at?

4

Отлично!
Great! The 1's on the diagonal represent edges that start in one vertex and go back to the same vertex.

✓ 3.

If you have a graph with 5 vertices and 2 edges, how many entries are there in the matrix with an adjacency matrix representation of this graph?

25

Отлично!
Good! There are 5*5 entries, representing each possible edge in the graph. It doesn't matter how many edges there actually are.

✓ 4.

Consider the following adjacency list representation of a directed graph:

```
0 -> {}
1 -> {2, 3}
2 -> {1}
3 -> {0, 2, 3}
4 -> {0, 1, 3, 4}
```

How many edges does this graph have?

10

Отлично!
Great! The numbers in the lists on the left represent the edges in the graph.

✓ 5.

Consider the following adjacency list representation of a directed graph:

```
0 -> {}
1 -> {2, 3}
2 -> {1}
3 -> {0, 2, 3}
4 -> {0, 1, 3, 4}
```

Which vertex in this graph has the highest *in*-degree?

3

Отлично!
Great! 3 has three edges coming into it (from 4, 3, and 1).

✗ 6.

Consider the following adjacency list representation of a directed graph (note: this graph is slightly different from the graph in the previous two questions):

```
0 -> {}
1 -> {2, 3}
2 -> {1, 3}
3 -> {0, 2, 3}
4 -> {0, 1, 3, 4}
```

What is the degree sequence for this graph? Make sure you put a single space between each number in the sequence. There should be no commas or additional spaces in the sequence.

Hint: make sure you list the degrees in the correct order.

0 2 2 3 4

Извините, но это не то, что мы ожидаем услышать.
Remember that the degree of a node includes both its in-degree plus its out-degree. A self-loop will contribute 2 to the degree of the node. The degree sequence needs to be ordered from largest to smallest.

✖ 7.

Consider the following adjacency list representation of a directed graph:

```
0 -> {}
1 -> {2, 3}
2 -> {1}
3 -> {0, 2, 3}
4 -> {0, 1, 3, 4}
```

Which of the following pairs of vertices have paths from the first vertex to the second. Select all that apply.

□ From 0 to 1

Отлично!
Review the lecture Core: Graph Definitions

Hint: remember that a path can have more than one hop.

□ From 1 to 4

Отлично!
Review the lecture Core: Graph Definitions

Hint: remember that a path can have more than one hop.

□ From 4 to 0

Отлично!
Review the lecture Core: Graph Definitions

Hint: remember that a path can have more than one hop.

□ From 1 to 0

Извините, это неверно.
Review the lecture Core: Graph Definitions

Hint: remember that a path can have more than one hop.

□ From 3 to 4

Отлично!
Review the lecture Core: Graph Definitions

Hint: remember that a path can have more than one hop.

✓ 8.

How many hours did you spend on the programming assignment this week?

○ Less than 1

○ 1-2

○ 2-3

○ 3-4

○ 4-5

○ More than 5

✓ 9.

How difficult did you find the programming assignment?

○ Very easy

○ Pretty easy

○ Neither easy nor difficult

○ Pretty difficult

○ Very difficult

✓ 10.

How much did you enjoy the programming assignment?

○ I really enjoyed it!

○ I enjoyed it.

○ I'm neutral about my enjoyment

○ I did not enjoy it.

○ I really did not enjoy it!

👍 👎 ⚑