

# Week 7 Quiz [Fall 2019]

**Due** Oct 11 at 11:59pm      **Points** 16      **Questions** 16  
**Available** until Oct 12 at 12:01am      **Time Limit** None

## Instructions

## Submission Guidelines

This assignment has multiple-choice and numeric response questions. Only one submission is allowed, however as long as the quiz is not submitted, it is automatically saved and can be resumed.

Upon submission, make sure you have a record of the submission (with timestamp) on the assignment/quiz page on Canvas. If we do not have your submission in Canvas, you will **not** receive credit.

It is essential to follow these instructions to provide answers for this assignment. **Students who do not follow these guidelines will lose points.**

## Attempt History

	Attempt	Time	Score
LATEST	<u>Attempt 1</u>	32 minutes	15 out of 16

Score for this quiz: **15** out of 16

Submitted Oct 11 at 6:55pm

This attempt took 32 minutes.

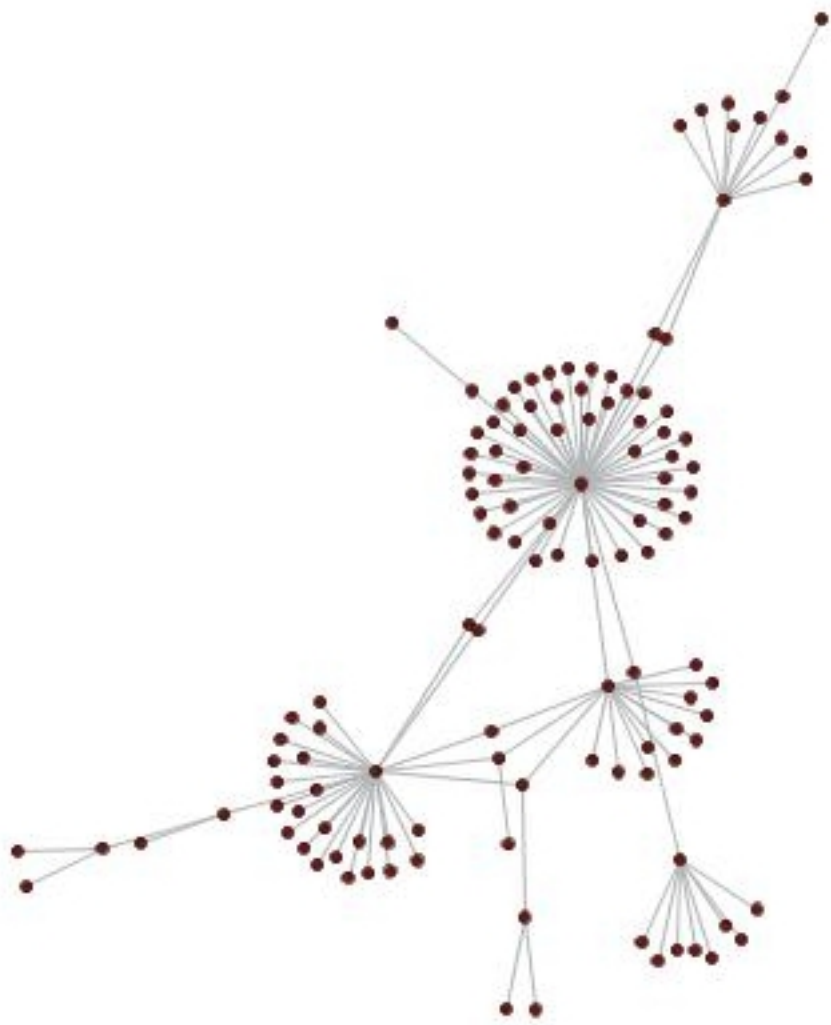
### Question 1

1 / 1 pts

The network diagram below represents a small sub-graph of the of the *Drosophila Melanogaster* (a.k.a. fruit fly) protein-protein interaction network.

In this network each node represents a protein that interacts with other proteins to perform the essential work of the cell. Experimental evidence has demonstrated that proteins with edges between them form a molecular bond to accomplish some biological function.

Use this graph to answer the following questions.



Which of the following is the best estimate of this graph's diameter?

Correct!

☒ 10

☐ 2

☐ 4

☐ 20

## Question 2

1 / 1 pts

Does the network contain mostly high degree nodes? Or mostly low degree nodes

Correct!

☒ Low degree

☐ High degree

### Question 3

1 / 1 pts

Consider the previous graph

Is the graph a tree?

**Correct!**

- ☐ No

- ☐ Yes

### Question 4

1 / 1 pts

Consider again the previous graph - which of the following is the best estimate for the average clustering coefficient of the graph?

**Correct!**

- 0.05

- 0.5

- 0.75

- 0.95

Still considering the previous graph - to store this network - which would be more compact

- Correct!

☒ Adjacency list

☐ Adjacency Matrix

☐

☐

For the next few questions, consider a network formed by 500 students in a dorm as the nodes.

The edges in this network represent roommate relationships, *i.e.* two nodes are connected if they are currently roommates. In this form, the rooms are mostly double occupancy with a few triples and quads.

What is the mode (most frequent value) of the node degrees?

Correct!

1

Correct Answers

- 1 (with margin: 0)
- 0 (with margin: 0)
- 0 (with margin: 0)
- 0 (with margin: 0)

Consider the aforementioned roommate network. How many nodes are in the largest clique in the network?

Correct!

4

Correct Answers

- 4 (with margin: 0)
- 0 (with margin: 0)
- 0 (with margin: 0)
- 0 (with margin: 0)

Question 8

1 / 1 pts

Consider the aforementioned roommate network. Would an adjacency matrix of this graph contain mostly ones or zeros?

Correct!

- ☒ Zeros
- ☐ Ones
- ☐
- ☐

Question 9

1 / 1 pts

Consider the aforementioned roommate network. Among the following types of network representations, which would be more compact?

Correct!

- ☒ Adjacency list
- ☐ Adjacency matrix

Question 10

1 / 1 pts

Consider the aforementioned roommate network. Which of the following best describes the connectivity of this graph?

Correct!

☒ Not connected

☐ Weakly connected

☐ Strongly connected

☐ None of the above

Question 11

0 / 1 pts

What is the average degree in an undirected network with 100 nodes and 200 edges?

You Answered

2

Correct Answers

4 (with margin: 0)

0 (with margin: 0)

0 (with margin: 0)

0 (with margin: 0)

## Question 12

1 / 1 pts

True or False: a graph's diameter is always greater than or equal to its APL (average path length).

Correct!

☒ True

☐ False

☐

☐

## Question 13

1 / 1 pts

Consider the following Python statements for the following questions:

```
data_rows = [  
    ('Alice', 26, 167),  
    ('Bob', 22, 183),  
    ('Carol', 20, 170),  
]  
  
data_records = [  
    {'name': 'Alice', 'age': 26, 'height': 167},  
    {'name': 'Bob', 'age': 22, 'height': 183},  
    {'name': 'Carol', 'age': 20, 'height': 170},  
]
```

Given the above data, what would be the value of the following statement:

```
data_rows[2][1]
```

Correct!

☒ 20

☐ 26

☐ 183

☐ 'Carol'

☐ No value - will raise an error

## Question 14

1 / 1 pts

Consider the `data_rows` and `data_records` from the previous question. What would be the value of the following statement: `data_records[2][1]`

Correct!

☒ No value - would raise an error

☐ 26

☐ 20

☐ 'Carol'

☐ 183

## Question 15

1 / 1 pts

Consider the `data_rows` from a previous question. Which of the following is the best way to obtain a list containing the name from each row in `data_rows`?

A:

`[row for row in data_rows]`

B:

`[row.values() for row in data_rows]`

C:

`[row['name'] for row in data_rows]`

D:



`[row[0] for row in data_rows]`

Correct!

☒ D

☐ A

☐ B

☐ C

## Question 16

1 / 1 pts

Consider the `data_records` from a previous question. Which of the following is the best way to obtain a list containing the name from each record in `data_records`?

A:

`[row for row in data_records]`

B:

`[row.values() for row in data_records]`

C:

`[row['name'] for row in data_records]`

D:

`[row[0] for row in data_records]`

Correct!

☒ C

☐ A

☐ B

☐ D

Quiz Score: **15** out of 16