Week 11 Quiz [Fall 2019]

Due Nov 8 at 11:59pm **Points** 15 **Questions** 15
Available Nov 2 at 12am - Nov 8 at 11:59pm 7 days **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	Attempt 1	31 minutes	14 out of 15

Score for this quiz: **14** out of 15
Submitted Nov 8 at 12:50am
This attempt took 31 minutes.

Question 1 — 1 / 1 pts

Which is not an example of a real-world directed and/or weighted network?

- Twitter follow relationships
- Correct! Facebook friendship network
- Wikipedia links between pages

Traffic flow

Question 2

1 / 1 pts

If one were seeking to disrupt a network by removing nodes and/or edges in an effort to disconnect it and/or increasing average path lengths, an "obvious" strategy is to attack the hubs. Whether it is because the hubs are hard to attack (airports?) or because the network lacks hubs (highways?), which of the following is another valid criterion for good targets to disrupt?

Nodes with high clustering coefficient

Nodes with low degree

Correct!

Nodes/edges with high betweenness centrality

Nodes with high closeness centrality

Question 3

1 / 1 pts

Which of the following best describes a **scale-free** network?

A network whose degree distribution follows a Normal distribution

Correct!

A network whose degree distribution follows a power law

A network whose degree distribution has no median

A network whose degree distribution has no maximum

Question 4

1 / 1 pts

Web graph conforms to what type of structure?

- Spiral Galaxy
- Grid
- Bow-tie

Correct!

- Pyramid

Question 5

1 / 1 pts

Taking the log of power-law distributed data does what to the shape of the distribution?

- Turns it into a monotonically decreasing quadratic
- Turns it into a upward sloping exponential.
- Turns it into a downward sloping exponential.

Correct!

- Turns it into a line

Question 6

1 / 1 pts

True or False: The degree of a randomly chosen node from a network with a power-law distributed degree distribution is comparable to the average of that

distribution.

- True

Correct!

- False

Question 7

1 / 1 pts

The degree distribution of a network can be interpreted as the probability of randomly — with equal probability for each node — selecting a node with a given degree.

Correct!

Correct!

- True

- False

Question 8

1 / 1 pts

Scale-free graphs are ultra small-world.

Correct!

Correct!

- True

- False

Question 9

1 / 1 pts

How does preferential attachment work?

New nodes are connected to existing nodes proportional to their clustering coefficient.

Correct!

New nodes are connected to existing nodes with probability proportional to their degree.

New nodes are connected with higher probability to nodes added earlier in the process

New nodes are connected with higher probability to more recent nodes.

Question 10

1 / 1 pts

True or false: All centralities have strong correlation with each other because important nodes tend to be important in various ways.

True

Correct!

False

Question 11

1 / 1 pts

True or false: In the context of web graph, all entries exist within either the in, out, or core components.

True

Correct!

False

Question 12

1 / 1 pts

True or false: in web graph, to go from the in-component to the out-component requires going through the core

True

Correct!

False

Question 13

0 / 1 pts

In the context of the web, what would we expect to be true about average path length?

orrect Answer

A large value

ou Answered

A low value

Question 14

1 / 1 pts

Topical locality refers to the fact that pages about related topics tend to link to each other.

One method of discerning whether or not two pages relate to a similar topic

is:

- PageRank similarity
- Text index score
- Crawler alignment score

Correct!

- (•) Cosine similarity

Question 15

1 / 1 pts

On a very basic level, web crawlers follow:

- Degree-proportional search

Correct!

- (•) Breadth-first search
- Depth-first search
- Random walk

Quiz Score: **14** out of 15