X

Week 6: Assignment 6

The due date for submitting this assignment has passed.

Due on 2022-09-07, 23:59 IST.

Assignment submitted on 2022-09-07, 20:05 IST

1) If nx represents networkx library then, for a graph G, what does nx.pagerank(G) returns? ***1 point***

- Returns a List of PageRanks of the node.
- Returns a Dictionary where keys are nodes and values are PageRanks of the node.
- Returns a List of nodes sorted in ascending order according to PageRank.
- Returns a Dictionary where keys are PageRanks and values are lists of nodes with the same PageRanks

Yes, the answer is correct.
Score: 1
Accepted Answers:
Returns a Dictionary where keys are nodes and values are PageRanks of the node.

2) Web graph is a ____. ***1 point***

- Complete graph
- Undirected graph
- Directed graph
- Bipartite graph

Yes, the answer is correct.
Score: 1
Accepted Answers:
Directed graph

3) Let there exist n nodes with no edges in between them initially. We start moving from one node to the other (probability of moving from any node to any other node being the ***1 point***

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same) and creating an edge between the nodes if there already isn't. After a large number of iterations, the graph generated will be?
I. Bipartite graph
II. Connected graph
III. Acyclic graph
IV. Complete graph

- Only I
- Only II
- Only IV
- Only II, IV

Yes, the answer is correct.
Score: 1
Accepted Answers:
Only II, IV

4) Google PageRank algorithm uses - ***1 point***

- Dictionary of web pages created manually by Google workers.
- List of pages relevant to the search and rank those pages based on their creation date.
- Web graph and Searching algorithms like Depth First Search.
- Web graph and random walk algorithm.

Yes, the answer is correct.
Score: 1
Accepted Answers:
Web graph and random walk algorithm.

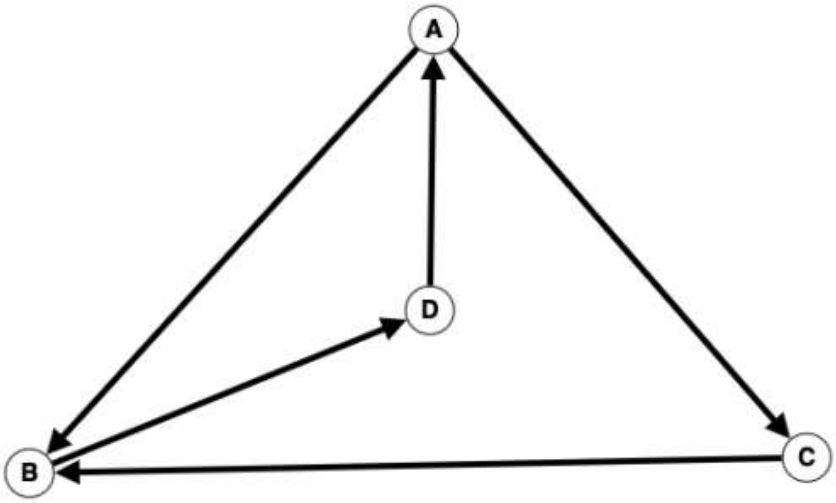
5) Choose the correct option based on the two statements given below. ***1 point***

Statement I: The PageRank of a node only depends on its out-degree value.
Statement II: The PageRank of node A can be higher than that of node B even if fewer nodes have an edge going to A compared with node B.

- Both statements are incorrect.
- Statement I is incorrect & Statement II is correct.
- Statement I is correct & Statement II is incorrect.
- Both statements are correct.

No, the answer is incorrect.
Score: 0
Accepted Answers:
Statement I is incorrect & Statement II is correct.

6) If the initial PageRank of each node is $\frac{1}{4}$ for the given graph below, what will be the PageRank of the nodes after 1 iteration? ***1 point***



- $B = \frac{3}{8}$ & $C = \frac{1}{8}$
- $B = \frac{3}{8}$ & $C = \frac{1}{4}$
- $B = \frac{1}{2}$ & $C = \frac{1}{4}$
- $B = \frac{1}{2}$ & $C = \frac{1}{8}$

Yes, the answer is correct.
Score: 1

Accepted Answers:
$B = \frac{3}{8}$ & $C = \frac{1}{8}$

7) Given below is an adjacency matrix for a graph. X & Y are PageRank of nodes 2 & 3 respectively after 2 iterations and $Z = \frac{X}{Y}$. If the initial PageRank of each node is $\frac{1}{4}$, the value of Z is ____. ***1 point***

$$\begin{bmatrix} 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 1 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{bmatrix}$$

- $\frac{1}{4}$
- $\frac{1}{8}$
- $\frac{5}{3}$
- $\frac{3}{5}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$\frac{5}{3}$

8) In a random graph with n nodes, to visit all nodes in a random walk, the number of nodes required to be travelled is _____. **1 point**

- n^2
- $\frac{n^*(n-1)}{2}$
- $\frac{n}{log(n)}$
- $n^* log(n)$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$n^* log(n)$

9) In a graph of students with edges representing friendship, choose the correct option based on the two statements given below. **1 point**

Statement I - Taking a random walk and dropping 1 coin to each node while visiting. Students accumulating the most coins will be most popular.
Statement II - Giving an equal number of coins to all students at the beginning and then each student has to distribute them equally to all of their friends at every snap. After a large number of snaps, the student with the most coins will be the most popular.

- Both statements are correct.
- Statement I is correct and statement II is incorrect.
- Statement I is incorrect and statement II is correct.
- Both statements are incorrect.

Yes, the answer is correct.
Score: 1

Accepted Answers:
Both statements are correct.

10) What does Teleportation mean? **1 point**

- Choosing a node uniformly at random in a graph.
- Creating an edge between any 2 random nodes.
- Creating an edge between the highest and lowest-ranked nodes.
- Changing the leader in a graph manually.

No, the answer is incorrect.
Score: 0

Accepted Answers:
Choosing a node uniformly at random in a graph.