Unit 15 - Week 11- Small World Phenomenon

Week 11 Assignment 1

1) According to Watts and Strogatz, which of the following two phenomena give rise to small world networks. ***1 point***

- triadic closure and weak ties
- triadic closure and community structure
- homophily and weak ties
- homophily and foci closure

Accepted Answers:
homophily and weak ties

2) Choose the correct statement from the following. ***1 point***

- We have more number of friends which are geographically closer and less number of friends which are geographically distant.
- We have less number of friends which are geographically closer and more number of friends which are geographically distant.
- Number of friends which are geographically closer is equal to the number of friends which are geographically distant.
- None of the above

Accepted Answers:
We have more number of friends which are geographically closer and less number of friends which are geographically distant.

3) Random rewiring in small world generative model refers to ***1 point***

- Addition of an extra edge in the network
- Deletion of a random edge from the network
- Deletion of a random edge from the network and addition of a new edge in the network
- None of the above

Accepted Answers:
Deletion of a random edge from the network and addition of a new edge in the network

4) Assume that each of your friends has 100 friends other than you. Similarly, each of their friends has 100 friends other than them and so on. Then, how many people can you reach in i levels ***1 point***

(Level one refers to your friends, level 2 refers to your friends' friends and so on)?

- 100
- 100^{i+1}
- 100^{i-1}
- 100^{i}

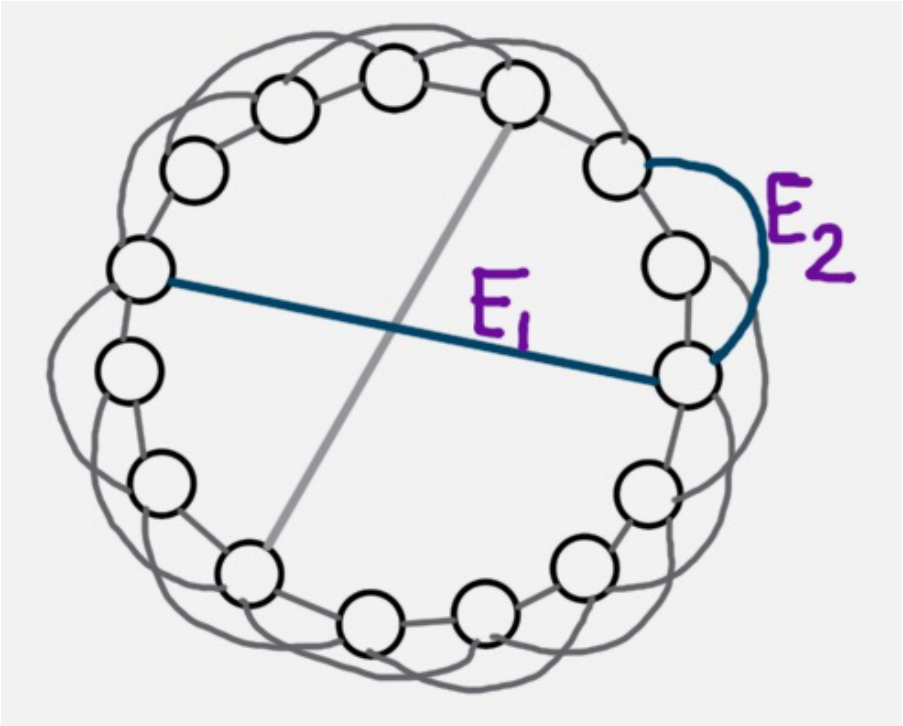
Accepted Answers:
100^{i}

5) For performing decentralised search, a node requires the knowledge of ***1 point***

- only its neighbors
- the entire network
- its neighbors and an estimate of their distance from the target
- its neighbors and neighbors of its neighbors

Accepted Answers:
its neighbors and an estimate of their distance from the target

6) Given the small world network as shown in Figure. ***1 point***



Choose the correct statement from the following.

- E1 is strong tie while E2 is a weak tie
- E1 is weak tie while E2 is a strong tie.
- Both E1 and E2 are weak ties.
- Both E1 and E2 are strong ties.

Accepted Answers:
E1 is weak tie while E2 is a strong tie.

7) Assume there is a node X in a network having 5 weak ties connected to it. It chooses one of the weak tie randomly and transmits the packet across this tie. Choose the correct statement from the following. ***1 point***

- The letter will move closer to the target.
- The letter will move away from the target.
- There will be no change in the distance of the letter from the target.
- Can't say

Accepted Answers:
Can't say

8) Which of the following correctly represents a Watts-Strogatz model on n nodes in 2 dimensional space? ***1 point***

- n nodes arranged in 2-D lattice where the connections between the nodes are all random.
- n nodes arranged in a 2-D lattice where every node is connected to every other node.
- n nodes arranged in a 2-D lattice where every node is connected to the nodes on its left, right, top, bottom and optionally diagonally opposite.
- n nodes arranged in a 2-D lattice where every node is connected to the nodes on its left, right, top, bottom and optionally diagonally opposite, and, some edges are randomly laid in the network between any two nodes.

Accepted Answers:
n nodes arranged in a 2-D lattice where every node is connected to the nodes on its left, right, top, bottom and optionally diagonally opposite, and, some edges are randomly laid in the network between any two nodes.

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