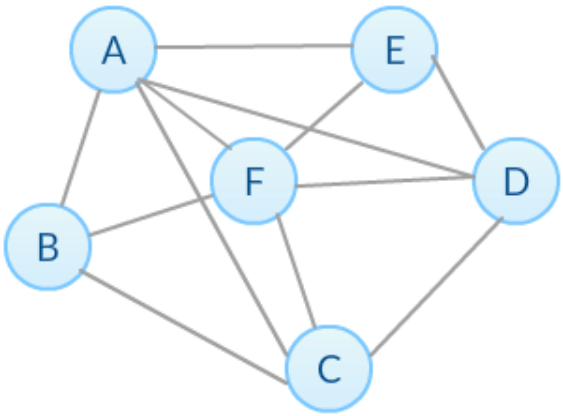
Module 2 Quiz

Quiz, 10 questions

1 point

1.

Consider the given network. What is the value of node F's local clustering coefficient?



- 0.5
- 0.6
- 0.7
- 0.8

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1 point

2.

Given the following two networks, which of the following is True?

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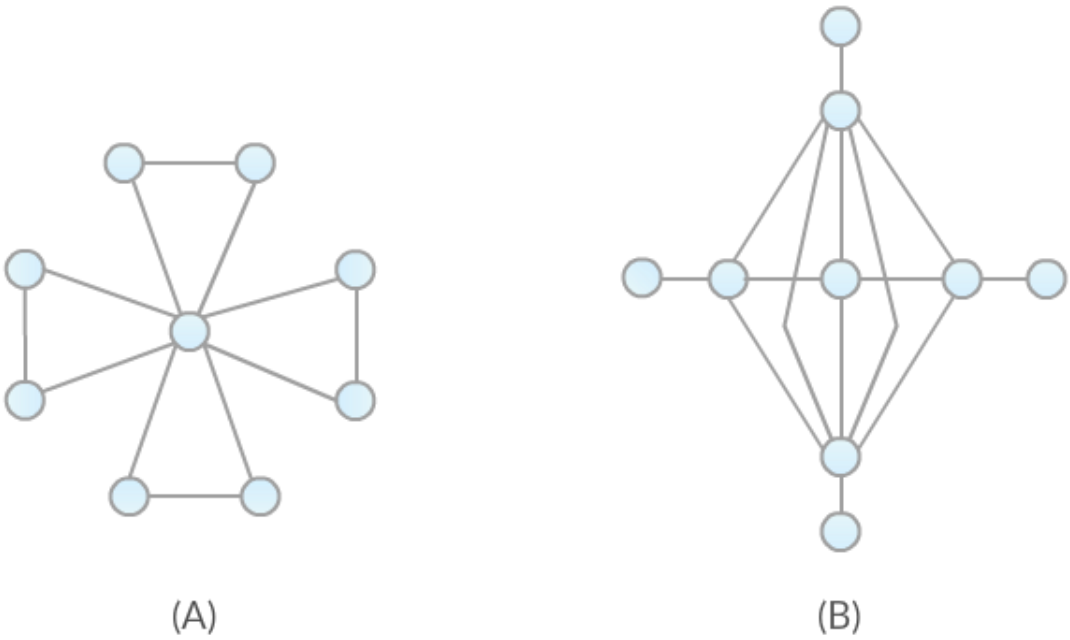

- Network (A) has higher average local clustering coefficient and higher transitivity than (B).
- Network (A) has higher average local clustering coefficient but lower transitivity than (B).
- Network (A) has lower average local clustering coefficient and lower transitivity than (B).
- Network (A) has lower average local clustering coefficient but higher transitivity than (B).

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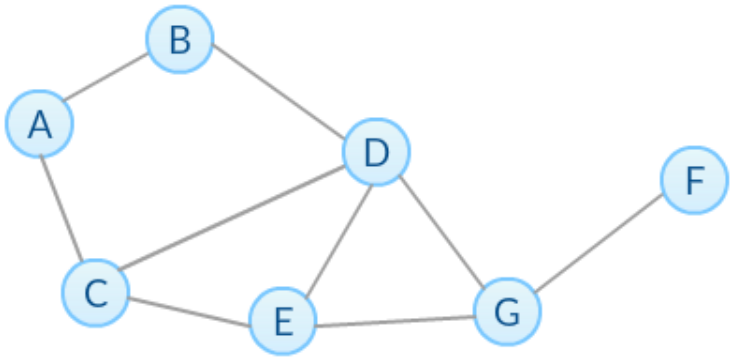
1 point

3.

Consider the network shown below and select all that apply.



- [ ]

- [ ] The radius of this network is half of its diameter.
- [ ] The deletion of node G will make the network disconnected.
- [ ] If we perform Breadth-First Search (BFS) from node A, the BFS tree we obtain will have a depth of 4.
- [ ] Node C and D are in the center of the network.
- [ ] F is the only in the periphery of the network.
- [ ] The eccentricity of node B and C are equal.

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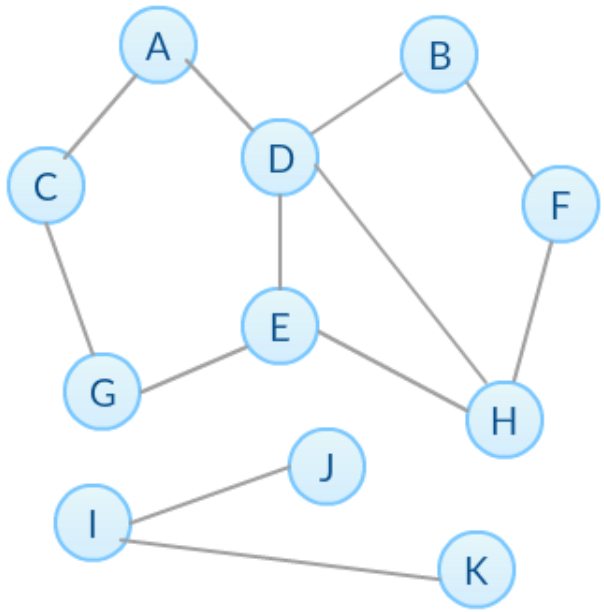
1 point

4.

Select all that apply for the network below.



- [ ] It is a disconnected graph with 2 connected components.
- [ ] If edge (E,G) is removed, the number of connected components will not change.
- [ ] The local clustering coefficient of node I is higher than node J and K.
- [ ] We can make the graph connected by adding edge (E,J).

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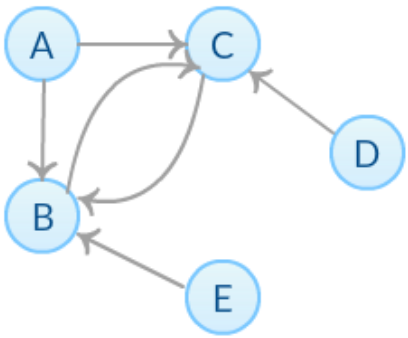
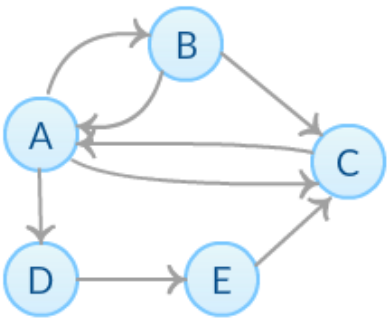
1 point

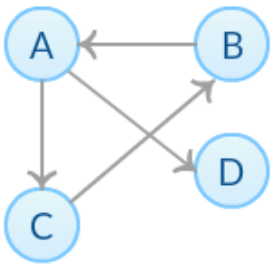
5.
Consider three networks (A), (B) and (C) below and select all that apply.



(A)



(B)



(C)

- [ ] Only network (B) is a strongly connected graph.
- [ ] We can change network (A) from a weakly connected graph to a strongly connected graph by adding a directed edge from node C to node D.
- [ ] All edges in network (B) are needed for the network to be strongly connected.
- [ ] We only need to add one directed edge in order to change network (C) to a strongly connected graph.

1 point

6.
Which of the following is true about network robustness and connectivity? Select all that apply.

- [ ] The closure of an airport and the cancellation of a flight route are examples of two different kinds of network attacks in the real world.
- [ ] Adding more edges to a network always makes it more robust.
- [ ] A network that has a high average local clustering coefficient always has a high node connectivity.
- [ ] Network robustness measures a network's ability to maintain its connectivity.
- [ ] Adding edges to a network can never make the network less robust.

1 point

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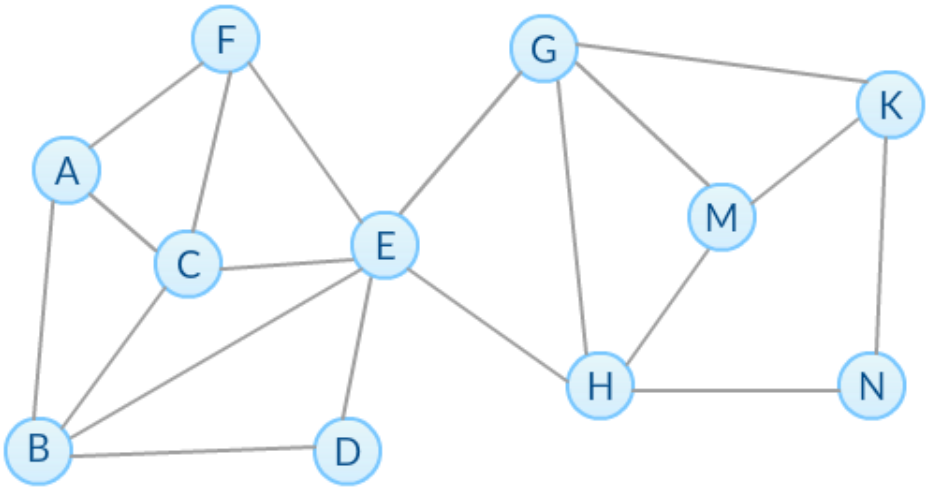
7. Consider the network given below.

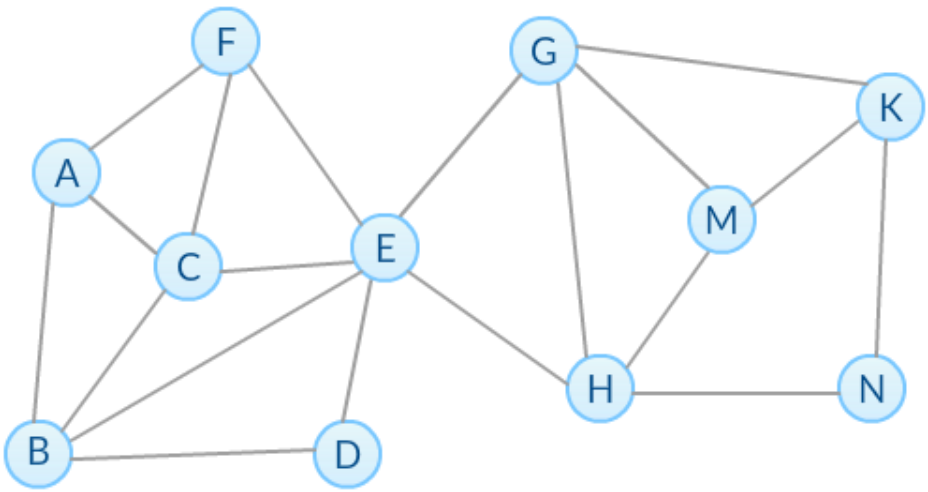


What's the node connectivity of the network?

- 1
- 2
- 3
- 4

1 point

8.
Consider the network given below.



What is the edge connectivity of the network?

1

2

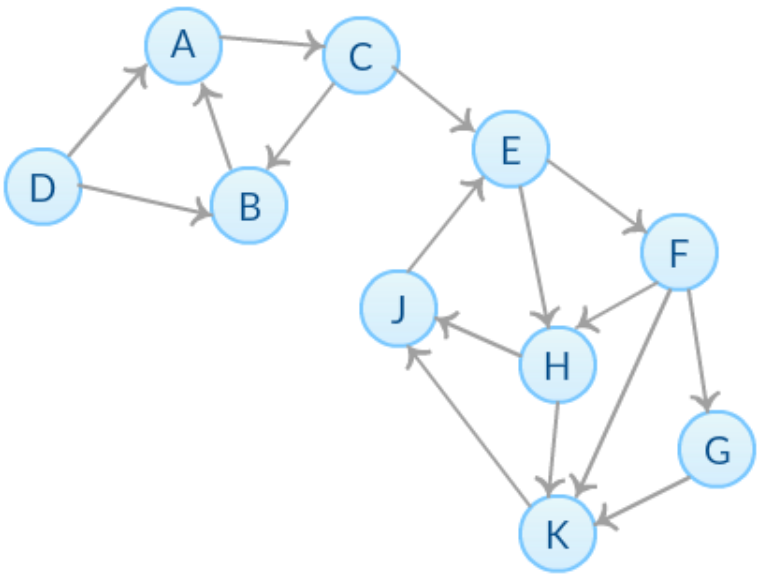
3

4

1 point

9.

The directed network below shows how information can be transferred between nodes. For example, node A can pass the information to node C directly but not vice-versa. If node C wants to send messages to node A, all data must be forwarded by node B.



What is the total number of simple paths from node D to node K?

5

6

7

8

9

1 point

10.

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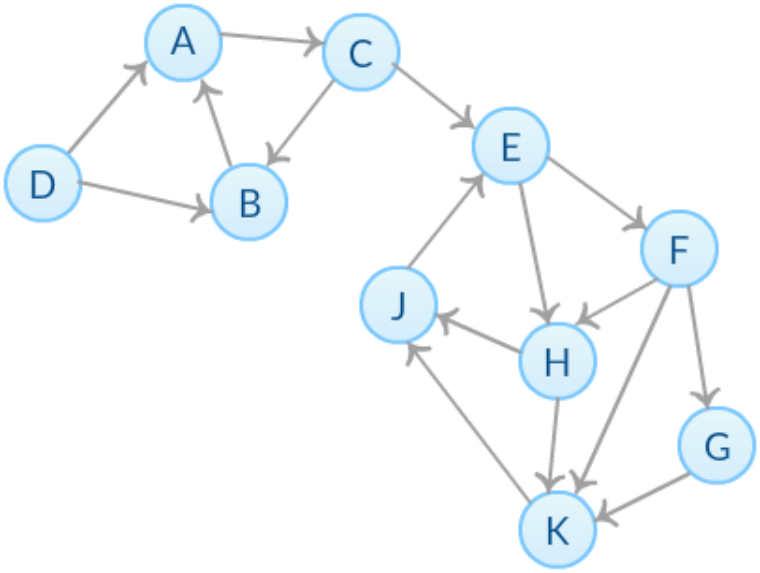
The directed network below shows how information can be transferred between nodes. For example, node A can pass the information to node C directly but not vice-versa. If node C wants to send messages to node A, all data must be forwarded by node B.



Suppose we want to block all information channels from node E to node K. Which of the following options achieve this goal? Check all that apply.

- [ ] Removing node H only
- [ ] Removing node G and H
- [ ] Removing node F and H
- [ ] Removing edge (H,K)
- [ ] Removing edges (H,K) and (E,F)
- [ ] Removing edges (H,K) and (F,G)

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