Week 6 Homework Results for Austin Koske

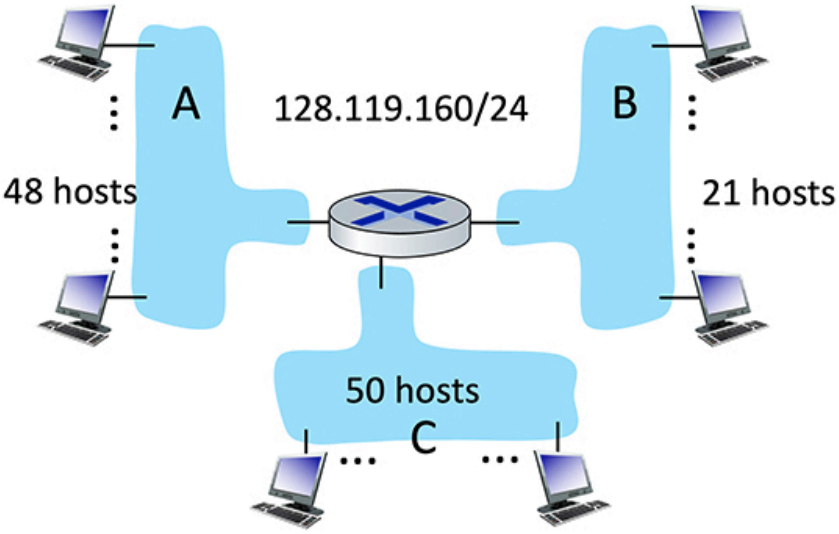
Score for this attempt: 43.2 out of 44
Submitted Oct 13 at 5:09pm
This attempt took 2,626 minutes.

Correct answer

Question 1
2 / 2 pts

4.3-1. Subnet addressing. Consider the three subnets below, each in the larger 128.119.160/24 network. The following questions are concerned with subnet addressing. Answer each question by selecting a matching answer. Each answer can be used to answer only *one* question.

[Note: You can find more examples of problems similar to this **here** (http://gaia.cs.umass.edu/kurose_ross/interactive/subnet_addressing.php) .]



What is the maximum number of hosts possible in the larger 128.119.160/24 network?

256

How many bits are needed to be able to address all of the host in subnet A?

6

Suppose that subnet A has a CIDRized subnet address range of 128.119.160.128/26 (hint: 128 is 1000 0000 in binary); Subnet B has an CIDRized subnet address range of 128.119.160.64/26. We now want a valid CIDRized IP subnet address range for subnet C of the form 128.119.160.*x*/26. What is a valid value of *x*?

0

Other Incorrect Match Options:

- 64
- 2**32
- 96

Nice! This answer is correct

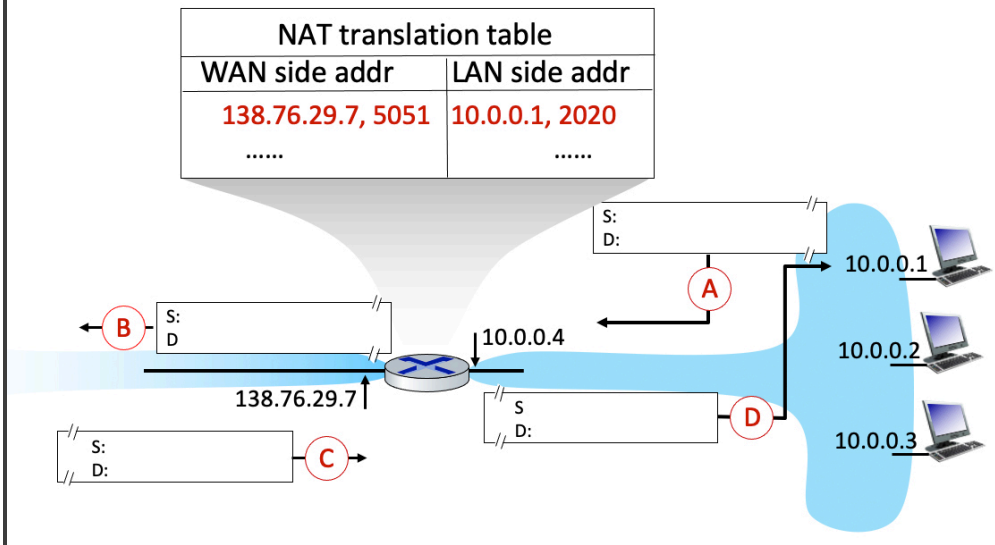
Correct answer

Question 2

2 / 2 pts

4.3-2a Network Address Translation (a). Consider the following scenario in which host 10.0.0.1 is communicating with an external web server at IP address 128.119.40.186. The NAT table shows the table entry associated with this TCP flow. What are the source and destination IP address and port numbers at point ***A?***

[Note: You can find more examples of problems similar to this here (http://gaia.cs.umass.edu/kurose_ross/interactive/nat.php) .]



The source IP address is:

10.0.0.1

The destination IP address is:

128.119.40.186

The source port number is:

2020

The destination port number is:

80

Other Incorrect Match Options:

- 10.0.0.4
- 138.76.29.7
- 5051

Nice! This answer is correct

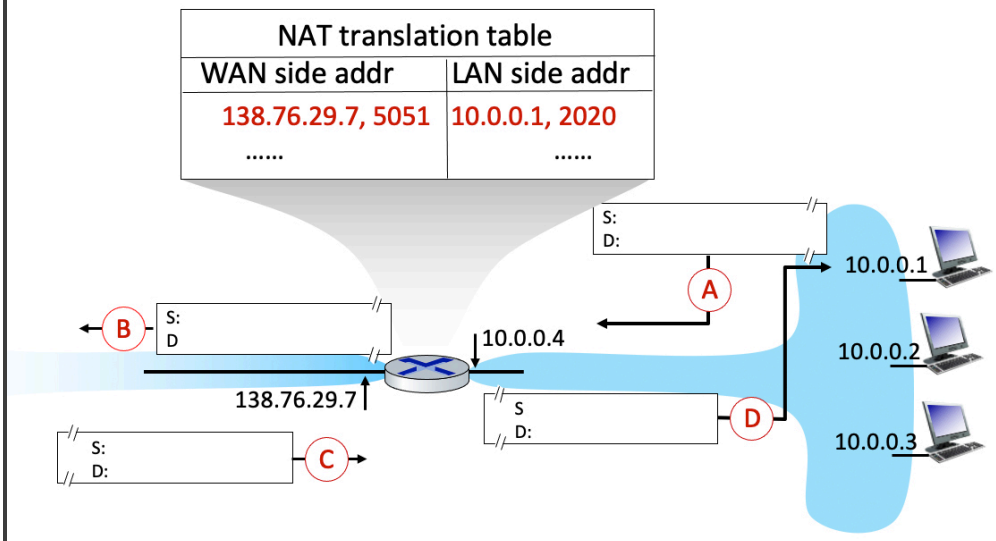
Correct answer

Question 3

2 / 2 pts

4.3-2b. Network Address Translation (b). Consider the following scenario in which host 10.0.0.1 is communicating with an external web server at IP address 128.119.40.186. The NAT table shows the table entry associated with this TCP flow. What are the source and destination IP address and port numbers at point ***B?***

[Note: You can find more examples of problems similar to this **here** (http://gaia.cs.umass.edu/kurose_ross/interactive/nat.php) .]



The source IP address is:

138.76.29.7

The destination IP address is:

128.119.40.186

The source port number is:

5051

The destination port number is:

80

Other Incorrect Match Options:

- 2020
- 10.0.0.4
- 10.0.0.1

Nice! This answer is correct

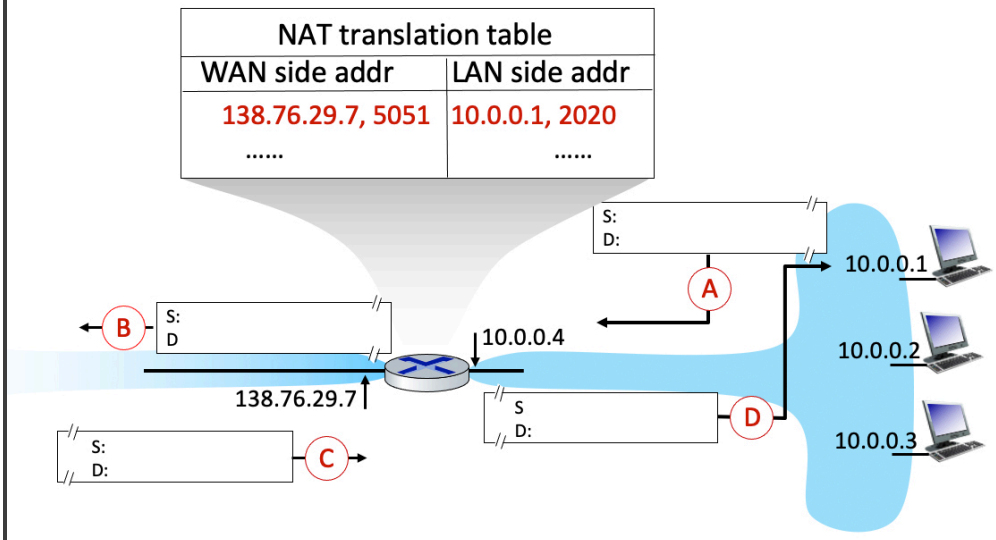
Correct answer

Question 4

2 / 2 pts

4.3-2c. Network Address Translation (c). Consider the following scenario in which host 10.0.0.1 is communicating with an external web server at IP address 128.119.40.186. The NAT table shows the table entry associated with this TCP flow. What are the source and destination IP address and port numbers at point ***C?***

[Note: You can find more examples of problems similar to this here (http://gaia.cs.umass.edu/kurose_ross/interactive/nat.php) .]



The source IP address is:

128.119.40.186

The destination IP address is:

138.76.29.7

The source port number is:

80

The destination port number is:

5051

Other Incorrect Match Options:

- 10.0.0.1
- 10.0.0.4
- 2020

Nice! This answer is correct

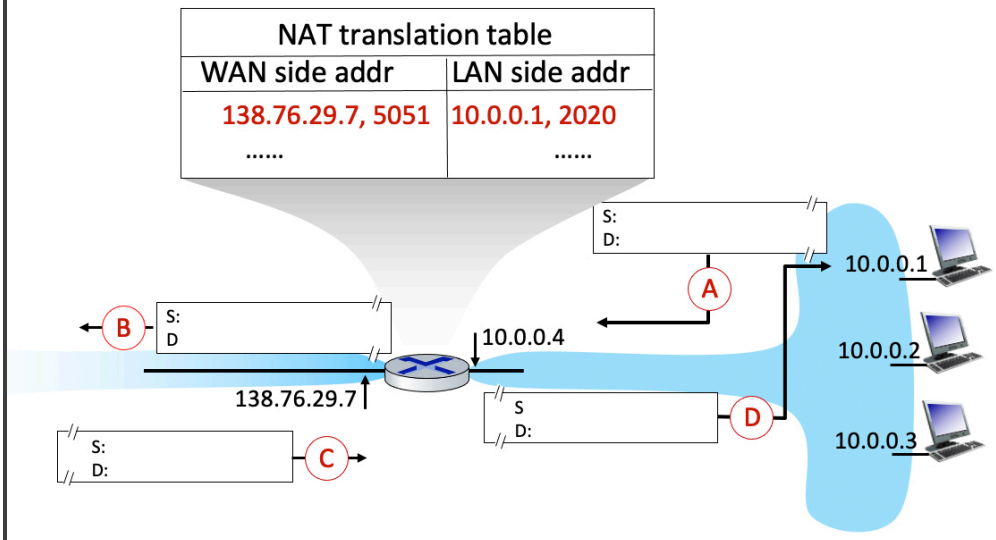
Correct answer

Question 5

2 / 2 pts

4.3.2-d. Network Address Translation (d). Consider the following scenario in which host 10.0.0.1 is communicating with an external web server at IP address 128.119.40.186. The NAT table shows the table entry associated with this TCP flow. What are the source and destination IP address and port numbers at point ***D?***

[Note: You can find more examples of problems similar to this **here** (http://gaia.cs.umass.edu/kurose_ross/interactive/nat.php) .]



The source IP address is:

128.119.40.186

The destination IP address is:

10.0.0.1

The source port number is:

80

The destination port number is:

2020

Other Incorrect Match Options:

- 10.0.0.4
- 5051
- 138.76.29.7

Nice! This answer is correct

Correct answer

Question 6
2 / 2 pts

5.2-1. What's a "good" path? What is the definition of a "good" path for a routing protocol? Chose the best single answer.

- A high bandwidth path.
- A low delay path.
- A path that has little or no congestion.
- A path that has a minimum number of hops.
- Routing algorithms typically work with abstract link weights that could represent any of, or combinations of, all of the other answers.

Nice! This answer is correct.

Correct answer

Question 7
2 / 2 pts

5.2-2. Dijkstra's link-state routing algorithm. Consider Dijkstra's link-state routing algorithm that is computing a least-cost path from node a to other nodes b, c, d, e, f. Which of the following statements is true. (Refer to Section 5.2 in the text for notation.)

- [x] In the initialization step, the initial cost from a to each of these destinations is initialized to either the cost of a link directly connecting a to a direct neighbor, or infinity otherwise.
- [ ] Following the initialization step, if nodes b and c are directly connected to a, then the least cost path to b and c will never change from this initial cost.

Suppose nodes b, c, and d are in the set N'. These nodes will remain in N' for the rest of the algorithm, since the least-cost paths from a to b, c, and d are known.

The values computed in the vector D(v), the currently known least cost of a path from a to any node v, will never increase following an iteration.

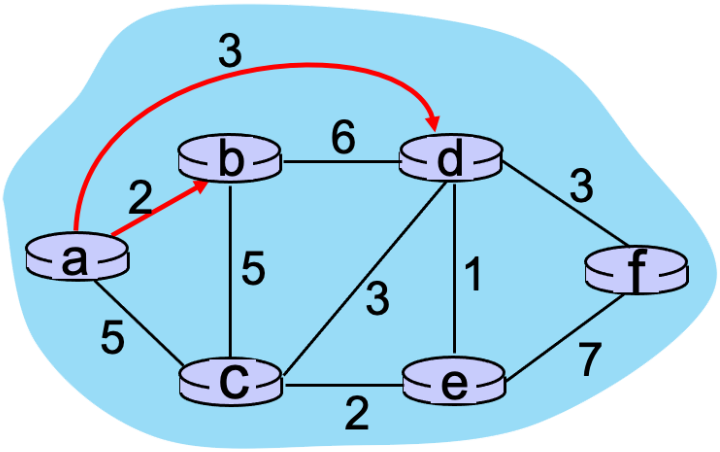
The values computed in the vector D(v), the currently known least cost of a path from a to any node v, will always decrease following an iteration.

Nice! This answer is correct.

Correct answer

Question 8
2 / 2 pts

5.2-4. Dijkstra's link-state routing algorithm (Part 1). Consider the graph shown below and the use of Dijkstra's algorithm to compute a least cost path from a to all destinations. Suppose that nodes b and d have already been added to N'. What is the next node to be added to N' (refer to the text for an explanation of notation).



[Note: You can find more examples of problems similar to this **here** (http://gaia.cs.umass.edu/kurose_ross/interactive/?q=c5q1) .]

c

e

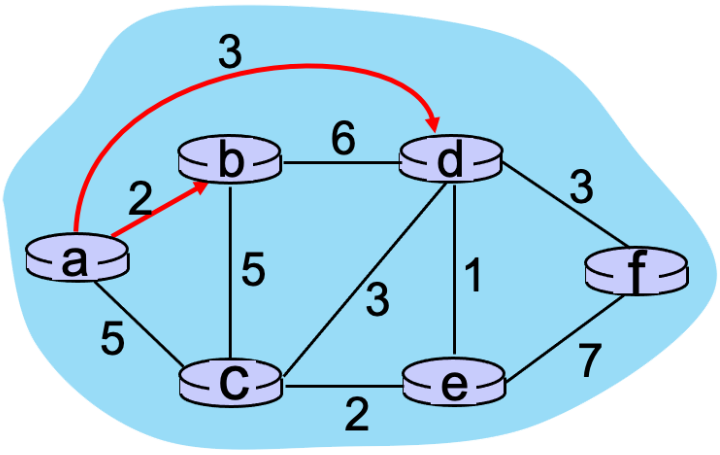
f

Nice! This answer is correct.

Correct answer

Question 9
2 / 2 pts

5.2-5. Dijkstra's link-state routing algorithm (Part 2). Consider the graph shown below and the use of Dijkstra's algorithm to compute a least cost path from a to all destinations. Suppose that nodes b and d have already been added to N'. What is the *path cost* to the next node to be added to N' (refer to the text for an explanation of notation).



[Note: You can find more examples of problems similar to this **here** (http://gaia.cs.umass.edu/kurose_ross/interactive/?q=c5q1) .]

- 4
- 5
- 6
- 7

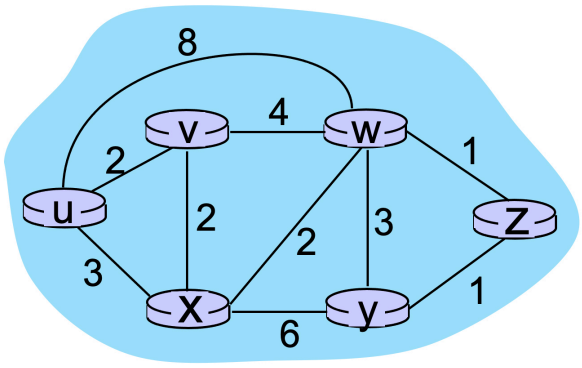
Nice! This answer is correct.

Correct answer

Question 10
2 / 2 pts

5.01-1. Dijkstra's Algorithm (1, part 1). Consider the network shown below, and Dijkstra's link-state algorithm to find the least cost path from source node U to all other destinations. Using the algorithm statement and its visual representation used in the textbook, complete the first row in the table below showing the link state algorithm's execution by matching the table entries (a), (b), (c), and (d) with their values. Write down your final [correct] answer, as

you'll need it for the next question. [Note: You can find more examples of problems similar to this here (http://gaia.cs.umass.edu/kurose_ross/interactive/?q=c5q1) .]



Step	N'	v D(v),p(v)	w D(w),p(w)	x D(x),p(x)	y D(y),p(y)	z D(z),p(z)
0	u	(a)	(b)	(c)	(d)	∞

(a)

2,u

(b)

8,u

(c)

3,u

(d)

infinity

Other Incorrect Match Options:

- 6,v
- 7,u
- 4,v
- 1,u
- 5,x

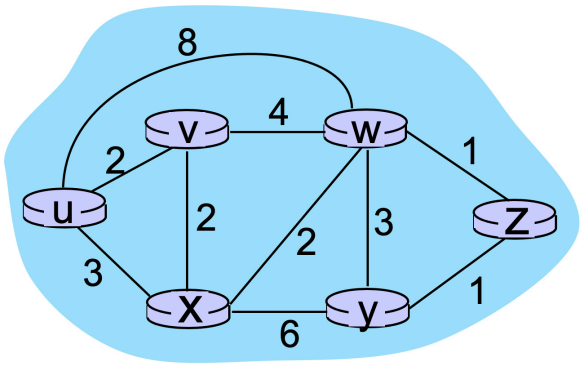
Nice! This answer is correct

Correct answer

Question 11

2 / 2 pts

5.01-2. Dijkstra's Algorithm (1, part 2). Consider the network shown below, and Dijkstra's link-state algorithm to find the least cost path from source node U to all other destinations. Using the algorithm statement and its visual representation used in the textbook, complete the **second** row in the table below showing the link state algorithm's execution by matching the table entries (a), (b), (c), (d) and (e) with their values. Write down your final [correct] answer, as you'll need it for the next question; the *s shown correspond to your answers to the question 5.01-1. [Note: You can find more examples of problems similar to this **here** (http://gaia.cs.umass.edu/kurose_ross/interactive/?q=c5q1)]



Step	N'	v D(v),p(v)	w D(w),p(w)	x D(x),p(x)	y D(y),p(y)	z D(z),p(z)
0	u	*	*	*	*	∞
1	(a)	(b)	(c)	(d)	(e)	∞

(a)

uv

(b)

2,u

(c)

6,v

(d)

3,u

(e)

infinity

Other Incorrect Match Options:

- 4,v
- 9,x
- 9,w
- 4,u

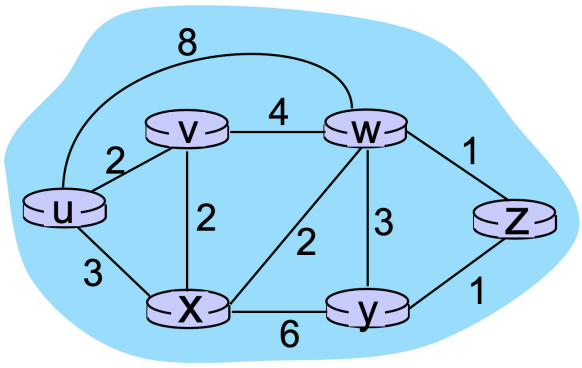
Nice! This answer is correct

Correct answer

Question 12

2 / 2 pts

5.01-3. Dijkstra's Algorithm (1, part 3). Consider the network shown below, and Dijkstra's link-state algorithm to find the least cost path from source node U to all other destinations. Using the algorithm statement and its visual representation used in the textbook,complete the **third** row in the table below showing the link state algorithm's execution by matching the table entries (a), (b), (c), (d) and (e) with their values. Write down your final [correct] answer, as you'll need it for the next question; the *s shown correspond to your answers to earlier parts of this question. [Note: You can find more examples of problems similar to this **here** (http://gaia.cs.umass.edu/kurose_ross/interactive/?q=c5q1) .]



Step	N'	v D(v),p(v)	w D(w),p(w)	x D(x),p(x)	y D(y),p(y)	z D(z),p(z)
0	u	*	*	*	*	∞
1	*	*	*	*	*	∞
2	(a)	(b)	(c)	(d)	(e)	∞

(a)

uvx

(b)

2,u

(c)

5,x

(d)

3,u

(e)

9,x

Other Incorrect Match Options:

- 6,v
- uvw
- 4,u
- 9,5

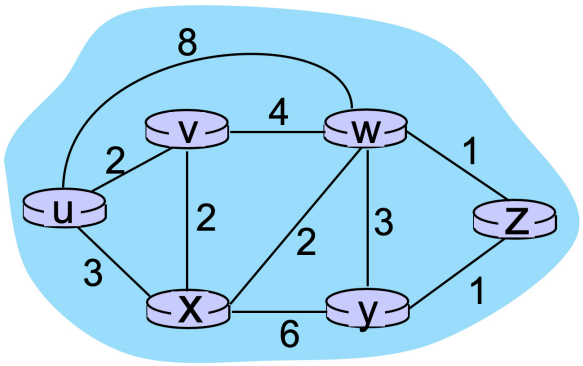
Nice! This answer is correct

Correct answer

Question 13

2 / 2 pts

5.01-4 Dijkstra's Algorithm (1, part 4). Consider the network shown below, and Dijkstra's link-state algorithm to find the least cost path from source node U to all other destinations. Using the algorithm statement and its visual representation used in the textbook, complete the **fourth** row in the table below showing the link state algorithm's execution by matching the table entries (a), (b), (c), and (d) with their values. Write down your final [correct] answer, as you'll need it for the next question. The *s shown correspond to your answers to the earlier parts of this question; note that a couple of table entries are given for you (!). [Note: You can find more examples of problems similar to this **here** (http://gaia.cs.umass.edu/kurose_ross/interactive/?q=c5q1) .]



Step	N'	v D(v),p(v)	w D(w),p(w)	x D(x),p(x)	y D(y),p(y)	z D(z),p(z)
0	u	*	*	*	*	∞
1	*	*	*	*	*	∞
2	*	*	*	*	*	∞
3	(a)	2,u	(b)	3,u	(c)	(d)

(a)

uvxw

(b)

5,x

(c)

8,w

(d)

6,w

Other Incorrect Match Options:

- 7,y
- 7,w
- uvxy
- infinity
- 6,v

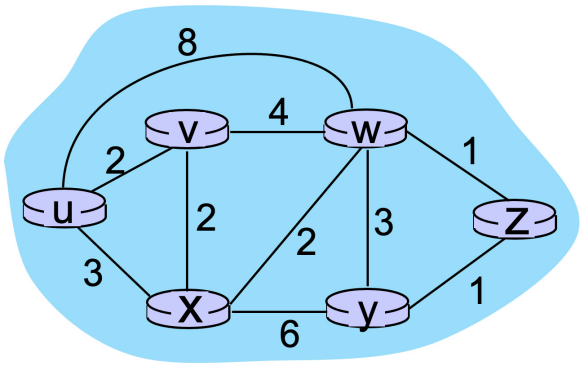
Nice! This answer is correct

Correct answer

Question 14

2 / 2 pts

5.01-5 Dijkstra's Algorithm (1, part 5). Consider the network shown below, and Dijkstra's link-state algorithm to find the least cost path from source node U to all other destinations. Using the algorithm statement and its visual representation used in the textbook, complete the **fifth** row in the table below showing the link state algorithm's execution by matching the table entries (a), (b), (c),and (d) with their values. The *s shown correspond to your earlier answers to this question. [Note: You can find more examples of problems similar to this **here** (http://gaia.cs.umass.edu/kurose_ross/interactive/?q=c5q1) .]



Step	N'	v D(v),p(v)	w D(w),p(w)	x D(x),p(x)	y D(y),p(y)	z D(z),p(z)
0	u	*	*	*	*	∞
1	*	*	*	*	*	∞
2	*	*	*	*	*	∞
3	*	2,u	*	3,u	*	*
4	(a)	2,u	(b)	3,u	(c)	(d)

(a)

uvxwz

(b)

5,x

(c)

7,z

(d)

6,w

Other Incorrect Match Options:

- uvxwy
- 6,v
- 9,x
- 8,w
- infinity

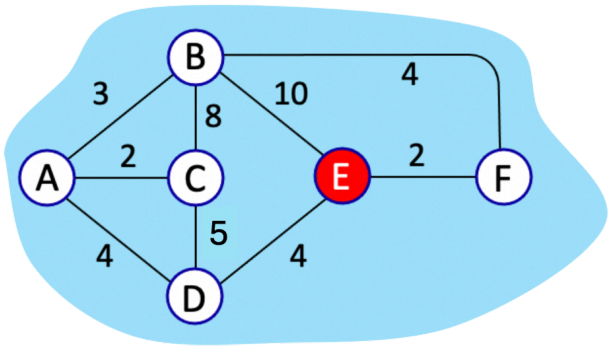
Nice! This answer is correct

Correct answer

Question 15

2 / 2 pts

5.03-1. Dijkstra's Algorithm (3, part 1). Consider the network shown below, and Dijkstra's link-state algorithm. Here, we are interested in computing the least cost path from node ***E*** (note: the start node here is ***E***) to all other nodes using Dijkstra's algorithm. Using the algorithm statement used in the textbook and its visual representation, complete the "Step 0" row in the table below showing the link state algorithm's execution by matching the table entries (i), (ii), (iii), and (iv) with their values. Write down your final [correct] answer, as you'll need it for the next question. [Note: You can find more examples of problems similar to this **here** **(http://gaia.cs.umass.edu/kurose_ross/interactive/?q=c5q1)** .]



Step	N'	A D(A),p(A)	B D(B),p(B)	C D(C),p(C)	D D(D),p(D)	F D(F),p(F)
0	E	(i)	(ii)	∞	(iii)	(iv)

(i)

infinity

(ii)

10,E

(iii)

4,E

(iv)

2,E

Other Incorrect Match Options:

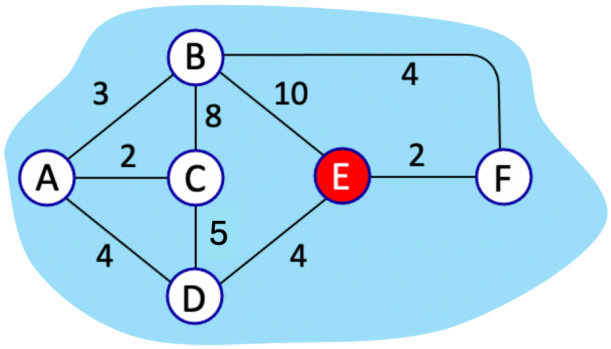
- F
- 3,E
- 2,F
- 3,D

Nice! This answer is correct

Correct answer

Question 16
2 / 2 pts

5.03-2. Dijkstra's Algorithm (3, part 2). Consider the network shown below, and Dijkstra's link-state algorithm. Here, we are interested in computing the least cost path from node ***E*** to all other nodes using Dijkstra's algorithm. Using the algorithm statement used in the textbook and its visual representation, complete the "Step 1" row in the table below showing the link state algorithm's execution by matching the table entries (i), (ii), (iii), (iv) and (v) with their values. Write down your final [correct] answer, as you'll need it for the next question. [Note: You can find more examples of problems similar to this **here** (http://gaia.cs.umass.edu/kurose_ross/interactive/?q=c5q1) .]



Step	N'	A D(A),p(A)	B D(B),p(B)	C D(C),p(C)	D D(D),p(D)	F D(F),p(F)
0	E	*	*	∞	*	*
1	(i)	(ii)	(iii)	∞	(iv)	(v)

(i)

EF

(ii)

infinity

(iii)

6,F

(iv)

4,E

(v)

2,E

Other Incorrect Match Options:

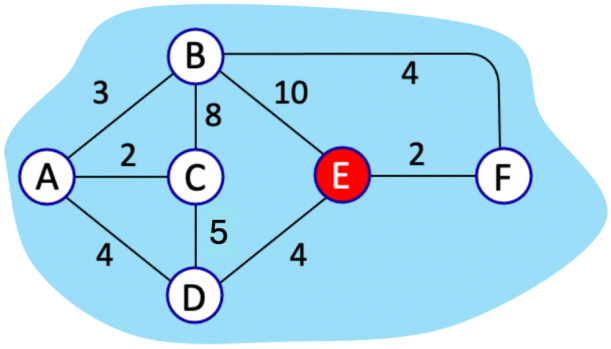
- ED
- 1,E
- 7,D
- 4,F

Nice! This answer is correct

Question 17

1.6 / 2 pts

5.03-3. Dijkstra's Algorithm (3, part 3). Consider the network shown below, and Dijkstra's link-state algorithm. Here, we are interested in computing the least cost path from node ***E*** to all other nodes using Dijkstra's algorithm. Using the algorithm statement used in the textbook and its visual representation, complete the "Step 2" row in the table below showing the link state algorithm's execution by matching the table entries (i), (ii), (iii), (iv) and (v) with their values. Write down your final [correct] answer, as you'll need it for the next question. [Note: You can find more examples of problems similar to this **here** (http://gaia.cs.umass.edu/kurose_ross/interactive/?q=c5q1) .]



Step	N'	A D(A),p(A)	B D(B),p(B)	C D(C),p(C)	D D(D),p(D)	F D(F),p(F)
0	E	*	*	∞	*	*
1	*	*	*	∞	*	*
2	(i)	(ii)	(iii)	(iv)	(v)	2,E

(i)

EFD

(ii)

8,D

(iii)

6,F

(iv)

9,D

8,D

(v)

4,E

Other Incorrect Match Options:

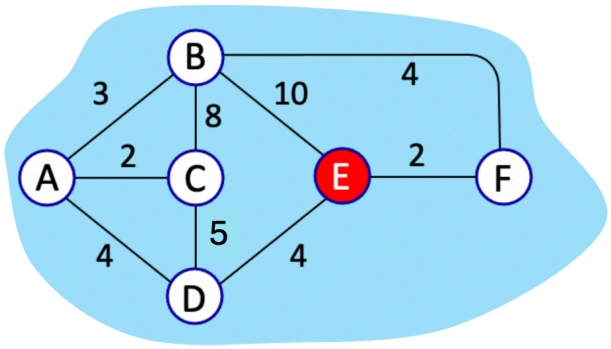
- 1,E
- 8,F
- 9,D
- 6,D
- EFB

Question 18

1.6 / 2 pts

5.03-4. Dijkstra's Algorithm (3, part 4). Consider the network shown below, and Dijkstra's link-state algorithm. Here, we are interested in computing the least cost path from node ***E*** to all other nodes using Dijkstra's algorithm. Using the algorithm statement used in the textbook and its visual representation, complete the "Step 3" row in the table below showing the link state algorithm's execution by matching the table entries (i), (ii), (iii), (iv) and (v) with their

values. Write down your final [correct] answer, as you'll need it for the next question. [Note: You can find more examples of problems similar to this here (http://gaia.cs.umass.edu/kurose_ross/interactive/?q=c5q1) .]



Step	N'	A D(A),p(A)	B D(B),p(B)	C D(C),p(C)	D D(D),p(D)	F D(F),p(F)
0	E	*	*	∞	*	*
1	*	*	*	∞	*	*
2	*	*	*	*	*	2,E
3	(i)	(ii)	(iii)	(iv)	(v)	2,E

(i)

EFDB

(ii)

8,D

(iii)

6,F

(iv)

9,D

8,D

(v)

4,E

Other Incorrect Match Options:

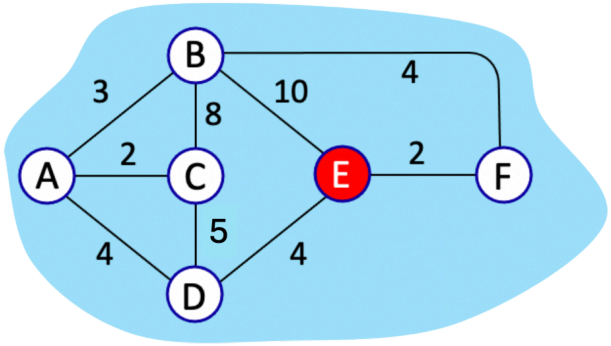
- 8,F
- EFB
- 1,E
- 6,D
- 9,D

Correct answer

Question 19

2 / 2 pts

5.03-5. Dijkstra's Algorithm (3, part 5). Consider the network shown below, and Dijkstra's link-state algorithm. Suppose that Dijkstra's algorithm has been run to compute the least cost paths from node E to all other nodes. Now suppose that source node E has a packet to send to destination node A. What is the first router to which E will forward this packet on its path to A?



B

C

D

F

Nice! This answer is correct.

Correct answer

Question 20

2 / 2 pts

5.6-1. ICMP: Internet control message protocol. Which of the statements below about ICMP are true?

- [x] ICMP is used by hosts and routers to communicate network-level information.
- [x] ICMP messages are carried directly in IP datagrams rather than as payload in UDP or TCP segments.
- [ ] ICMP communicates information between hosts and routers by marking bits in the IP header.
- [x] The TTL-expired message type in ICMP is used by the traceroute program.
- [ ] ICMP messages are carried in UDP segments using port number 86.

Nice! This answer is correct.

Correct answer

Question 21
2 / 2 pts

6.1-1. Link-layer services. Which of the following services may be implemented in a link-layer protocol? Select one or more statements.

- [x] Reliable data transfer between directly connected nodes.
- [ ] Lookup and forwarding on the basis of an IP destination address.
- [x] Flow control between directly connected nodes.
- [ ] TLS security (including authentication) between directly connected nodes.
- [x] Coordinated access to a shared physical medium.
- [x] Bit-level error detection and correction.
- [x] Multiplexing down from / multiplexing up to a network-layer protocol.
- [ ] End-end path determination through multiple IP routers.

Nice! This answer is correct.

Correct answer

Question 22
2 / 2 pts

6.3-1. Channel partitioning protocols. Which of the following statements is true about channel partitioning protocols?

- [ ] There can be simultaneous transmissions resulting in collisions.

- [x] There can be times when the channel is idle, when a node has a frame to send, but is prevented from doing so by the medium access protocol.
- [x] Channel partitioning protocols can achieve 100% channel utilization, in the case that all nodes always have frames to send.
- [ ] Channel partitioning protocol can achieve 100% utilization, in the case that there is only one node that always has frames to send

Nice! This answer is correct.

Quiz Score: 43.2 out of 44