

Dashboard

Courses

Calendar

Inbox

History

Help

Home

Syllabus

Modules

Assignments

Quizzes

Discussions

Announcements

Grades22

People

Lucid (Whiteboard)

CE 352 Computer Networks > Quizzes > Assignment 7

Assignment 7

Due Dec 21, 2024 at 10:59am

Points 15

Questions 16

Time Limit None

Instructions

While working on this assignment, you certify that you have neither given help to nor received help from any other person.

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	22 minutes	10.32 out of 15

Score for this quiz: 10.32 out of 15

Submitted Dec 14, 2024 at 10:24pm

This attempt took 22 minutes.

Question 1

1 / 1 pts

An area in an OSPF autonomous system refers to a set of routers, in which each router broadcasts its link state to all other routers in the same set. An OSPF AS can be configured hierarchically into multiple areas, with each area running its own OSPF link-state routing algorithm. Within each area, one or more area border routers are responsible for routing packets outside the area. Therefore, the concept of area is introduced for scalability reason, i.e., we would like to build a hierarchical routing for a large scale OSPF AS, and an area is an important building block in hierarchical routing

Correct!

☒ True

☐ False

Submission Details:

Time:	22 minutes
Current Score:	10.32 out of 15
Kept Score:	10.32 out of 15

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Calendar

Inbox

History

Help

Home

Syllabus

Modules

Assignments

Quizzes

Discussions

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Correct!

☒ True

☐ False

Question 3

1 / 1 pts

The count-to-infinity problem refers to a problem of distance vector routing. The problem means that it takes a long time for a distance vector routing algorithm to converge when there is a link cost increase. For example, consider a network of three nodes x, y, and z. Suppose initially the link costs are $c(x,y)=4$, $c(x,z)=50$, and $c(y,z)=1$. The result of distance-vector routing algorithm says that z's path to x is $z \rightarrow y \rightarrow x$ and the cost is $5(=4+1)$. When the cost of link (x,y) increases from 4 to 60, it will take 44 iterations of running the distance-vector routing algorithm for node z to realize that its new least-cost path to x is via its direct link to x, and hence y will also realize its least-cost path to x is via z.

Correct!

☒ True

☐ False

Question 4

1 / 1 pts

A SNMP trap message is generated as a response to an event happened on a managed device for which the device's managing server requires notification. It is used for notifying a managing server of an exceptional situation (e.g., a link interface going up or down) that has resulted in changes to MIB object values.

Correct!

☒ True

☐ False

Question 5

1 / 1 pts

Routers use the AS-PATH attribute to detect and prevent looping advertisements; they also use it in choosing among multiple paths to the same prefix. The NEXT-HOP attribute indicates the IP address of the first router along an advertised path (outside of the AS receiving the advertisement) to a given prefix. When configuring its forwarding table, a router uses the NEXT-HOP attribute.

Correct!

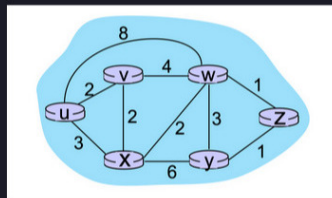
☒ True

☐ False

Question 6

0 / 1 pts

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.



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)

You Answered

(a)

uvxwy

uvxwz

You Answered

(b)

6,w

5,x

You Answered

(c)

8,w

7,z

You Answered

(d)

7,z

6,w

Other Incorrect Match Options:

• 8,w

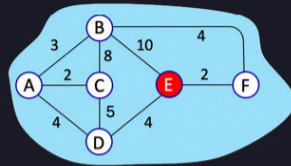
• uvxwy

Not quite. This answer is incorrect.

Question 7

0.4 / 1 pts

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 first 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.



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	(a)	(b)	(c)	∞	(d)	(e)

You Answered

(a)

infinity

EF

You Answered

(b)

6,F

infinity

You Answered

(c)

Infinity

6,F

Correct!

(d)

4,E

Correct!

(e)

2,E

Other Incorrect Match Options:

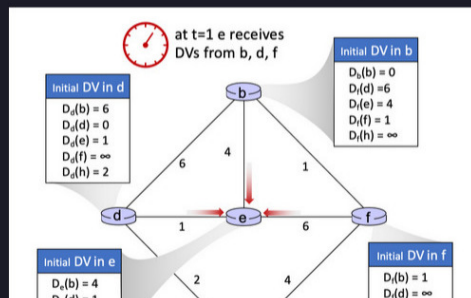
- 7,D
- 4,F
- 1,E

Question 8

0 / 0 pts

Consider the scenario shown below. The figure below shows the (old) DV at e (before receiving the new DVs from its neighbors) as well as the DVs being sent from b, d, and f. In the previous question you computed the new DV at e. Now suppose that all network nodes have iterated and completed all of the DV calculations, i.e., that the algorithm has converged and quiesced.

Suppose now that sometime after the algorithm has converged, the link between e and f goes down. Will node e send out a new DV to its neighbors? Pick a response below that best answers this question.



$D_e(e) = 0$
 $D_e(f) = 6$
 $D_e(h) = \infty$



$U_e(e) = b$
 $D_e(f) = 0$
 $D_e(h) = 4$

Correct Answer

☐ No. Node e's distance vector does not change when the link between e and f goes down (since e's shortest path to f did not use this direct link between e and f), so e will not send out a new DV.

You Answered

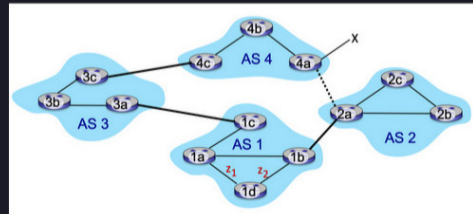
- ☒ Yes. Node 2 always needs to update all of its neighbors if a link goes down, since all nodes need to know the network topology.
- ☐ Yes. Since node e's distance vector changes when the link between e and f goes down, it will send out a new DV.

Not quite. This answer is incorrect.

Question 9

1 / 1 pts

Consider the network shown below. Suppose AS1, AS2, AS3, and AS4 are running OSPF for their intra-AS routing protocol and that all links have a weight of 1. Initially suppose there is no link between AS2 and AS4. Once router 1d learns about destination x, it will need to install a forwarding table entry to x. Indicate which one of the statements below are true.



Correct!

- ☒ 1d will forward along z1 since OSPF has computed the path to 1c is via z1.

Nice! This answer is correct.

- ☐ 1d will forward along z2 since OSPF has computed the path to 1c is via z2.
- ☐ 1d will forward along z2 since BGP has computed the path to 1c is via z2.
- ☐ 1d will forward along z1 since BGP has computed the path to 1c is via z1.
- ☐ 1d will forward along z1 since hot potato routing forwards clockwise.

Nice! This answer is correct.

Question 10

1 / 1 pts

Match the name of the approach towards implementing a control plane with a description of how this approach works.

Correct!

Per-router control plane.

An individual routing algorithm

Correct!

Software-defined networking (SDN).

A (typically) remote controller

Nice! This answer is correct.

Question 11

1 / 1 pts

Match the terms "interdomain routing" and "intradomain routing" with their definitions. Recall that in Internet parlance, an "AS" refers to "Autonomous System" - a network under the control of a single organization.

Correct!

Interdomain routing.

Routing among different ASes

Correct!

Intradomain routing.

Routing among routers within s ▾

Nice! This answer is correct.

Question 12

1 / 1 pts

Check the one or more of the following statements about the OSPF protocol that are true.

☐

The Open Shortest Path First (OSPF) Internet routing protocol implements a Bellman-Ford distance-vector routing algorithm.

Correct!

☒ OSPF is an intra-domain routing protocol.

☐ OSPF is an interdomain routing protocol.

Correct!

☒ OSPF uses a Dijkstra-like algorithm to implement least cost path routing.

Correct!

☒ OSPF implements hierarchical routing

Nice! This answer is correct.

Question 13

0.75 / 1 pts

Among the following protocols, terminology or considerations, indicate those that are associated with "routing within a single network (typically owned and operated by one organization)."

Correct!

☒ Driven more by performance than by routing policy

☐ Inter-AS routing

☐ Driven more by routing policy than end-end routing performance

Correct Answer

☐ OSPF

Correct!

☒ intra-AS routing

☐ BGP

Correct!

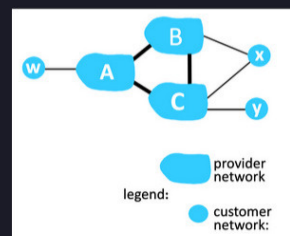
☒ intra-domain routing

☐ inter-domain routing

Question 14

0.67 / 1 pts

Suppose a provider network only wants to carry traffic to/from its customer networks (i.e., to provide no transit service), and customer networks only want to carry traffic to/from itself. Consider the figure below. To implement this policy, to which of the following networks would network C advertise the path Cy?



☐ w

Correct!

☒ A

Correct Answer

☐ x

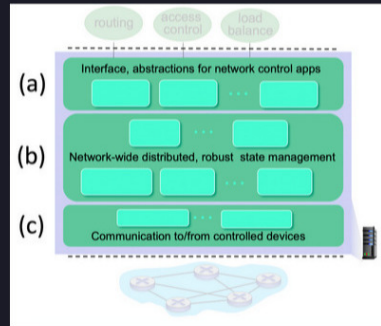
Correct!

☒ B

Question 15

0.5 / 1 pts

Which of the functions below belong in the controller layer labeled "Interface, abstractions for network control apps"? Check all below that apply.



Correct!

☒ Intent

☐ Flow tables

☐ Host information

You Answered

☒ Statistics

☐ Switch information

☐ Link-state information

☐ OpenFlow protocol

Correct!

☒ Network graph

Question 16

0 / 1 pts

Consider the following network. Suppose there is another router w, connected to router y and z. The costs of all links are given as follows:

- $c(x,y) = 4$
- $c(x,z) = 50$
- $c(y,w)=1$
- $c(z,w)=1$
- $c(y,z) = 3$ (note: the cost changed from 1 to 3)

Using distance-vector routing algorithm, after stabilized, what is distance vector at z to x, y, and w?



☐ (7, 3, 1)

You Answered

☒ (50, 3, 1)

☐ (6, 3, 1)

Correct Answer

☐ (6, 2, 1)

Quiz Score: **10.32** out of 15

◀ Previous

Next ▶