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CPE 138 – 03

Professor Jun Dai

07 May 2023

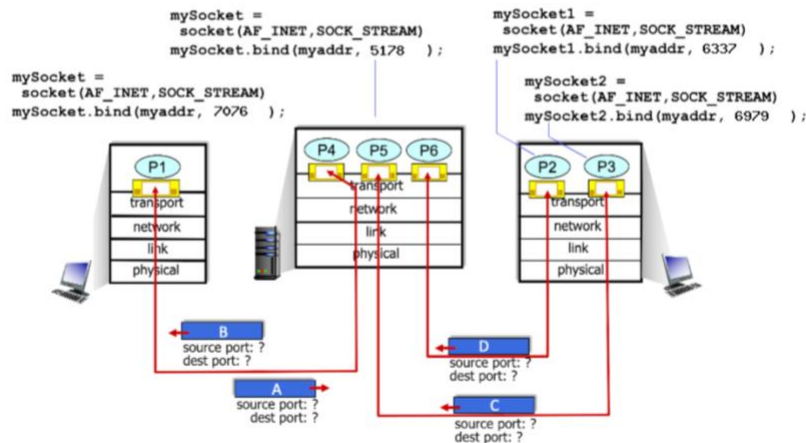
PROBLEM SOLVING ASSIGNMENT

For this assignment, we are tasked to do the following interactive assignments given in the instruction. The goal on this assignment is to learn and enhance the understanding about transport layer, network layer, and link layer. There are 3 different interactive exercises as well as questions in each exercise shown below.

1. TCP MULTIPLEXING AND DEMULTIPLEXING

TCP MULTIPLEXING AND DEMULTIPLEXING

In the scenario below, the left and right TCP clients communicate with a TCP server using TCP sockets. The Python code used to create a single welcoming socket in the server is shown in the figure (the welcoming socket itself is not shown graphically); code is also shown for the client sockets as well. The three sockets shown in server were created as a result of the server accepting connection requests on this welcoming socket from the two clients (one connection from the client on the left, and two connections from the client on the right).



QUESTION 1 OF 8

What is the source port # for packet D?

CHECK

HINT

SKIP

QUESTION 2 OF 8

What is the destination port # for packet D?

CHECK

HINT

SKIP

QUESTION 3 OF 8

What is the source port # for packet A?

CHECK

HINT

SKIP

QUESTION 4 OF 8

What is the destination port # for packet A?

CHECK

HINT

SKIP

QUESTION 5 OF 8

What is the source port # for packet C?

6979

CHECK

HINT

SKIP

QUESTION 6 OF 8

What is the destination port # for packet C?

5178

CHECK

HINT

SKIP

QUESTION 7 OF 8

What is the source port # for packet B?

5178

CHECK

HINT

SKIP

QUESTION 8 OF 8

What is the destination port # for packet B?

7076

CHECK

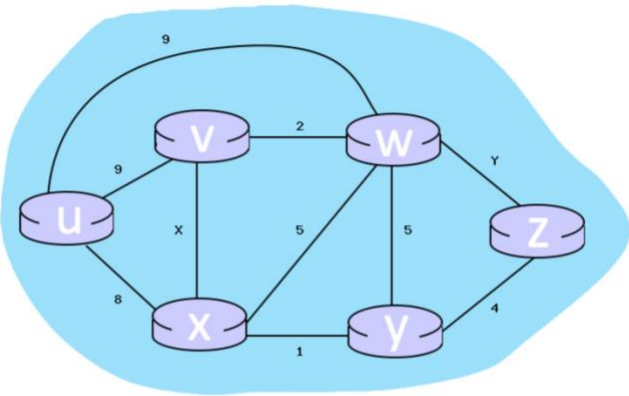
HINT

SKIP

2. DIJSTRA’S LINK STATE ALGORITHM - ADVANCED

DIJKSTRA'S LINK STATE ALGORITHM - ADVANCED

Consider the incomplete 6-node network shown below, with the given link costs.



Consider the completed table below, which calculates the shortest distance to all nodes from X:

Node	Shortest distance from X	Previous Node
X	0	n/a
Y	1	X
V	4	X
W	5	X
Z	5	Y
U	8	X

QUESTION 1 OF 2

For link X, what is the cost associated with this link? If the answer can't be determined given the information, respond with 'n/a'

4

CHECK

HINT

SKIP

QUESTION 2 OF 2

For link Y, what is the cost associated with this link? If the answer can't be determined given the information, respond with 'n/a'

n/a

CHECK

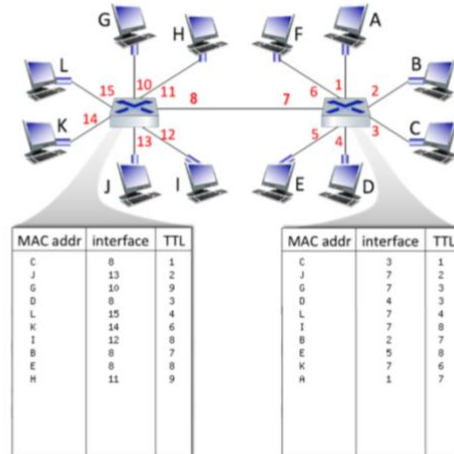
HINT

SKIP

3. LEARNING SWITCHES - ADVANCED

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Consider the LAN below consisting of 10 computers connected by two self-learning Ethernet switches. (You may want to re-read section 6.4.3 in the text). At $t=0$ the switch table entries for both switches are empty. At $t = 1, 2, 3, 4, 5, 6, 7, 8,$ and $9,$ a source sends to a destination as shown below, and the destination replies immediately (well before the next time step).



QUESTION 1 OF 4

At $t=2$, what two nodes communicated? Write your answer in alphabetical order as x,y (If there is only enough information for 1 node, write that, and if there's no information, write 'n/a')

J

CHECK

HINT

SKIP

QUESTION 2 OF 4

At $t=7$, what two nodes communicated? Write your answer in alphabetical order as x,y (If there is only enough information for 1 node, write that, and if there's no information, write 'n/a')

A,B

CHECK

HINT

SKIP

QUESTION 3 OF 4

At $t=8$, what two nodes communicated? Write your answer in alphabetical order as x,y (If there is only enough information for 1 node, write that, and if there's no information, write 'n/a')

E,I

CHECK

HINT

SKIP

QUESTION 4 OF 4

At $t=3$, what two nodes communicated? Write your answer in alphabetical order as x,y (If there is only enough information for 1 node, write that, and if there's no information, write 'n/a')

D,G

CHECK

HINT

SKIP

For each exercise, I was able to answer the questions correctly and understand the concept behind it.