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COMP90007 Internet Technologies

# Week 8 Workshop

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<https://eduassistpro.github.io/>

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Semester 2, 2021

*Suggested solutions*

# Question 1

A router has just received the following IP addresses:  
57.6.96.0/21, 57.6.104.0/21, 57.6.112.0/21 and  
57.6.120.0/21. If all of them use the same outgoing line,  
can they be aggregated? If not, why not?

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*Answer:*

They can be aggregated to 57.6.96.0/19

# Question 2

Why do we need routing algorithms in the Network layer?  
What are the key categories of routing algorithms?

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Answer: Routing algorithms decide on which output line an incoming packet is transmitted.  
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Key Categories:

📁 Non-Adaptive Algorithms

📁 Adaptive Algorithms

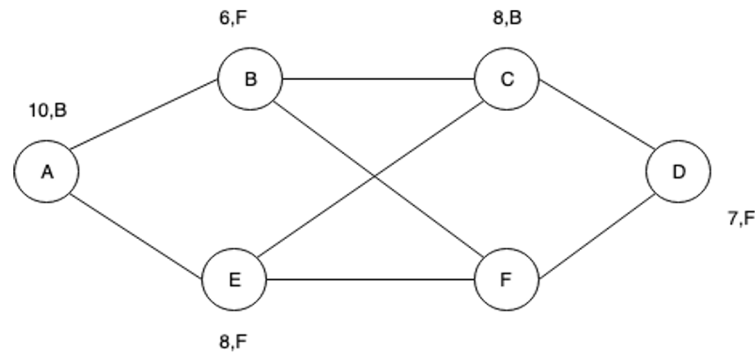
# Question 3

Compute the sink tree for Node F in the graph below:

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Ans. Refer to Dijkstra's Algorithm at [edu\\_assistpro](https://eduassistpro.github.io/) 53-55 of Network Layer



# Question 4

Distance vector routing is used for the diagram shown below, and the following vectors have just come in to router C: from B: (5, 0, 8, 12, 6, 2); from D: (16, 12, 6, 0, 9, 10); and from E: (7, 6, 3, 9, 0, 4). The cost of the links from C to B, D, and E, are 6, 3, and 5, respectively. What is C's new routing table? Give both the outgoing line to use and the

*Answer: Using the delay* <https://eduassistpro.github.io/>  
*the vectors will be written as:*

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All Routers	Via B	Via D	Via E
A	11	19	12
B	6	15	11
C	14	9	8
D	18	3	14
E	12	12	5
F	8	13	9

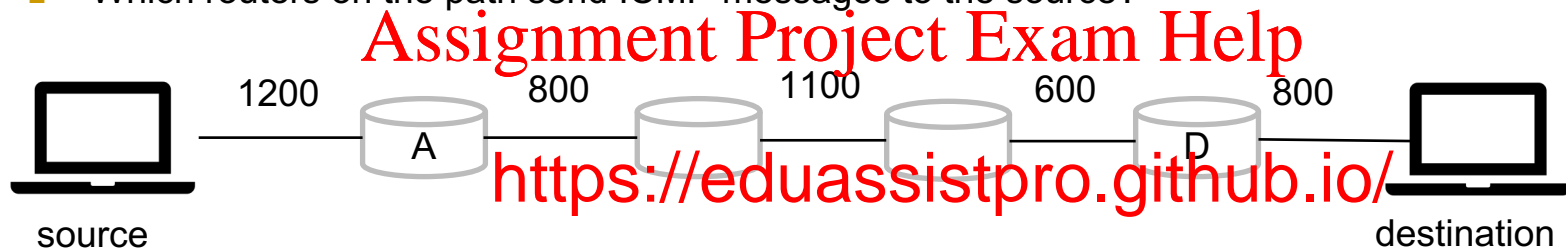


All Routers	Outgoing Line	Delay
A	B	11
B	B	6
C	-	0
D	D	3
E	E	5
F	B	8

# Question 5

If the Path MTU Discovery is used to send a packet of 1200 bytes from the source to the destination as shown in Figure. The maximum packet size for each network on the path is labelled on the link.

- How many trials does the source machine need to send this packet?
- Which routers on the path send ICMP messages to the source?



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*Answer:* (1) The packet can be delivered after 2 trials.  
(2) routers A, and C will send ICMP messages “Destination unreachable” to the source.

- The initial message is 1200 bytes, and router A will send ICMP message.
- After processing, the packet will be 800 bytes, and router C will send ICMP message, as the MTU of the following network is 600 bytes. After this trial, the packet can be sent to the destination