SE331: Introduction to Computer Networks	**Recitation 7**
Semester 1 5785	**18 Dec 2024**
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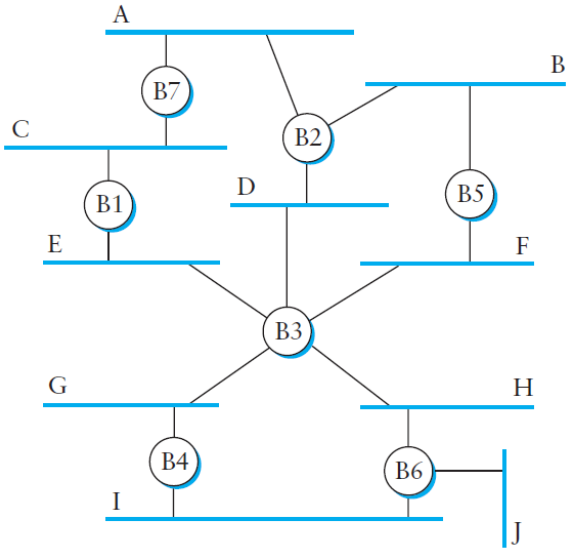
Bridges and Spanning Tree Algorithm, IP Addresses

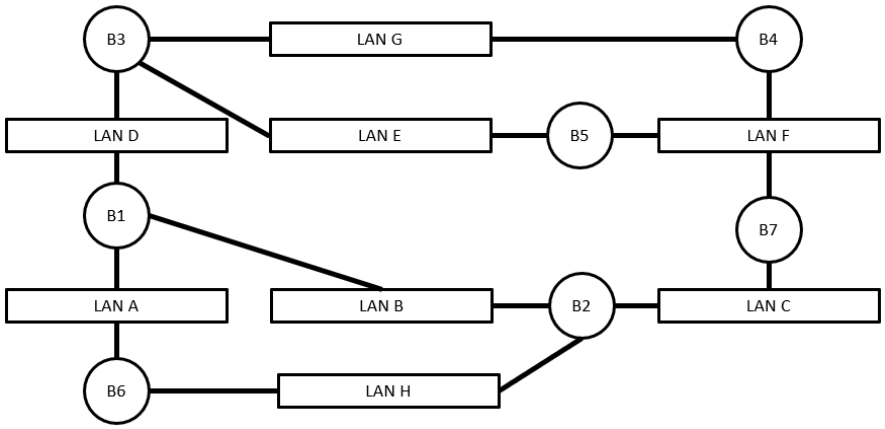
1 Spanning Tree

Given the extended LAN shown below, assume that bridge B1 suffers catastrophic failure. Indicate which ports are not selected by the spanning tree algorithm after the recovery process and a new tree has been formed.



2 Spanning Tree Algorithm

Consider the following bridge mesh. The bridges are shown as circles with numbering that begins with "B1". The LANs are shown as rectangles with a single letter inside starting with "A". Draw the final state of the bridges and links after the spanning tree algorithm has run. Assign each connection between a bridge and a LAN with "rp" if it's a root port, "d" if it's the designated bridge, and $\emptyset$ if it has no assignment at all.



Fill your answers in the table below.

Link	Status
B1-A	
B1-B	
B1-D	
B2-B	
B2-C	
B2-H	
B3-D	
B3-E	
B3-G	
B4-F	
B4-G	
B5-E	
B5-F	
B6-A	
B6-H	
B7-C	
B7-F	

3 IP Addresses

For each of the following IP addresses, write whether it belongs to a Class A area, a Class B area, or a Class C area.

(a) 18.69.19.7

(b) 5.200.50.6

(c) 190.5.38.9

(d) 140.14.78.14

(e) 200.8.1.71

4 IP Packet Fragmentation

Suppose a TCP message that contains 2048 bytes of data, 20 bytes of IP header, and 20 bytes of TCP header is passed to IP for delivery across two networks of the Internet (i.e., from the source host to a router to the destination host). The first network uses 14-byte headers and has an MTU of 1024 bytes; the second uses 8-byte headers with an MTU of 512 bytes. Each network's MTU gives the size of the largest IP datagram that can be carried in a link-layer frame **including the link layer header** (*e.g.* network 1's packets can hold a total of 1024 bytes of payload data). Give the sizes, offsets, more flag values, and internal formats of the sequence of fragments delivered to the network layer at the destination host.

Use the following table format for your answer.

Packet #	More Flag?	Offset	Format + Size
			?? Link Header + ?? IP Header + ?? TCP Header + ?? data
			?? Link Header + ?? IP Header + ?? data

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