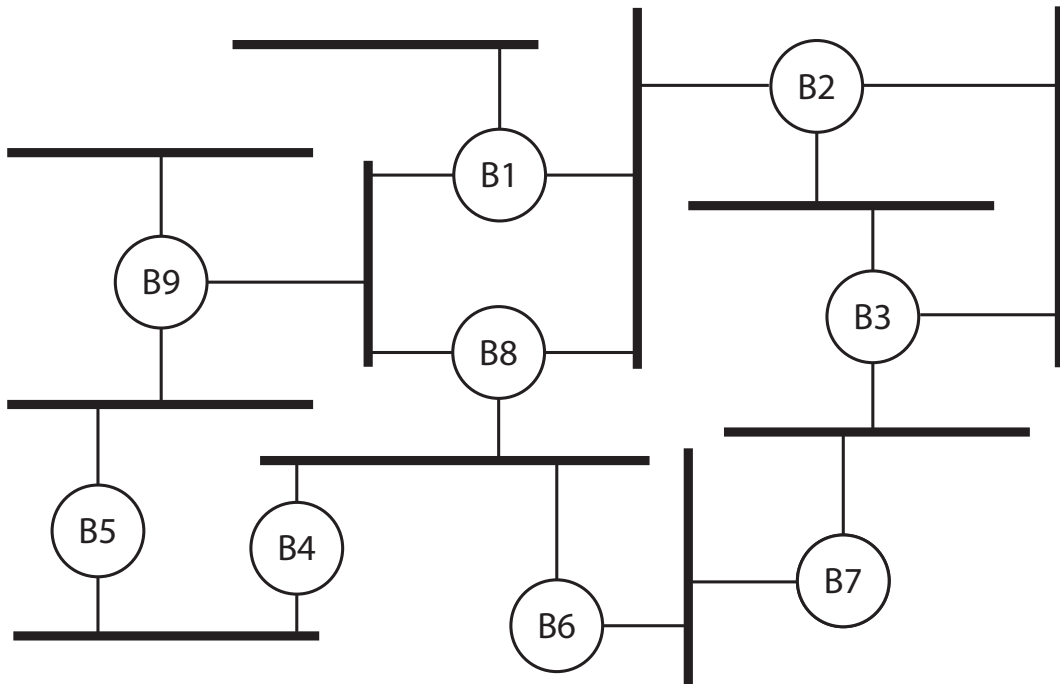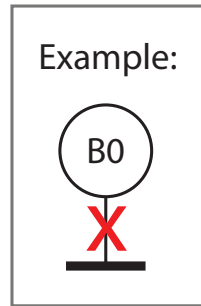*This homework is due at the beginning of class on September 28, 2016 and is worth 1.5% of your grade.*

Name: _____

CCIS Username: _____

| Problem	Possible	Score
1	15	
2	20	
3	25	
4	10	
Total	70	

1. Consider the bridged Ethernet shown below.

Example:

B0

B9 B1 B2 B8 B3 B5 B4 B6 B7

Indicate which ports are blocked by the bridge spanning tree protocol by putting an "X" over the corresponding ports. The bridge IDs are the numeric values. Feel free to label the ports with port numbers, if necessary. (15 pts)

2. Consider another bridged Ethernet shown below. Assume the spanning tree protocol has already finished its computations. The ports not selected by the spanning tree protocol are marked by "X". The ports of bridge B2 are labeled p1, p2, p3 respectively. There are 4 computers H1, H2, H3, and H4 in the network. Assume the forwarding tables of all bridges are currently empty. Suppose H1 transmits a single packet addressed to H3, and H2 transmits a single packet addressed to H4.
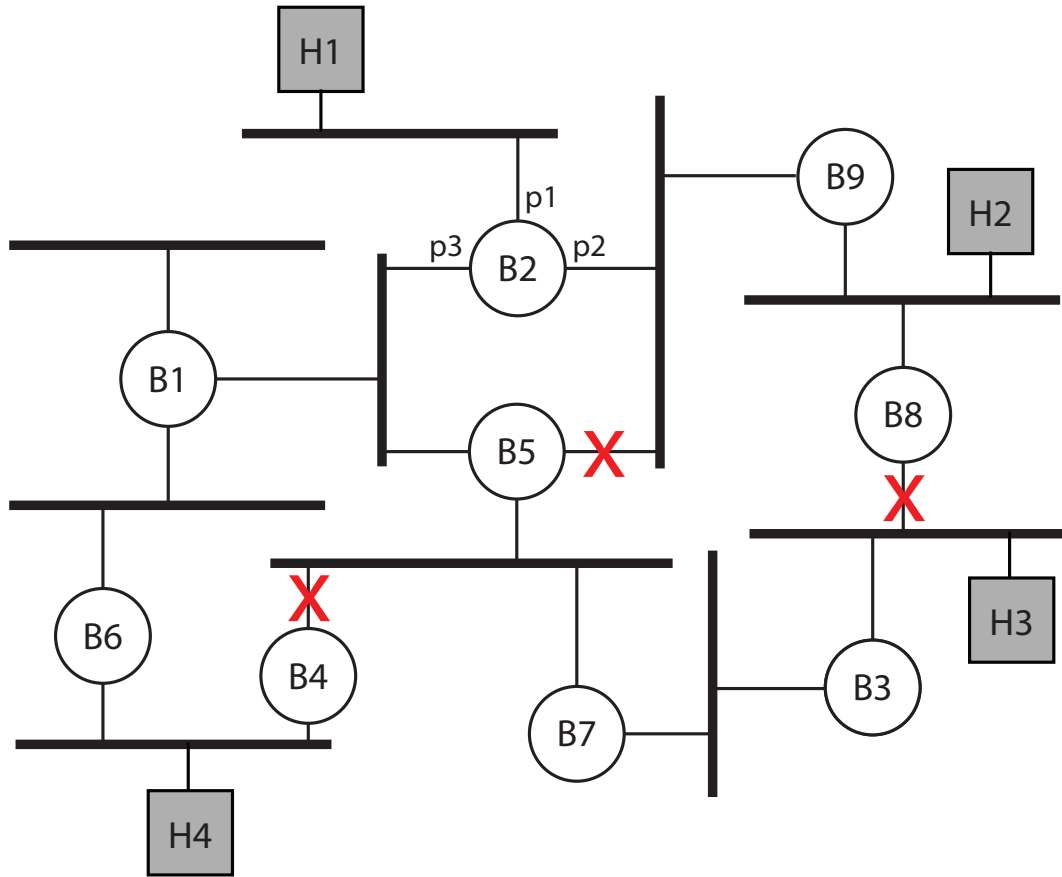
The questions on the next page refer to this diagram.

2a. Explain how the Ethernet bridges in this example forward these two packets and how they learn forwarding table entries. (10 pts)

2b. After the transmissions of the two packets have been completed and the network is idle, what is the content of the forwarding table at bridge B2? (10 pts)

3a. State **two** reasons why broadcast Ethernet, where all hosts on the network share one single wire and CSMA/CD (carrier sense multiple access/collision detect) is used to arbitrate media access among the hosts, cannot support (1) a large number of hosts, or (2) hosts spread across a large geographic area. (10 pts)

3b. State **three** reasons why bridged Ethernet, where all hosts on the network share one single wire and CSMA/CD (carrier sense multiple access/collision detect) cannot be scaled to a network the size of the Internet. (15 pts)

4a. Suppose learning bridges B1 and B2 are as shown below, and do *not* implement the spanning tree algorithm. Each bridge maintains a single table of $< address, interface >$ pairs.
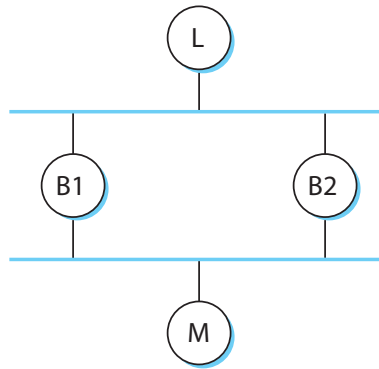
What will happen if M sends to L?   (5 pts)

4b. Suppose some repeaters (hubs), rather than bridges, are connected into a loop. What will happen when somebody transmits?   (5 pts)