

COMP90007 Internet Technologies

Due: 30th April, 2018 at 5:00pm

Assignment 2

This assignment is worth 5% of the total marks for the subject. This assignment has 4 questions. The weighting of each question is shown beside the Question. **Answers must be submitted as a PDF file via the COMP90007 Assignment 2 submission form in the LMS by 5:00pm, 30/04/2018. Late submissions will attract a penalty of 10% per day (or part thereof). Please ensure your name and user name are clearly presented. Submission should only contain the question number and the answer (do not repeat the text of questions in your submission).** Please present all steps for questions involving calculations and/or derivations otherwise relevant penalties will be imposed.

Each question can be answered in a few sentences. Excessively long answers will be penalized.

All questions can be answered by studying the material from the textbook. You can discuss the assignment topics with your friends, however, all work presented should be your original work. There will be a discussion forum thread for the assignment and any instructions provided in the forum are also part of the specification

1. Sixteen stations, numbered 1 through 16, are contending for the use of a shared channel by using the adaptive tree walk protocol. If the stations with addresses 1; 4; 8; 11; 15 suddenly became ready at once, how many bit slots are needed to resolve the contention? (No need to draw the diagram) [1 mark]

2. Refer to the Ethernet frame format in Figure 4.14

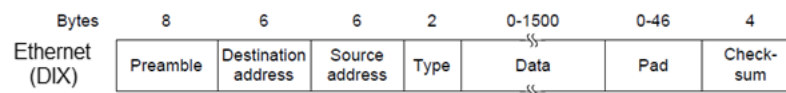


Fig 4.14. Frame formats. (a) Ethernet

- Explain with reasoning as to why padding is required in classic Ethernet frame structure?
- An IP packet to be transmitted by Ethernet is 47 bytes long, including all its headers. If LLC is not in use, is padding needed in the Ethernet frame, and if so, how many bytes? Briefly justify your answer.

[1 mark]

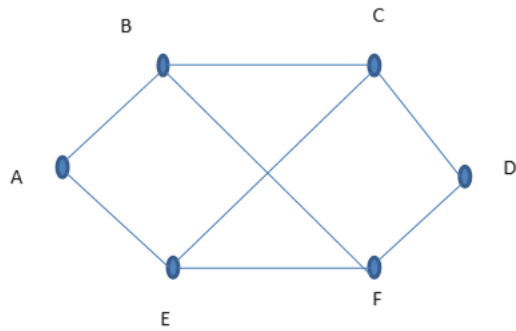
3. Consider the subnet of the following figure. Distance vector routing is used, and the following vectors have just come in to router C:

From B: (2,0,8,12,6,2);

From D:(14,12,6,0,9,10); and

From E: (7,6,3,9,0,4).

The measured delays to B,D,E are 8, 2, and 5 respectively. What is C's new routing table? Give both the outgoing line to use and the expected delay. (show steps) [1 mark]



- 4.a. If a class B network uses a subnet mask 255.255.240.0, how many subnets are allowed?
- b. A large number of consecutive IP addresses are available starting at 128.14.0.0. Suppose that four organizations A,B,C and D request 1000, 512, 2000, and 8000 addresses respectively, and in that order. For each of these, give the first IP address assigned, the last IP address assigned, and the mask in the **w.x.y.z/s** notation and **not /s**. (do not remove all 0's and 1's in your allocation)
- [2 marks]