

COMP90007 Internet Technologies

Assignment 2

Semester 2, 2019

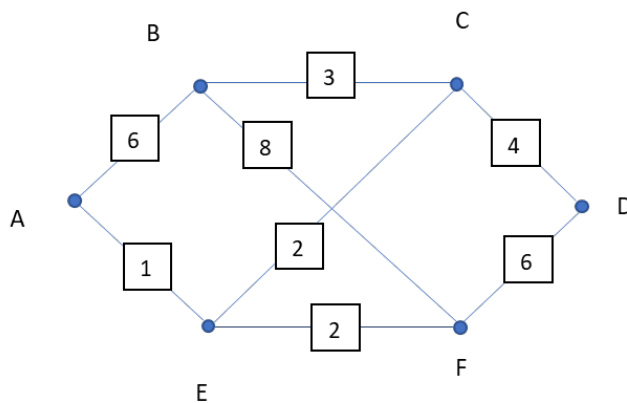
Due date: Oct 18th Friday 11:30am

This assignment is worth 5% of the total marks for the subject. This assignment has 5 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 which will open close to the submission time. Late submissions will attract a penalty of 10% per day (or part thereof). Please ensure your name, user name and id are clearly presented. Submission should only contain the question number and the answer (*do not repeat the text of questions in your submission*). Questions can be answered by studying the material covered. All work presented should be your original individual effort/work.

Question 1 (1 mark)

Consider a subnet in the following figure, with the weight of each edge as shown in the label. The shortest path routing is used.

- 1) Compute the sink tree for node B using Dijkstra's algorithm. Show your calculation and the steps of adding all nodes to the sink tree. (It is recommended to use a table similar to the one as shown on the Slide 9 of Week 6's lecture)
- 2) What is the shortest path from B to F and its distance?



Question 2 (1 mark)

Suppose that four organisations A, B, C and D request 2000, 1700, 900, and 4000 addresses respectively, and in that order. There are a large number of consecutive IP addresses available starting at 159.27.0.0, which can be assigned to these four organisations. For each of these

organisations, give the first IP address assigned, the last IP address assigned, the number of addresses allocated and the mask in the w. x. y. z /s notation.

Organisation	Starting Address	Ending Address	Number of Addresses Allocated	Mask
A				
B				
C				
D				

Question 3 (1 mark)

Different applications care about different aspects of a network transmission. For the following applications please annotate each bucket/aspect with three values, Low, Medium, High, where High means a high need for quality for that aspect.

Application	Bandwidth	Delay	Jitter	Loss
Downloading Music				
Instant Messaging				
Online Card Game				
Skype (Voice) Call				

Question 4 (1 mark)

At Transport layer we use segments to send data across. Argue for using larger segments by discussing briefly why larger segments could be beneficial. Then also argue why using small segments may be beneficial.

Question 5 (1 mark)

In the following security protocol that we saw in class, discuss briefly what could go wrong with the protocol if R_A was not sent across from Alice to Bob. What fails in the protocol?

