

# Workshop 2 - Submit at least 48 hours before your workshop session to receive credit (deadline set as a reminder)

[Re-submit Assignment](#)

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**Due** Apr 2 by 15:00    **Points** 2    **Submitting** a text entry box or a file upload

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## Computer Networks & Applications

### Workshop 2 - Transport Layer

Workshops are aimed at practicing and developing your problem solving skills. As the focus is on the reasoning process and not the specific problems in the workshop, we do not distribute solutions to tutorials.

The 3 workshops make up 5% of your mark. Your tutor will review all submissions for your session and the workshop will be tailored around the submissions. The workshop will not just be going through the problems, but instead will focus on the problems/misconceptions that arise from reviewing the submissions. If the submissions answer all the questions correctly, the tutorial will cover other areas requested in submissions (some examples: working on current practical, more problems on a given topic, review of a topic, etc.)

**To receive credit you must submit solution attempts to this tutorial at least 48 hours before your workshop session (as a reminder we have set a deadline of Saturday of the week before the tutorial).**

Please note, *credit for partially completed submissions* will depend on the depth and breadth of answers (ie we may give credit if you answer most questions with clear thought and miss one question). If you are unable to answer a question, ***we expect you to write what thoughts you have on how to solve the question*** (what information is useful, what equations do you think are relevant, etc).

If you have any other questions about topics covered so far or other network related topics you are curious about, include them in your submission and we can discuss them in the workshop.

## Question 1

The UDP header does not contain any information that is not present in the TCP header (verify this for yourself). That being the case, why do you, as a programmer, have to specify the header information (ports and IP addresses) whenever you send a UDP packet; but you don't when you send a TCP packet?

## Question 2

Protocol design decisions often have unexpected performance consequences. HTTP 1.0 is an example of a protocol design where lower layer protocol behaviour impacted directly on the performance of the higher layer protocol.

What is the difference between HTTP 1.1 and HTTP 1.0 in terms of transport layer connections? What two transport layer issues do the changes to HTTP address? How does the change improve HTTP performance?

## Question 3

Consider congestion control in TCP Reno (most common algorithm). How might application designers exploit the Internet's use of TCP to get higher data rates at the expense of other data flows that are using TCP?

## Question 4

Consider the problem of implementing timers. Selective Repeat does not resend all packets on timeout, so it must timeout packets individually. However, in an implementation we are likely to only have one hardware timer. How might we solve this problem? What would happen if we re-start the timer every time a packet is sent? What would happen if we re-start the timer when the oldest packet is ACKed?

## Question 5

What would you like to discuss or review in tutorial?