

University of London

Computing and Information Systems/Creative Computing

CO1110 Introduction to computing and the internet

Coursework assignment 2 2018 – 19

This coursework assignment consists of four questions. Full marks will be awarded for complete answers to all four questions. The marks for each part of a question are indicated at the end of the part in [...] brackets.

There are 100 marks available for this coursework assignment.

Your coursework assignment should be submitted as a single PDF file, using the following file-naming conventions:

*FamilyName\_SRN\_COxxxxcw#.pdf (e.g. Zuckerberg\_920000000\_CO1110cw2.pdf)*

- **FamilyName** is your family name (also known as last name or surname) as it appears in your student record (check your student portal);
- **SRN** is your Student Reference Number, for example 920000000;
- **COxxxx** is the course number, for example CO1110; and
- **cw#** is either cw1 (coursework 1) or cw2 (coursework 2).

Files that you should have in order to complete this assignment:

- *JokesCWK2-2018-19.html*
- *BlueHeadings.css*

You should read the CO1110 subject guide and recommended reading for this course before completing this coursework assignment. In addition, you should also consult appropriate library and internet resources. It is important that your submitted assignment is your own individual work and, for the most part, written in your own words. You must provide appropriate in-text citation for both paraphrase and quotation, with a detailed reference section at the end of your assignment (this should not be included in any word count). Copying, plagiarism and unaccredited and wholesale reproduction of material from books or from any online source is unacceptable, and will be penalised (see our guide on [how to avoid plagiarism](#) on the VLE).

### Question 1

The Transmission Control Protocol (TCP) implements positive acknowledgement with retransmission. Acknowledgement of data segments received is through a process known as cumulative acknowledgement. In this process, not every data packet has to be individually acknowledged, since an acknowledgement implicitly confirms receipt of all unacknowledged data received with a smaller sequence number. Under cumulative acknowledgement, a data segment can only be acknowledged if all previous segments have been received.

The Selective Acknowledgement scheme described in RFC 2018, <https://tools.ietf.org/html/rfc2018>, is designed for the case where some transmitted data packets are not received. It allows a TCP receiver to specify exactly which data packets have been received, and which are missing. The scheme is not mandatory and so does not replace cumulative acknowledgement. Explain how this scheme addresses a possible inefficiency in the TCP protocol's cumulative acknowledgement scheme.

**[20 marks]**

## Question 2

- a. Copy and complete the following table:

[16 marks]

**Subnet masks for class C addresses**

Subnet mask	Subnet mask in binary	Number of subnets	Number of hosts
255.255.255.0	11111111 11111111 11111111 00000000	$2^0 = 1$	$2^8 - 2 = 254$
255.255.255.128	11111111 11111111 11111111 10000000	$2^1 = 2$	
255.255.255.255			

- b. How many of the subnet masks that you have identified in the table in part (a) are usable in practice?

[5 marks]

- c. In the table given in part (a) it is assumed that all subnets are usable. With older technology, it used to be the case that the all zeros and all ones subnet addresses were not used, because of possible address ambiguity. In the past hardware could not cope with this ambiguity, but modern hardware can, and does, to avoid losing any valuable address space.

Explain why 2 is deducted from the possible number of hosts, to give the actual number of usable host addresses.

[5 marks]

- d. A network administrator with an IP address of 201.168.67.0 applies the subnet mask 255.255.255.128. What is the CIDR notation for this network?

[5 marks]

### Question 3

Consider the file *JokesCWK2-2018-19.html*. You may find it helpful to view the file both in a text editor, and in a web browser.

- a. There are three ways of applying CSS in HTML documents: inline; document level; and external style sheets. Identify an example of HTML code that implements each way of applying CSS in the HTML file that you have been given. Make sure to clearly identify in your answer the CSS implementation that the code snippet you are giving represents. **[14 marks]**
- b. Explain the precedence that a web browser applies to each of the three ways of implementing CSS, when determining how to display a web page. **[5 marks]**

### Question 4

In most jurisdictions computer software is granted author copyright, but, in general, cannot be patented, although there can be exceptions to this.

In the United States, software can be patented. The Electronic Freedom Foundation, <https://www.eff.org/>, is an American non-profit organisation dedicated to defending free speech in the digital world. The EFF is very much opposed to the patenting of software and campaigns against it. Consider and evaluate their position and the arguments they advance against software patenting. Do you think that patenting software is a good idea in terms of encouraging innovation and stimulating business?

*Write between 700 and 1,000 words. This question does not have a right or wrong answer. Marks will be awarded for sensible and relevant points, coherent argumentation, clarity and depth of knowledge demonstrated.*

**[30 marks]**

**[Total: 100 marks]**

**[END OF COURSEWORK ASSIGNMENT 2]**