Faculty of Science, Engineering and Computing Assessment Form

Module:	CI5250	**Setter:**	Nada Philip
Title of Assignment:	Networking Design	**Deadline:**	04/11/2019
Module weighting	15% (This is the first part of the Coursework 1 element of Assessment)		

Coursework Aim

This exercise will allow you to identify, review, and understand protocols (at all layers) involved in the seemingly simple scenario: requesting a web page.

Submission details

Submission of coursework will be performed using Turnitin on Canvas. You need to upload two files: the 1st file is a Word document that includes the answers to the 6 tasks below. The 2nd file is the packet tracer file for this scenario. Upload your files to the submission boxes within the Assignments page of the Canvas module by midnight of the day of the deadline.

Deadline: 2359 November 4th 2019

Missing the deadline by even a few minutes will result in a cap of 40%. If you are ill or have problems that prevent you from meeting the deadline you may be able to negotiate an extension in advance. The University Mitigating Circumstances policy may apply. You will need to use the online Extensions and Mitigation Circumstances system. Remember if you submit a piece of work or attend an examination, you have judged yourself fit to undertake the assessment and cannot claim mitigating circumstances retrospectively.

Coursework brief

This coursework considers an integrated and holistic review (putting-it-all-together) of our learning journey down the IP protocol stack (application, transport, network, and link layers). This coursework considers a student scenario when attaching a laptop to the University network, requesting to view a web page from the university campus network. Figure 1 illustrates this scenario. In this scenario, a student connects his/her laptop to their university network and browse a web page. As we have learned, such a scenario considers a lot of protocols. The university network consists of three subnetworks (subnets) and as follows:

Network 1 consists of the following:

1- End devices (a laptop and a DHCP server)
2- Network devices (Switch1).

Network 2 consists of the following:

1. End devices (Web server)
2. Network devices (Switch2)

Network 3 consists of the following:

1. End devices (DNS server)
2. Network devices (Switch3)

All three networks are connected together via a Router.

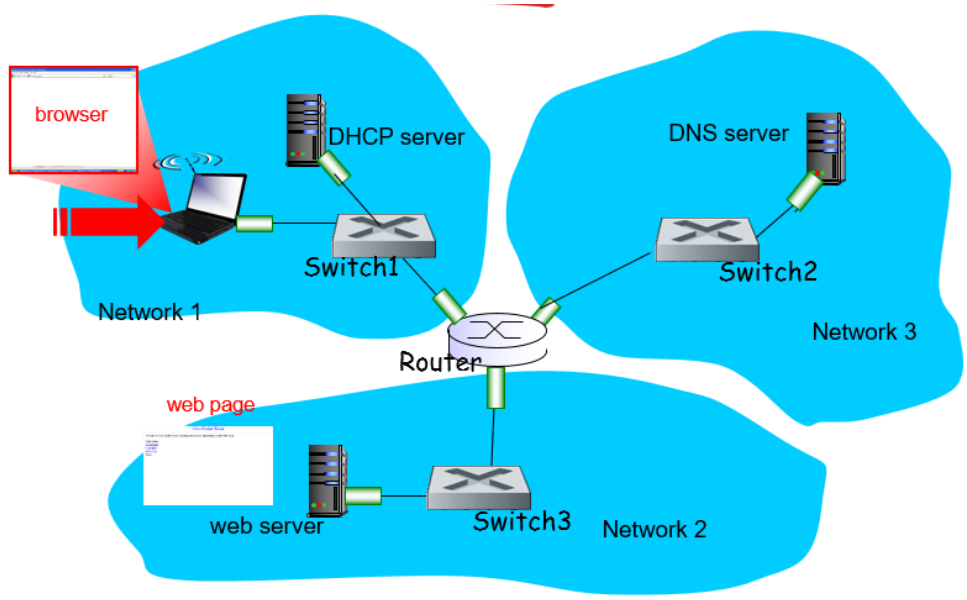

Figure 1 Networking scenario

Tasks to perform for this assignment:

Submit a document that includes answers to the following tasks, please add a front page to the report showing your name, K number, module title and code, and assignment title:

Task 1

Assign IP addresses for the three networks and the involved devices. You can capture your answer to this task by completing Tables 1 and 2 overleaf.

Note: The network addresses assigned to you are as follows:
'192' . 'Your 1st , 4th and 5th number digit starting from the left of your K number'. '1 for Network 1, 2 for Network 2 and 3 for Network 3' . '0' .
E.g. if the K number is K1420812 then the network address for Network 1 is 192.108.1.0, for Network 2 is 192.108.2.0 and for Network 3 is 192.108.3.0

Task 2

Implement the scenario in figure 1 using *Packet Tracer*. Show the results of the successful implementation of this scenario.

(Hint: copy and paste the packet tracer implementation of the network here, use the Ping command between the different devices and show successful Ping between the devices. Use the browsing of the web page via the laptop and show the result of the successful appearance of the page on the laptop browser. Submit the packet tracer file via the assignment link for packet tracer file on Canvas)

Task 3

Describe how the laptop (in this scenario - Network 1) learns about the MAC address of Network 1 gateway?

(Hint: the description here can be as bullet points and diagrams, max text limit is 150 words)

Task 4

Describe how the laptop will be assigned an IP address? Show the steps and protocols involved.

(Hint: the description here can be as bullet points and diagrams, max text limit is 150 words)

Task 5

Describe how the URL name for the Web page requested is converted to an IP address? Show the steps and protocols involved.

(Hint: the description here can be as bullet points and diagrams, max text limit is 150 words).

Task 6

Show the steps and protocols involved in the web page/HTTP request process.

(Hint: the description here can be as bullet points and diagrams, max text limit is 200 words).

Table 1

Subnet Name	**Subnet ID**	**First Host**	**Last Host**	**Broadcast**	**Subnet Mask**
Network 1					
Network 2					
Network 3					

Table 2

Device	**Interface**	**IP Address**	**Subnet Mask**	**Default Gateway**
Router				
Laptop				
DHCP Server				
DNS Server				
Web / HTTP Server				

Assessment criteria

The assessment grade boundaries for the problem is as shown in the table below.

Table 3 Criteria Grades for the Networking Design Coursework

Weight	Exceeded Expectations	Met Expectations	Close to expectations	Below Expectation	Well Below Expectations
	100-80%	**79-60%**	**59-50%**	**49-40%**	**39-1%**
	All steps and protocols are identified and described correctly involved in the web requesting scenario. IP addressing is correctly designed. The scenario is correctly simulated using packet tracer tool. Well documented with screenshots of the results and discussion.	All steps and protocols are identified and described correctly involved in the web requesting scenario. IP addressing is correctly designed. Well documented with results discussions	All steps and protocols are identified and described correctly involved in the web requesting scenario. Well documented with results discussion.	The main steps and protocols are identified and listed correctly involved in the web requesting scenario. Well documented with results discussion.	Failure to design, implement and identify the steps and protocols involved in the web requesting page scenarios.

Academic Misconduct

Plagiarism is presenting somebody else's work as your own. It is an offence to copy materials (even if it is a phrase or a sentence) from the Internet or other work and publications. You must write everything in your own words. *Collusion* is also an offence i.e. allowing another student to use your work even if it is just as a template! There is a heavy penalty for plagiarism and collusion which could see you receiving a ZERO mark and your subsequent academic record may be affected. Further details about plagiarism and referencing can be found at:

http://www.kingston.ac.uk/aboutkingstonuniversity/howtheuniversityworks/policiesandregulations/documents/Plagiarism_%20Student.pdf