

 Faculty of Science & Technology	Coursework Assignment Brief		2017-18
	Undergraduate Computing		Level 4
	<u>Unit</u> Computers and Networks	<u>Unit Leader</u> Reza Sahandi	
		<u>Quality Assuror</u> Networking Subject Group/David Newell	
	<u>Title</u> Assignment 1 - Networks part	<u>Weighting</u> This assignment is a formal element worth 25% of the overall unit mark	

DEADLINE

Date: 12th March 2018
Time: 12:30 pm



Please note that is the final time you can submit,
Not the time to submit!

A Packet Tracer file should be submitted. A demonstration is also required and the deadline for it is the lab session during the week commencing 12th March.

Submission Method: Electronic

Your feedback and mark for this assignment will be provided by 2nd April 2018.

Feedback method: oral and electronic

THE BRIEF

The head office of a manufacturing company is located in a single-storey building. The floor consists of an open plan office measuring 200m x 200m. There are 12 employees working in this office. Each staff member is supported by a computer. Ten of the employees are allocated a PC each and two use wireless laptops.

The company is planning to set up a LAN consisting of three segments to support its activities. Each segment has its own netid, which includes 4 computers and a data server (to facilitate local storage). A webserver should also be attached to one of the segments which will be used for internal access only. A wireless access point supports every segment. Each access point should use a different communication channel to avoid interference. The LAN should have sufficient capacity for future expansion.

Staff should also be able to use their mobile phones or tablets such as ipads to access the data servers or the webserver. These devices should be able to connect to the network through the access points.

The LAN is expected to be connected to the Internet through a NAT proxy server for security. To gain access to the Internet, the company has just signed a contract with an Internet Service Provider and has received a single IP address 198.124.1.1/30 for this connection. Four Class C private IP address ranges (192.168.1.0/24, 192.168.2.0/24, 192.168.3.0/24 and 192.168.4.0/24) have been provided to be allocated to the devices on this network.

Design and implement the network following the steps below:

1. Using Packet Tracer, design the network consisting of a switch and 4 computers, a data server and a wireless access point per segment. A webserver should be attached to one of the segments. One or more routers may be used for the network.
2. Select suitable devices and appropriate transmission media for connecting them to the network
3. Allocate appropriate IP addresses manually (not using DHCP) to all the wired devices. IP address allocation using DHCP may be used for wireless devices.
4. Connect the network to the Internet through the NAT proxy server.
5. Simulate the operation of the network ensuring operability.

DELIVERABLES

Demonstrate the working of the network (using Packet Tracer) in your lab session during week commencing 12th March 2018. Failure to demonstrate will result in a zero mark being awarded for this assignment.

You are expected to justify your design during the question and answer session while demonstrating your network.

A copy of your Packet Tracer file MUST be submitted by 12:30 pm on 12th March 2018.

MARKING SCHEME:

Assessment	Weighting (%)
1. Selection of appropriate network devices and IP address allocation	20
2. Appropriate design using Packet Tracer and a working network	10
3. Set up and configuration of access points	10
4. Set-up of the NAT proxy server	10
5. A complete network meeting all the requirements	20
6. Good technical justifications	10
7. Quality of responses to the questions	20

Total	100

The above weighting is merely to indicate the importance of the topics to be discussed in this assignment.

Please also refer to the generic assessment criteria below.

LEARNING OUTCOMES

Having completed this assignment the student is expected to be able to:

1. Be able to analyse business and Information System requirements for networks, and appreciate the range of available LAN and WAN solutions and architectures.
2. Be able to analyse the traffic load of a simple two- or three-tier LAN, given client traffic data, and validate a network designed to carry that load.
3. Be able to analyse the business and Information Systems requirements for clients and servers, and appreciate the range of available computer infrastructure solutions and architectures.
4. Be aware of the range of devices that may form part of the architecture of a modern computer system

HELP AND SUPPORT

- If you have any question about the assignment, you could discuss it with me at the end of the lecturers. Alternatively, you could e-mail it to me, or send a message to me via Piazza.
- You must acknowledge your source every time you refer to others' work, using the **Harvard Referencing** system (Author Date Method). Failure to do so amounts to plagiarism which is against University regulations and is classified as an **academic offence**. Please refer to <http://www.bournemouth.ac.uk/library/how-to/citing-refs.html> for the University's guide to citation in the Harvard style.
- There are also **other types of academic offence** including duplication or 'self-plagiarism' (copying parts of your own writing that has already been marked). Refer to: **How to avoid academic offences** page (<http://www.bournemouth.ac.uk/library/how-to/academic-offences.html>) for further details.
- Students who require **learning support** may contact Additional Learning Support on <http://studentportal.bournemouth.ac.uk/learning/als/index.html>.
- **General academic support** is available via the Study Skills area on Brightspace (within the Library & Study Support menu).
- If you are experiencing technical problems when submitting online then **you must contact the IT Service Desk immediately and before the deadline**. Call **01202 965515** off-campus, or **65515** on-campus. It's best to call, especially if it's close to the deadline. You can log a problem online too: <https://bournemouth.service-now.com>
- **Additional support** is provided by the Faculty.
 - Ask in C114.
- If you have any valid **mitigating circumstances** that mean you cannot meet an assignment submission deadline and you wish to request an extension, you will need to complete and submit the Mitigating Circumstances Form via Brightspace and notify
 - Year 1: Your Academic Advisor (AA)
 - Year 2: Your Programme Leader
 - Year 4: Your Programme Leadertogether with appropriate supporting evidence (e.g. GP note) normally before the assignment deadline. Further details on the procedure and the mitigating circumstances form can be found at www.bournemouth.ac.uk/student/mitigating. *Please make sure you read those documents carefully before submitting anything for consideration.*

DISCLAIMER

The information provided in this assignment brief is correct at time of publication. In the unlikely event that any changes are deemed necessary, they will be communicated clearly via e-mail and Brightspace and a new version of this assignment brief will be circulated.

Version: 1

Level 4 Grade Range		Subject knowledge and understanding	Intellectual skills - including analysis, evaluation, and critical judgement	Subject-specific skills - including applications and problem solving	Transferable skills - including communication and presentation
High First 80% + Exceptional work overall	Feedback	The work demonstrates an exceptionally broad factual and conceptual understanding of the subject informed by extensive reading.	The work demonstrates exceptional analysis and evaluation of information. Ideas and information are fluently, insightfully and critically selected and collated in support of analysis, evaluation and a sustained coherent argument.	The work demonstrates a range of very effective responses to given problems, some of which may demonstrate innovation and considerable insight	Exceptionally well-organised work in which the argument is well-structured and communicated very well. Sentence structure and grammar indicate a high level of skill.
	Feedforward	Future work could offer even broader and deeper understanding.	Future work could offer an even deeper and more extensive critical approach with deeper analysis and evaluation.	Future work could demonstrate even further innovation and insights.	Future work could offer even greater flow with the argument.
First 70 - 79% Excellent work overall	Feedback	The work demonstrates excellent factual and conceptual understanding informed by extensive reading.	There is clear evidence of analysis and evaluation using defined techniques and principles. Ideas and information are selected and collated in support of analysis, evaluation and argument. The work demonstrates an early critical approach to information.	The work demonstrates the generation of a very effective range of appropriate responses to given problems, some of which may be innovative.	Excellent well-organised work in which the argument is structured and communicated well. Sentence structure and grammar are well developed.
	Feedforward	Deeper reading and research would help develop knowledge and understanding further.	Future work could offer a fluent and critical stance in relation to information and its evaluation and analysis.	Future work could demonstrate deeper insight and innovation.	Future work could offer flow and progression across well-structured arguments.
Upper Second 60 - 69% Very good work overall	Feedback	The work demonstrates very good understanding of the subject. There is evidence of wider reading which goes beyond unit contact and draws on independent research.	The work demonstrates very good analysis and evaluation of information. Well argued with appropriate amount of evidence, substantiated opinions are given.	The work demonstrates the application of knowledge to different contexts and generates a range of responses.	The structure is clear and logical showing progression of the argument. There may be some minor mistakes in presentation or referencing.
	Feedforward	Future work should demonstrate wider reading and more developed understanding.	Future work should offer more detailed analysis and criticality.	Future work should demonstrate deeper insight along with innovative responses.	Future work should demonstrate additional flow and progression, well developed sentence structure and accurate referencing.
Lower Second 50 - 59% Good work overall	Feedback	The work demonstrates some good evidence that understanding has been enhanced through wider reading, but is still limited to basic texts.	The work demonstrates some good understanding of the subject and some analysis of the information using simple reasoning. On balance the work is descriptive.	The work demonstrates a reasonable, if limited, attempt to apply understanding to other contexts.	Structure would benefit from more accurate communication and presentation.
	Feedforward	Future work should demonstrate wide reading and more developed understanding.	Future work should contain more clearly developed arguments, backed up with appropriate references from the literature.	Future work should demonstrate a more detailed application of knowledge to other contexts.	Future work should offer a clearer structure and/or more accurate references and language use.
Third Class 40 - 49% A basic level of work overall	Feedback	The work demonstrates a basic level of factual and conceptual understanding of the subject. Reading/research appears limited to that gained through unit materials.	The work is mainly descriptive with opinions rather than academic argument. Logical development of an argument is lacking.	The work demonstrates only a limited attempt to apply knowledge across situations and/ or limited understanding of how to do so.	The structure of the work is weak. There are mistakes in grammar or sentence structure. References are not presented in the BU referencing style.
	Feedforward	In future work further reading and research beyond the material covered in the unit materials is needed to develop knowledge and	In future work more clearly developed arguments, backed up with appropriate references from the literature are required.	In future work clearer links between theory and practice are required beyond the limited range presented here.	A clearer structure is needed, along with a more appropriate use of English. Developing skills in referencing is strongly

		understanding.			recommended.
Fail 30-39% Insufficient level of work overall	Feedback	The work shows an insufficient level of factual and conceptual understanding of the subject. There is little or no evidence of reading and research beyond unit contact.	The work is almost entirely descriptive, showing little or no evidence of analysis and unsubstantiated opinions are present.	The link between theory and practice is limited or absent.	The structure is very weak or lacking. There are many mistakes in grammar or sentence structure and the academic style is undeveloped. The references are not presented in the BU referencing style.
	Feedforward	In future work the level of factual and conceptual understanding needs to be strengthened. Further reading and research beyond unit contact is needed.	Future work needs to demonstrate less description and a greater level of analysis, backed up with the use of appropriate literature.	Future work needs to demonstrate clearer links between theory and practice.	A much clearer structure is needed, along with a more appropriate use of English. Developing skills in referencing is strongly recommended.
Poor Fail 0-29% A very insufficient level of work overall	Feedback	The work is largely inaccurate and/or contains much irrelevant material. There is little or no evidence of knowledge or understanding of the subject, or of reading/research.	The work shows little or no evidence of analysis and contains unsubstantiated opinions.	The work demonstrates little or no evidence of relating theory to practice.	The work is unstructured and is written in inappropriate English. The references are presented incorrectly or are missing. The work may be incomplete or too brief.
	Feedforward	In future work, reading introductory texts will help to develop basic understanding which can then be built on.	Future work should demonstrate understanding through appropriate use of references.	Future work needs to demonstrate links between theory and practice.	A much clearer structure is needed, along with a more appropriate use of English. Developing skills in referencing is strongly recommended.