جامعة الحسين التقنية
Al Hussein Technical University

ASSIGNEMNT BRIEF

HTU Course No: 30201110 BTEC UNIT No: H/615/1619	HTU Course Name: Networking BTEC UNIT Name: Networking

Assignment Brief Number: 1

Version 1

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Assignment Brief

Student Name/ID Number/Section	
HTU Course Number and Title	30201110 - Networking
BTEC Unit Number and Title	H/615/1619 - Networking
Academic Year	2020/2021 (Summer Semester)
Assignment Author	Dr. Huthaifa Al-Omari
Course Tutor	Dr. Huthaifa Al-Omari
Assignment Title	Computer Network of Institute of Technology
Assignment Ref No	Assignment 1
Issue Date	18/08/2021
Formative Assessment dates	2/09/2021
Submission Date	8/09/2021
IV Name & Date	Eng. Malik Louzi 15/08/2021

Submission Format

There should be one submission for this assignment (including all parts). Each student individually should submit his work which should include:

a) An individual written report covering the required details in the (Assignment Brief and Guidance) section.

b) Evidence of an implemented network using the Cisco Packet Tracer simulator version 8 and a soft copy of the .pkt file and a screen shot included in the report.

There will be a mandatory discussion session regarding your implemented work. Instruction, date and time for the discussion will be specified later.

PS: Do not upload a zipped file!! Just upload each file separately.

Report Guidelines:

Your report should be:

- written in a concise, formal business style using single spacing and font size 12 with use of headings, paragraphs and subsections as appropriate.
- supported with research and referenced using the Harvard referencing system.
- 4,000–5,000 words, although you will not be penalised for exceeding the total word limit.

Submission of soft copies should be done through the university's eLearning system within the determined deadline through the following link:
https://elearning.htu.edu.jo/

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Unit Learning Outcomes

LO1 Examine networking principles and their protocols.
LO2 Explain networking devices and operations.
LO3 Design efficient networked systems.
LO4 Implement and diagnose networked systems.

Assignment Brief and Guidance

You are employed as a network administrator by a regional Institute of Technology. The institute is planning to build a distributed computer network in different countries, where the headquarter of the institute is going to be in Amman and there will be five other regional offices located in Dubai, Cairo, Beirut, Kuwait, and Jeddah. Based on the institute requirements, it has been decided that the following should be achieved after the network is activated:

- Information about offered courses and number of students enrolled in those courses are to be stored at different offices.
- Authorized employees in the headquarter should have access to the collected data which will be compiled in the headquarter and displayed on the institute website.
- Employees in different offices should be able to exchange emails among each other.

Part 1:

You manager asked you to produce a report for the CEO that includes the following:

1. Cover page, table of contents, and an introduction to provide an overview of your report.
2. An explanation of networking principles, protocols and devices, including benefits and constraints of networked solutions, communication and bandwidth requirements, effectiveness of networking systems, operating principles of networking devices and server types.
3. An exploring of server types and justification of the selection of the servers to be used in the institute network.
4. A discussion of the inter-dependencies of workstation hardware with relevant networking software.
5. A comparison of different network topologies in order to find which one is most suitable to be implemented as the institute network.

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Part 2:
Based on part 1 of this project, you will need to analyse the specification from the institute below for completion of this project within a given timeframe:

Headquarter Office:
People: 1 higher manager, 2 network administrators, and 1 web developers.
Resources: 4 computers, and 2 printers
Building: all staff and machines are located on the same floor.

Regional Stations:
People: one manager, and one network administrator.
Resources: 4 computers, and 2 printers.
Building: all staff and machines are located on the same floor.

Note that each of the offices must belong to different network subnet.

2.1 Design efficient networked systems

1. Prepare a written step-by-step plan of how you are going to design a Local Area Network including a blueprint of your network.
2. Justify your choice of devices for your network design.
3. Produce a test plan to evaluate this design for the requirements of bandwidth and cost constraints as per user specifications.
4. Justify the security requirements and quality of services needed for selection of accessories.
5. Design a maintenance schedule to support the networked system.

2.2 Implement test and diagnose networked systems

1. Implement a networked system based on your prepared design.
2. Conduct verification with e.g. Ping, extended ping, trace route, telnet, SSH, etc.
3. Record the test results and analyse these against expected results.
4. Investigate what functionalities would allow the system to support device growth and the addition of communication devices.
5. Discuss the significance of upgrades and security requirements in your recommendations.
6. Use critical reflection to evaluate your own work and justify valid conclusions.

Learning Outcomes and Assessment Criteria			
Learning Outcome	**Pass**	**Merit**	**Distinction**
LO1 Examine networking principles and their protocols			
	P1 Discuss the benefits and constraints of different network types and standards. **P2** Explain the impact of network topology, communication and bandwidth requirements.	**M1** Compare common networking principles and how protocols enable the effectiveness of networked systems.	**D1** Critically evaluate the topology protocol selected for a given scenario to demonstrate the efficient utilisation of a networking system.
LO2 Explain networking devices and operations			
	P3 Discuss the operating principles of networking devices and server types. **P4** Discuss the inter-dependence of workstation hardware with relevant networking software.	**M2** Explore a range of server types and justify the selection of a server, considering a given scenario regarding cost and performance optimisation.	
LO3 Design efficient networked systems			
	P5 Design a networked system to meet a given specification. **P6** Test and evaluate the design to meet the requirements and analyse user feedback with the aim of improving efficiency.	**M3** Install and configure network services and applications on your choice.	**D2** Design a maintenance schedule to support the networked system.
LO4 Implement and diagnose networked systems			
	P7 Implement a networked system based on a prepared design. **P8** Document and analyse test results against expected results.	**M4** Recommend potential enhancements for the networked systems.	**D3** Use critical reflection to evaluate own work and justify valid conclusions.

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STUDENT ASSESSMENT SUBMISSION AND DECLARATION

When submitting evidence for assessment, each student must sign a declaration confirming that the work is their own.

Student name:		**Assessor name:** Dr. Huthaifa Al-Omari
Issue date: 18/08/2021	**Submission date:** 8/09/2021	**Submitted on:**
Programme: Computing		
HTU Course Name: Networking	**BTEC Course name:** Networking	
HTU Course Code: 30201110	**BTEC Course Code:** H/615/1619	
Assignment number and title: Assignment 1 [Computer Network of Institute of Technology]		

Plagiarism

Plagiarism is a particular form of cheating. Plagiarism must be avoided at all costs and students who break the rules, however innocently, may be penalised. It is your responsibility to ensure that you understand correct referencing practices. As a university level student, you are expected to use appropriate references throughout and keep carefully detailed notes of all your sources of materials for material you have used in your work, including any material downloaded from the Internet. Please consult the relevant unit lecturer or your course tutor if you need any further advice.

Student declaration
I certify that the assignment submission is entirely my own work and I fully understand the consequences of plagiarism. I understand that making a false declaration is a form of malpractice.

Student signature: **Date:**