INTRODUCTION TO NETWORKING

Group Assigment (50%)

Intake:
Hand Out Date:
Due Date:
Word Count Limit: 2500 words / person.
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This assignment aim is to allow students to design and configure a LAN topology by applying basic principles of wired and wireless network, together with configuration of network devices (including routers and switches) by using Cisco Packet Tracer simulation tool. Students are also expected to be able to design their IP addressing scheme with subnetting to segment their network.

1. Assessed Learning Outcomes:

- CLO2: Form the local area network design and configuration using simulation tool for the given scenario. (A2, PLO6)
- CLO3: Work in a team to justify the topology and IP addressing plan based on the network design (A3, PLO4)

Note: PLO6 –Digital Skills.   PLO4 – Interpersonal Skills.

2. Scenario:

ARENA Technology Sdn Bhd is a forensic company and headquarters in KL Sentral, Kuala Lumpur, Malaysia, operating since 2015, and more than 125 employees working also have many clients in Malaysia. As the business is expanding, the CEO of ARENA has decided to open another new branch in JOHOR. The new infrastructure of the building consists of 2 blocks, named as DRAGON block and PYTHON block and each block has 2 floors.

"DRAGON block A" is dedicated to administrative areas with private and public use. The main administrative office is located on the 1st floor with a reception, waiting area, and cafeteria. While for the 2nd floor of this building, its where the Branch Manager (BM) room, Chief Technical Officer (CTO) room, Marketing department, and Finance department are located together with the HR department.

The second building, which is the PYTHON block "B " is dedicated to the technical team to do the forensic investigations such as forensic lab, server room, technical assistant to monitor the network, meeting room for technical teams, and library.

The meeting room, library, technical assistant rooms and staff lounge are located on the 1st floor. Forensic lab, and server room are located on the 2nd floor. This 2nd floor is very secure and only permitted for the technical people with access cards. Both blocks have a necessary IoT infrastructure such as CCTV and WiFi.

Your team is appointed to assist with the proposal to plan for a suitable network design for this new project. The main objective is to identify the requirement and conduct a research to propose for a suitable topology diagram with necessary devices and IP addressing scheme to make it work.

Your research should include :
- Layout of the building
- Number of hosts (per room / building)
- Justification of the Topology
- IP Adressing scheme

The findings and outcome of your research should be arranged in a proper flow to be presented to the Technical team who are involved in the full design of the network. In addition, prepare a Cisco Packet Tracer diagram as a proof of concept for your research work.

3. Important Instructions for online submission:

1. You are required to complete the assignment in a group of **not more** than **4** members. **No individual submission is allowed for the 1st attempt.**

2. Select the **team leader** among the group members and you have to hand in your assignment (**only soft copy of individual and group**) work on time to him for **online submission**.

3. **Group leader** only must upload the entire work on time (**with the knowledge of group members**) to the **Online Submission System**.

4. Double check the work before online submission (**Peer Evaluation form and Self-Reflection, etc).**

3(a). General Instructions.

1. The assignment should attach front cover, table of contents and attach the completed **Work Breakdown Structure (WBS)** must be digital signed and agreed by all group members.
2. You are required to **build a complete computer network environment** for the scenario, supported with a good research work.
3. Design the floor plan using **Microsoft Visio** with very good justification and provide configuration of the logical network diagram using **Cisco Packet Tracer** Submit. the softcopy of floor plan and network diagram (configuration) together with the assignment.
4. Your report must be typed using Microsoft Word with Times New Roman font size 12. Report should be in 1.5 spacing.
5. The report has to be well presented and should be *typed*. Submission of reports that are *unprofessional* in its outlook will not fare well when marks are allocated.
6. The report should have a one (1") margin all around the page as illustrated below:
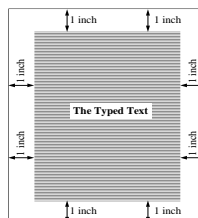
7. Plagiarism is a serious offence and will automatically be awarded zero (0) mark.

8. All information, figures and diagrams obtained from external sources must be referenced using the Harvard referencing system accordingly.

4. Work Breakdown Structure:

CLO2: Form the local area network design and configuration using simulation tool for the given scenario				
(PLO6: Digital Skills)				
Introduction - Objective - Assumptions (number of hosts, rooms, labs, etc.)				
Individual Component	**Student 1** **Block A (1st floor)**	**Student 2** **Block A (2nd floor)**	**Student 3** **Block B (1st floor)**	**Student 4** **Block B (2nd floor)**
	Floor plan-(Layout) Justification Network diagram and configuration (Packet Tracer)	Floor plan-(Layout) Justification Network diagram and configuration (Packet Tracer)	Floor plan-(Layout) Justification Network diagram and configuration (Packet Tracer)	Floor plan-(Layout) Justification Network diagram and configuration (Packet Tracer)
CLO2: Work in team to justify the topology and IP addressing plan based on the network design				
(PLO4: Interpersonal Skills)				
Group Component	**Block A:** • Topology and IP Addressing Justification		**Block B:** • Topology and IP Addressing Justification	
	Demonstration			

For students who have to re-do the assignment (failed the 1st attempt), produce the assignment individually. Complete both sections and choose one building design for the new submission.

5. Assessment Criteria: Marks Breakdown

Assessment Criteria	Group Assignment				
	Marks Awarded				
Digital Skills (60 marks)	Weight	Student 1	Student 2	Student 3	Student 4
Floor Plan and Justification	**10**				
Analysis and Justification	**10**				
Network Diagram	**10**				
Configuration	**10**				
Demonstration	**10**				
Referencing	**10**				
Teamwork Skills (40 marks)	**Weight**				
Topology Justification	**10**				
IP Addressing Plan and Justification	**10**				
Documentation	**10**				
Alternate Roles	**5**				
Peer Evaluation	**5**				
Total Marks	**100**				

6. Peer Evaluation and Reflection

PEER EVALUATION FORM

**To be filled up by individual student and include with soft copy the document.

Student Name / TP Number   :

Please answer 'Yes' / 'No'

	Myself **TP NO:**	**Member 2** **TP NO:**	**Member 3** **TP NO:**	**Member 4** **TP NO:**
Participated in group discussion				
Helped to monitor group progress				
Contributed useful ideas				
Completed work on time				
Submitted good quality of work				
Communicated effectively with group members				
Helped others with their work when needed				
Good relationship with group members				
Overall was a valuable member of the team				

Self-Reflection *(what I did best and what I should improve in future):*

7. Marking Rubrics

Individual Components (60%)				
Marking Criteria	**0-2** **(Fail)**	**3-4** **(Marginal Fail)**	**5-6** **(Pass)**	**7-8** **(Credit)**	**9-10** **(Distinction)**
Floor Plan	Not able to use a proper tool / software to design the floor plan. Floor plan is not visible.	Show minimal ability to use a proper tool / software to design the floor plan. Simple floor plan produced, with no label and legend	Show ability to use a proper tool / software to design the floor plan. Appropriate floor plan design but with less detail.	Show good ability to use tool / software to design the floor plan. Good floor plan design with sufficient detail.	Proficient use of tool / software to design the floor plan. Very detailed floor plan design, with good representation. Creativity shown in the design
Analysis and Justification	Almost no requirement analysis and no justification of the network devices (positioning) presented.	Limited requirement analysis. Very less detail in justification of the network devices (positioning).	Sufficient requirement analysis to design a floor plan. Minimal justification of the network devices (positioning) provided.	Good requirement analysis and comparison of facts. Sufficient justification of the network devices (positioning) but lack of critical discussion.	Very good requirement analysis and comparison of facts. Good justification of the network devices (positioning) with sufficient critical discussion.
Network Diagram	Not able to show good skills in using Cisco Packet Tracer tool. Network diagram is not clear.	Able to show sufficient skills in using Cisco Packet Tracer tool. Minor issues in network diagram (not feasible).	Able to show good skills in using Cisco Packet Tracer tool. Feasible network diagram, meeting the minimum requirement of a network.	Able to show very good skills in using Cisco Packet Tracer tool. Good network diagram, showing complete layout of the network	Proficient in using Cisco Packet Tracer tool. Very good quality of network diagram, with some complexity of design
Configuration	Weak configuration skills. Not able to fully configure the design.	Limited configuration skills. Only able to meet minimum requirement on the configuration on router and PCs	Good configuration skills. Able to perform good level of configuration on router and PCs	Very good configuration skills. Able to perform some complex configuration on routers and PCs	Outstanding configuration skills. Complex configuration on routers, PCs and switches.

Demonstration	Not turn up for project demonstration.	Major issues in configuration (some parts are unable to ping).	Minimal issues in configuration – not fully working according to the proposed plan Able to modify the network configuration with help of friends during demonstration	Successful network configuration (able to ping to all devices) Able to modify the network configuration without any help during demonstration	Successful network configuration (able to ping to all devices) Excellent skills in modifying network configuration during demonstration
Referencing	Not able to use referencing tools in Microsoft Word. No in-text citation and very minimal references. Major issues in the referencing format.	Minimal use of referencing tools in Microsoft Word. Minimal in-text citation and references used. Minor issues in the referencing format.	Full use of referencing tools in Microsoft Word. Sufficient number of references and citation in the report. No issue in the referencing format	Good use of referencing tools in Microsoft Word. Recent source of references used, with proper reference list. Limited in-text citation in the report	Very good use of referencing tools in Microsoft Word. Very good quality of references used, with proper citation and reference list for all facts and diagrams used

Group Components (40%)					
Marking Criteria	**0-2** **(Fail)**	**3-4** **(Marginal Fail)**	**5-6** **(Pass)**	**7-8** **(Credit)**	**9-10** **(Distinction)**
Topology Justification	Not able to propose for suitable Topology.	Propose incomplete Topology with weak justification	Propose complete Topology with minimal justification	Propose good Topology with justification, suitable for the scenario	Propose very good Topology with justification, suitable the scenario with supporting evidence.
IP Addressing Plan and Justification	No explanation to justify the selection of technique for IP addressing plan and segmentation	Almost no relevant explanation to justify the selection of technique for IP addressing plan and segmentation	Appropriate technique chosen for IP addressing plan and segmentation. Minimal explanation to justify the plan	Good technique chosen for IP addressing plan and segmentation. Lacking of supporting evidence to justify the plan	Very good technique chosen for IP addressing plan and segmentation. Supported with extensive research work for technical accuracy
Documentation	No table of content and page numbering, font size and type are not	Table of content exist but without page numbers, report structure not standardized	Table of content included with proper page numbering, standardized report structure and	Good structure and flow of documentation with appropriate header and footer	Very good structure and flow of documentation, appropriate header and footer with very good

	standardized Incomplete assignment requirements	Assignment requirements are partially completed.	headings. Proper introduction conclusion of the report	Good introduction and conclusion of the report	appearance Very good introduction and conclusion of the report.
Marking Criteria	**1** **(Fail)**	**2** **(Marginal Fail)**	**3** **(Pass)**	**4** **(Credit)**	**5** **(Distinction)**
Alternate Roles	No clear evidence of ability to assume alternate role as a group leader and member.	Attempt to Demonstrate the ability to assume alternate roles as a group leader and member with limited effect and require improvements.	Able to demonstrate the ability to assume alternate roles as a group leader and member with some effect and require minor improvements.	Clear evidence of ability to assume alternate role as a group leader and member to achieve the same goal.	Very clear evidence to assume alternate role as a group leader and member to demonstrated in practice.
Teamwork **(Based on peer evaluation and reflection document)**	No clear evidence of ability to foster good relationship and work together effectively with group members.	Able to foster relationship and work together with other group members towards goal achievement but with limited effect.	Able to foster relationship and work together with other group members towards goal achievement with some effects, but still require improvements.	Able to foster good relationship and work together with other group members towards goal achievement.	High ability to foster good relationship and work together effectively with other group members towards goal achievement.