ITT300 ASSIGNMENT

PREPARED BY:

SALEHUDDIN SHUIB

- **OBJECTIVES**

The objectives of these assignments are:

a. To cover basic concepts of networking
b. To study LAN setup and understand basic LAN principles

Assignment Completion Sheet

Sr. No	Assignment Name	Marks
1	Study of LAN environment	
	Total Mark	

Signature of In charge :

Assignment: Study of LAN environment

Find out information about the network in your lab and fill in details below:

1. Total Number of computers in your lab:27

2. Find details of any 5 computers :

	MAC address	IP address	LAN speed	Default mask	hostname
1	E4-54-E8-5E-C2-F5	10.30.14.144	1000/1000(Mbps)	255.255.255.0	KMK7_PC08
2	6C-2B-59-EC-70-B0	10.30.14.76	1000/1000(Mbps)	255.255.255.0	KMK7_PC39
3	6C-2B-59-CC-99-29	10.30.14.75	1000/1000(Mbps)	255.255.255.0	KMK7_PC40
4	E4-54-E8-5E-BB-E1	10.30.14.140	1000/1000(Mbps)	255.255.255.0	KMK7_PC36
5	E4-54-E8-5E-B4-39	10.30.14.149	1000/1000(Mbps)	255.255.255.0	KMK7_PC35

3. Are the IP addresses assigned to the machines statically or dynamically?
   =dynamically
4. Does the network have a DHCP server?

   =Yes.
5. If yes, what is the address of the server ?

   =10.30.1.1
6. How many servers are configured? :

   Details of servers :

	IP address	MAC address	Purpose
1	10.30.1.1	E4-54-E8-5E-B8-23	maintains a pool of IP addresses
2	10.0.7.12	E4-54-E8-5E-B8-23	translating domain names into a specific IP address so that the initiating client can load the requested Internet resources
3	10.0.8.19	E4-54-E8-5E-B8-23	translating domain names into a specific IP address so that the initiating client can load the requested Internet resources

7. Cables
   a. Type :
      =CAT6
   b. Is it coaxial / twisted pair or fiber optic cable ?
      =Twisted pair
   c. Cable bandwidth
      =250MHz
   d. Maximum cable length limit
      =100m
   e. Connector used
      =RJ-45

8. Switches:

No	Company Name	MAC address	No. of ports	Managed / Unmanaged	IP's of Machines connected to the switch
1	Cisco Systems, Inc	CC:DB:93:40:57:D0	48	0/48	10.30.14.17
2	Cisco Systems, Inc	CC:DB:93:40:58:D8	48	31/48	10.30.14.14
3	Cisco Systems, Inc	CC:DB:93:40:34:50	48	0/48	10.30.14.16
4	Cisco Systems, Inc	CC:DB:93:40:59:A8	48	24/48	10.34.14.13
5	Cisco Systems, Inc	48:9B:0A:60:27:60	48	36/48	10.30.14.15

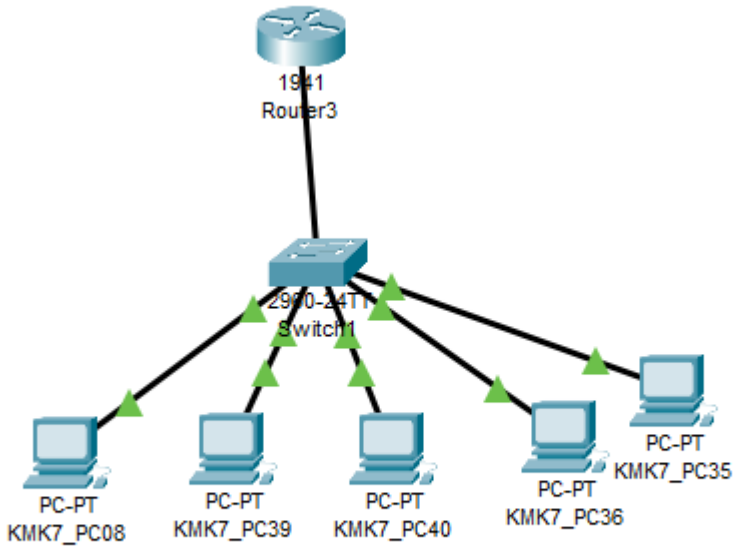
9. Routers:

No	Company Name	No. / Types of ports	Port speed	IP address	
1	Cisco Systems,Inc	48	1000MBps	10.30.14.254	
2					
3					

10. Is there wi-fi capability in the LAN?
If yes,
    i. What is the Wi-fi access point address?
    = 10.30.159.254
    ii. How many devices / IP addresses does it support?
    = 8190
    iii. What is the bandwidth?
    = 5.0 GHz
If no,
    iv. What additional devices are needed?
    v. Where will you connect them?
    vi. What will be its IP address?

11. Is there internet access in the lab?
=Yes
If not, what changes to the hardware / software must be made ?
If yes, what is the IP address of the router / gateway ?
=10.30.159.254

12. Draw the Network Topology (show how machines and servers are connected using connectivity devices)



13. If 20 more machines have to be added to the network, what changes must be made to the network?

= Expand IP address range or create a new subnet, add or upgrade network switches for additional ports, acquire more network cables.

14. If the network is to be divided into four subnetworks having 50 machines each, give a plan to do so. What additional devices will be needed ? Give the IP address of each subnetwork and the address ranges for hosts in each subnetwork.

This is the plan:
First, calculate the subnet mask: Since each subnetwork needs to accommodate 50 machines, it require a subnet with at least 64 IP addresses (2^6 = 64). Therefore, a /26 subnet mask will provide 64 IP addresses per subnet.

Subnetwork 1: 192.168.0.192/26

- Network Address: 192.168.0.192
- First Host Address: 192.168.0.193
- Last Host Address: 192.168.0.254
- Broadcast Address: 192.168.0.255

Subnetwork 2: 192.168.0.128/26

- Network Address: 192.168.0.128
- First Host Address: 192.168.0.129
- Last Host Address: 192.168.0.190
- Broadcast Address: 192.168.0.191

Subnetwork 3: 192.168.0.64/26

- Network Address: 192.168.0.64
- First Host Address: 192.168.0.65
- Last Host Address: 192.168.0.126
- Broadcast Address: 192.168.0.127

Subnetwork 4: 192.168.0.0/26

- Network Address: 192.168.0.0
- First Host Address: 192.168.0.1
- Last Host Address: 192.168.0.62
- Broadcast Address: 192.168.0.63

Then, a router is needed to enable communication between the four subnetworks. The router should have an IP address within each subnet to facilitate inter-subnet routing. The specific IP addresses for the router can be chosen based on user requirements and available address ranges within each subnet,
make sure to configure the router's routing table and enable routing protocols (such as OSPF or RIP) to ensure proper connectivity between the subnets.

Signature of the instructor ☐ Date ☐

Assignment Evaluation

0: Not done ☐ 2: Late Complete ☐ 4: Complete ☐

1: Incomplete ☐ 3: Needs improvement ☐ 5: Well Done ☐

ITT300 – INTRODUCTION TO DATA COMMUNICATION AND NETWORKING

CATEGORY	EXCELLENT - 5	GOOD – (4 - 3)	SATISFACTORY - 2	NEED IMPROVEMENT - 1
Synopsis and objective of lab activities	Clearly understand and describe the objectives of the lab as well as the skill and information learned. Discusses possible success of lab procedures/steps errors,	Adequately describes the objectives of the lab and the information learned. Does not discuss possible success of lab procedures/steps errors and effects.	Describes the objectives of the lab the information learned but some details are lacking. Does not discuss any lab procedures/steps errors and describe their likely effects.	Does not adequately describes the objectives of the lab, what was learned or any possible lab procedures/steps errors.
Configuration on network devices or setup network application	All configurations or setup have been done properly and completely on all devices.	Most of the configurations or setup have been done but not completely done on all devices.	Almost 50% of the configurations or setup have been done but have errors on the certain devices.	Incomplete configuration or setup and some of the configurations or setup incorrect.
Testing & Result	Adequately detailed result are shown for each steps of lab exercise. 90-100 % of the testing working properly. Use time well in lab and focused attention on the lab procedures/steps.	Adequately detailed result are shown for each steps of lab exercise. Almost all (70 – 89%) of the testing working properly. Use time pretty well in lab and stay focused on the lab procedures/steps most of the time.	Result are shown for each steps of lab exercise but some details are lacking. Most (50- 69%) of the testing have no errors. Did the lab but did not appear very interested. Focus was lost during completing the lab.	Result are lacking for some procedure steps. More than 30% of the testing have errors. Participation was minimal OR student was hostile about participating.
Troubleshooting/Problem Solving	Clearly describes the problems encountered and how they were solved. Able to modify based on requirements and use an efficient strategy to solve it.	Adequately describes the problems encountered and they were solved but may leave some unanswered questions. Able to explain how to modify and use inefficient strategy based on requirements	Unclearly describes the problem encountered and how they were solved. Able to suggest how to modify and use efficient strategy based on requirements but does not do it consistently.	Does not adequately describe the problems encountered or how to solve it. Has no ability to suggest any relevant solution and rarely uses an effective strategy to solve problems.
Question & Answer	90-100% of the questions that has been issued can be explained with no error and fluently.	Almost at (70 - 89%) of the questions can be explained clearly with no errors.	Most (50 - 69%) of the questions can be explained with no error adequately.	Unable to explain for less than 30% of the questions that has been issued in Q&A session.

GROUP: KCS1104B **LAB EXERCISE:** **INDIVIDUAL ASSIGNMENT**

NAME: **MUHAMMAD IRFAN NAFIS BIN OMAR** **DATE:20/6/2023**

TIME:9.30pm

ASSESSMENT CRITERIA	WEIGHT (W)	SCORE (S) [1-5] (Refer to rubric)	MARK (W*S)
Synopsis and objective of lab activities (Clear understanding, properly discuss the steps and procedure of lab activities)	4		
Configure switches and end devices to provide access to local and remote network resources (Complete configuration based on lab requirements)	3		
Testing & Result (Adequate detailed result, all devices working properly, able to complete in time, stay focused during completing lab exercise)	5		
Troubleshooting/Problem Solving (Clearly describe the problem, know how to modify for troubleshooting, use efficient method/strategy)	3		
Question & Answer (Able to give clear explanation with no errors and fluently)	2		
TOTAL			

Comments: