**DATA COMMUNICATION & NETWORKING LAB**

***CEL 222***

Lab 4



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Q1: **Building and testing a Switch based Network.**

**Tasks:**

# Introduction (devices Connectivity, IP Assigning)

# Connection Testing

# Internet Sharing

# Remote Desktop Connections

# Use Hub, switch, Routers and perform the same experiment.

# Introduction

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| Switch:A network switch is a computer networking device that connects network segments. The term commonly refers to a network bridge that processes and routes data at the data link layer (layer 2) of the OSI model. Switches that additionally process data at the network layer (layer 3 and above) are often referred to as Layer 3 switches or multilayer switchesHub:A network hub is a device that allows multiple computers to communicate with each other over a network. It has several Ethernet ports that are used to connect two or more network devices together. ... While switches send incoming data to a specific port, hubs broadcast all incoming data to all active ports.Router:A router is an electronic device that interconnects two or more computer networks, and selectively interchanges packets of data between them. Each data packet contains address information that a router can use to determine if the source and destination are on the same network, or if the data packet must be transferred from one network to another. Where multiple routers are used in a large collection of interconnected networks, the routers exchange information about target system addresses, so that each router can build up a table showing the preferred paths between any two systems on the interconnected networks.Devices Connectivity and IP Assigning.  1. Open software packet tracer 2. Click End Devices icon (lower left corner) or press CTRL + ALT + V 3. Drag icon general (Personal Computer 4x) and drop to worksheets. 4. Drag a switch and drop to worksheets.      1. Double click PC1. 2. Desktop tab, then click IP Configuration.      1. Set IP Address for Subnet Mask. IP Address PC1 = 192.168.1.1 Subnet Mask = 255.255.255.0( will automatically assign after inputting ip)   Default Gateway: 192.168.2.1     1. Close window PC1 2. Double click PC2. 3. Desktop tab, then click IP Configuration 4. IP Address PC2 = 192.168.1.2 Subnet Mask = 255.255.255.0( will automatically assign after inputting ip)   Default Gateway: 192.168.2.1     1. close window PC2 2. Double click PC3. 3. Desktop tab, then click IP Configuration 4. IP Address PC3 = 192.168.1.3 Subnet Mask = 255.255.255.0( will automatically assign after inputting ip)   Default Gateway: 192.168.2.1     1. close window PC3 2. Double click PC4. 3. Desktop tab, then click IP Configuration 4. IP Address PC4 = 192.168.1.4 Subnet Mask = 255.255.255.0( will automatically assign after inputting ip)   Default Gateway: 192.168.2.1     1. Close window PC4 2. Now Click Connections icon or press CTRL + ALT + 0 , then click Automatically Choose Connection Type. 3. Connect Each PC to the switch    Connection Testing **For PC1**   1. Click PC1 2. Desktop tab, then click Command Prompt 3. Enter ping 192.169.1.2                1. **STP is being followed Before sending another Packet**        1. Now Next Packet (Message will be sent)      1. Now The previous steps will be repeated to stimulate the packets.   **For PC2**   1. Click PC2 2. Desktop tab, then click Command Prompt 3. Enter ping 192.169.1.3        1. Similar Steps from PC1 will be Repeated here to show the simulation. 2. Enter ping 192.168.1.4      1. Similar Steps from PC1 will be Repeated here to show the simulation. 2. All the pings were Successful hence connections are Tested and verified successfully. |

# Using Hub

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| Repeat above steps from Step 1 to Step 2 with the exception of switch Instead use Hub Instead of Switch.Connection Testing:  1. Click PC1 2. Desktop tab, then click Command Prompt 3. Enter ping 192.169.1.2 4. Press Enter              Similarly Perform Pings and simulations for Other PCS.Pings Were Successful So the connection of PCS with Router Was Successfully Tested |

# Using Router

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| Repeat above steps from Step 1 to Step 2 except for switch Instead use Router Instead of Switch.Click RouterTurn it off by clicking the button.Then Drag the HWIC-4ESW Port( as highlighted 2 in below pic)at the empty position( as highlighted 3 in below pic)Close RouterSelect Copper Straight Through Cable and Attach all the 4 pcs(Fast Ethernet). with the router(Fast Ethernet).Connection Testing.For PC1. Click PC1  Desktop tab, then click Command Prompt  Enter ping 192.169.1.2  **STP is being followed Before sending another Packet** Similarly other Messages(packets) are sent.Perform the Above steps with other PCS.Pings Were Successful So the connection of PCS with Router Was Successfully Tested |