Computer Networks Lab Assignment 1

Max marks: 20 **Deadline: 17.03.21**

Instructions:

- Please submit original work. Plagiarism/copying of any form, will deduct the mark.
- Submit all documents in google classroom.
- Save all submission files into a single folder and submit the compressed folder.
- **Must follow the following naming convention:**
    - Name the ZIP file submission as, `Yourname_Rollnumber_Assignmentnumber.zip`

Question 1: Basic networking commands in computer networks. Execute the following networking commands in the terminal. Describe the usage of mentioned commands along with the screenshot of the outputs received. (Preferably, use linux terminal to run the commands.) [10 marks]

1. Use the Ping command for sending 10 packets to **Amazon.com**. Calculate the following :
    a. Calculate the maximum, minimum and average round-trip time (RTT). RTT is the time taken by the request to travel from client to server plus the time taken by the response from server to client.
    b. Change the default ping packet size to **100** and recalculate RTT.
2. Use **ifconfig/ipconfig** commands. Show and describe the output.
3. **traceroute** google.com/ **traceroute** google.in. Analyze the results.
4. Display all active TCP connections and the TCP and UDP ports on which your computer is currently listening.

Question 2: Creating network topology in packet tracer. [10 marks]

Software required: Cisco Packet tracer

Installation link: *https://www.computernetworkingnotes.com/ccna-study-guide/how-to-install-and-activate-packet-tracer-in-windows.html*

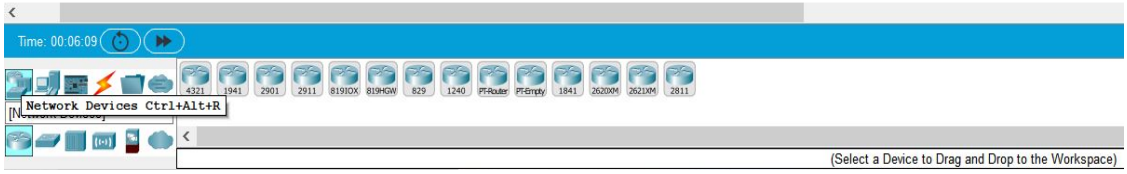
Steps to launch the packet tracer:

1. Search for packet tracer in the main menu.
2. Click on the application. It will direct you to the weblogin page.
3. Click on the guest login button at the right bottom corner.
4. Wait for a few seconds and the guest login button will change to confirm guest button.
5. Click on the confirm guest button.
6. Packet tracer will launch.

Steps to design a topology in packet tracer:

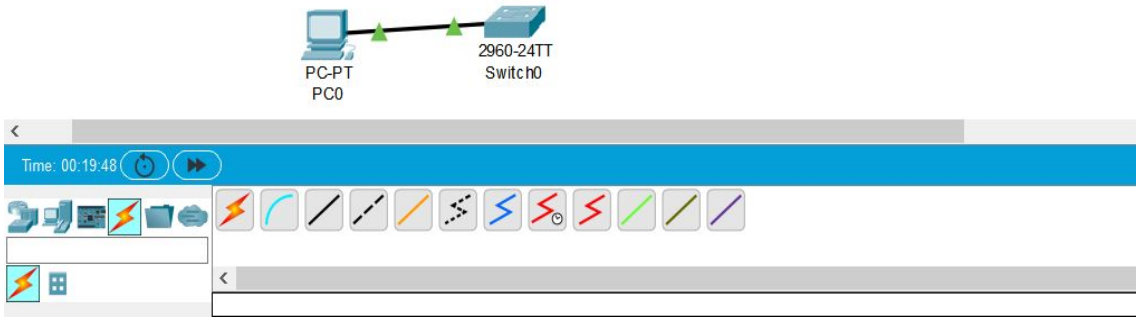
In order to use any object, drag and drop that particular object on the workspace.

1. Select a switch from the network devices displayed at the left bottom.

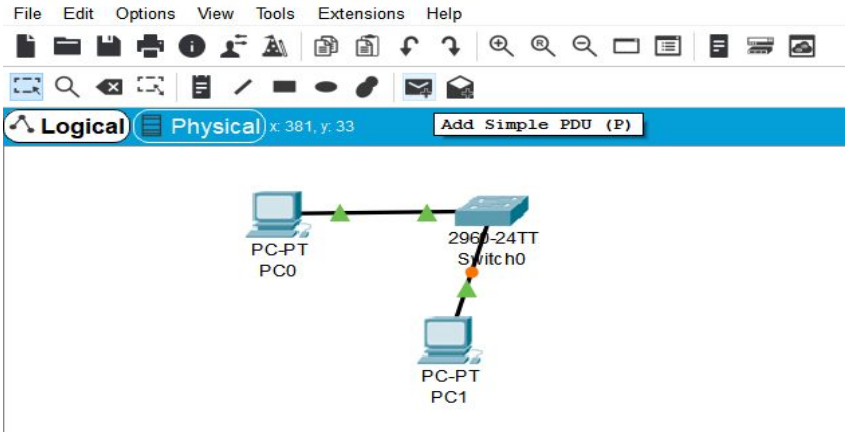


2. Select a pc as an end device.

3. Connect a switch and pc using a generic cable. The generic cable itself adjusts the type of cable required to connect two devices. For example, two similar devices are connected using *cross-over cable* and two different devices are connected using *straight-through cable.* Wait for a few seconds, the red dots will turn green.

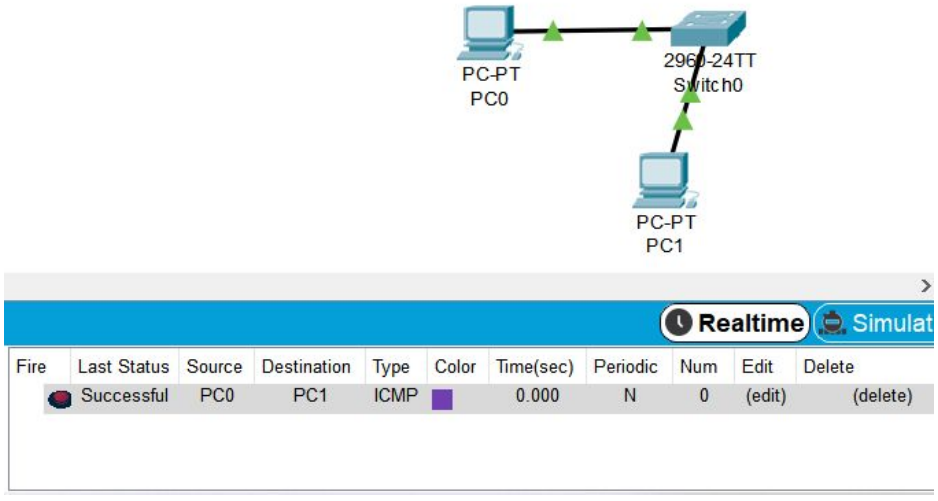


4. Assign IP address to pc0 by following the steps given:
    a. Click on pc device.
    b. Go to the desktop tab.
    c. Select IP configuration.
    d. Assign IP address: 192.168.1.1.
    e. Subnet mask will be autofilled.
    f. Assign Default gateway: 192.168.2.1.
    g. Exit.
5. Similarly, create one more pc device and assign the IP address 192.168.1.1 to the pc1. (subnet mask and default gateway will be the same).
6. Simulate message transfer between two PCs as follows:
    a. Click on the PDU icon.



b. Then, click on PC0 to make this pc as the source of the message. After this click on PC1 to make it the destination of the message sent by PC0.

7. Check the success/failure of the message delivery in the bottom right corner.



Task: Simulate the following topologies with 5 pc each.

i) Star topology,
ii) Bus topology and
iii) Tree topology.

Check the following points while assigning the IP address to end devices (pcs):

1. The ip addresses of all the devices must belong to the same class. Assign IP address from the range 192.168.1.1 to 192.168.1.254.
2. Do not repeat the ip address within a topology.

Check the connections between PCs. Each PC must be able to communicate with every other PC. Submit a report containing the screenshots of the topology where links are active. Students may be asked to execute the topology through an online demo.