

18CSC202J COMPUTER COMMUNICATIONS

A MINOR PROJECT REPORT

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in

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BONAFIDE CERTIFICATE

Certified that 18CSC202J minor project report titled “**Network design for school.**” is the bonafide work of “**Hardika** [RA2111003010242], **Jiiyaa Jaiswal**[RA2111003010244], **Keerthana**[RA2111003010250], **Sandesh Rajbar**[RA2111003010261], **Vanshika Yadav**[RA2111003010267] ” who carried out the minor project work under my supervision. Certified further, that to the best of my knowledge the work reported herein does not form any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate

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1)PROJECT TITLE: Network design for school.

2)ABSTRACT:

A network has to be designed for a school. There are a total of 230 computers in the school computer lab. The users in the lab should belong to a single domain and receive IP addresses dynamically from a central server with the ability to share files on a central location. Some of the users have laptops with wireless cards for which wireless access is required. The total size of the lab is 1000 sq ft. Identify appropriate solutions with the detailed services, hardware and software requirements to design the appropriate network for the school.

3)OBJECTIVE OF THE PROJECT:

- a) To design a network for a school.
- b) For total numbers of computers is 230 and lab size is 1000sq ft.
- c) Users should be of single domain and receive dynamic ip.

4) INTRODUCTION:

Networking is referred as connecting computers electronically for the purpose of sharing information. Resources such as a file, applications, printers & software are some common information shared in a networking. The advantages of networking can be seen clearly in terms of security, efficiency, manageability & and cost effectiveness as it allows collaboration between users in a wide range. The Switches and Router this device that play an important role in data transfer from one place to another using different technology such as a radio waves & wire. LAN network is made up of two or more computers connected together in a short distance usually at home, offices buildings or school. WAN is a network that covers wider area than LAN and usually covers cities, countries and the whole world. Several major LAN can be connected together to form a WAN. As a several devices are connected to network, it is important to ensure data collision does not happen when this device attempt to use data channel simultaneously. A set of rules called carrier sense multiple access/collision detection are used to detect and prevent collision in networks.

5) MODULES OF THE PROJECT

5.1 :- Network Topology

5.2 :- System Development

5.1 NETWORK TOPOLOGY:

A local area network (LAN) is a collection of devices connected together in one physical location, such as building, office, or home. A LAN can be small or large, ranging from a home network with one user to an enterprise network with thousands of users and devices in an office and school. Regardless of size, a LAN's single defining characteristic is that it connects devices that are in a single, limited area.

The advantages of a LAN are the same as those for any group of devices networked together. The devices can use a single Internet connection, share files with one another, print to shared printers, and be accessed and even controlled by one another.

While the benefits of having devices connected to a network have always been well understood, it was not until the wide deployment of Wi-Fi technology that LANs became commonplace in nearly every type of environment. Today, not only do businesses and schools use LANs, but also restaurants, coffee shops, stores, and homes.

Topology used for the model: Star Topology

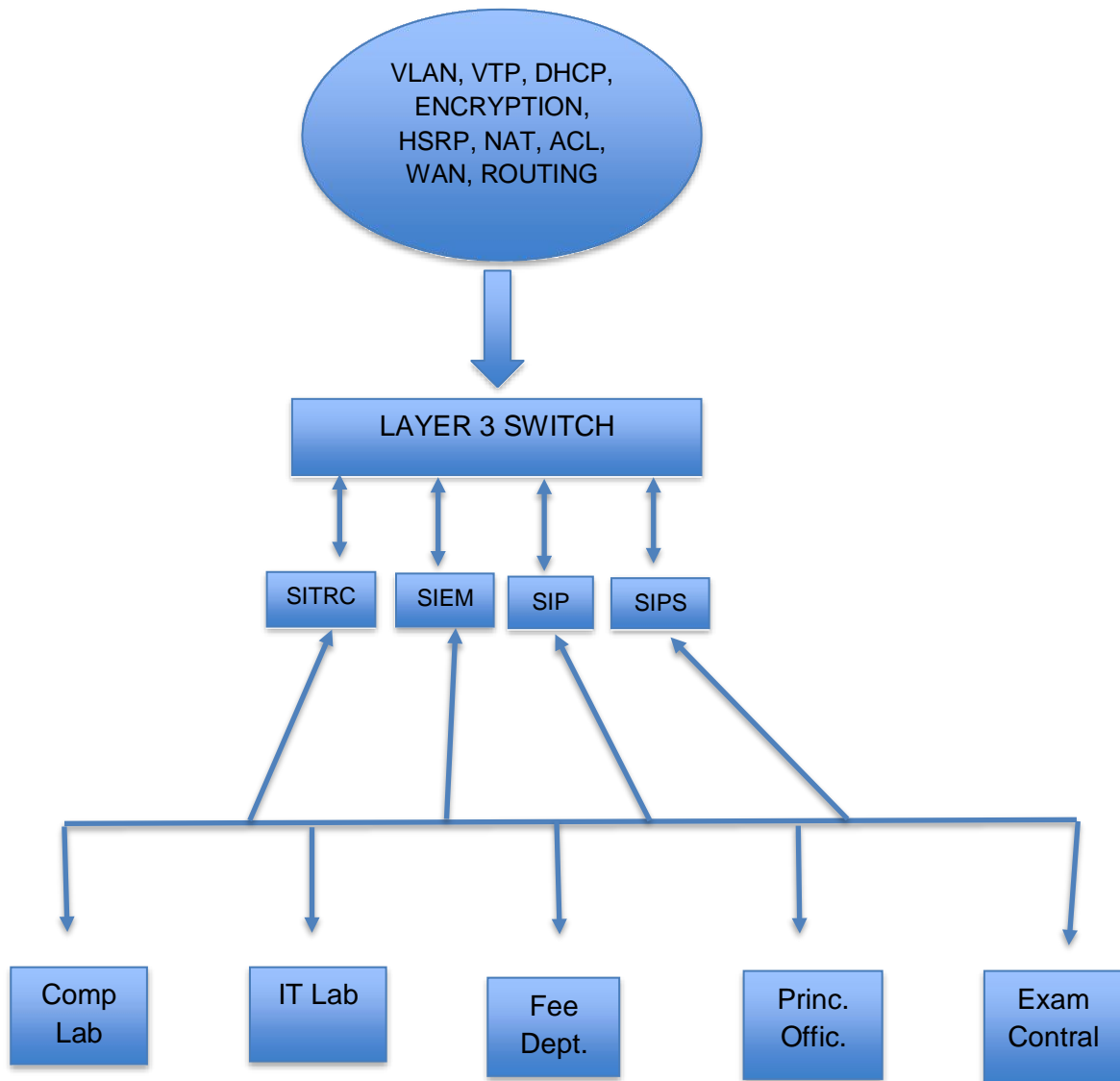
Star topology is a network topology in which each network component is physically connected to a central node such as a router, hub or switch. In a star topology, the central hub acts like a server and the connecting nodes act like clients. Technically, there is no limit to how many computers can connect in a star topology. However, network performance can decrease as more computers are connected, resulting in slower network speeds.

5.2 SYSTEM DEVELOPMENT

In this growing network area, it has become necessary to protect our network from unauthorized users and prevent it from hacking, so it is necessary to maintain security in our network by using various security options like port security, encryption using most secure

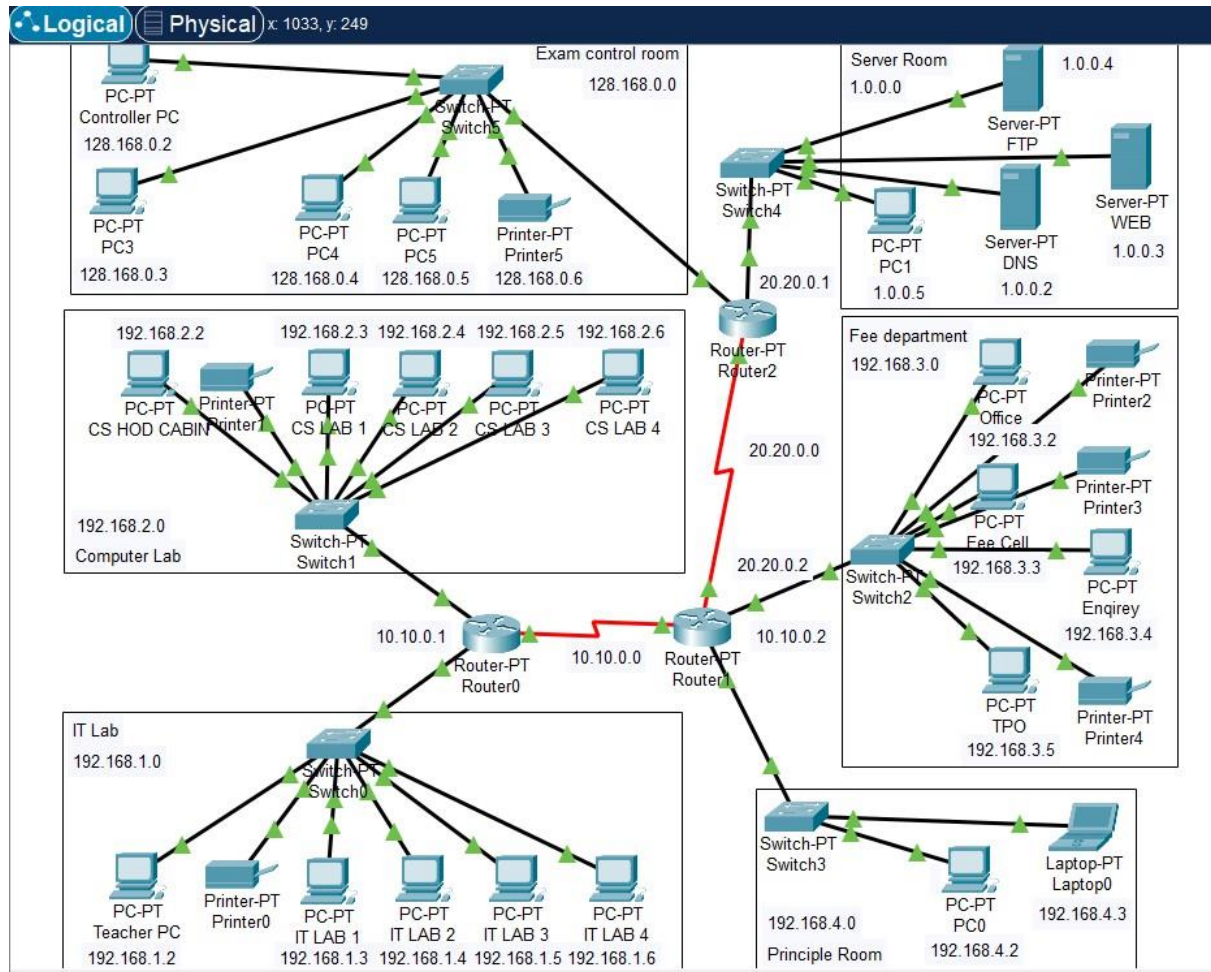
routing protocol. To implement this, we need best devices which can support these protocols more efficiently. So, our discussion we decide to use layer 3 switches which work as switch as well as router, and using this router it is possible to implement EIGRP routing protocol. By using EIGRP it is possible for load balancing on parallel links between sites and also manages load balancing.

6) BLOCK DIAGRAM:



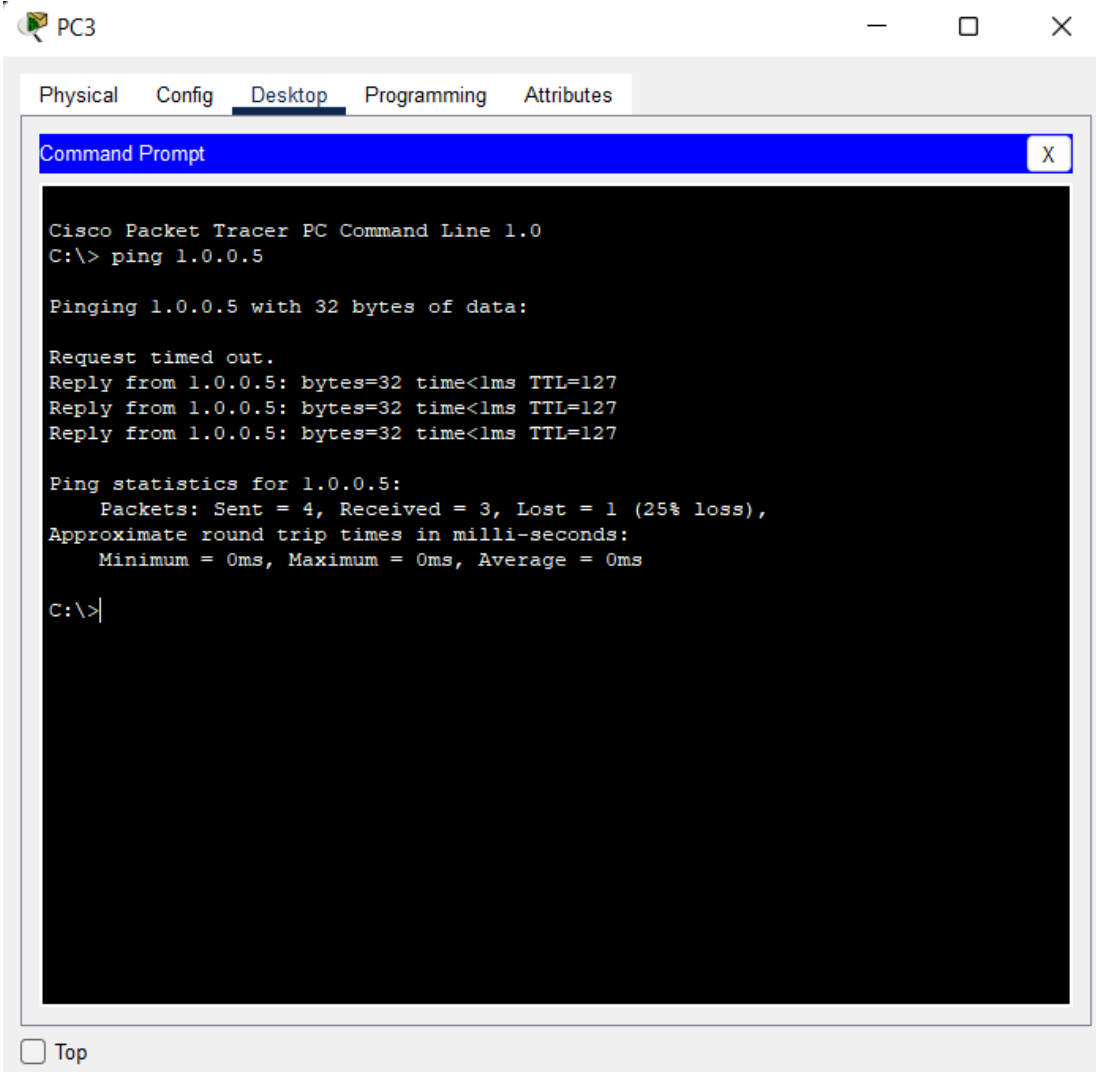
7) SCREEN SHOT OF PROJECT

DESIGN



OUTPUT

Server Room



The screenshot shows a Cisco Packet Tracer interface with a PC named 'PC3'. The 'Desktop' tab is selected, displaying a 'Command Prompt' window. The command prompt shows the execution of a 'ping 1.0.0.5' command. The output indicates that the first ping request timed out, while the subsequent three succeeded. The statistics show 4 packets sent, 3 received, and 1 lost (25% loss). The round trip times are all 0ms.

```
Cisco Packet Tracer PC Command Line 1.0
C:\> ping 1.0.0.5

Pinging 1.0.0.5 with 32 bytes of data:

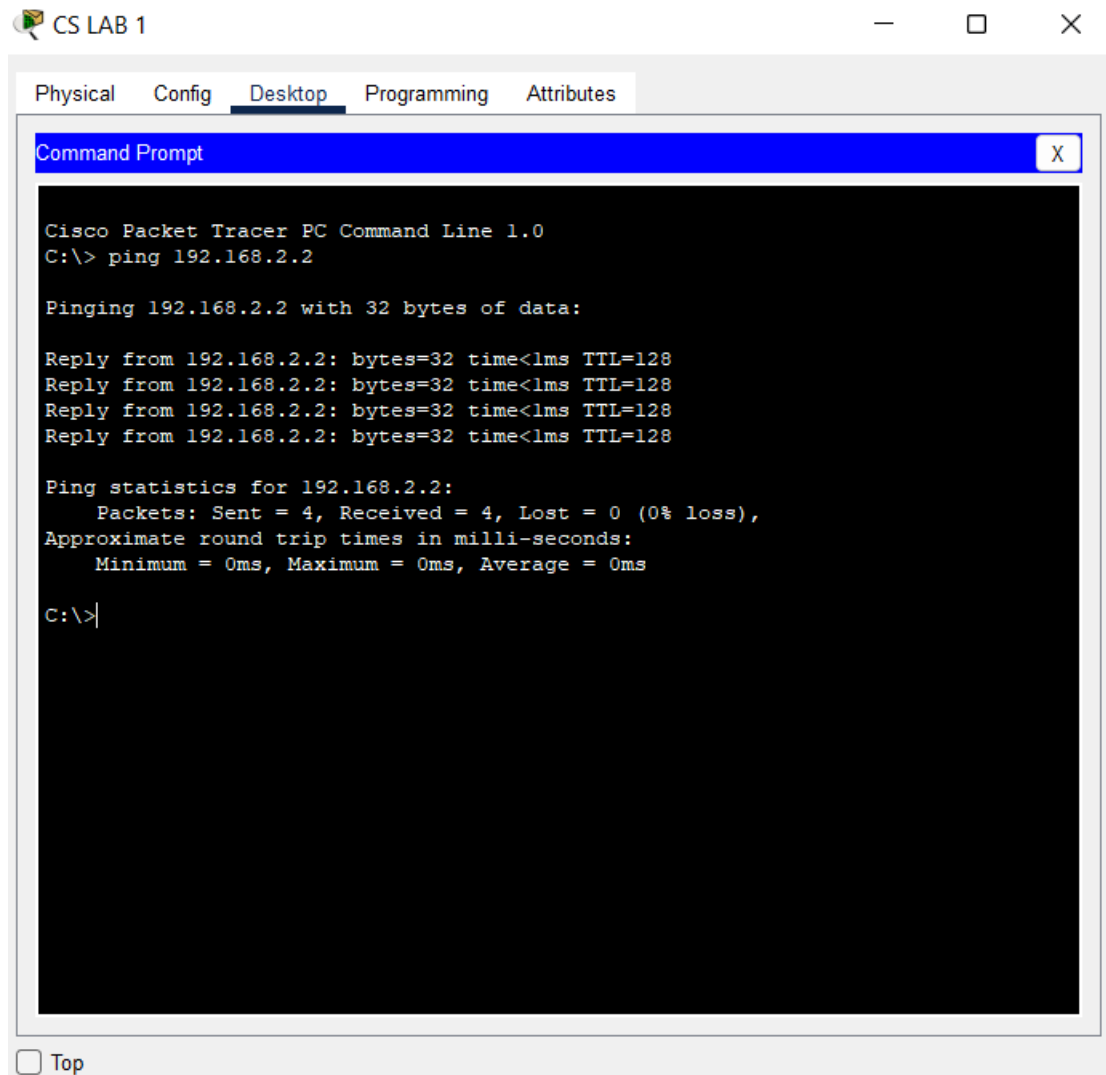
Request timed out.
Reply from 1.0.0.5: bytes=32 time<1ms TTL=127
Reply from 1.0.0.5: bytes=32 time<1ms TTL=127
Reply from 1.0.0.5: bytes=32 time<1ms TTL=127

Ping statistics for 1.0.0.5:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

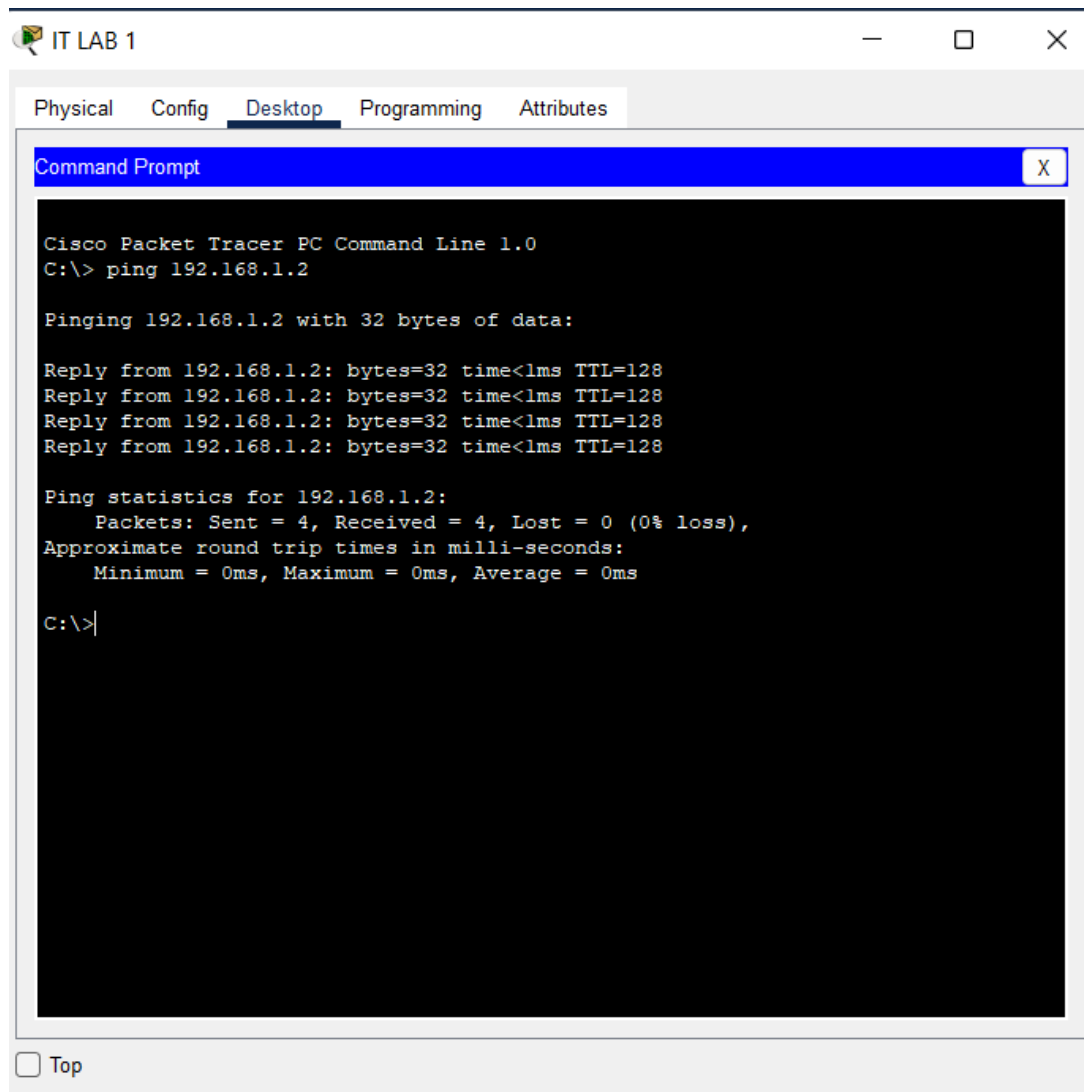
C:\>|
```

☐ Top

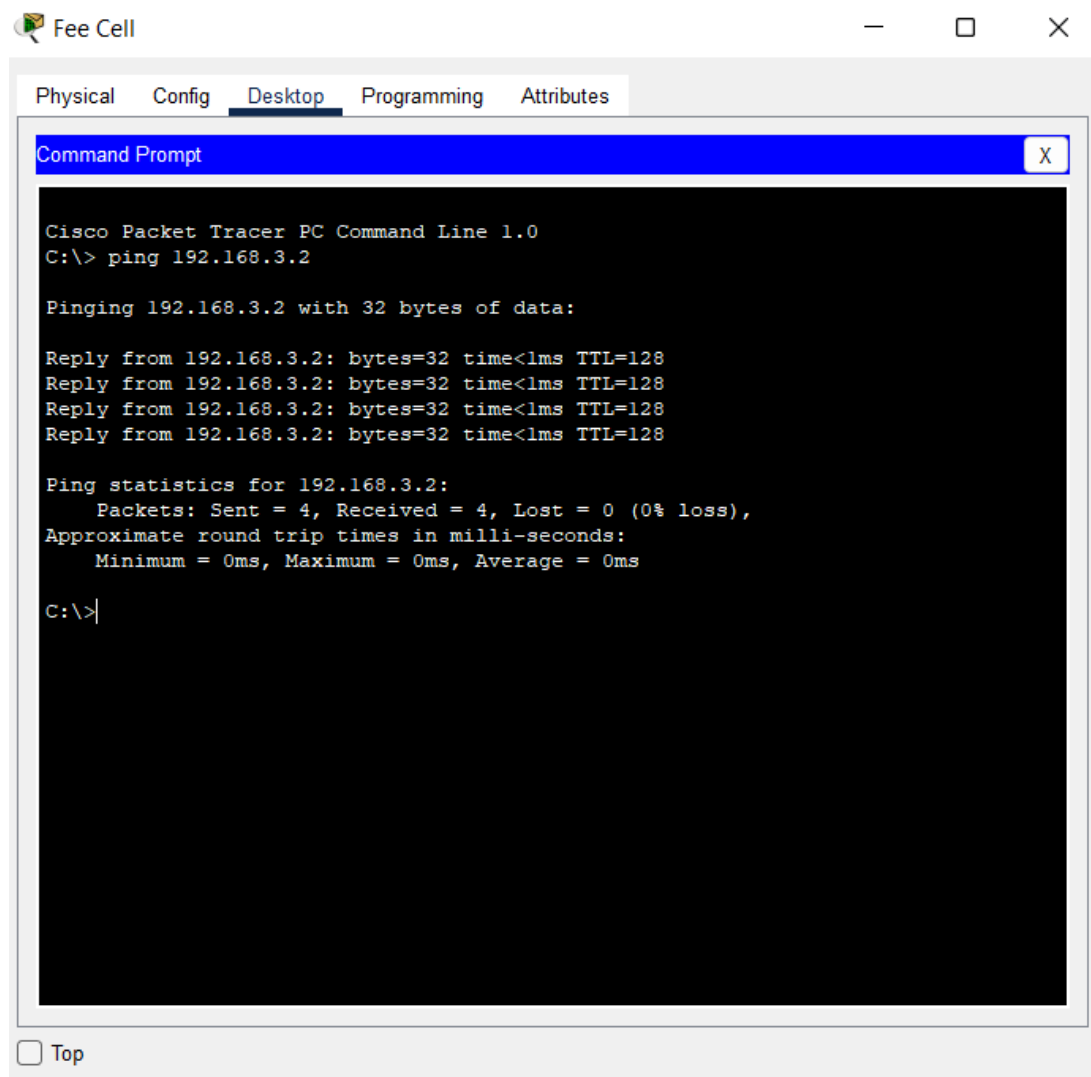
Computer Lab



IT Lab



Fee Department



8) INFERENCE FROM THE RESULTS:

- All students and staff members internet activities that occur on a web page are monitored.
- Set alerts to find out if sensitive files are uploaded or downloaded through email.
- Find out if users access websites deemed suspicious, or determined off-limits by management via real-time alerts and responses.

9) REFERENCES:

a) https://www.cisco.com/c/en/us/td/docs/solutions/Enterprise/Education/SchoolsSRA_DG/SchoolsSRA-DG/SchoolsSRA_chap2.html

b) <https://people.uwec.edu/hiltonts/101/CBAsample/projectsample.htm>