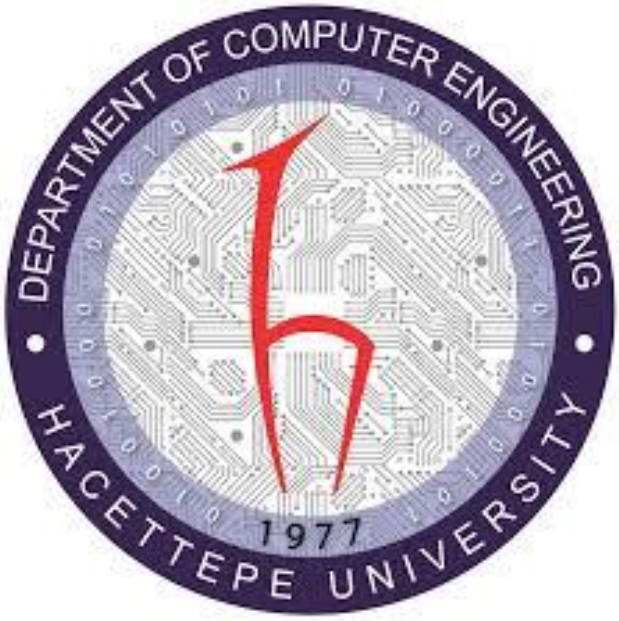
HACETTEPE UNIVERSITY

COMPUTER ENGINEERING DEPARTMENT

COMPUTER NETWORKS LABORATORY



EXPERIMENT

Vitual Local Area Networks (VLANs)

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Group No:12

AIM OF EXPERIMENT:

In this lab experiment, we created a VLAN using Switches. We saw the uses of Switch in Virtual Local Area Network using Cisco packet tracer.

DEFINITIONS AND EXPLANATIONS:

VLAN: Stands for "Virtual Local Area Network". A VLAN is a network created from one or more existing LANs. It enables groups of devices from multiple virtual networks to be combined into a single logical physical network. VLAN's advantages include helping with network efficiency by reducing traffic, making the system more secure by creating a virtual boundary around the unit and improving workspace distribution.

Switch: Switch is a network device which is used to enable the connection establishment and connection termination on the basis of need. Switch is operated on Data link layer.

VLAN Trunking: VLAN trunking enables the movement of traffic to different parts of the network configured as a VLAN. A trunk could be a point-to-point link between two network devices that carry quite one VLAN. With VLAN trunking, you'll be able to extend your configured VLAN across the whole network.

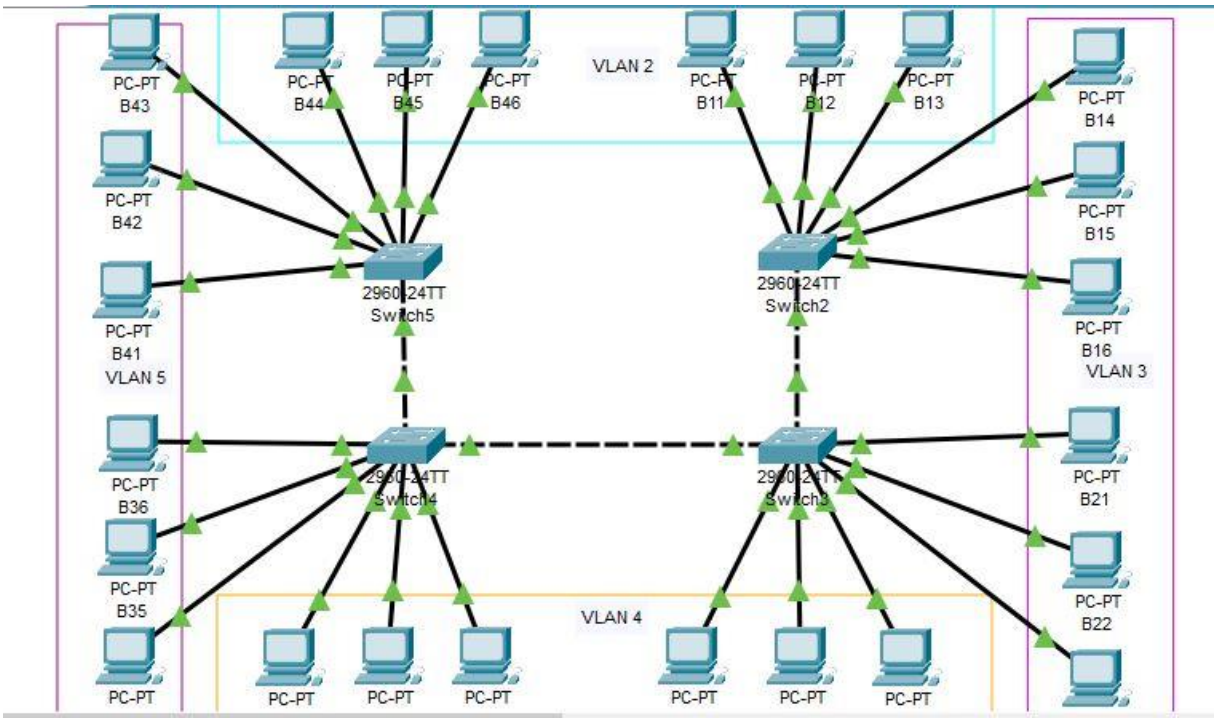
VLAN Tagging: VLAN Tagging, also referred to as Frame Tagging, may be a method developed by Cisco to assist identify packets travelling through trunk links. When an Ethernet frame traverses a trunk link, a special VLAN tag is added to the frame and sent across the trunk link.

DIFFERENCES BETWEEN LAN AND VLAN:

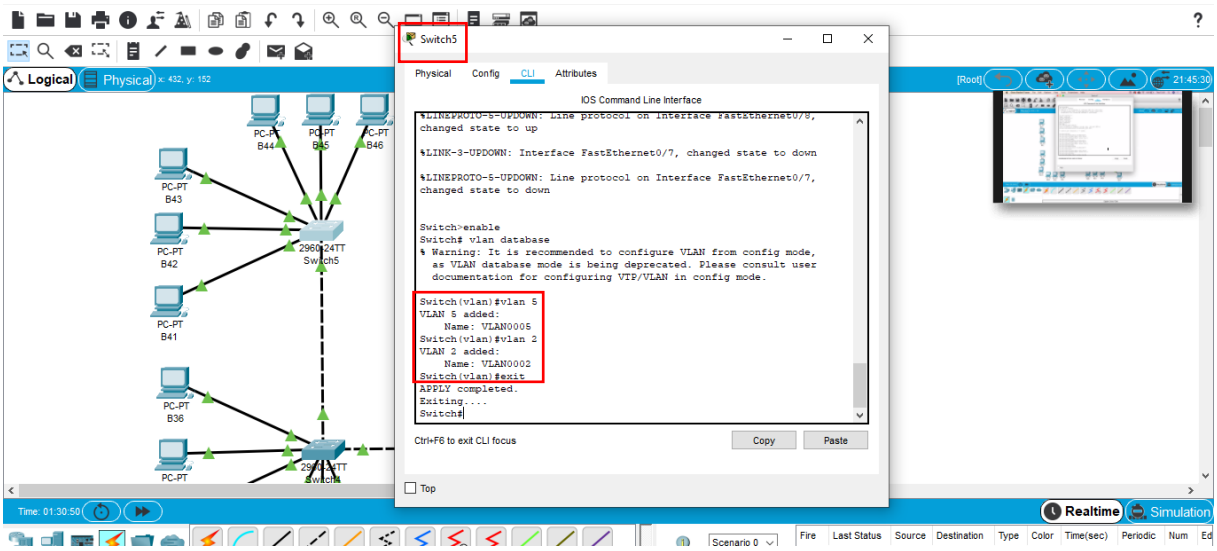
LAN	VLAN
LAN can be created with computer and hub or switches and is in a limited area.	VLAN can be created in a custom network from one or more LAN'S.
The latency is high.	The latency is lower.
The cost is high.	The cost is less.
In LAN the network packet can be advertised to every device.	In VLAN the network packet is sent to a broadcast domain.

PS: Because we are group 12 our IP addresses go like 10.12.xx.x .

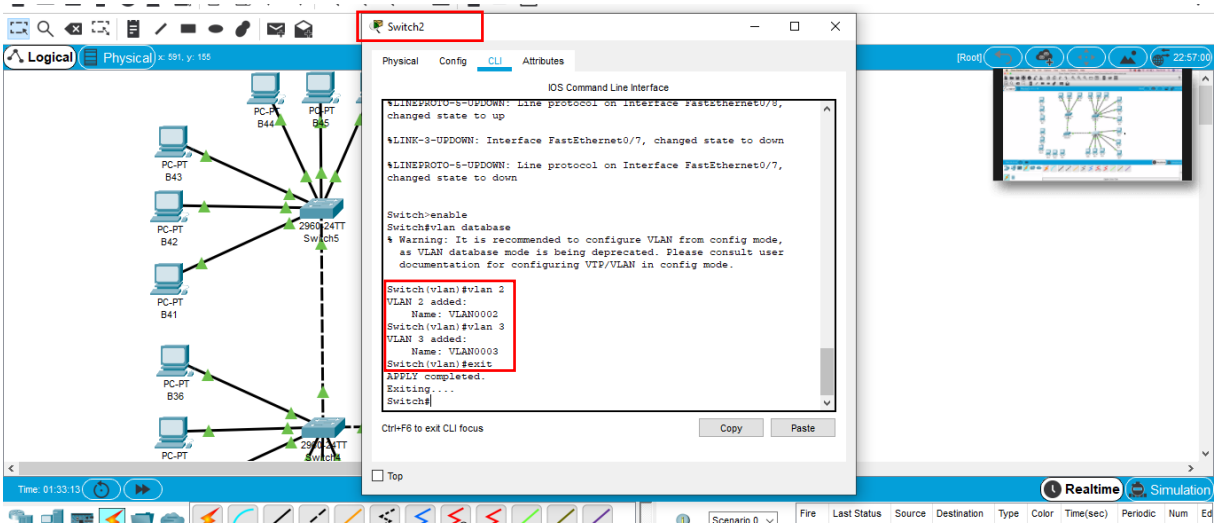
STEPS TAKEN:



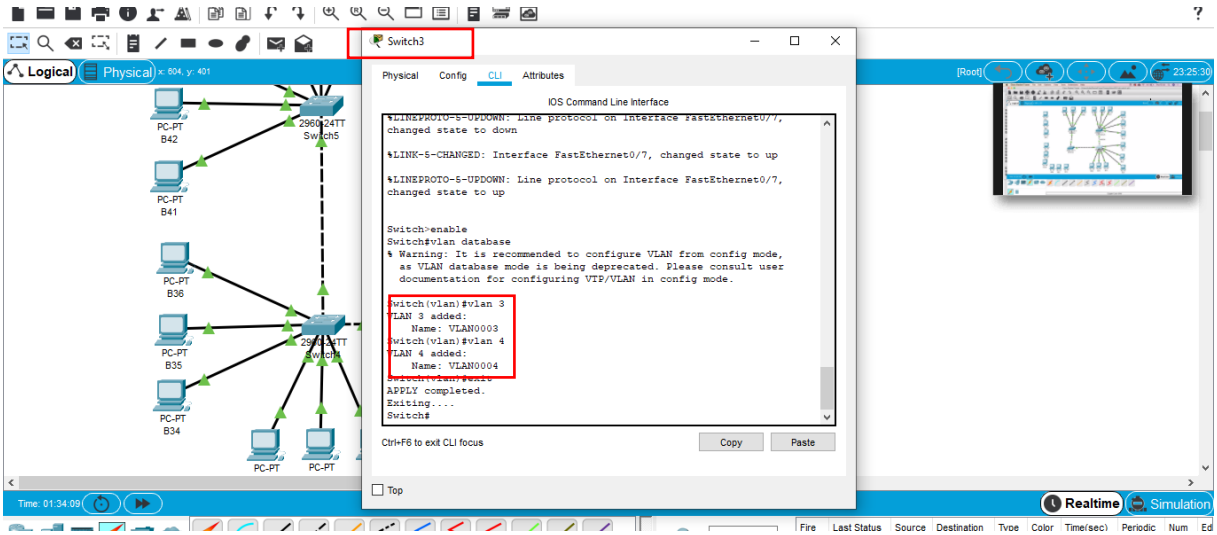
Topology



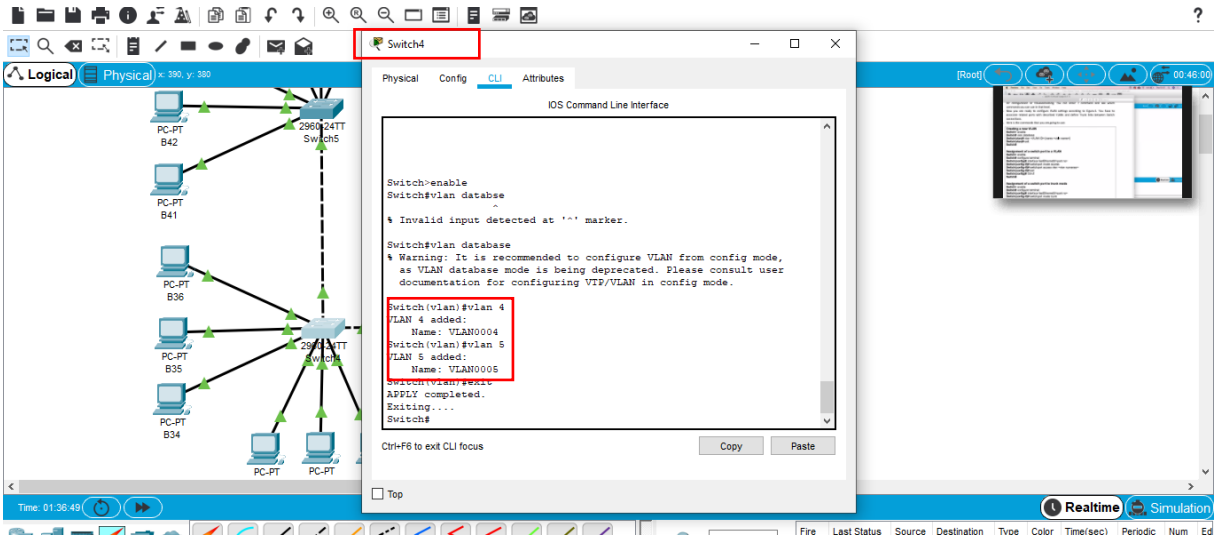
Switch5 connected to VLAN2 and VLAN5.



Switch2 connected to VLAN2 and VLAN3.

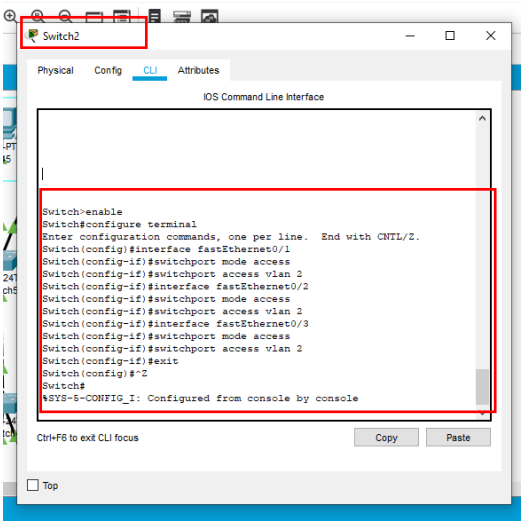


Switch3 connected to VLAN3 and VLAN4.

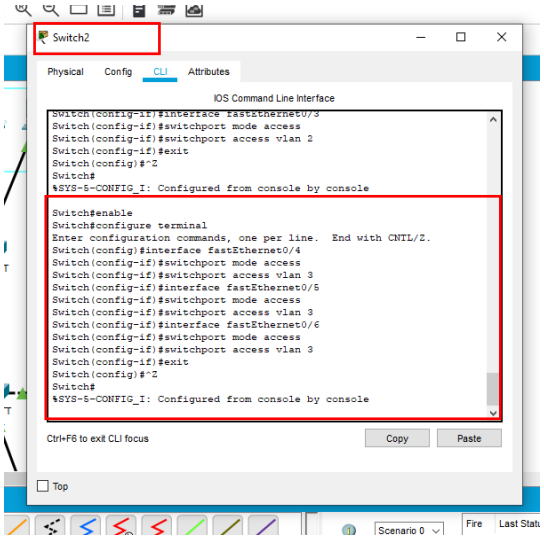


Switch4 connected to VLAN4 and VLAN5.

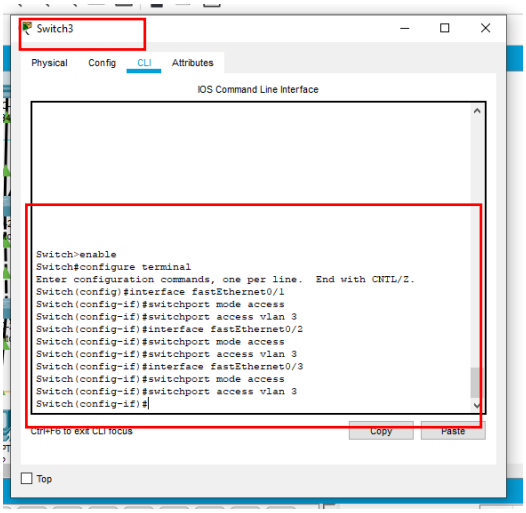
Assignment of a switch port to a VLAN.



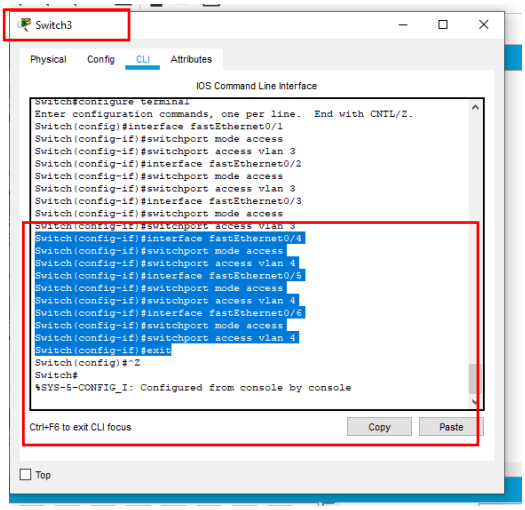
Switch2 assigned to VLAN2.



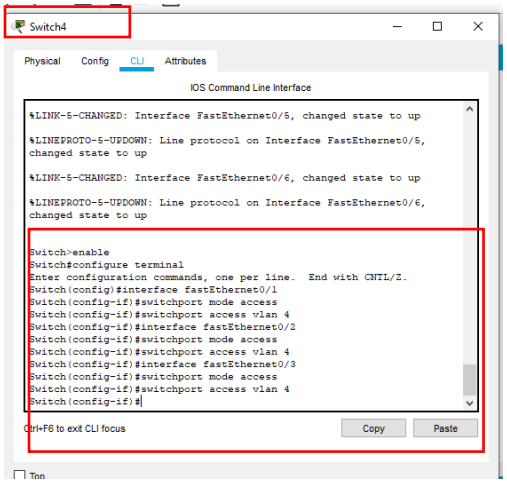
Switch2 assigned to VLAN3.



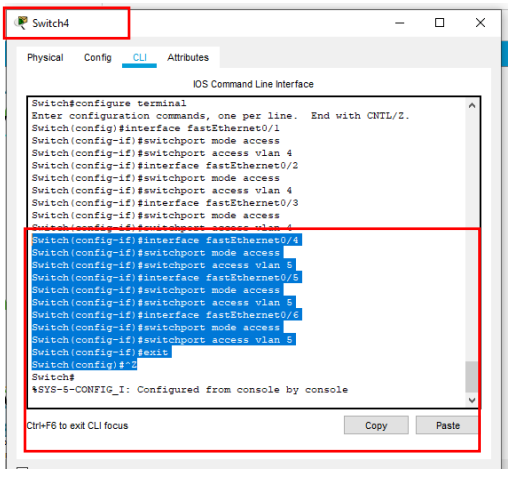
Switch3 assigned to VLAN3.



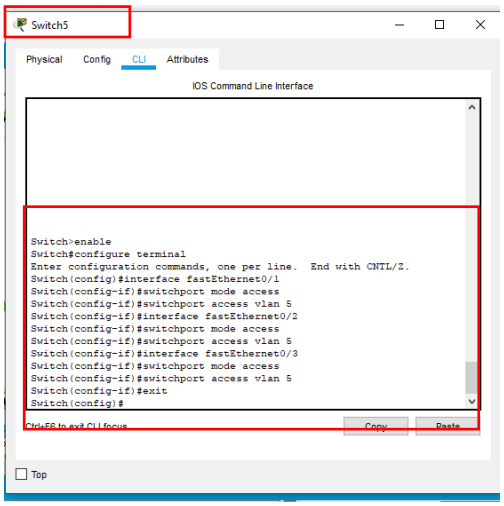
Switch3 assigned to VLAN4.



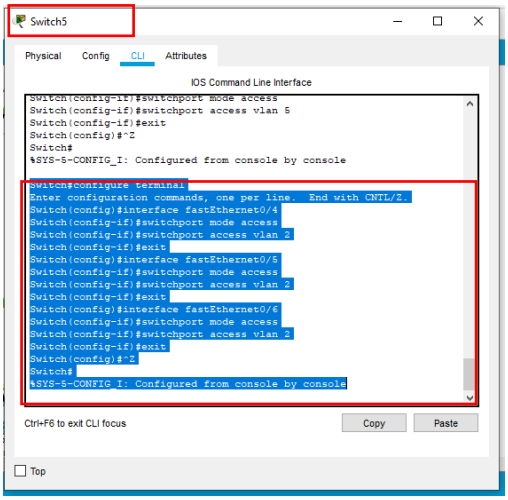
Switch4 assigned to VLAN4.



Switch4 assigned to VLAN5.

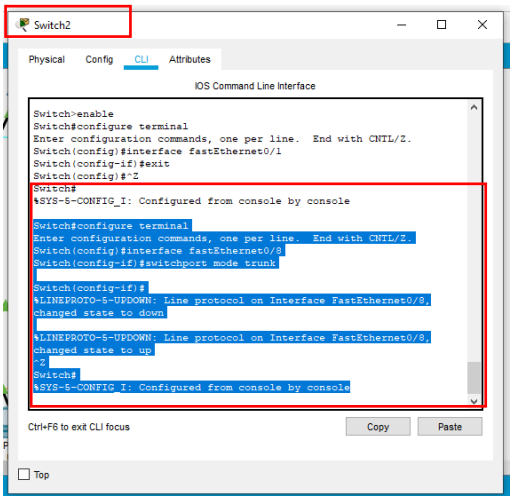


Switch5 assigned to VLAN5.

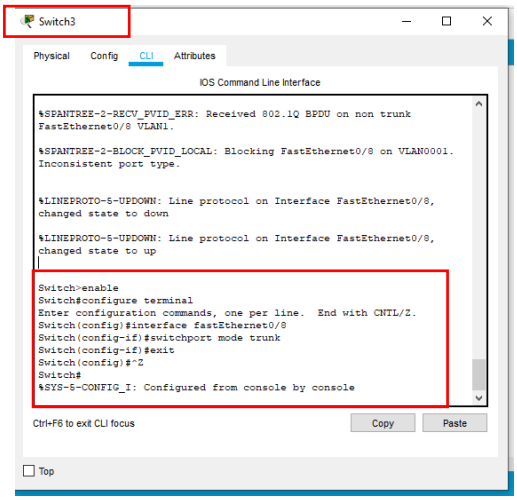


Switch5 assigned to VLAN2.

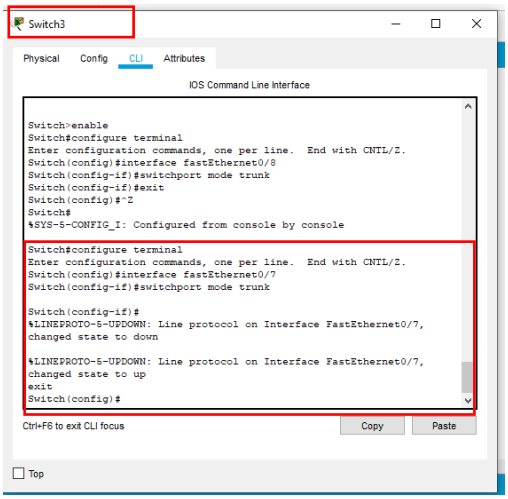
Assignment of a switch port to trunk mode



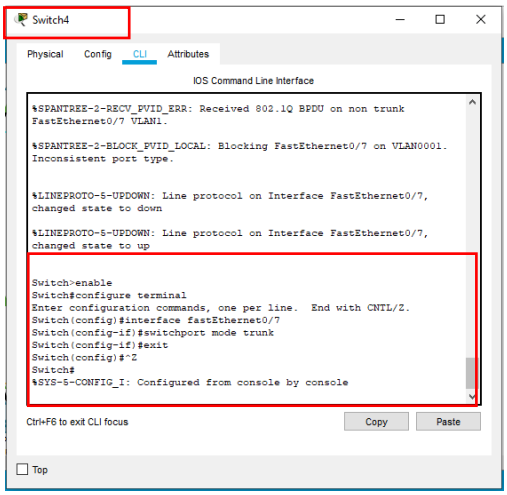
Switch 2 trunk mode(switch3).



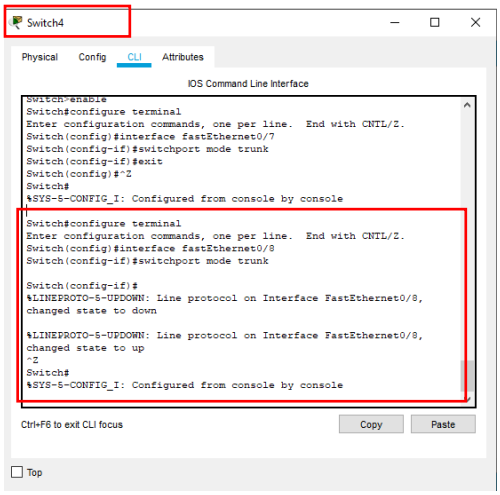
Switch3 trunk mode(switch2).



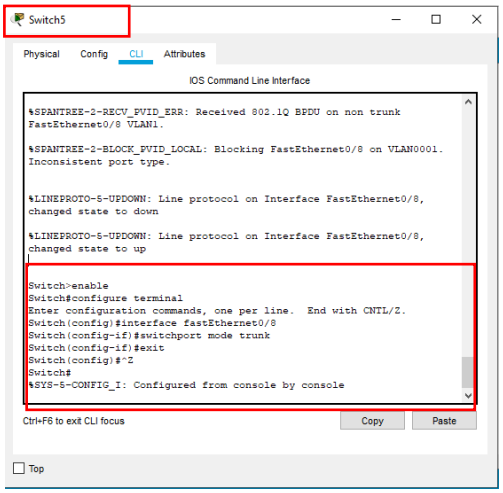
Switch3 trunk mode(switch4).



Switch4 trunk mode(switch3).

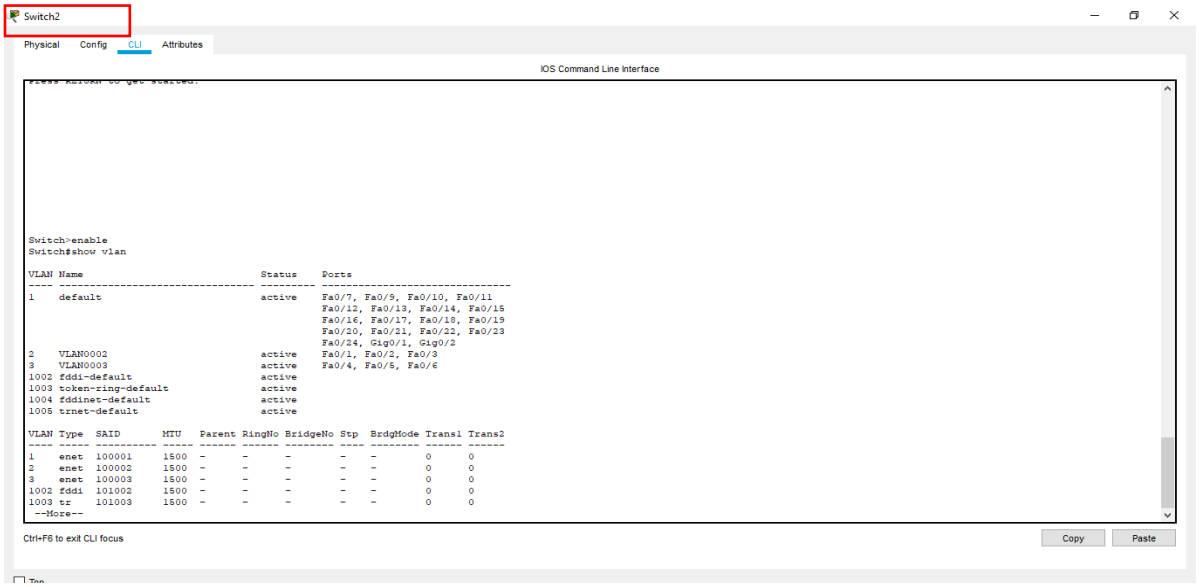


Switch4 trunk mode(switch5).

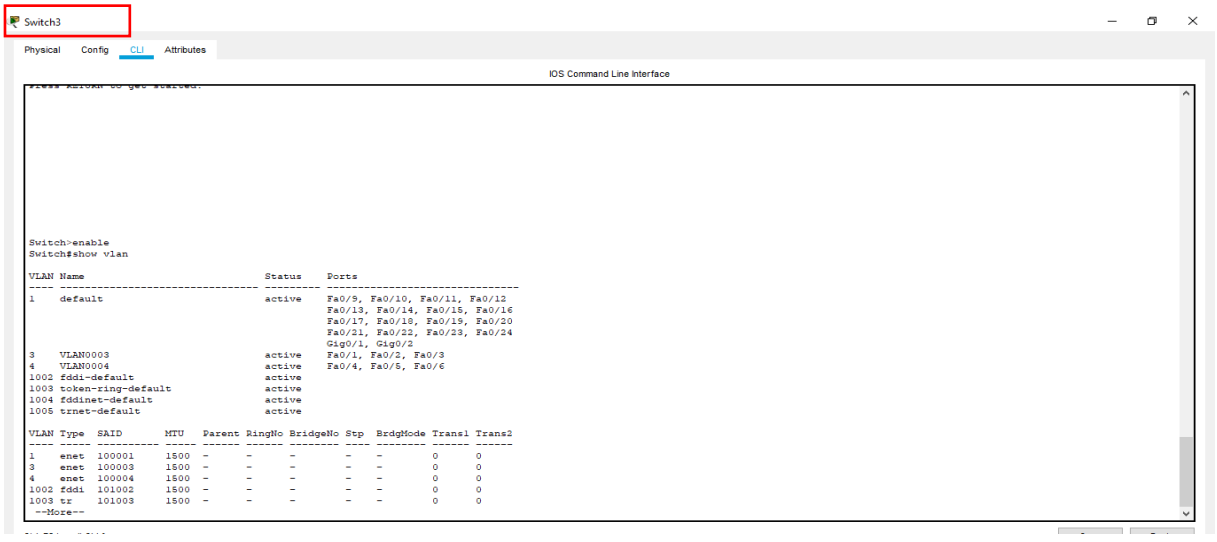


Switch5 trunk mode(switch4).

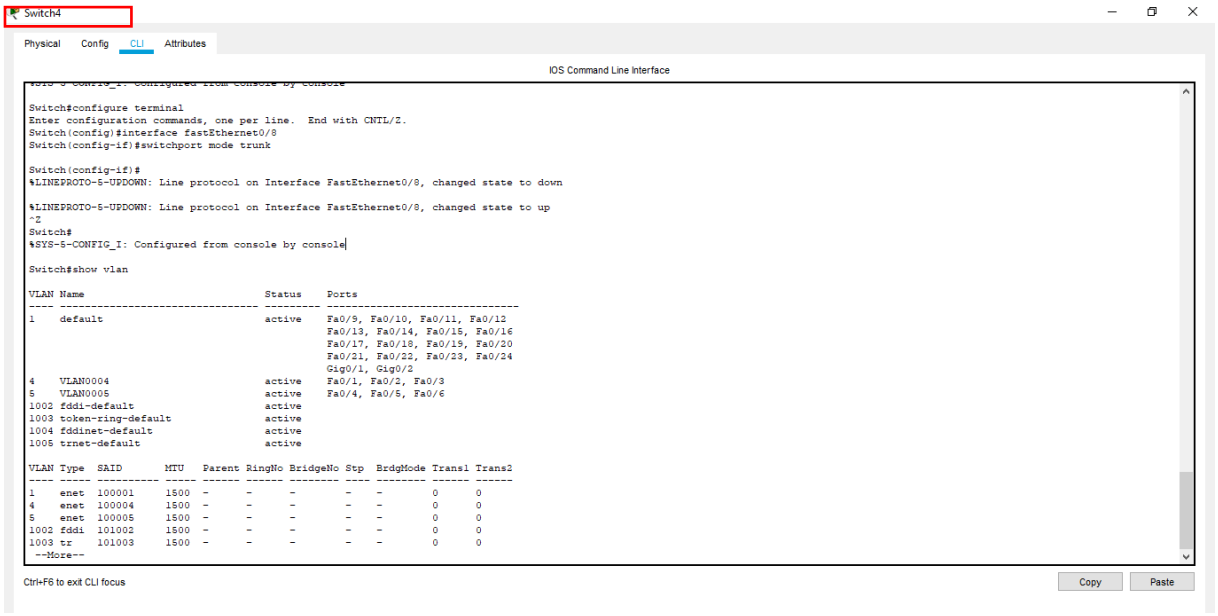
Displaying VLAN interface table



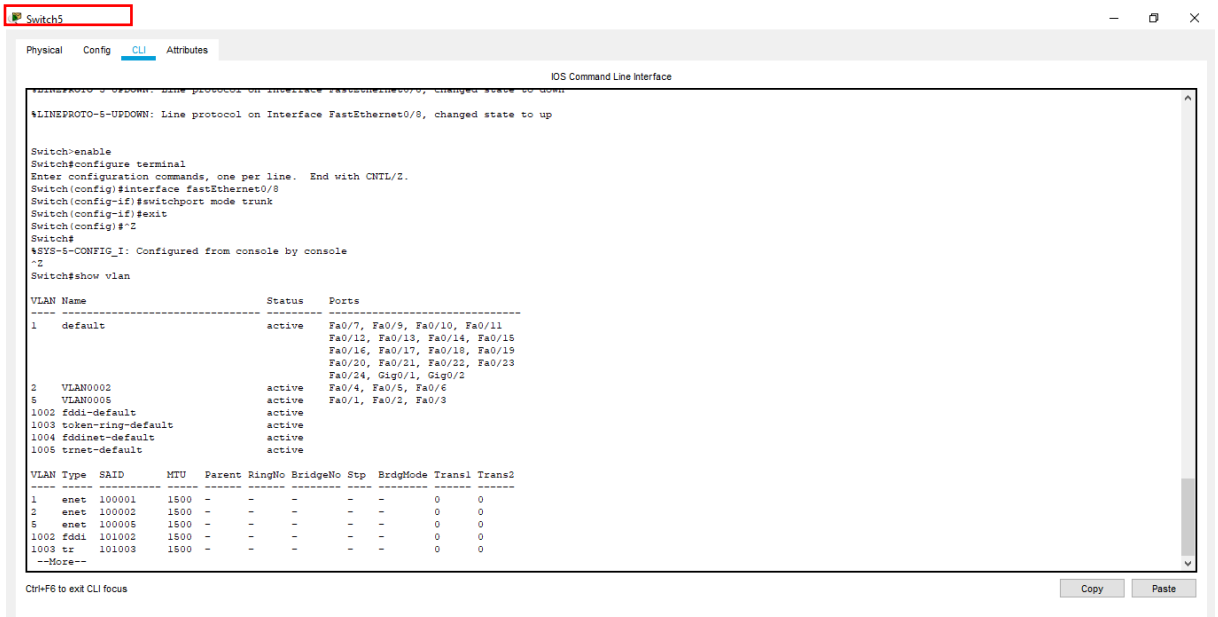
Switch 2 interface table



Switch 3 interface table

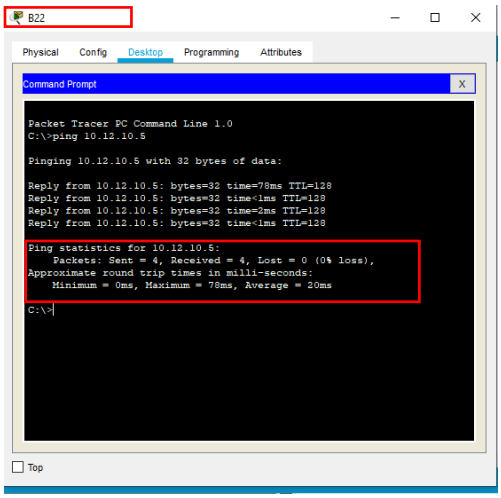


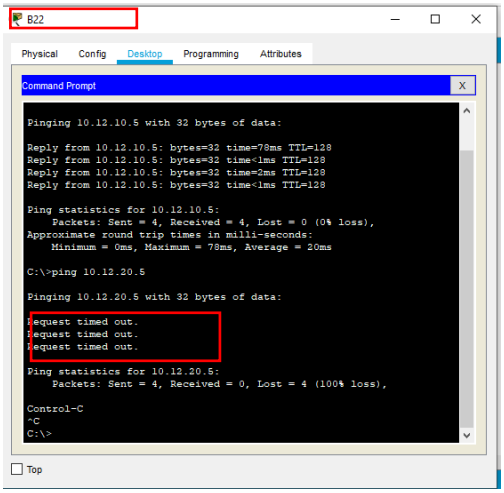
Switch 4 interface table



Switch 5 interface table

Sending Ping





B22→B15

B22→B25 Timeout

B22→B15 ping worked because both of them are in VLAN3.

B22→B25 Timeout because both of them are connected to switch3 but B22 is in VLAN3 while B25 is in VLAN4.