Department of Computer Science and Engineering
Islamic University of Technology (IUT)
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Laboratory Report

CSE 4412 : Data Communication and Networking Lab

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| Lab No | :08 |

**Title**: Understanding the concept of VLAN and configuration of VLAN to multiple user groups in different locations.

**Objective**:

1. Understand VLAN
2. Configuration of VLAN

**Devices Used In the Experiment:**

1.CISCO Packet Tracer

**Theory:**

**VLAN Definition:**

A virtual LAN (VLAN) is a network that connects together a subset of devices. These devices within a subset are connected through a physical medium or LAN.

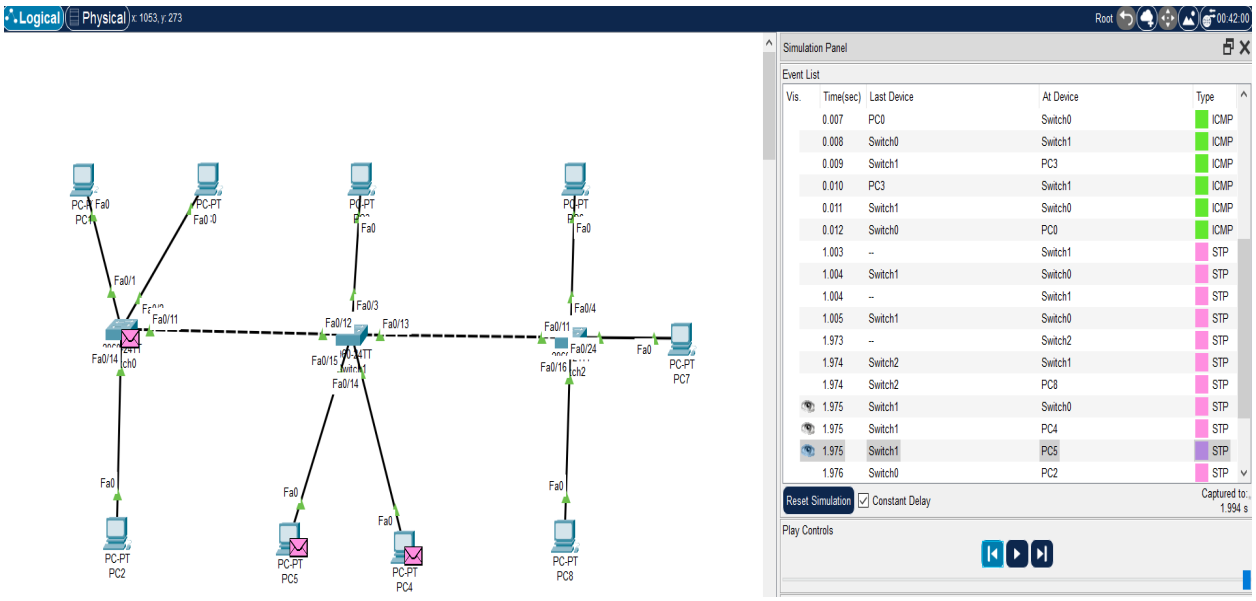
**Usage of VLAN:**

Explain the usage of VLAN with an example with three different user groups situated in three different levels of an office building.

Suppose, an office building with three different user groups situated in three different levels - IT, Human Resource and Finance. For the IT group, we can create IT VLAN .For the Human Resource group, we can create HR VLAN. For the Finance group, we can create Finance VLAN.

Using VLAN these groups can communicate with the devices within their own VLAN. Devices within the IT group can only communicate with other devices in the IT group. Same goes for Human Resource and Finance.

**Diagram of the experiment:**



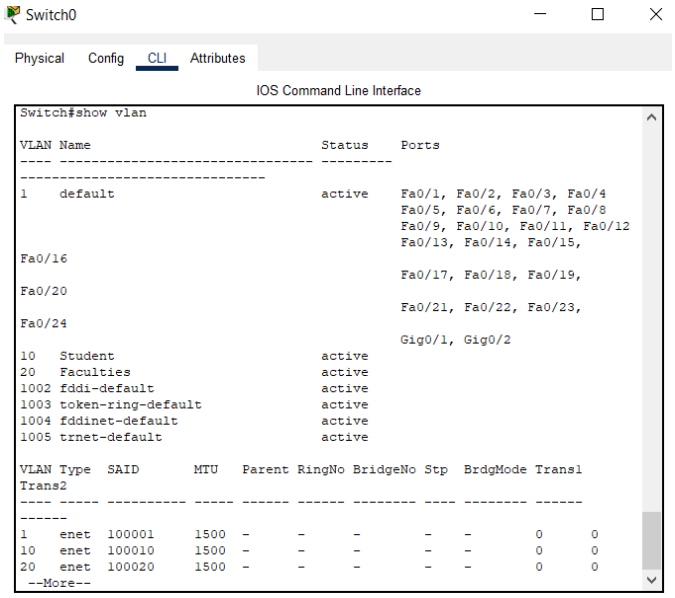

**Configuration of different Switches:**

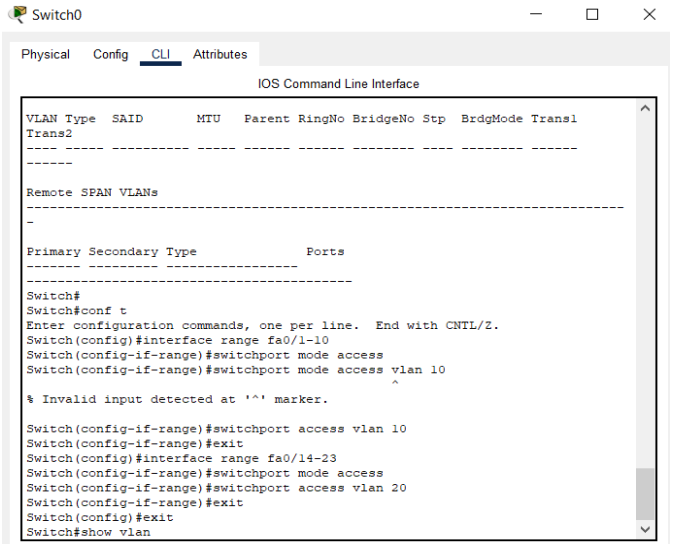
Commands for configuring VLAN:

To configure the VLAN I at first went to the CLI mode of a switch and then entered the following commands:

En ⟶conf t ⟶ vlan 10 ⟶name Student ⟶exit.

After that I created another VLAN named Faculties in the same way.

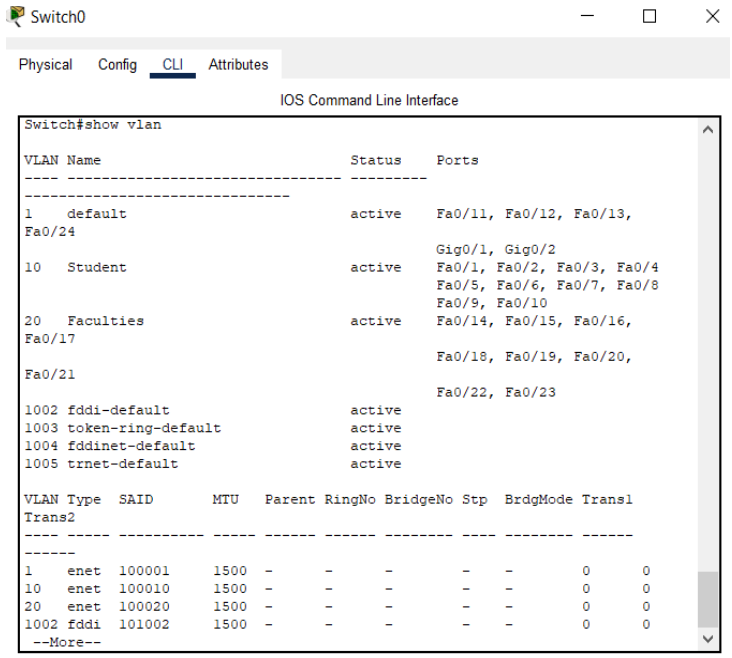


Then I assigned ports to the the VLAN with the following commands:

Conf t ⟶ interface range fa0/1-10 ⟶switchport mode access ⟶ switchport access vlan 10 ⟶ exit.

Similarly, I assigned the interfaces fa0/14 to fa0/23 to VLAN 20.

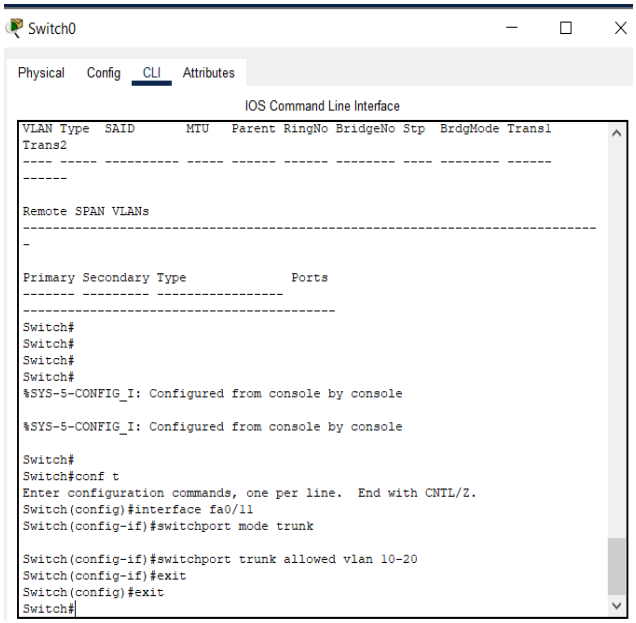


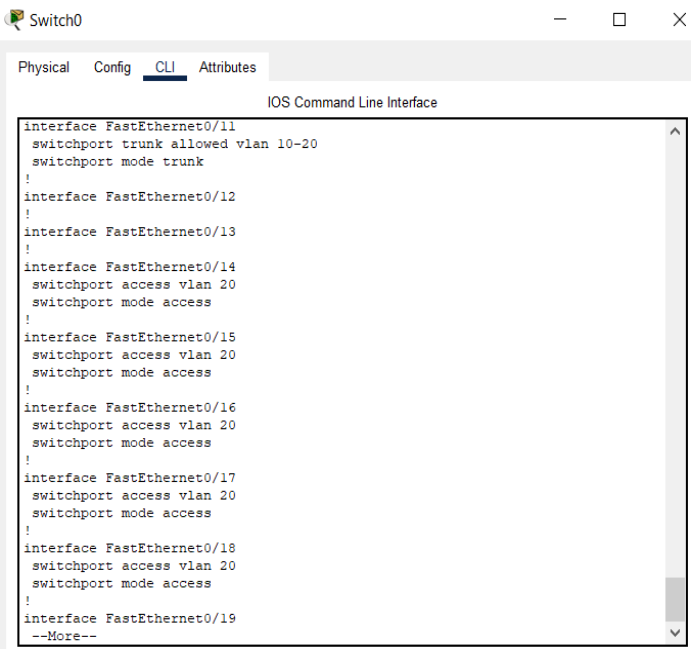

After that I assigned IP addresses to the PCs. All the PCs belonging to the Students VLAN were under the network address 192.162.10.0 and the PCs belonging to the Students VLAN were under the network address 192.162.20.0 .

I configured the other 2 switches in the same way. In switch 2 there were 3 VLANS including the Management VLAN.

After that I configured the ports which were connecting switches among themselves and set their mode as trunk:

En ⟶ conf t ⟶ interface fa0/11 ⟶ switchport mode trunk ⟶ switchport trunk allowed vlan 10-20 ⟶ exit

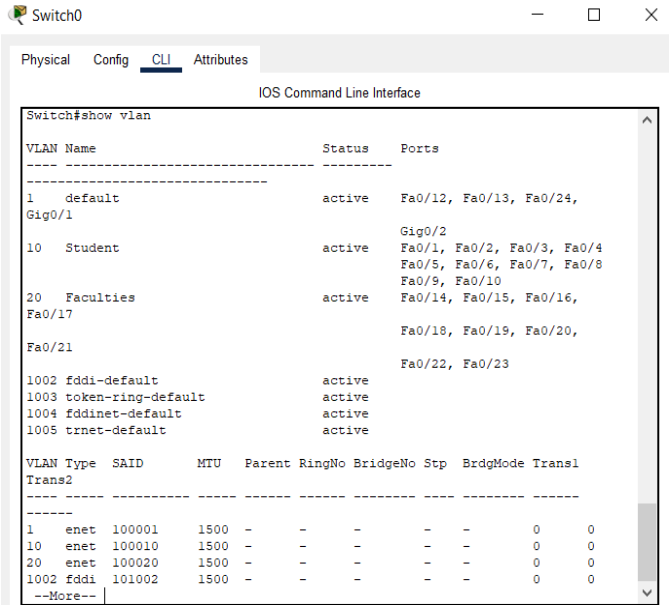


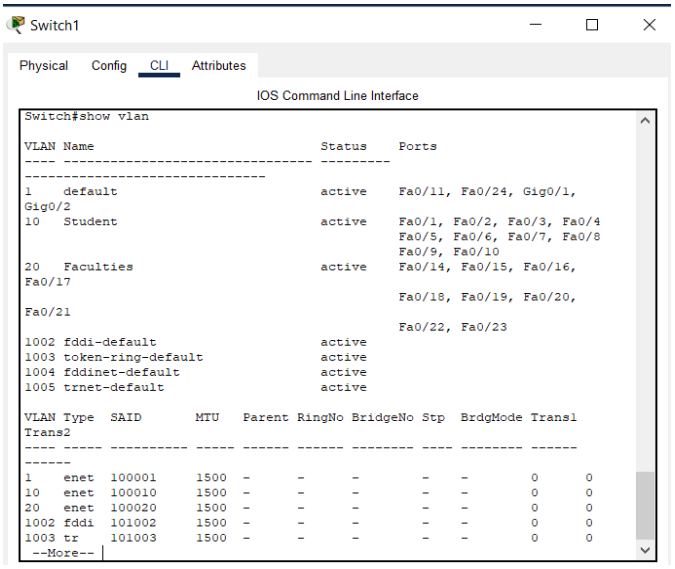



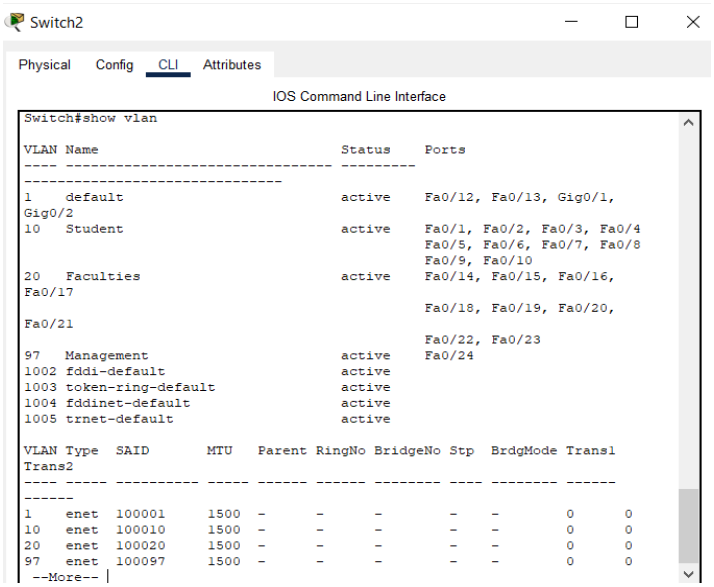

To see the configuration of all the ports including trunk, I entered the following command:
Show running-config

**Observation:**

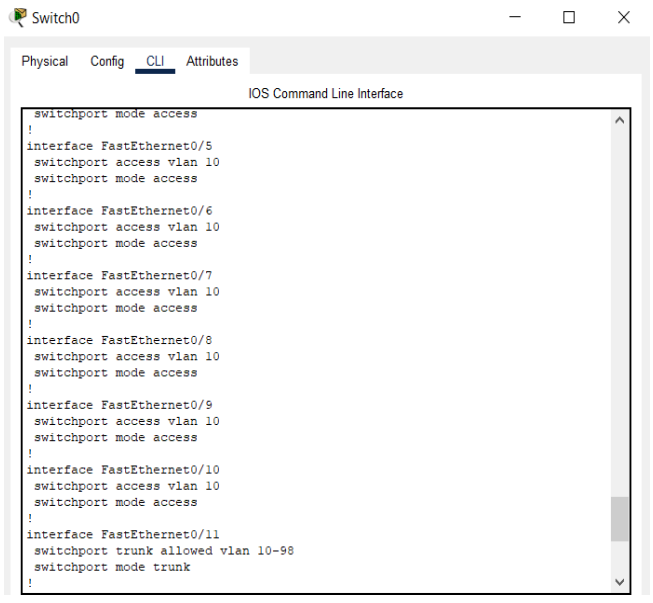
The screenshots of *show vlan* command in two switches are shown below:

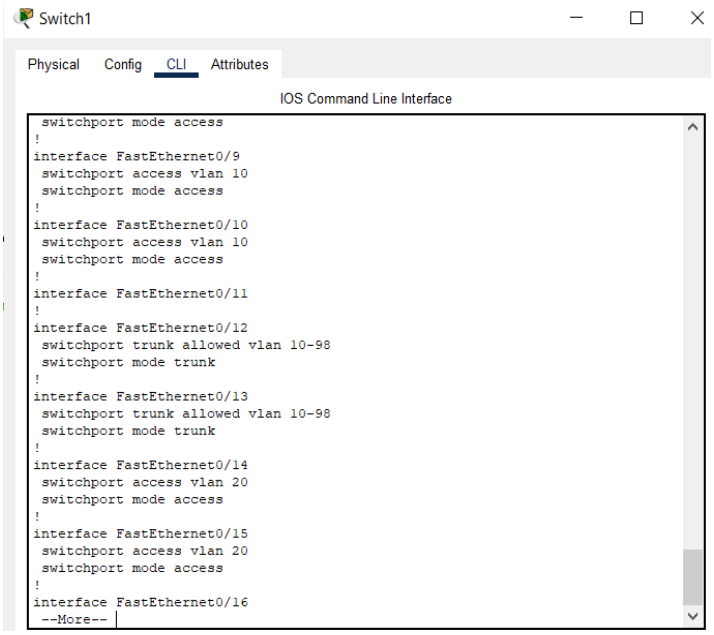


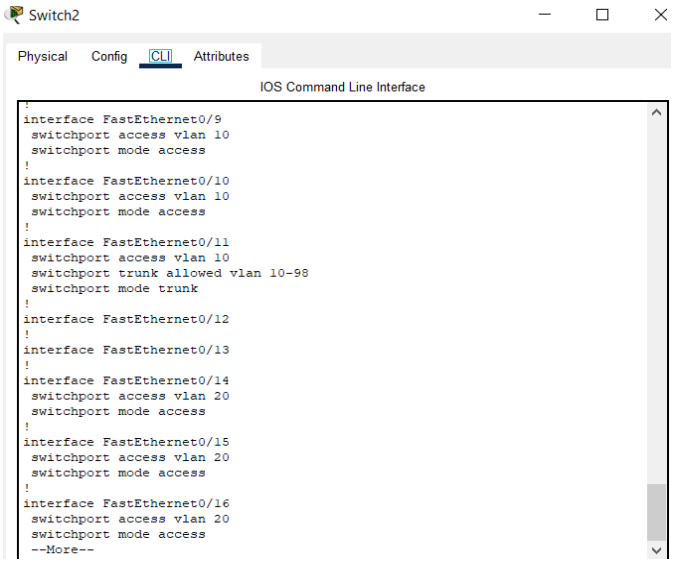






To see the interface with trunk access I used *show running-config*






## Challenges:

In this task, I faced difficulties while configuring the switches as there were too many commands for three different switches.