

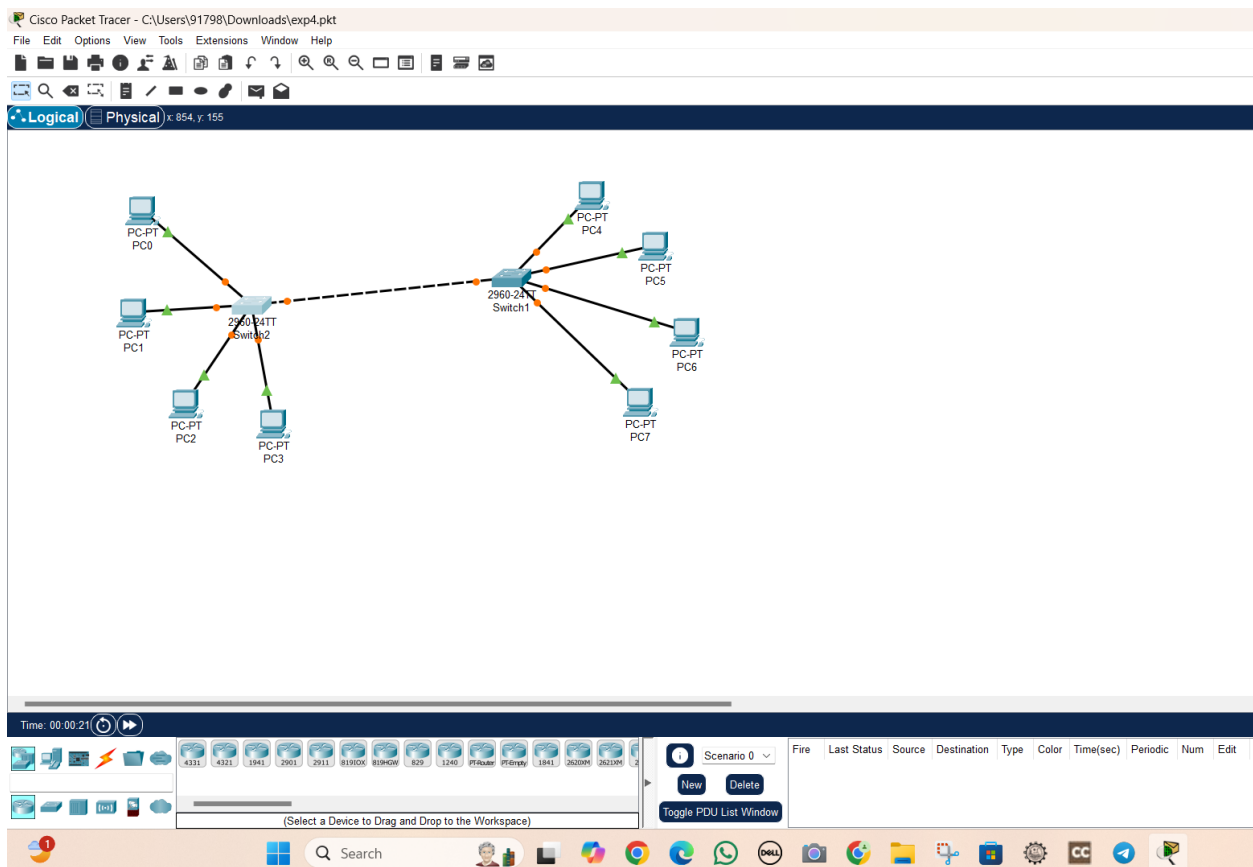
### EXP: 4 Construction of Different VLANS and TRUNKING using cisco packet tracer.

Constructing different VLANs (Virtual Local Area Networks) and configuring trunking using Cisco Packet Tracer involves a few steps:

Trunking is used in a network to allow multiple VLANs to communicate across network devices (like switches) over a single physical link. It enables the transportation of traffic from different VLANs over the same link, reducing the need for multiple physical connections and ensuring that VLAN segmentation is maintained across the network.

#### Step 1: Setting Up the Network Topology

#### Network Architecture



### *Devices:*

- **Switch 1 (S1)**
- **Switch 2 (S2)**
- **PCs (End Devices)**
  - **PC1** and **PC2** connected to **S1** (assigned to VLAN 10)
  - **PC3** and **PC4** connected to **S1** (assigned to VLAN 20)
  - **PC5** and **PC6** connected to **S2** (assigned to VLAN 10)
  - **PC7** and **PC8** connected to **S2** (assigned to VLAN 20)

### *VLANs:*

- **VLAN 10:** IP range 192.168.10.0/24
- **VLAN 20:** IP range 192.168.20.0/24

### *Trunk Ports:*

- **Fa0/24** on both **S1** and **S2**

## **Configuration Steps**

### *Step 1: Setting Up the Network Topology*

1. **Add Devices in Packet Tracer:**
  - Drag and drop two switches (**S1** and **S2**).
  - Add PCs and connect them to the switches using copper straight-through cables.
  - Connect **fa0/24** of **S1** to **fa0/24** of **S2** using a cross-over cable.

## **Switch 0 Configuration**

Switch>enable

Switch#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

### **Create VLAN 10**

Switch(config)#vlan 10

Switch(config-vlan)#name VLAN10

Switch(config-vlan)#exit

### **Create VLAN 20**

Switch(config)#vlan 20

Switch(config-vlan)#name VLAN20

Switch(config-vlan)#exit

### **Assign Ports to VLAN 10:**

Switch(config)#interface range fa0/1 - 4

Switch(config-if-range)#switchport mode access

Switch(config-if-range)#switchport access vlan 10

Switch(config-if-range)#exit

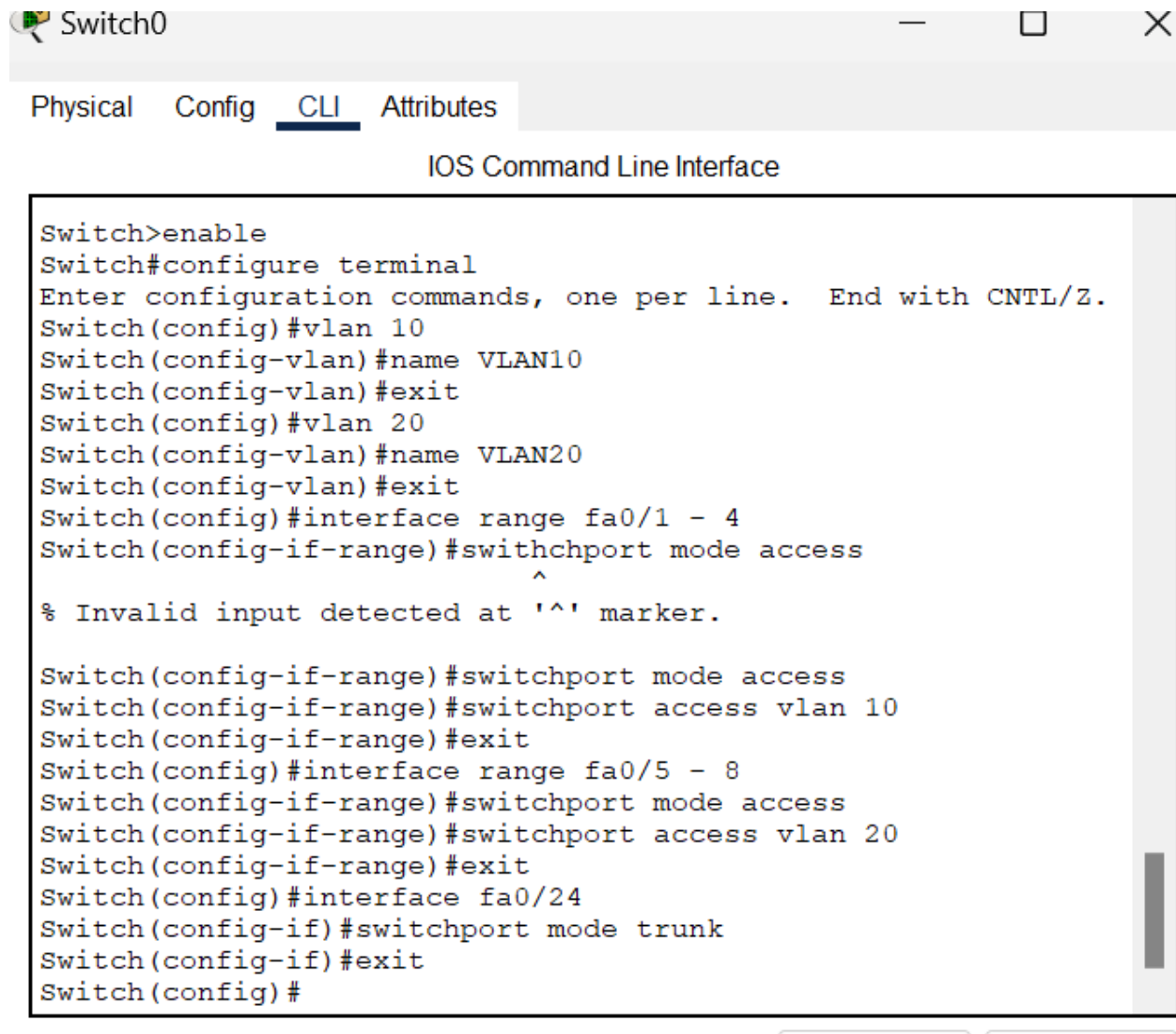
## Assign Ports to VLAN 20:

```
Switch(config)#interface range fa0/5 - 8
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 20
Switch(config-if-range)#exit
```

## Set a Port to Trunk Mode- S0

```
Switch(config)#interface fa0/24
Switch(config-if)#switchport mode trunk
Switch(config-if)#exit
```

```
Switch(config)#
```



```
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#vlan 10
Switch(config-vlan)#name VLAN10
Switch(config-vlan)#exit
Switch(config)#vlan 20
Switch(config-vlan)#name VLAN20
Switch(config-vlan)#exit
Switch(config)#interface range fa0/1 - 4
Switch(config-if-range)#switchchport mode access
                        ^
% Invalid input detected at '^' marker.

Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 10
Switch(config-if-range)#exit
Switch(config)#interface range fa0/5 - 8
Switch(config-if-range)#switchport mode access
Switch(config-if-range)#switchport access vlan 20
Switch(config-if-range)#exit
Switch(config)#interface fa0/24
Switch(config-if)#switchport mode trunk
Switch(config-if)#exit
Switch(config)#
```

## Switch 1 Configuration

```
Switch>enable
Switch#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
```

## Create VLAN 10

```
Switch(config)#vlan 10
```

```
Switch(config-vlan)#name VLAN10  
Switch(config-vlan)#exit
```

### **Create VLAN 20**

```
Switch(config)#vlan 20  
Switch(config-vlan)#name VLAN20  
Switch(config-vlan)#exit
```

### **Assign Ports to VLAN 10:**

```
Switch(config)#interface range fa0/1-4  
Switch(config-if-range)#switchport mode access  
Switch(config-if-range)#switchport access vlan 10  
Switch(config-if-range)#exit
```

### **Assign Ports to VLAN 20:**

```
Switch(config)#interface range fa0/5-8  
Switch(config-if-range)#switchport mode access  
Switch(config-if-range)#switchport access vlan 20  
Switch(config-if-range)#exit
```

### **Configuring Trunking on Switch 1**

```
Switch(config)#interface fa0/24  
Switch(config-if)#switchport mode trunk  
Switch(config-if)#exit  
Switch(config)#
```

```
Switch#
```



## Check VLANs:

Switch# show vlan brief

```
Switch>show vlan brief
```

VLAN	Name	Status	Ports
1	default	active	Fa0/9, Fa0/10, Fa0/11, Fa0/12 Fa0/13, Fa0/14, Fa0/15, Fa0/16 Fa0/17, Fa0/18, Fa0/19, Fa0/20 Fa0/21, Fa0/22, Fa0/23, Gig0/1 Gig0/2
10	VLAN10	active	Fa0/1, Fa0/2, Fa0/3, Fa0/4
20	VLAN20	active	Fa0/5, Fa0/6, Fa0/7, Fa0/8
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

```
Switch>|
```

## Step 5: Configure End Devices

### 1. Assign IP Addresses to PCs:

- PC1: 192.168.10.1/24
- PC2: 192.168.10.2/24
- PC3: 192.168.20.1/24
- PC4: 192.168.20.2/24
- PC5: 192.168.10.3/24
- PC6: 192.168.10.4/24
- PC7: 192.168.20.3/24
- PC8: 192.168.20.4/24

### □ Test Connectivity within VLANs:

- Ping from PC1 to PC2 (both in VLAN 10)
- Ping from PC3 to PC4 (both in VLAN 20)
- Ping from PC5 to PC1 (both in VLAN 10, across switches)

```
C:\>ping 192.168.10.1

Pinging 192.168.10.1 with 32 bytes of data:

Reply from 192.168.10.1: bytes=32 time<1ms TTL=128
Reply from 192.168.10.1: bytes=32 time<1ms TTL=128
Reply from 192.168.10.1: bytes=32 time<1ms TTL=128
Reply from 192.168.10.1: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.10.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

- **Ping** from **PC7** to **PC3** (both in VLAN 20, across switches)

☐ **Verify that PCs in different VLANs cannot communicate without a router:**

- **Ping** from **PC1** to **PC3** should fail (VLAN 10 to VLAN 20)
- **Ping** from **PC7** to **PC1**