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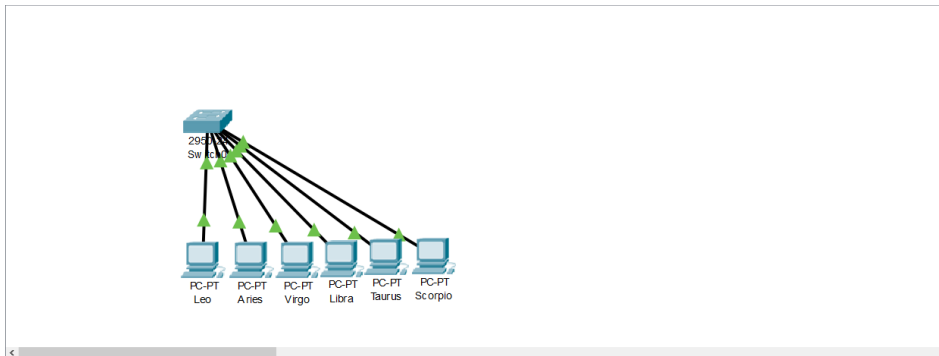
## MODUL 4

### VIRTUAL LAN DAN TRUNKING

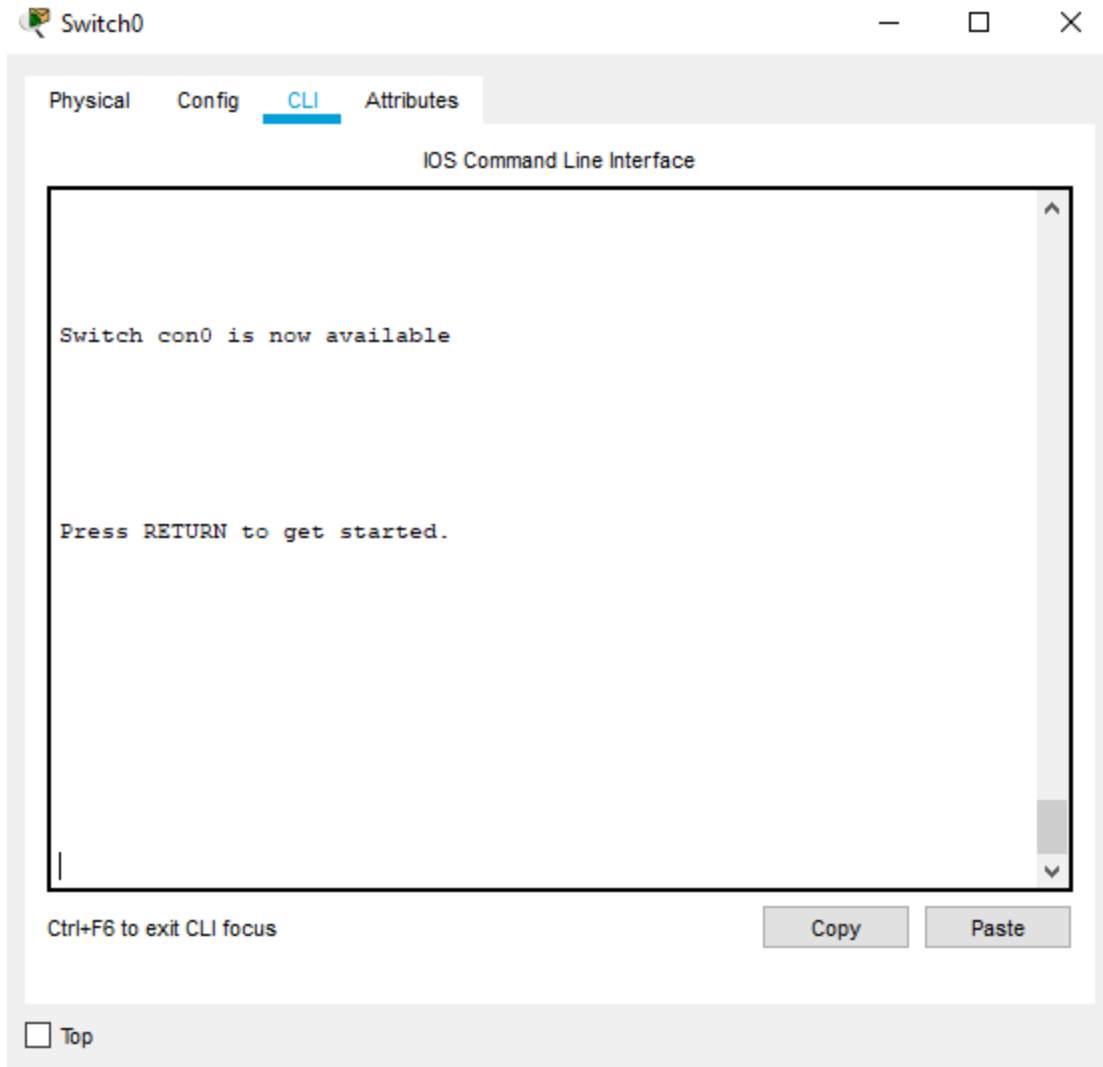
#### C. Kegiatan Praktikum

##### Kegiatan 1. Topologi 1

1. Menggunakan packet tracer buat topologi berikut ini dengan menggunakan switch.



2. Beri nama masing-masing perangkat dengan SW1 (Switch), Leo (PC0), Aries (PC1), Virgo (PC2), Pisces (PC3), Taurus (PC4), dan Scorpio (PC5)
3. Konfigurasi masing-masing PC dengan nama dan alamat IP berikut ini :
  - Leo = 172.21.1.1/24
  - Aries = 172.21.1.2/24
  - Virgo = 172.21.1.3/24
  - Libra = 172.21.1.4/24
  - Taurus = 172.21.1.5/24
  - Scorpio = 172.21.1.6/24
4. Konfigurasi pada switch dengan *mode user* atau *mode privileged*, buat 3 VLAN dengan nama zodiak1, zodiak2, dan zodiak3. Dengan cara klik pada switch 2 kali. Kemudian pilih CLI.



Langkah pengoperasian

Switch>enable

Switch#conf term

Switch(config)#vlan 10

Switch(config)#name zodiak1

Switch(config)#vlan 20

Switch(config)#name zodiak2

Switch(config)#vlan 30

Switch(config)#name zodiak3

5. Pada *mode configuration* , konfigurasi port-port switch ke dalam VLAN zodiak1, zodiak2, dan zodiak3 dengan anggota sebagai berikut.

- zodiak1 = leo dan libra

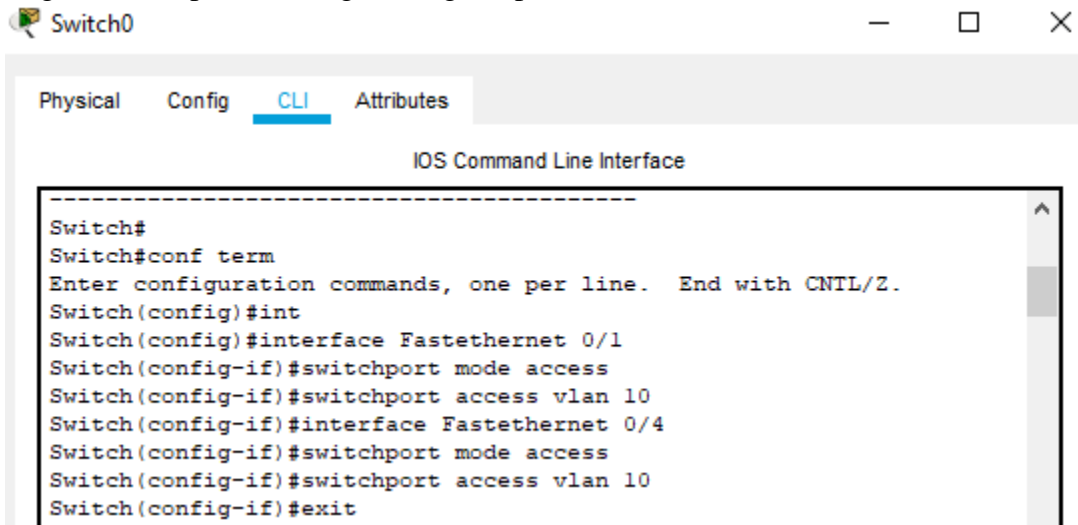
- zodiak2 = aries dan Taurus

- zodiak3 = virgo dan scorpio

Langkah pengoperasian

- Masuk *mode configuration*

- Ketik ***interface Fastethernet 0/1*** ; (jika PC leo dihubungkan dengan switch port 1)
  - Ketik ***switchport mode access***
  - Ketik ***switchport access vlan 10***
  - Ketik ***interface Fastethernet 0/4*** ; (jika PC libra dihubungkan dengan switch port 1)
  - Ketik ***switchport mode access***
  - Ketik ***switchport access vlan 10***
  - Ketik ***exit***
  - Lakukan langkah-langkah diatas untuk port VLAN zodiak2 (aries dan taurus) dan port VLAN zodiak3 (virgo dan scorpio)
6. Pada *mode user* atau *mode privileged*, lihat konfigurasi VLAN yang telah dibuat. Langkah pengoperasian untuk melihat konfigurasi
- Tekan enter
  - Masuk *mode privileged*
  - Ketik ***show vlan brief*** (informasi vlan keseluruhan)
  - Ketik ***show vlan id 2*** (informasi vlan 2)
  - Ketik ***show vlan id 3*** (informasi vlan 3)
  - Ketik ***show vlan id 4*** (informasi vlan 4)
- Tugas 6A : Capture masing-masing tampilan informasi vlan dan isi tabel berikut.



The screenshot shows a network switch window titled "Switch0" with a standard window control bar (minimize, maximize, close). Below the title bar are four tabs: "Physical", "Config", "CLI", and "Attributes". The "CLI" tab is selected and highlighted with a blue underline. The main content area is titled "IOS Command Line Interface" and displays a series of configuration commands entered at the switch prompt. The commands are as follows:

```

Switch#
Switch#conf term
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#int
Switch(config)#interface Fastethernet 0/1
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 10
Switch(config-if)#interface Fastethernet 0/4
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 10
Switch(config-if)#exit
  
```

Switch0

Physical
Config
CLI
Attributes

IOS Command Line Interface

Remote SPAN VLANs

-----

-----

Primary

Secondary

Type

Ports

-----

-----

Switch#show vlan id 10

VLAN Name

Status

Ports

-----

-----

10

zodiak1

active

Fa0/1, Fa0/4

VLAN Type

SAID

MTU

Parent

RingNo

BridgeNo

Stp

BrdgMode

Trans1

Trans2

-----

-----

10

enet

100010

1500

-

-

-

-

-

0

0

Switch#

Switch#

Ctrl+F6 to exit CLI focus

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NO	Variabel	Nilai
1	Nomor VLAN	10
2	Nama VLAN	zodiak1
3	Port	Fa 0/1, Fa 0/4
4	Status	Active

Switch0

Physical Config CLI Attributes

IOS Command Line Interface

Switch#conf term  
Enter configuration commands, one per line. End with CNTL/Z.  
Switch(config)#int  
Switch(config)#interface Fastethernet 0/2  
Switch(config-if)#switchport mode access  
Switch(config-if)#switchport access vlan 20  
Switch(config-if)#interface Fastethernet 0/5  
Switch(config-if)#switchport mode access  
Switch(config-if)#switchport access vlan 20  
Switch(config-if)#exit

Switch0

Physical Config CLI Attributes

IOS Command Line Interface

-----  
-----  
Remote SPAN VLANs  
-----  
-----  
Primary Secondary Type Ports  
-----  
-----  
Switch#show vlan id 20  

VLAN Name	Status	Ports
20 zodiak2	active	Fa0/2, Fa0/5

VLAN Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	
Trans1	Trans2							
20	enet	100020	1500	-	-	-	-	0
0								

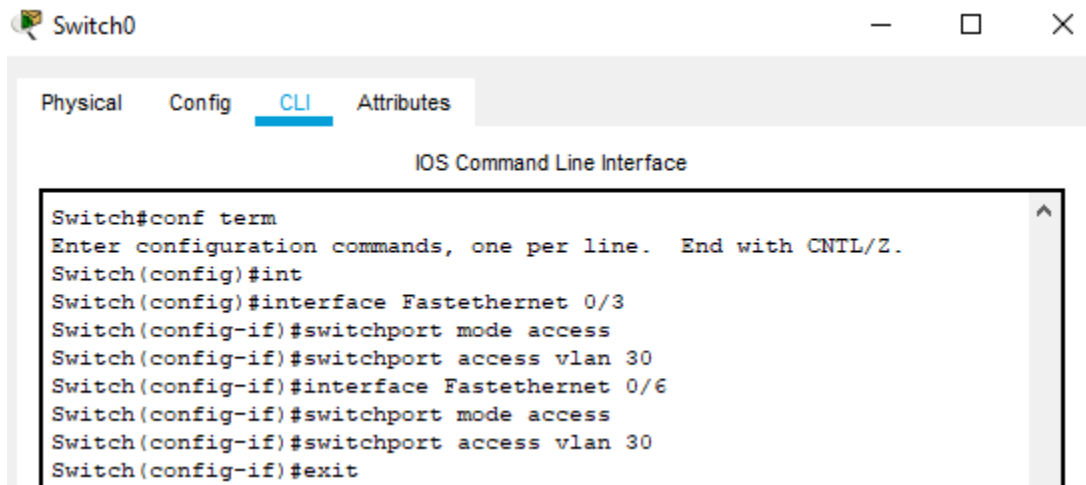
Switch#

Ctrl+F6 to exit CLI focus

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☐ Top

NO	Variabel	Nilai
1	Nomor VLAN	20
2	Nama VLAN	zodiak2
3	Port	Fa 0/2 , Fa 0/5
4	Status	Active



```

Switch#conf term
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#int
Switch(config)#interface Fastethernet 0/3
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 30
Switch(config-if)#interface Fastethernet 0/6
Switch(config-if)#switchport mode access
Switch(config-if)#switchport access vlan 30
Switch(config-if)#exit

```

Switch0

Physical Config **CLI** Attributes

IOS Command Line Interface

```

-----
Remote SPAN VLANs
-----

Primary Secondary Type          Ports
-----
Switch#show vlan id 30

VLAN Name                Status    Ports
-----
30    zodiak3              active    Fa0/3, Fa0/6

VLAN Type  SAID      MTU   Parent RingNo BridgeNo Stp  BrdgMode
Trans1 Trans2
-----
30    enet    100030   1500   -     -     -     -     -     0
0

Switch#
  
```

Ctrl+F6 to exit CLI focus

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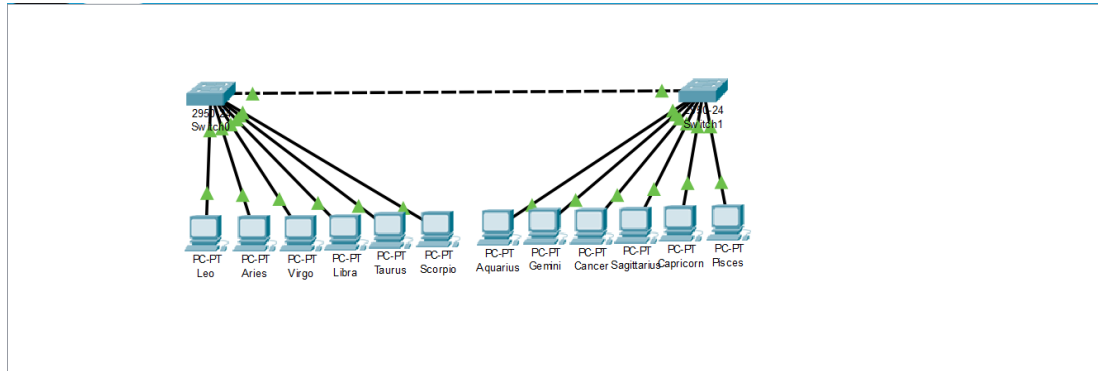
☐ Top

NO	Variabel	Nilai
1	Nomor VLAN	30
2	Nama VLAN	zodiak3
3	Port	Fa 0/3, Fa 0/6
4	Status	Active

- Tugas 6B : Jelaskan secara singkat hasil yang anda peroleh dari tugas 6A.

## Kegiatan 2. Topologi 2

1. Menggunakan *cisco packet tracer* buat topologi berikut ini dengan menggunakan switch Catalyst 2950.



2. Beri nama masing-masing perangkat dengan SW1 (Switch 1), Leo (PC0), Aries (PC1), Virgo (PC2), Pisces (PC3), Taurus (PC4), dan Scorpio (PC5) untuk segmen switch 1.
3. Beri nama masing-masing perangkat dengan SW2 (Switch 2), Aquarius (PC6), Gemini (PC 7), Cancer (PC8), Sagittarius (PC9), Capricornus (PC10), dan Pisces (PC11) untuk segmen switch 2.
4. Konfigurasi masing-masing PC dengan nama dan alamat IP berikut ini :
  - Leo = 172.21.1.1/24
  - Aries = 172.21.1.2/24
  - Virgo = 172.21.2.1/24
  - Libra = 172.21.2.2/24
  - Taurus = 172.21.3.1/24
  - Scorpio = 172.21.3.2/24
  - Aquarius = 172.21.1.3/24
  - Gemini = 172.21.1.4/24
  - Cancer = 172.21.2.3/24
  - Sagittarius = 172.21.2.4/24
  - Capricornus = 172.21.3.3/24
  - Pisces = 172.21.3.4/24
5. Lakukan langkah 4 dan 5 laboratoriu 1 untuk switch 1
6. Lakukan konfigurasi VLAN trunking pada switch 1  
Langkah pengoperasian
  - Tekan enter
  - Masuk *mode konfigurasi*
  - Masuk *mode interface* yang dipakai untuk trunking
  - Ketik *switchport mode seperti contoh di bawah ini*
  - *Switch(config)#interface fa 0/24*
  - *Switch(config-if)#switchport mode trunk*
  - *Switch(config-if)#exit*
  - *Switch(config)#*



- switch

```
Switch#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#interface fa 0/7
Switch(config-if)#switchport mode trunk
Switch(config-if)#exit
Switch(config)#
Switch(config)#
```

Ctrl+F6 to exit CLI focus

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7. Pada mode user atau mode privileged , lihat konfigurasi trunking yang telah dibuat.  
Langkah pengoperasian untuk melihat konfigurasi

- Tekan enter

- Masuk mode privileged

- Ketik *show interface fastethernet 0/?? switchport* (?? Nomor port trunking)

Switch3

Physical Config **CLI** Attributes

IOS Command Line Interface

```
Switch#show interface fastethernet 0/7 switchport
Name: Fa0/7
Switchport: Enabled
Administrative Mode: trunk
Operational Mode: trunk
Administrative Trunking Encapsulation: dot1q
Operational Trunking Encapsulation: dot1q
Negotiation of Trunking: On
Access Mode VLAN: 1 (default)
Trunking Native Mode VLAN: 1 (default)
Voice VLAN: none
Administrative private-vlan host-association: none
Administrative private-vlan mapping: none
Administrative private-vlan trunk native VLAN: none
Administrative private-vlan trunk encapsulation: dot1q
Administrative private-vlan trunk normal VLANs: none
Administrative private-vlan trunk private VLANs: none
Operational private-vlan: none
Trunking VLANs Enabled: All
Pruning VLANs Enabled: 2-1001
Capture Mode Disabled
Capture VLANs Allowed: ALL
Protected: false
--More--
```

Ctrl+F6 to exit CLI focus

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☐ Top

- Ketik *show interface fastethernet 0/?? trunk* (?? Nomor port trunking)

- ketik show vlan

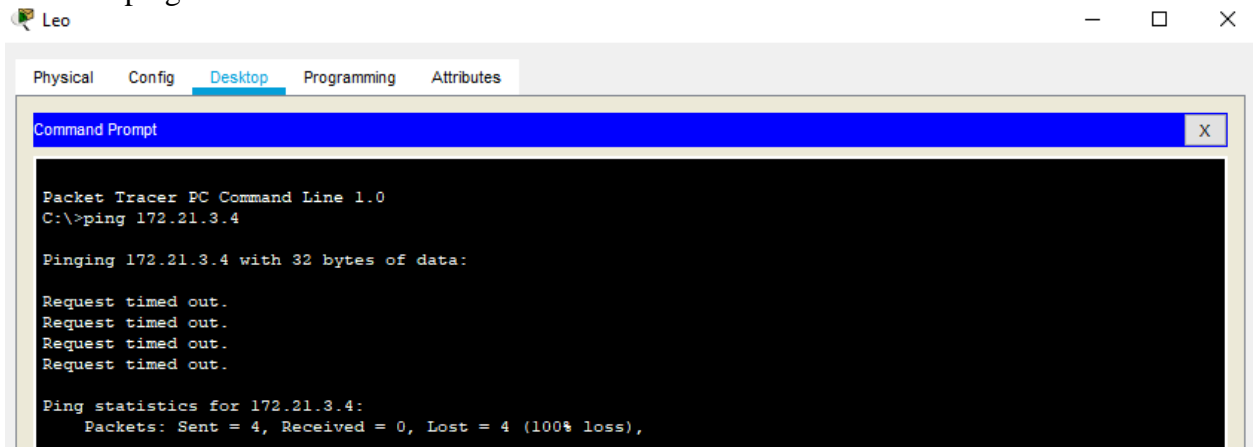
```
Switch#show vlan
```

VLAN	Name	Status	Ports
1	default	active	Fa0/8, 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, Fa0/24
10	zodiak1	active	Fa0/1, Fa0/4
20	zodiak2	active	Fa0/2, Fa0/5
30	zodiak3	active	Fa0/3, Fa0/6
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode
Trans1	Trans2							

- Tugas 7A : Jelaskan secara singkat hasil yang anda peroleh dari langkah 7. Dari langkah 7A dapat diperoleh kesimpulan bahwa kita bisa melihat interface fa berapa yang akan diubah modenya ke mode trunk. Mode itu bertujuan untuk koneksi antar switch dengan vlan yang sama. Lalu kita juga bias melihat keseluruhan vlan yang ada.
8. Lakukan ping dari PC leo ke PC Pisces.



- Tugas 8A : Jelaskan secara singkat mengapa hasil yang anda peroleh dari langkah 8 mendapatkan status “reply”? Karena di switch 2 belum dibuat interface sebagai penghubung dengan switch 1.

```
C:\>ping 172.21.1.3

Pinging 172.21.1.3 with 32 bytes of data:

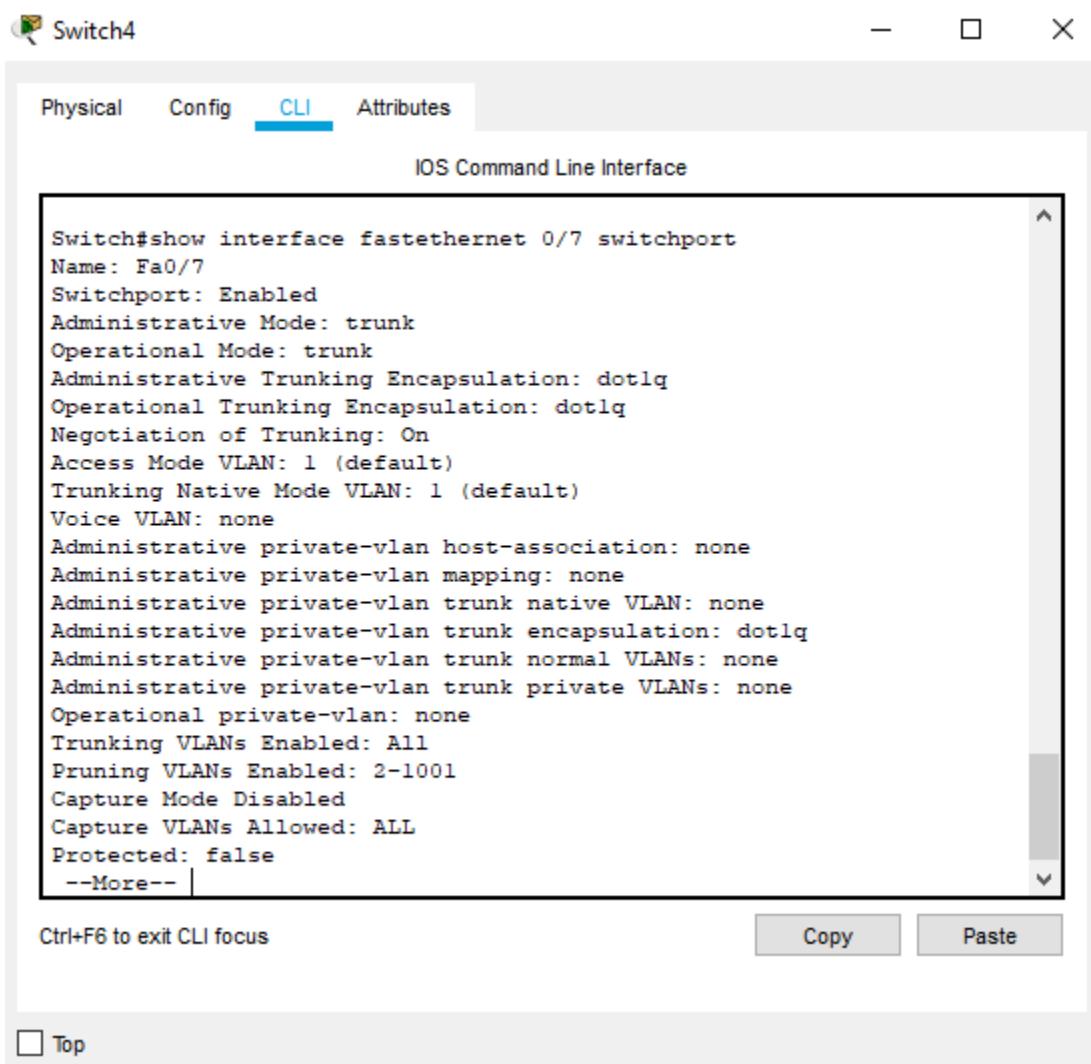
Reply from 172.21.1.3: bytes=32 time=1ms TTL=128
Reply from 172.21.1.3: bytes=32 time<1ms TTL=128
Reply from 172.21.1.3: bytes=32 time<1ms TTL=128
Reply from 172.21.1.3: bytes=32 time=1ms TTL=128

Ping statistics for 172.21.1.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>
```

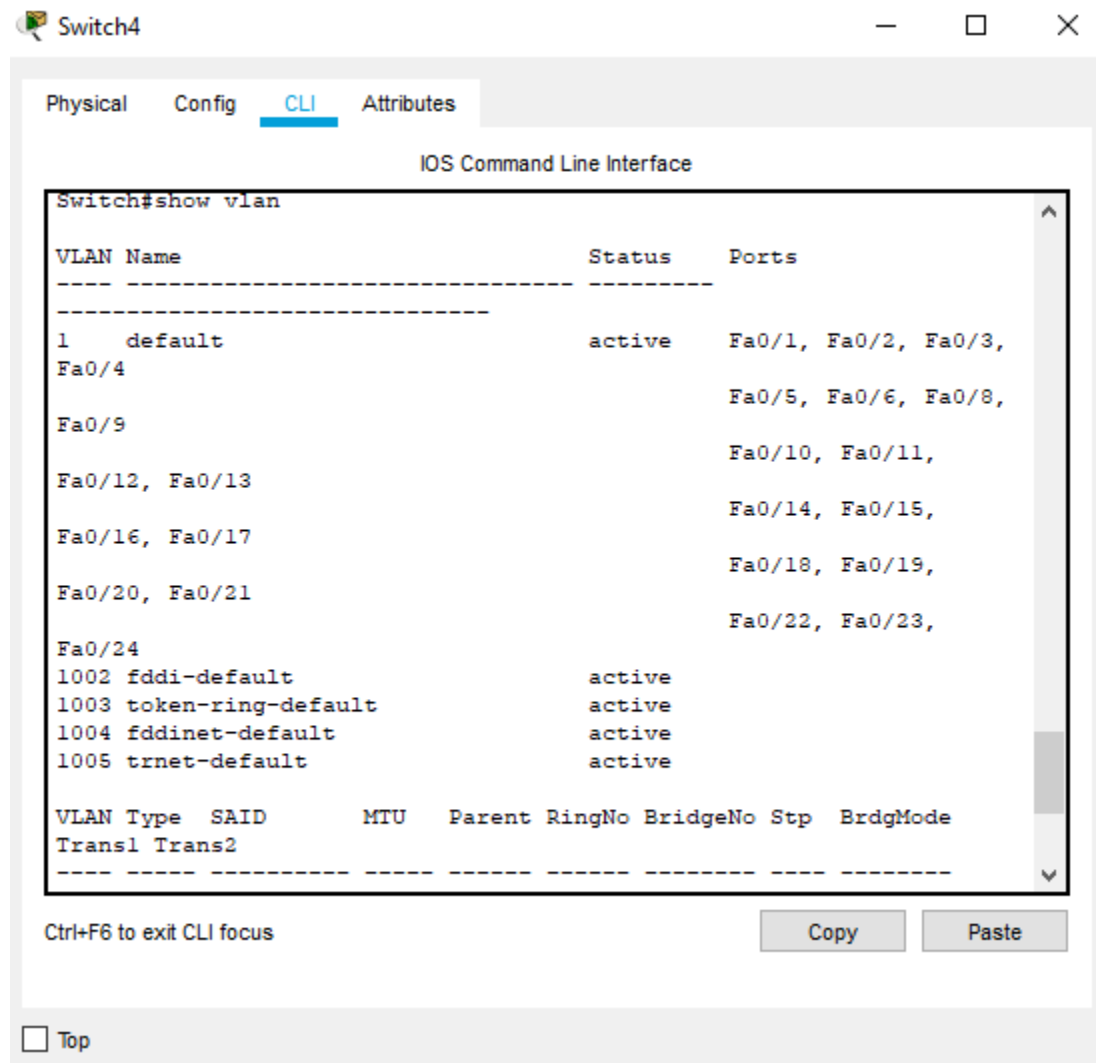
Ping Leo ke Aquarius

9. Lakukan konfigurasi VLAN trunking pada switch 2 seperti langkah 6.
10. Pada *mode user* atau *mode privileged* , lihat konfigurasi vlan pada switch 2.



Langkah pengoperasian untuk melihat konfigurasi

- Tekan enter
- Masuk *mode privileged*
- Ketik *show vlan*



The screenshot shows a window titled "Switch4" with a tabbed interface. The "CLI" tab is active, displaying the "IOS Command Line Interface". The command "Switch#show vlan" has been entered, and the output is shown in a scrollable area. The output consists of two tables. The first table lists VLANs with their names, status, and associated ports. The second table lists VLAN types, SAIDs, MTUs, parent rings, bridge numbers, STP modes, and bridge modes.

VLAN	Name	Status	Ports
1	default	active	Fa0/1, Fa0/2, Fa0/3, Fa0/4, Fa0/5, Fa0/6, Fa0/8, 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, Fa0/24
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode
1	Trans1	Trans2						

- Tugas 10A : Jelaskan secara singkat hasil yang anda peroleh dari langkah 10.
11. Pada *mode configuration* , konfigurasi port-port switch ke dalam VLAN zodiak1, zodiak2, dan zodiak3 dengan anggota sebagai berikut :

```
Switch#
Switch#conf term
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#vlan 10
Switch(config-vlan)#name zodiak1
Switch(config-vlan)#exit
Switch(config)#vlan 20
Switch(config-vlan)#name zodiak2
Switch(config-vlan)#exit
Switch(config)#vlan 30
Switch(config-vlan)#name zodiak3
Switch(config-vlan)#exit
```

- zodiak1 = aquarius dan gemini

```
Switch#show vlan id 10
```

VLAN Name	Status	Ports
10 zodiak1	active	Fa0/1, Fa0/2

VLAN Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode
Trans1	Trans2						
10	enet	100010	1500	-	-	-	-
0							0

- zodiak2 = cancer dan sagitarius

```
Switch#show vlan id 20
```

VLAN Name	Status	Ports
20 zodiak2	active	Fa0/3, Fa0/4

VLAN Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode
Trans1	Trans2						
20	enet	100020	1500	-	-	-	-
0							0

```
Switch#
```

- zodiak3 = capricornus dan pisces

```
Switch#show vlan id 30
```

VLAN Name	Status	Ports
30 zodiak3	active	Fa0/5, Fa0/6

VLAN Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode
Trans1	Trans2						
30	enet	100030	1500	-	-	-	-
0							0

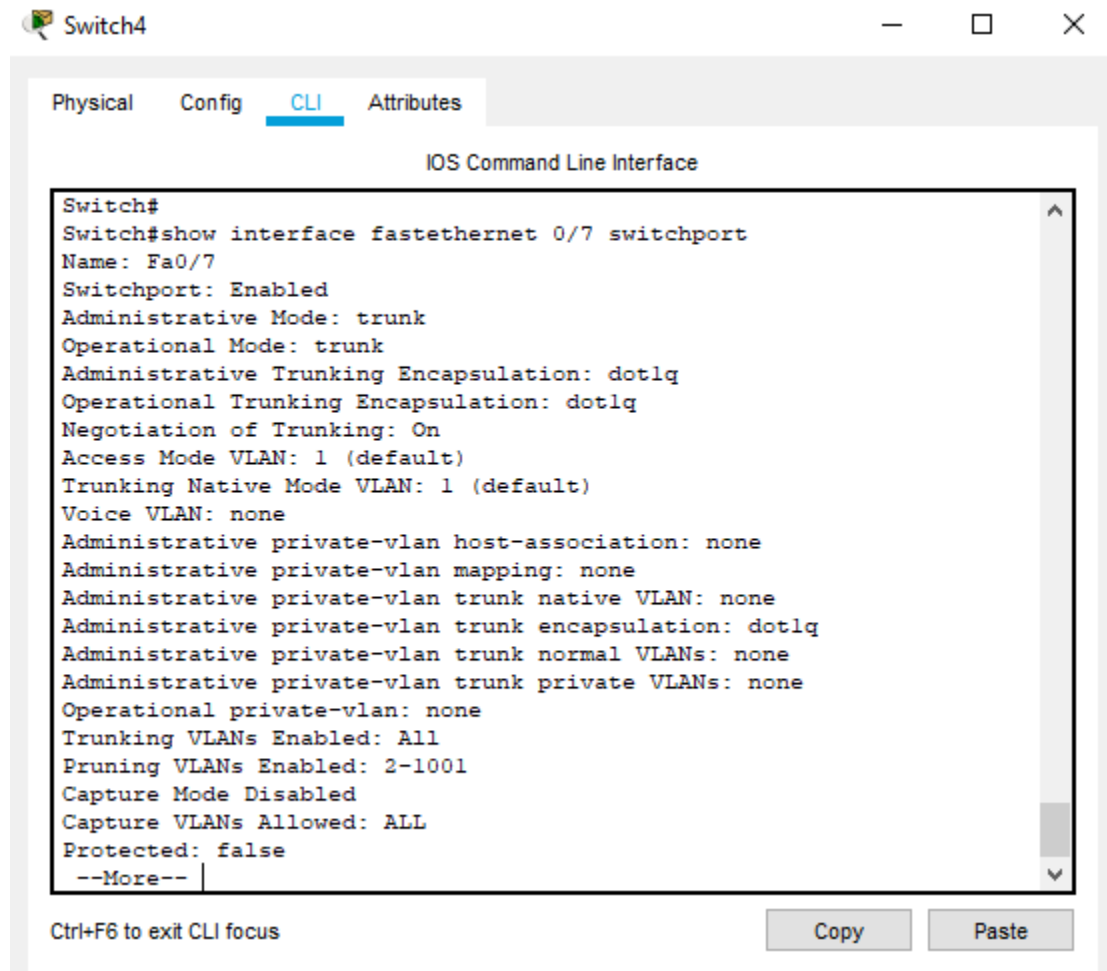
```
Switch#
```

Ctrl+F6 to exit CLI focus

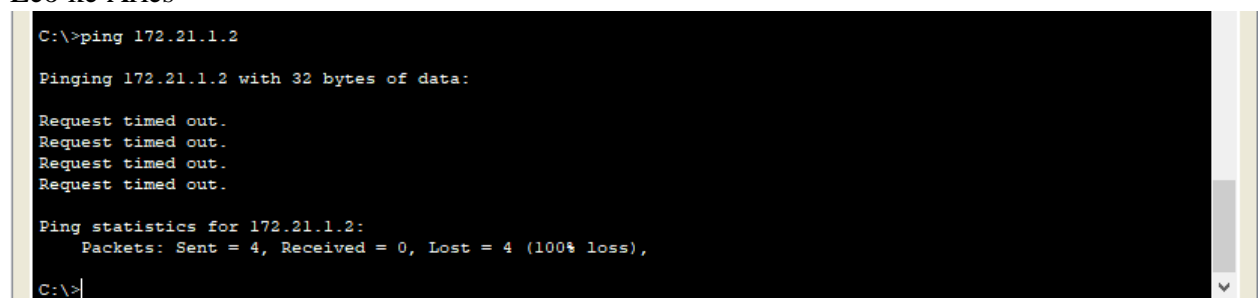
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12. Lakukan ping dari PC leo ke PC aries, PC leo ke PC aquarius , PC leo ke PC pisces , PC libra ke Cancer dan PC libra ke Leo.



Leo ke Aries



### Leo ke Aquarius

```
C:\>ping 172.21.1.3

Pinging 172.21.1.3 with 32 bytes of data:

Reply from 172.21.1.3: bytes=32 time=1ms TTL=128
Reply from 172.21.1.3: bytes=32 time<1ms TTL=128
Reply from 172.21.1.3: bytes=32 time<1ms TTL=128
Reply from 172.21.1.3: bytes=32 time=1ms TTL=128

Ping statistics for 172.21.1.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

### Leo ke Pisces

```
C:\>ping 172.21.3.4

Pinging 172.21.3.4 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 172.21.3.4:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

### Libra ke Cancer

```
Packet Tracer PC Command Line 1.0
C:\>ping 172.21.2.3

Pinging 172.21.2.3 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 172.21.2.3:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>
```

### Libra ke Leo

```
C:\>ping 172.21.1.1

Pinging 172.21.1.1 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 172.21.1.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

- Tugas 12A : Jelaskan secara singkat hasil yang anda peroleh dari langkah 8.  
Dari hasil percobaan diatas, dapat disimpulkan apabila PC berada pada VLAN yang sama, maka akan menghasilkan status Reply. Akan tetapi jika berada pada VLAN yang berbeda akan menghasilkan status Request Time Out.