

Elektrotehnički fakultet Sarajevo

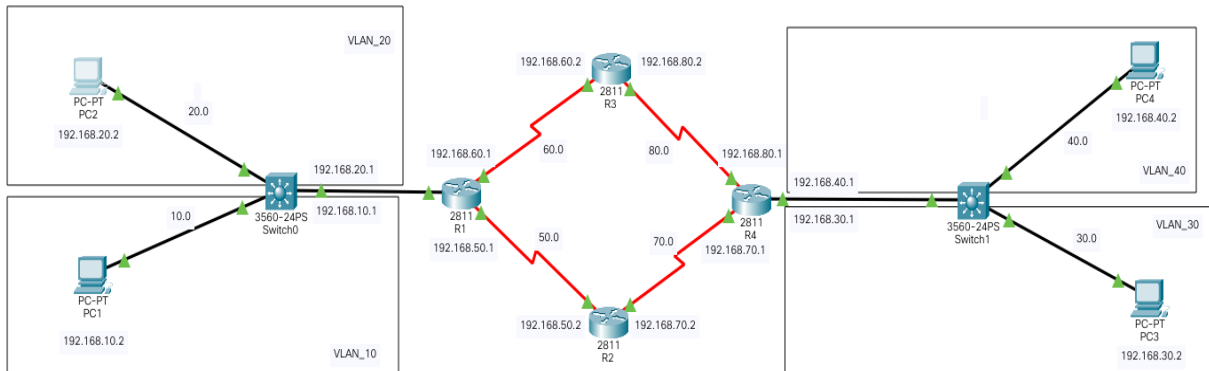
ZADAĆA 2

iz predmeta Računarske mreže

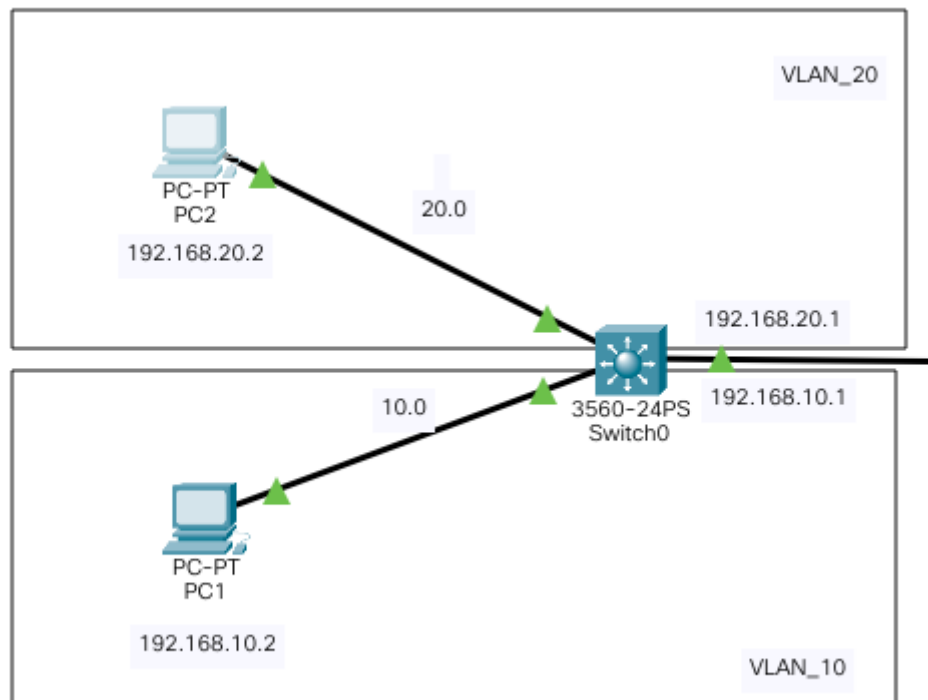
Samra Mujčinović, 18187/1763

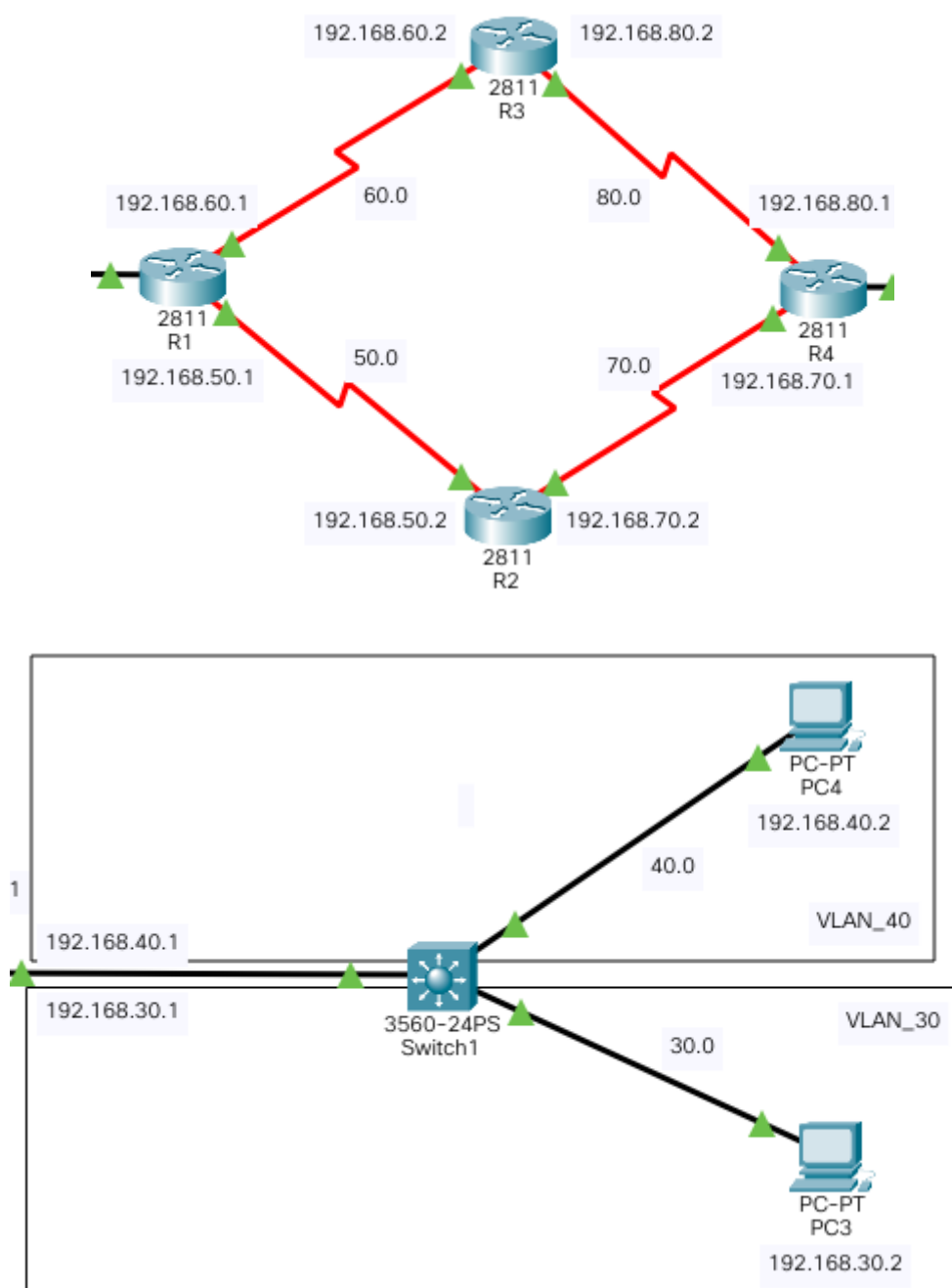
Sarajevo, april 2021.

U zadaći je bilo potrebno definisati mrežnu topologiju sa dva switch-a i najmanje četiri rutera koja ih povezuju. To je u Cisco Packet Tracer-u urađeno na sljedeći način:



Na prethodnoj slici prikazane su i dodijeljene IP adrese svake iskorištene komponente prikazane mreže. Kako bi one bile bolje uočljive, prethodna slika će u nastavku biti prikazana u tri dijela:





Kako možemo uočiti na prethodnim slikama, u ovoj mrežnoj topologiji je definisano ukupno 8 mreža i to na sljedeći način(dole), označene po pridruženim adresama mreže. Također su za svaki uređaj definisani interfejsi kojima su vezani za drugi uređaj.

- **Mreža 1: PC1(Fa0) i Switch0(Fa0/1)**
Opseg korištenih IP adresa u ovoj mreži je: 192.168.10.0/24
PC1 IP adresa: 192.168.10.2
Switch0(Fa0/3) - R1(Fa0/0.10) IP adresa: 192.168.10.1
Default gateway IP adresa: 192.168.10.1
Podmrežna maska: 255.255.255.0
- **Mreža 2: PC2(Fa0) i Switch0(Fa0/2)**

Opseg korištenih IP adresa u ovoj mreži je: 192.168.20.0/24

PC2 IP adresa: 192.168.20.2

Switch0(Fa0/3) - R1(Fa0/0.20) IP adresa: 192.168.20.1

Default gateway IP adresa: 192.168.20.1

Podmrežna maska: 255.255.255.0

- **Mreža 3: PC3(Fa0) i Switch1(Fa0/1)**

Opseg korištenih IP adresa u ovoj mreži je: 192.168.30.0/24

PC3 IP adresa: 192.168.30.2

Switch1(Fa0/4) - R4(Fa0/0.30) IP adresa: 192.168.30.1

Default gateway IP adresa: 192.168.30.1

Podmrežna maska: 255.255.255.0

- **Mreža 4: PC4(Fa0) i Switch1(Fa0/2)**

Opseg korištenih IP adresa u ovoj mreži je: 192.168.40.0/24

PC4 IP adresa: 192.168.40.2

Switch1(Fa0/4) - R4(Fa0/0.40) IP adresa: 192.168.40.1

Default gateway IP adresa: 192.168.40.1

Podmrežna maska: 255.255.255.0

- **Mreža 5: Ruteri R1(Se0/0/0) i R2(Se0/0/0)**

Opseg korištenih IP adresa u ovoj mreži je: 192.168.50.0/24

R1 IP adresa: 192.168.50.1

R2 IP adresa: 192.168.50.2

- **Mreža 6: Ruteri R1(Se0/0/1) i R3(Se0/0/0)**

Opseg korištenih IP adresa u ovoj mreži je: 192.168.60.0/24

R1 IP adresa: 192.168.60.1

R3 IP adresa: 192.168.60.2

- **Mreža 7: Ruteri R2(Se0/0/1) i R4(Se0/0/0)**

Opseg korištenih IP adresa u ovoj mreži je: 192.168.70.0/24

R2 IP adresa: 192.168.70.2

R4 IP adresa: 192.168.70.1

- **Mreža 8: Ruteri R3(Se0/0/1) i R4(Se0/0/1)**

Opseg korištenih IP adresa u ovoj mreži je: 192.168.80.0/24

R3 IP adresa: 192.168.80.2

R4 IP adresa: 192.168.80.1

U nastavku će biti prikazane table rutiranja svakog od postavljenih rutera pomoću komande *sh ip route*.

R1

PhysicalConfigCLIAttributes

IOS Command Line Interface

```
Router>
Router>enable
Router#sh ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
        E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
        i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
        * - candidate default, U - per-user static route, o - ODR
        P - periodic downloaded static route

Gateway of last resort is not set

  192.168.10.0/24 is variably subnetted, 2 subnets, 2 masks
C    192.168.10.0/24 is directly connected, FastEthernet0/0.10
L    192.168.10.1/32 is directly connected, FastEthernet0/0.10
  192.168.20.0/24 is variably subnetted, 2 subnets, 2 masks
C    192.168.20.0/24 is directly connected, FastEthernet0/0.20
L    192.168.20.1/32 is directly connected, FastEthernet0/0.20
S    192.168.30.0/24 [1/0] via 192.168.50.2
S    192.168.40.0/24 [1/0] via 192.168.60.2
  192.168.50.0/24 is variably subnetted, 2 subnets, 2 masks
C    192.168.50.0/24 is directly connected, Serial0/0/0
L    192.168.50.1/32 is directly connected, Serial0/0/0
  192.168.60.0/24 is variably subnetted, 2 subnets, 2 masks
C    192.168.60.0/24 is directly connected, Serial0/0/1
L    192.168.60.1/32 is directly connected, Serial0/0/1
R    192.168.70.0/24 [120/1] via 192.168.50.2, 00:00:18, Serial0/0/0
R    192.168.80.0/24 [120/1] via 192.168.60.2, 00:00:26, Serial0/0/1
```

R2

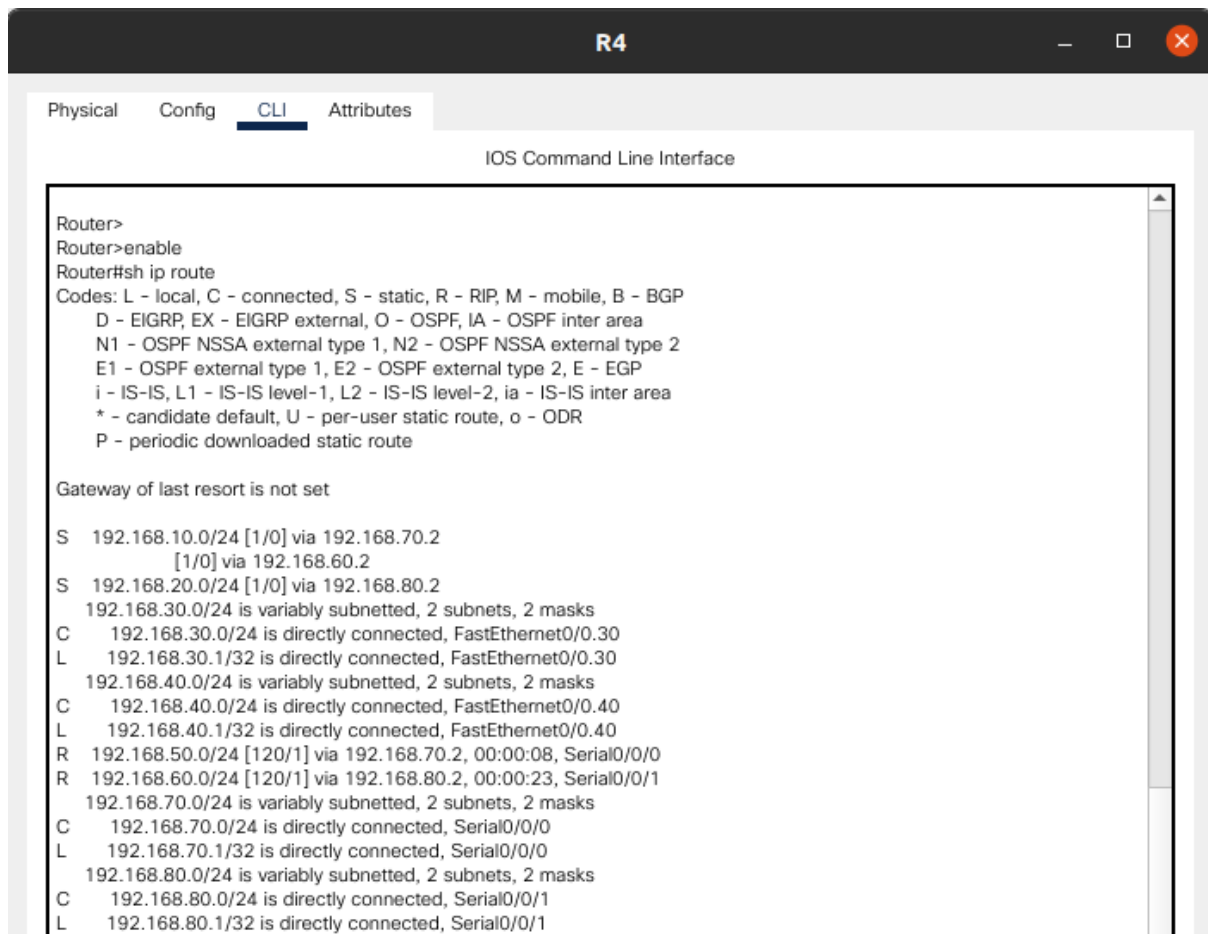
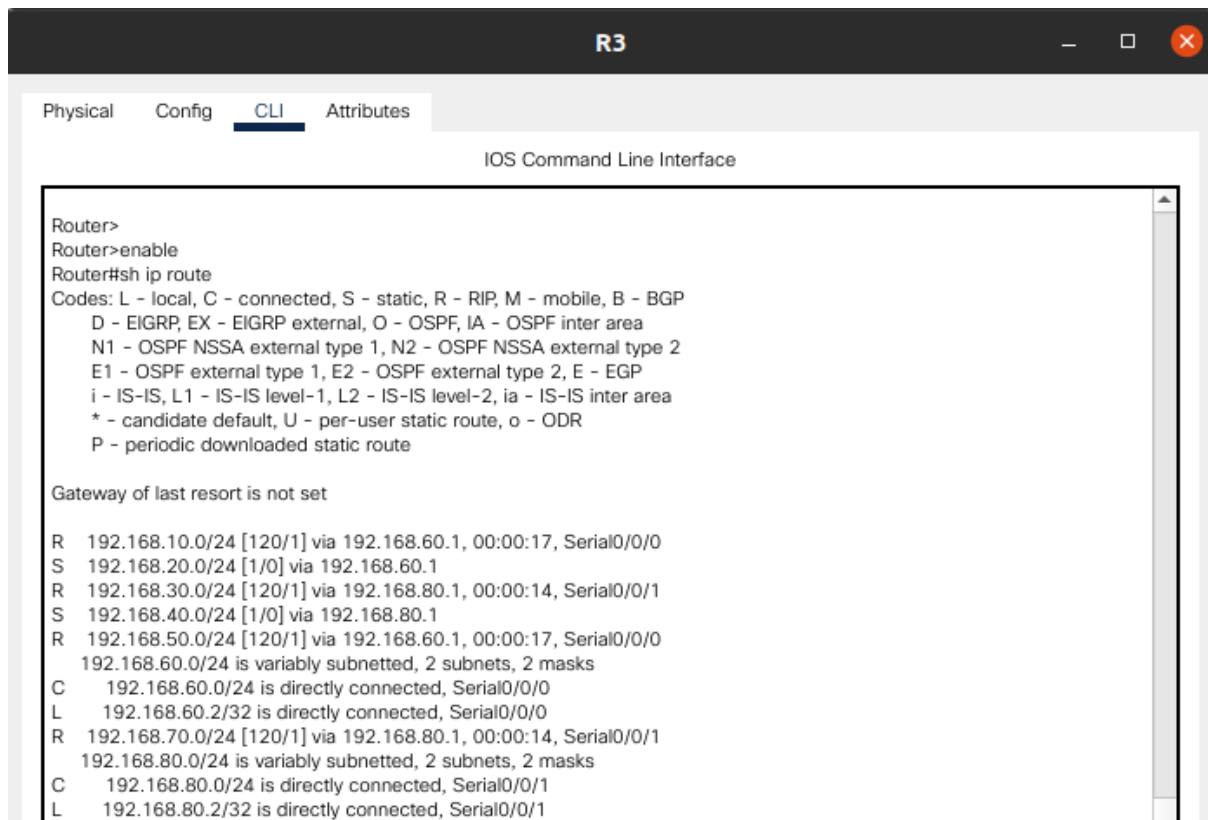
PhysicalConfigCLIAttributes

IOS Command Line Interface

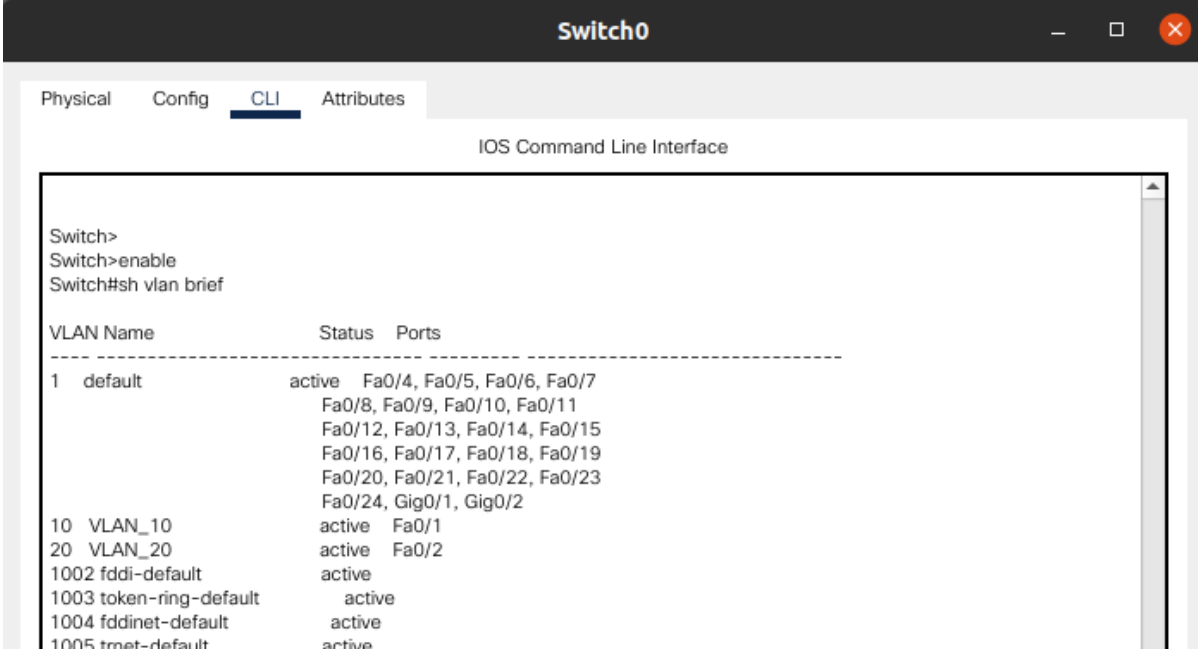
```
Router>
Router>enable
Router#sh ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
        D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
        N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
        E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
        i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
        * - candidate default, U - per-user static route, o - ODR
        P - periodic downloaded static route

Gateway of last resort is not set

S    192.168.10.0/24 [1/0] via 192.168.50.1
R    192.168.20.0/24 [120/1] via 192.168.50.1, 00:00:09, Serial0/0/0
S    192.168.30.0/24 [1/0] via 192.168.70.1
R    192.168.40.0/24 [120/1] via 192.168.70.1, 00:00:10, Serial0/0/1
  192.168.50.0/24 is variably subnetted, 2 subnets, 2 masks
C    192.168.50.0/24 is directly connected, Serial0/0/0
L    192.168.50.2/32 is directly connected, Serial0/0/0
R    192.168.60.0/24 [120/1] via 192.168.50.1, 00:00:09, Serial0/0/0
  192.168.70.0/24 is variably subnetted, 2 subnets, 2 masks
C    192.168.70.0/24 is directly connected, Serial0/0/1
L    192.168.70.2/32 is directly connected, Serial0/0/1
R    192.168.80.0/24 [120/1] via 192.168.70.1, 00:00:10, Serial0/0/1
```



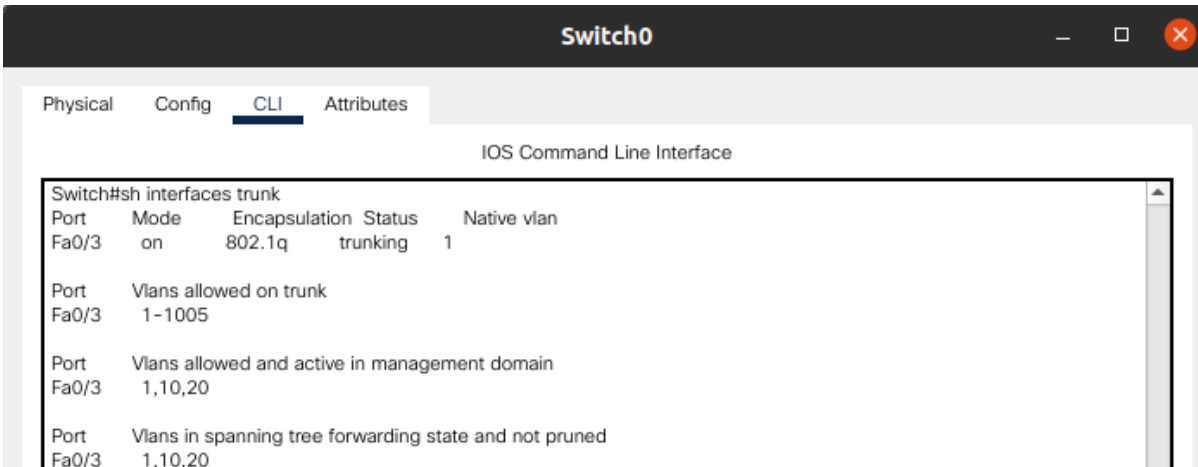
Nakon tabela rutiranja, postavkom zadatke traženo je da se prikaže lista VLAN-ova na svakom switchu pomoću komande *sh vlan brief*.



The screenshot shows the CLI of Switch0 with the 'CLI' tab selected. The command 'Switch#sh vlan brief' has been executed, displaying a table of VLANs. The table has columns for 'VLAN Name', 'Status', and 'Ports'. The output shows several VLANs, including the default VLAN 1, VLAN 10, VLAN 20, and various default VLANs like fddi-default, token-ring-default, fddinet-default, and trnet-default.

VLAN Name	Status	Ports
1 default	active	Fa0/4, Fa0/5, Fa0/6, Fa0/7 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, Gig0/1, Gig0/2
10 VLAN_10	active	Fa0/1
20 VLAN_20	active	Fa0/2
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	

Na prethodnoj fotografiji možemo vidjeti da je kao trunk port iskorišten Fa0/3 a to potvrđuje i sljedeći ispis komande *sh interfaces trunk*:



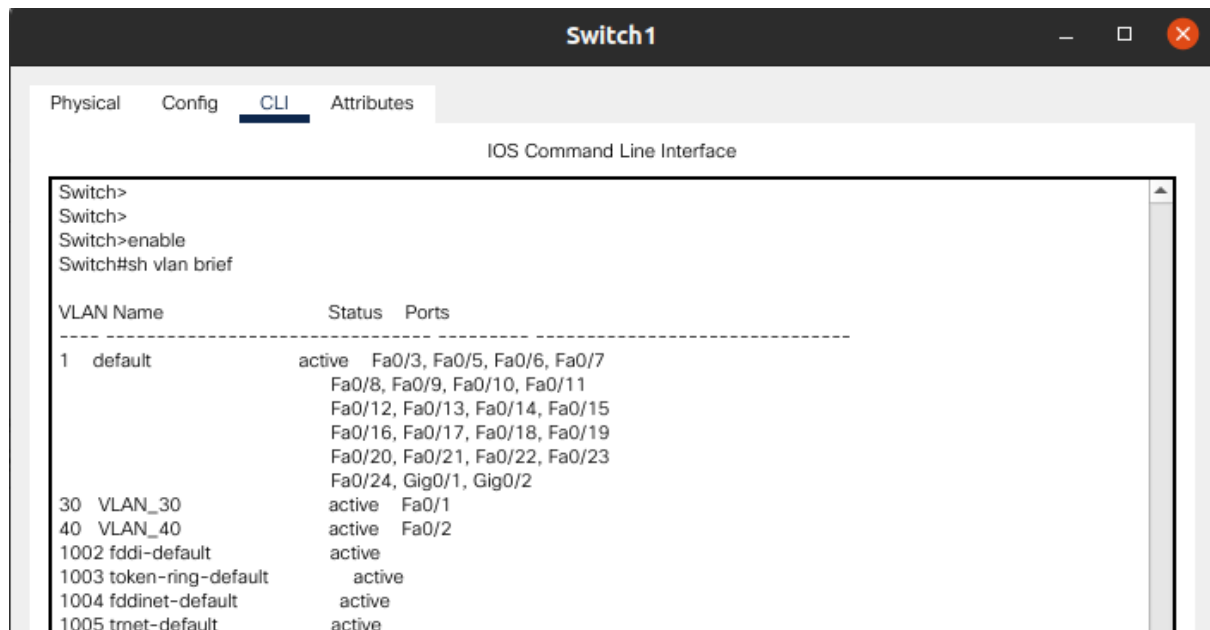
The screenshot shows the CLI of Switch0 with the 'CLI' tab selected. The command 'Switch#sh interfaces trunk' has been executed, displaying information about the trunk port Fa0/3. The output shows that Fa0/3 is in 'on' mode, using 802.1q encapsulation, and is in a 'trunking' status. It also lists the VLANs allowed on the trunk (1-1005) and the VLANs allowed and active in the management domain (1, 10, 20).

Port	Mode	Encapsulation	Status	Native vlan
Fa0/3	on	802.1q	trunking	1

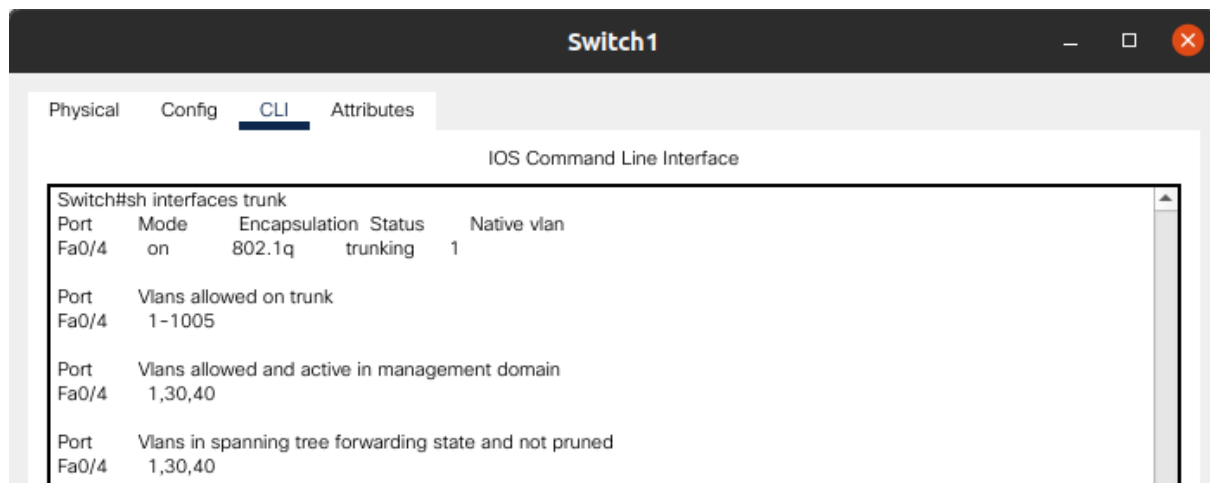
Port	Vlans allowed on trunk
Fa0/3	1-1005

Port	Vlans allowed and active in management domain
Fa0/3	1,10,20

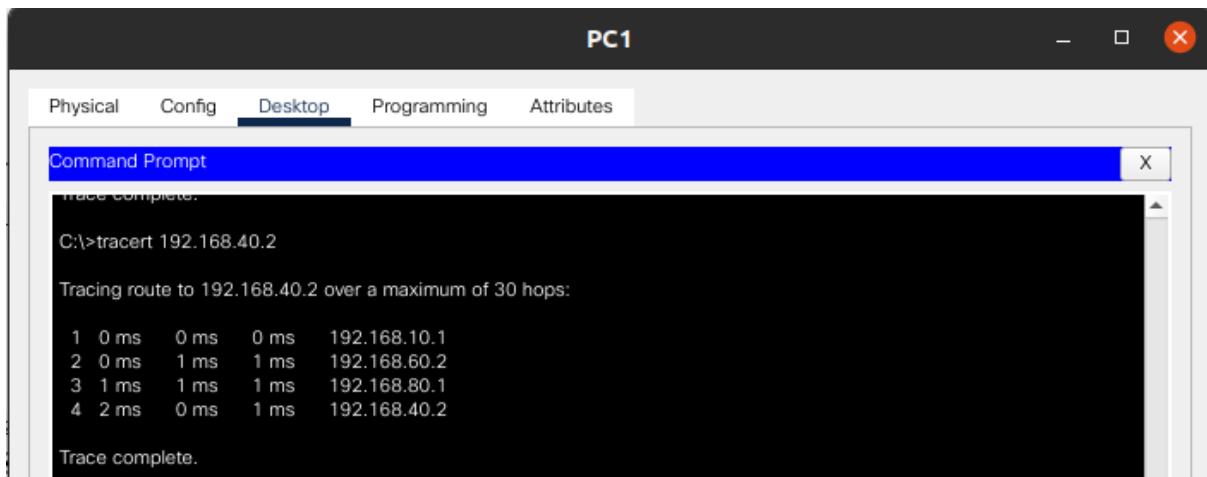
Port	Vlans in spanning tree forwarding state and not pruned
Fa0/3	1,10,20



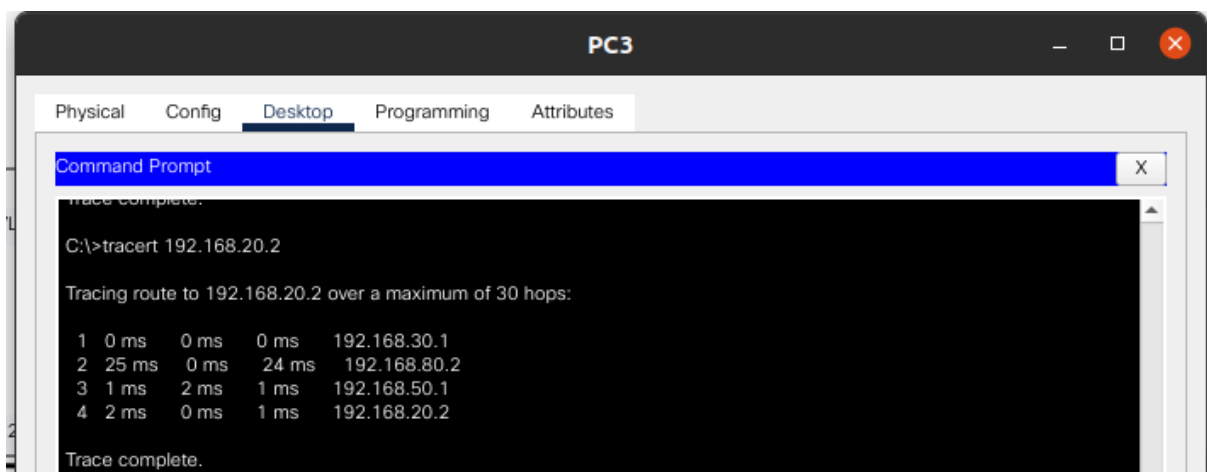
Za Switch1 kao trunk port uzet je Fa0/4 i to je potkrijepljeno ispisom prethodno navedene komande *sh interfaces trunk*:



Za kraj ove zadaće traženo je da se komandom *tracert* prikaže komunikacija jednog računara povezanog na jedan switch sa drugim računarom povezanim na drugi switch. Ovdje će biti prikazana komunikacija računara P1 -> P4 kao komunikacija od switcha0 do switcha1, te obrnuta komunikacija od switcha1 do switcha0 preko komunikacije računara P3 -> P2.



Na prethodnoj slici vidimo da paketi putuju od računara PC1 preko switcha0 na ruter R1(192.168.60.1), a onda od R1 do R3(192.168.60.2). Od R2(192.168.80.2) mrežom 80.0 dalje se paket šalje na R4(162.168.80.1), a onda preko switcha1(192.168.40.1) na PC4(192.168.40.2).



Na sličan način kako je prethodno opisano šalje se paket od PC3 do PC2.