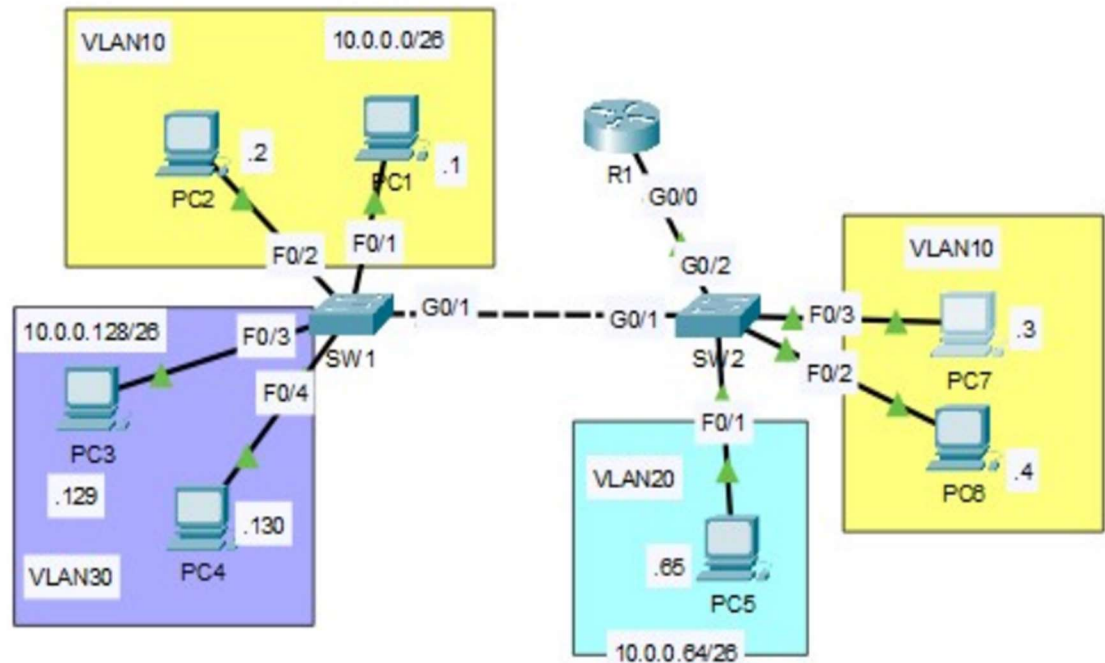INTER-VLAN CONNECTIVITY via ROAS

1. Configure the switch interfaces connected to PCs as access ports in the correct VLAN:

```
SW1(config)#int range f0/1 - 2                      SW2(config)#int f0/1
SW1(config-if-range)#switchport mode access          SW2(config-if)#switchport mode access
SW1(config-if-range)#switchport access vlan 10       SW2(config-if)#sw ac vlan 20
% Access VLAN does not exist. Creating vlan 10       % Access VLAN does not exist. Creating vlan 20
SW1(config-if-range)#int range f0/3 - 4              SW2(config)#int range f0/2 - 3
SW1(config-if-range)#switchport mode access          SW2(config-if-range)#sw mode ac
SW1(config-if-range)#switchport access vlan 30       SW2(config-if-range)#sw ac vlan 10
% Access VLAN does not exist. Creating vlan 30       % Access VLAN does not exist. Creating vlan 10
```

2. Configure the connection between SW1 and SW2 as a trunk, allowing only the necessary VLANs.
   Configure an unused VLAN as the native VLAN. Make sure all necessary VLANs exist on each switch:

```
SW1(config)#int g0/1                                 SW2(config-if-range)#int g0/1
SW1(config-if)#switchport mode trunk                 SW2(config-if)#switchport mode trunk
SW1(config-if)#switchport trunk allowed vlan 10,30   SW2(config-if)#sw trunk allowed vlan 10,30
SW1(config-if)#switchport trunk native vlan 1001     SW2(config-if)#switchport trunk native vlan 1001

%CDP-4-NATIVE_VLAN_MISMATCH                           ## NOW THERE IS NO NATIVE_VLAN_MISMATCH ##

                                                     ## I'VE ALREADY ALLOWED VLAN 30 ON THE G0/1 TRUNK FOR SW2,
                                                     BUT SINCE VLAN 30 WASN'T DIRECTLY CONNECTED TO SW2, I DIDN'T
                                                     CREATE IT, LIKE ON SW1. VLAN 30 NEEDS TO EXIST ON SW2 ##

                                                     SW2(config-if)#vlan 30
```

3. Configure the connection between SW2 and R1 using 'router on a stick'.
   Assign the last usable address of each subnet to R1's subinterfaces.

```
SW2(config)#int g0/2                                 R1(config)#int g0/0
SW2(config-if)#switchport mode trunk                 R1(config-if)#no shut
SW2(config-if)#sw trunk allowed vlan 10,20,30        R1(config-if)#int g0/0.10
SW2(config-if)#sw trunk native vlan 1001             R1(config-subif)#encapsulation dot1Q 10
                                                     R1(config-subif)#ip address 10.0.0.62 255.255.255.192
                                                     R1(config-subif)#
                                                     R1(config-subif)#int g0/0.20
                                                     R1(config-subif)#encapsulation dot1Q 20
                                                     R1(config-subif)#ip address 10.0.0.126 255.255.255.192
                                                     R1(config-subif)#
                                                     R1(config-subif)#int g0/0.30
                                                     R1(config-subif)#encapsulation dot1Q 30
                                                     R1(config-subif)#ip address 10.0.0.190 255.255.255.192
```