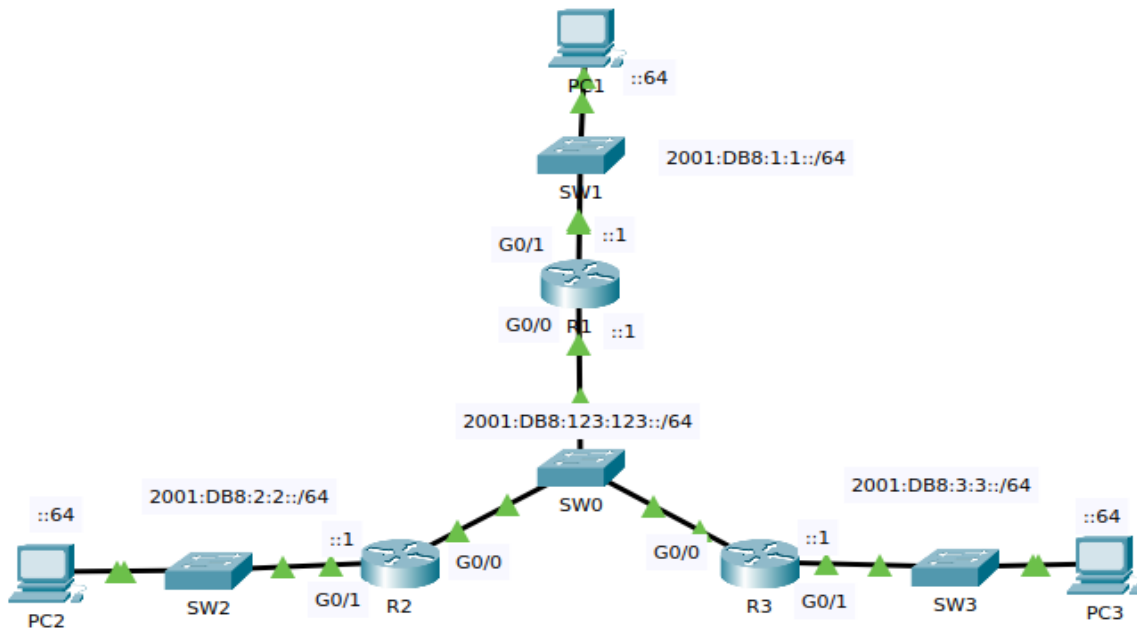# ACTIVITY 42: IPv6

1. Enable IPv6 on R1, R2, and R3, and configure the IPv6 addresses on:
R1's G0/0 and G0/1 interfaces
R1(config)#ipv6 unicast-routing
R1(config)#interface g0/0
R1(config-if)#ipv6 address 2001:DB8:123:123::1/64
R1(config-if)#no shutdown
R1(config-if)#exit
R1(config)#interface g0/1
R1(config-if)#ipv6 address 2001:DB8:1:1::1/64
R1(config-if)#no shutdown

R2's G0/1 interface
R2(config)#ipv6 unicast-routing
R2(config)#interface g0/1
R2(config-if)#ipv6 address 2001:DB8:2:2::1/64
R2(config-if)#no shutdown

R3's G0/1 interface
R3(config)#ipv6 unicast-routing
R3(config)#interface g0/1
R3(config-if)#ipv6 address 2001:DB8:3:3::1/64
R3(config-if)#no shutdown

2. Configure SLAAC on R2 and R3's G0/0 interfaces
R2(config)#interface g0/0
R2(config-if)#ipv6 address autoconfig
R2(config-if)#no shutdown

R3(config)#interface g0/0
R3(config-if)#ipv6 address autoconfig
R3(config-if)#no shutdown

R1#show ipv6 interface brief
GigabitEthernet0/0 [up/up]
        FE80::20C:CFFF:FE58:C801
        2001:DB8:123:123::1
GigabitEthernet0/1 [up/up]
        FE80::20C:CFFF:FE58:C802
        2001:DB8:1:1::1
GigabitEthernet0/2 [administratively down/down]
        unassigned
Vlan1 [administratively down/down]
        unassigned

R2#show ipv6 interface brief
        GigabitEthernet0/0 [up/up]
        FE80::2D0:FFFF:FE69:3801
GigabitEthernet0/1 [up/up]
        FE80::2D0:FFFF:FE69:3802
        2001:DB8:2:2::1
GigabitEthernet0/2 [administratively down/down]
        unassigned
Vlan1 [administratively down/down]
        unassigned

R3#show ipv6 interface brief
GigabitEthernet0/0 [up/up]
        FE80::2E0:8FFF:FE8A:7101
GigabitEthernet0/1 [up/up]
        FE80::2E0:8FFF:FE8A:7102
        2001:DB8:3:3::1
GigabitEthernet0/2 [administratively down/down]
        unassigned
Vlan1 [administratively down/down]
        unassigned

        3. Configure static IPv6 routes to provide full connectivity to the network
R1(config)#ipv6 route 2001:DB8:2:2::/64 g0/0 FE80::2D0:FFFF:FE69:3801
R1(config)#ipv6 route 2001:DB8:3:3::/64 g0/0 FE80::2E0:8FFF:FE8A:7101
R2(config)#ipv6 route 2001:DB8:1:1::/64 g0/0 2001:DB8:123:123::1
R2(config)#ipv6 route 2001:DB8:3:3::/64 g0/0 FE80::2E0:8FFF:FE8A:7101

R3(config)#ipv6 route 2001:DB8:1:1::/64 g0/0 2001:DB8:123:123::1
R3(config)#ipv6 route 2001:DB8:2:2::/64 g0/0 FE80::2D0:FFFF:FE69:3801

Ping from PC1 to PC2 :

```
C:\>ping 2001:DB8:2:2::64

Pinging 2001:DB8:2:2::64 with 32 bytes of data:

Reply from 2001:DB8:2:2::64: bytes=32 time<1ms TTL=254
Reply from 2001:DB8:2:2::64: bytes=32 time<1ms TTL=254
Reply from 2001:DB8:2:2::64: bytes=32 time<1ms TTL=254
Reply from 2001:DB8:2:2::64: bytes=32 time<1ms TTL=254

Ping statistics for 2001:DB8:2:2::64:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

Ping from PC1 to PC3 :

```
C:\>ping 2001:db8:3:3::64

Pinging 2001:db8:3:3::64 with 32 bytes of data:

Reply from 2001:DB8:3:3::64: bytes=32 time<1ms TTL=126
Reply from 2001:DB8:3:3::64: bytes=32 time<1ms TTL=126
Reply from 2001:DB8:3:3::64: bytes=32 time<1ms TTL=126
Reply from 2001:DB8:3:3::64: bytes=32 time=1ms TTL=126

Ping statistics for 2001:DB8:3:3::64:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

Ping from PC2 to PC3 :

```
C:\>ping 2001:DB8:3:3::64

Pinging 2001:DB8:3:3::64 with 32 bytes of data:

Reply from 2001:DB8:3:3::64: bytes=32 time<1ms TTL=126
Reply from 2001:DB8:3:3::64: bytes=32 time<1ms TTL=126
Reply from 2001:DB8:3:3::64: bytes=32 time<1ms TTL=126
Reply from 2001:DB8:3:3::64: bytes=32 time<1ms TTL=126

Ping statistics for 2001:DB8:3:3::64:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```