Router(config)#int loopback 10
Router(config-if)#ip add 10.1.1.1 0.0.0.255
Router(config-if)#exit

Router(config)#int loopback 20
Router(config-if)#ip add 10.2.1.1 0.0.0.255
Router(config-if)#exit

Router(config)#router os pf 1
Router(config-router)#network 192.10.5.0 0.0.0.255 area 0
Router(config-router)#network 192.10.4.0 0.0.0.255 area 0
Router(config-router)#network 192.10.3.0 0.0.0.255 area 0
Router(config-router)#exit

OSPF_Single Area neighborship /router-id

By default version 1 is enabled not specify configure

PC-PT PC2(1)   PC-PT PC4(1)   PC-PT PC6(1)   PC-PT PC7(1)
192.10.5.10   192.10.5.20   192.10.5.30   192.10.5.40
255.255.255.0 255.255.255.0 255.255.255.0 255.255.255.0
192.10.5.5   192.10.5.5   192.10.5.5   192.10.5.5

Printer-PT Printer1(1)   192.10.5.60 255.255.255.0 192.10.5.5

Laptop-PT Laptop1(1)   192.10.5.50 255.255.255.0 192.10.5.5

2960-24TT Switch2(1)   192.10.5.0   Nagpur Team C

192.10.5.5
192.10.3.2   Router2   192.10.4.1

192.10.3.0/24   192.10.4.0/24

AREA 0

Router(config)#router ospf 1
Router(config-router)#network 192.10.2.0 0.0.0.255 area 0
Router(config-router)#network 192.10.6.0 0.0.0.255 area 0
Router(config-router)#network 192.10.4.0 0.0.0.255 area 0
Router(config-router)#exit

192.10.1.0   Mumbai tam A

192.10.3.1

192.10.1.60 255.255.255.0 192.10.1.5
Printer-PT Printer0

192.10.1.50 255.255.255.0 192.10.1.5
Laptop-PT Laptop0

2960-24TT Switch0

PC-PT PC0   PC-PT PC3   PC-PT PC1   PC-PT PC5
192.10.1.10   192.10.1.20   192.10.1.30   192.10.1.40
255.255.255.0 255.255.255.0 255.255.255.0 255.255.255.0
192.10.1.5   192.10.1.5   192.10.1.5   192.10.1.5

192.10.1.5   2911 Router0   192.10.6.1   192.10.6.0/24   192.10.6.2 Router1   192.10.2.5

Pune Team B   192.10.2.0

2960-24TT Switch2

Printer-PT Printer1   192.10.2.60 255.255.255.0
Laptop-PT Laptop1   192.10.2.50 255.255.255.0 192.10.2.5

192.10.4.2

Router(config)#router ospf 1
Router(config-router)#router-id 1.1.1.1
Router(config-router)#network 192.10.1.0 0.0.0.255 area 0
Router(config-router)#network 192.10.6.0 0.0.0.255 area 0
Router(config-router)#network 192.10.3.0 0.0.0.255 area 0

Router#show ip route ospf
Router#show ip neighbor
Router#show ip databas e

PC-PT PC2   PC-PT PC4   PC-PT PC8   PC-PT PC7
192.10.2.10   192.10.2.20   192.10.2.30   192.10.2.40
255.255.255.0 255.255.255.0 255.255.255.0 255.255.255.0
192.10.2.5   192.10.2.5   192.10.2.5   192.10.2.5

OSPF Single Area NeighborShip_Router-id Network Topology and Configuration

1. Network Topology Overview

❖ Mumbai Team A (192.10.1.0/24):
  - Devices: PCs, Printer, and Laptop.
  - Switch: 2960-24TT.
  - IP Address Scheme:
    • PCs: 192.10.1.10, 192.10.1.20, 192.10.1.30, 192.10.1.40
    • Printer: 192.10.1.60
    • Laptop: 192.10.1.50
  - Router0: Connected to network 192.10.1.0/24 and other networks using OSPF.

❖ Pune Team B (192.10.2.0/24):
  - Devices: PCs, Printer, and Laptop.
  - Switch: 2960-24TT.
  - IP Address Scheme:
    • PCs: 192.10.2.10, 192.10.2.20, 192.10.2.30, 192.10.2.40
    • Printer: 192.10.2.60
    • Laptop: 192.10.2.50
  - Router3: Connected to network 192.10.2.0/24 and other networks using OSPF.

❖ Nagpur Team C (192.10.5.0/24):
  - Devices: PCs, Printer, and Laptop.
  - Switch: 2960-24TT.
  - IP Address Scheme:
    • PCs: 192.10.5.10, 192.10.5.20, 192.10.5.30, 192.10.5.40
    • Printer: 192.10.5.60
    • Laptop: 192.10.5.50
  - Router3: Connected to network 192.10.5.0/24 and other networks using OSPF

2. OSPF Configuration on Routers

❖ **Router0: Commands used**:

Router(config)#router ospf 1
Router(config-router)#router-id 1.1.1.1
Router(config-router)#network 192.10.1.0 0.0.0.255 area 0
Router(config-router)#network 192.10.6.0 0.0.0.255 area 0
Router(config-router)#network 192.10.3.0 0.0.0.255 area0

_____

Router#show ip route ospf
Router#show ip neighbor
Router#show ip database
Networks included in OSPF: 192.10.1.0/24 and 192.10.3.0/24 and 192.10.6.0/24

❖ **Router1: Commands used:**

Router(config)#router ospf 1
Router(config-router)#network 192.10.2.0 0.0.0.255 area 0
Router(config-router)#network 192.10.6.0 0.0.0.255 area 0
Router(config-router)#network 192.10.4.0 0.0.0.255 area 0
Router(config-router)#exit
Networks included in OSPF: 192.10.2.0/24 and 192.10.6.0/24 and 192.10.4.0/24

❖ **Router3: Commands used:**

the topology you provided, loopback addresses are configured on the routers, which are often used for identifying routers in OSPF, as they are stable interfaces that are always up unless manually disabled. Loopback addresses are important for OSPF to assign router IDs and to ensure reliable router identification.

Router(config)#int loopback 10
Router(config-if)#ip add 10.1.1.1 0.0.0.255
Router(config-if)#exit
Router(config)#int loopback 20
Router(config-if)#ip add 10.2.1.1 0.0.0.255
Router(config-if)#exit

Router(config)#router ospf 1
Router(config-router)#network 192.10.5.0 0.0.0.255 area 0
Router(config-router)#network 192.10.4.0 0.0.0.255 area 0
Router(config-router)#network 192.10.3.0 0.0.0.255 area 0
Router(config-router)#exit
Networks included in OSPF: 192.10.5.0/24 and 192.10.4.0/24 and 192.10.4.0/24

4. Verification Commands:
- Use show ip ospf neighbor on each router to verify OSPF neighbor relationships.
- Use show ip route ospf to check that routes between all subnets are properly advertised and accessible.