OSPF Tables:

Each OSPF router stores routing and topology information in three tables: Neighbor table, Topology table and Routing Table.

OSPF Routing Table:

OSPF stores single best route for each destination in this table. Router uses this table to forward the packet. There is a separate routing table for each routed protocol.

```
R1#show ip route ospf
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
       i - IS-IS, su - IS-IS summary, 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, + - replicated route

Gateway of last resort is not set

O       192.168.3.0/24 [110/2] via 192.168.2.3, 00:45:57, GigabitEthernet1/0
                       [110/2] via 192.168.1.2, 00:45:19, FastEthernet0/0
```

O	This route was learned through OSPF.
192.168.3.0/24	Destination learn network and 24 is subnet mask.
110	110, is the Administrative Distance of OSPF.
2	This is the metric, Total cost to get to the destination.
192.168.2.3	Next Hop IP Address where to send the traffic.
00:45:57	Time since the route was learnt.
GigabitE1/0	The outbound interface going towards the destination.

OSPF Neighbor Table:

Contain information about the neighbors; Neighbor table includes all neighbors that is directly connected to router using OSPF. Contains all discovered OSPF neighbors with whom routing information will be interchanged.

```
R1#show ip ospf neighbor

Neighbor ID     Pri   State           Dead Time   Address         Interface
192.168.3.3       1   FULL/BDR        00:00:38    192.168.2.3     GigabitEthernet1/0
192.168.3.2       1   FULL/BDR        00:00:31    192.168.1.2     FastEthernet0/0
```

Neighbor ID	The Neighbor ID is the router ID of the neighbor router.
Pri	The Pri field indicates the priority of the neighbor router.
State	The State field indicates the functional state of the neighbor router.
Dead Time	The amount of time remaining that the router waits to receive an OSPF hello packet from the neighbor before declaring the neighbor down.
Address	The IP address of the interface to which this neighbor is directly connected.
Interface	The interface on which the OSPF neighbor has formed adjacency.

OSPF Topology Table:

Topology Table contains the entire road map of the network with all available OSPF routers and calculated best and alternative paths. The OSPF database contains all LSAs that describe the network topology.

```
R1#show ip ospf database

            OSPF Router with ID (192.168.2.1) (Process ID 1)

                Router Link States (Area 0)

Link ID         ADV Router      Age         Seq#       Checksum Link count
192.168.2.1     192.168.2.1     24          0x80000002 0x008E08 2
192.168.3.2     192.168.3.2     20          0x80000003 0x00A8E4 2
192.168.3.3     192.168.3.3     20          0x80000003 0x000581 2

                Net Link States (Area 0)

Link ID         ADV Router      Age         Seq#       Checksum
192.168.1.2     192.168.3.2     25          0x80000001 0x00B3D0
192.168.2.3     192.168.3.3     25          0x80000001 0x00A2DD
192.168.3.3     192.168.3.3     20          0x80000001 0x00B2CA
```

OSPF Router With ID (192.168.2.1)	This router OSPF router ID that is 192.168.2.1 highest interface IP.
Process ID 1	Process ID of the OSPF configured by Network Administrator.
Link ID	The IDs of the routers in the area. There are three routers in Area 0.
ADV Router	Router ID of the routers who is advertising the LSA.
Age	Maximum age counter in seconds. The maximum is 3600 seconds or 1 hour
Seq#	It starts from 0x80000001 and will increase by 1 for each update.
Checksum	This is check sum of each LSA.
Link	Number of interfaces detected per router. Every router has 2 links in Area.