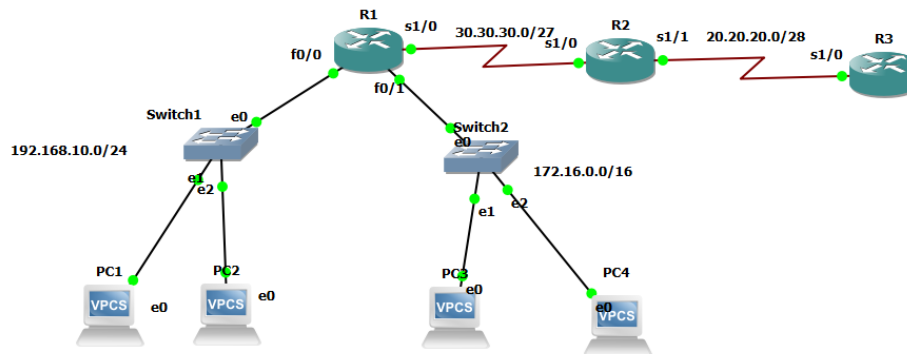DHCP and DNS: Additional Practice Sheet

Design the Network as shown for DHCP and DNS Configuration in R3.

A. Change the hostnames of the router to NAME-1, NAME-2 and NAME-3
B. Configure the IP Addresses to the interfaces on the router R1. (Use the last Host addresses)
C. Configure appropriate IP Addresses to the interfaces on R2 and R3.
D. Configure Static Routing on the routers. (Assign Static IP Address to PC2 to check connectivity to R3)
E. Configure R3 as the DNS Server with the Domain Name www.NAME.com. (Test using PC2)
F. Configure R3 as the DHCP router with the following restrictions:
   ○ Use name POOL-CLASS-C for the hosts in the 192.168.10.0/24 Network.
   ○ Use name POOL-CLASS-B for the hosts in the 172.16.8.0/16 Network.
   ○ Exclude the first and the last host addresses.
   ○ Assign the DNS Server address during IP Configuration.
G. Assign appropriate DHCP relay agents.
H. Test IP Configuration in hosts and Access to the DNS Server.
I. Save the configurations on all routers.

A, B and C :

```
R1(config)#hostname SAHANA-1
SAHANA-1(config)#int f0/0
SAHANA-1(config-if)#ip address 192.168.10.254 255.255.255.0
SAHANA-1(config-if)#no shut

SAHANA-1(config)#interface FastEthernet0/1
SAHANA-1(config-if)#ip address 172.16.0.254 255.255.0.0
SAHANA-1(config-if)#no shut

SAHANA-1(config)#interface Serial1/0
SAHANA-1(config-if)#ip address 30.30.30.1 255.255.255.224
SAHANA-1(config-if)#no shut

R2(config)#hostname SAHANA-2
SAHANA-2(config)#int s1/0
SAHANA-2(config-if)#ip address 30.30.30.2 255.255.255.224
SAHANA-2(config-if)#no shut

SAHANA-2(config-if)#int s1/1
SAHANA-2(config-if)#ip address 20.20.20.1 255.255.255.240
SAHANA-2(config-if)#no shut

R3(config)#hostname SAHANA-3
SAHANA-3(config)#int s1/0
SAHANA-3(config-if)#ip address 20.20.20.2 255.255.255.240
SAHANA-3(config-if)#no shut
```

D.

```
SAHANA-1(config)#ip route 20.20.20.0 255.255.255.240 30.30.30.2

SAHANA-2(config)#ip route 192.168.10.0 255.255.255.0 30.30.30.1
SAHANA-2(config)#ip route 172.16.0.0 255.255.0.0 30.30.30.1

SAHANA-3(config)#ip route 192.168.10.0 255.255.255.0 20.20.20.1
SAHANA-3(config)#ip route 172.16.0.0 255.255.0.0 20.20.20.1
SAHANA-3(config)#ip route 30.30.30.0 255.255.255.224 20.20.20.1
```

DHCP and DNS: Additional Practice Sheet

To Test :

```
PC2> ip 192.168.10.100 255.255.255.0 192.168.10.254

PC2> ping 20.20.20.2
84 bytes from 20.20.20.2 icmp_seq=1 ttl=253 time=76.795 ms
84 bytes from 20.20.20.2 icmp_seq=2 ttl=253 time=62.822 ms
84 bytes from 20.20.20.2 icmp_seq=3 ttl=253 time=77.863 ms
84 bytes from 20.20.20.2 icmp_seq=4 ttl=253 time=61.871 ms
84 bytes from 20.20.20.2 icmp_seq=5 ttl=253 time=64.335 ms
```

E.

```
SAHANA-3(config)#ip dns server
SAHANA-3(config)#ip host www.sahana.com 20.20.20.2
```

To Test :

```
PC2> ping www.sahana.com
www.sahana.com resolved to 20.20.20.2
84 bytes from 20.20.20.2 icmp_seq=1 ttl=253 time=46.881 ms
84 bytes from 20.20.20.2 icmp_seq=2 ttl=253 time=79.519 ms
84 bytes from 20.20.20.2 icmp_seq=3 ttl=253 time=78.913 ms
84 bytes from 20.20.20.2 icmp_seq=4 ttl=253 time=47.923 ms
84 bytes from 20.20.20.2 icmp_seq=5 ttl=253 time=78.424 ms
```

F.

```
SAHANA-3(dhcp-config)#exit
SAHANA-3(config)#ip dhcp excluded-address 192.168.10.1
SAHANA-3(config)#ip dhcp excluded-address 192.168.10.254
SAHANA-3(config)#ip dhcp excluded-address 172.16.0.1
SAHANA-3(config)#ip dhcp excluded-address 172.16.0.254
SAHANA-3(config)#ip dhcp pool POOL-CLASS-C
SAHANA-3(dhcp-config)#network 192.168.10.0 255.255.255.0
SAHANA-3(dhcp-config)#default-router 192.168.10.254
SAHANA-3(dhcp-config)#dns-server 20.20.20.2
SAHANA-3(dhcp-config)#ip dhcp pool POOL-CLASS-B
SAHANA-3(dhcp-config)#network 172.16.0.0 255.255.0.0
SAHANA-3(dhcp-config)#default-router 172.16.0.254
SAHANA-3(dhcp-config)#dns-server 20.20.20.2
SAHANA-3(dhcp-config)#
```

G.

> DHCP clients use broadcast messages to send DHCP requests. Routers do not forward broadcast messages. If the DHCP server and clients are in different network segments and connected through a router, the clients will not receive IP configurations from the DHCP server. In such a situation, you need to configure the router's interface connected to the DHCP server as a DHCP relay agent using the ip helper command
> When DHCP Command is given without the helper address
>
> ```
> PC3> dhcp
> DDD
> Can't find dhcp server
> ```

```
SAHANA-1(config)#int f0/0
SAHANA-1(config-if)#ip helper 20.20.20.2
SAHANA-1(config-if)#int f0/1
SAHANA-1(config-if)#ip helper 20.20.20.2
```

H.

```
PC1> dhcp
DORA IP 192.168.10.2/24 GW 192.168.10.254

PC1> show ip

NAME        : PC1[1]
IP/MASK     : 192.168.10.2/24
GATEWAY     : 192.168.10.254
DNS         : 20.20.20.2
DHCP SERVER : 20.20.20.2
DHCP LEASE  : 86393, 86400/43200/75600
MAC         : 00:50:79:66:68:00
LPORT       : 10028
RHOST:PORT  : 127.0.0.1:10029
MTU:        : 1500
```

```
PC3> dhcp
DDORA IP 172.16.0.2/16 GW 172.16.0.254

PC3> show ip

NAME        : PC3[1]
IP/MASK     : 172.16.0.2/16
GATEWAY     : 172.16.0.254
DNS         : 20.20.20.2
DHCP SERVER : 20.20.20.2
DHCP LEASE  : 86382, 86400/43200/75600
MAC         : 00:50:79:66:68:02
LPORT       : 10032
RHOST:PORT  : 127.0.0.1:10033
MTU:        : 1500
```

I.

```
SAHANA-1#copy run start
```

```
SAHANA-2#copy run start
```

```
SAHANA-3#copy run start
```