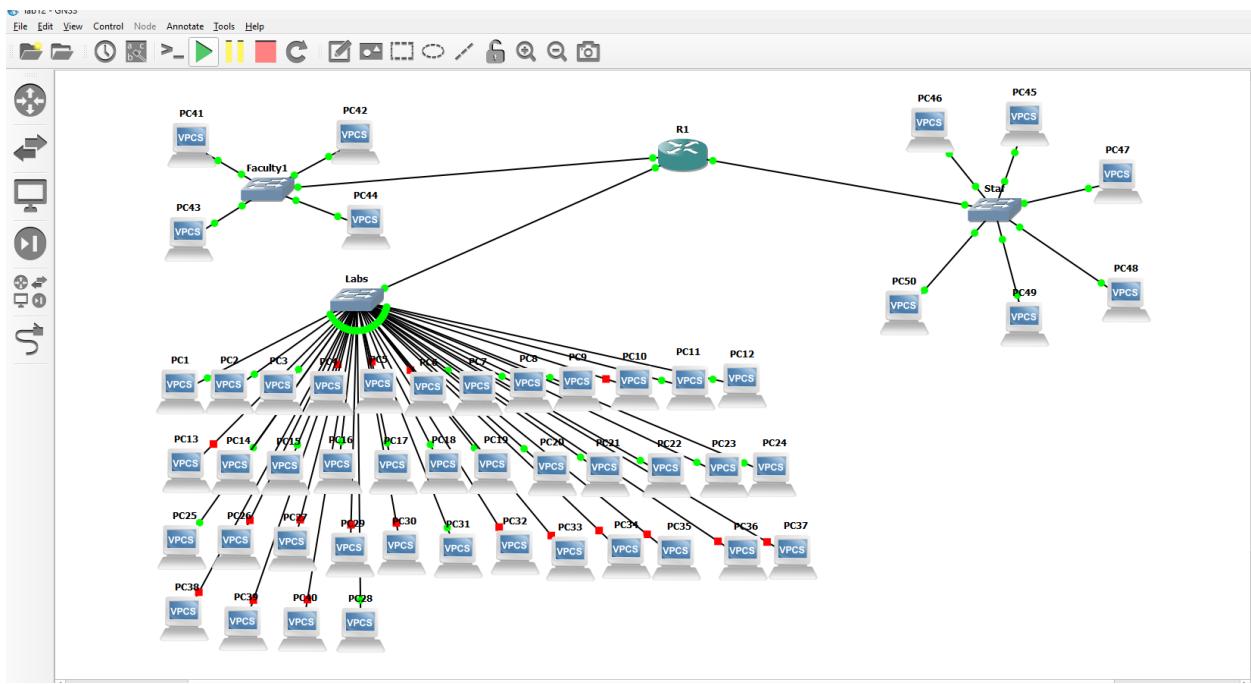


Lab 12



Labs 192.168.1.254

Faculty 192.168.2.254

Staff 192.168.3.254

Enable

Configure terminal

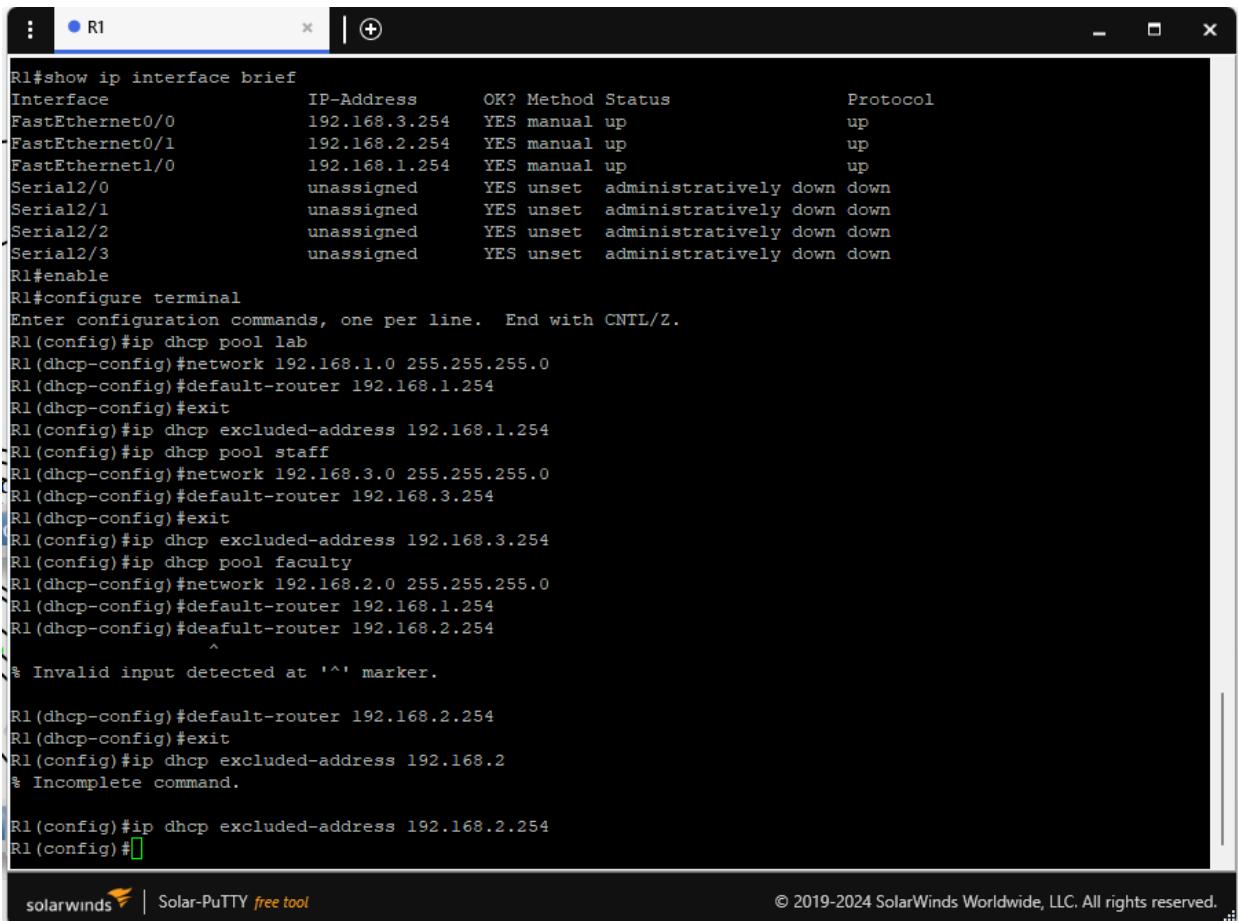
Interface -- (FastEthernet1/0)

Ip address - (192.168.1.254 255.255.255.0

no shutdown

show ip interface brief

```
R1#show ip interface brief
Interface          IP-Address      OK? Method Status      Protocol
FastEthernet0/0    192.168.3.254  YES manual up        up
FastEthernet0/1    192.168.2.254  YES manual up        up
FastEthernet1/0    192.168.1.254  YES manual up        up
Serial2/0          unassigned     YES unset administratively down down
Serial2/1          unassigned     YES unset administratively down down
Serial2/2          unassigned     YES unset administratively down down
Serial2/3          unassigned     YES unset administratively down down
R1#
```



The screenshot shows a SolarPuTTY terminal window titled 'R1'. The session is connected to a Cisco router named 'R1'. The terminal displays the output of the 'show ip interface brief' command, which shows all interfaces are up and administratively down. Below this, the user enters configuration mode with 'R1#enable' and 'R1#configure terminal'. They then proceed to set up a DHCP pool named 'lab' with a network range of 192.168.1.0/24, a default gateway of 192.168.1.254, and exclude the address 192.168.1.254 from the pool. They also create another pool named 'staff' with a network range of 192.168.3.0/24, a default gateway of 192.168.3.254, and exclude the address 192.168.3.254 from the pool. After exiting configuration mode, they attempt to set a default gateway of 192.168.2.254, but receive an error message stating '% Invalid input detected at '^' marker.' This is followed by a series of incomplete commands related to DHCP excluded addresses.

```
R1#show ip interface brief
Interface          IP-Address      OK? Method Status      Protocol
FastEthernet0/0    192.168.3.254  YES manual up        up
FastEthernet0/1    192.168.2.254  YES manual up        up
FastEthernet1/0    192.168.1.254  YES manual up        up
Serial2/0          unassigned     YES unset administratively down down
Serial2/1          unassigned     YES unset administratively down down
Serial2/2          unassigned     YES unset administratively down down
Serial2/3          unassigned     YES unset administratively down down
R1#enable
R1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#ip dhcp pool lab
R1(dhcp-config)#network 192.168.1.0 255.255.255.0
R1(dhcp-config)#default-router 192.168.1.254
R1(dhcp-config)#exit
R1(config)#ip dhcp excluded-address 192.168.1.254
R1(config)#ip dhcp pool staff
R1(dhcp-config)#network 192.168.3.0 255.255.255.0
R1(dhcp-config)#default-router 192.168.3.254
R1(dhcp-config)#exit
R1(config)#ip dhcp excluded-address 192.168.3.254
R1(config)#ip dhcp pool faculty
R1(dhcp-config)#network 192.168.2.0 255.255.255.0
R1(dhcp-config)#default-router 192.168.1.254
R1(dhcp-config)#deafult-router 192.168.2.254
^
% Invalid input detected at '^' marker.

R1(dhcp-config)#default-router 192.168.2.254
R1(dhcp-config)#exit
R1(config)#ip dhcp excluded-address 192.168.2.
% Incomplete command.

R1(config)#ip dhcp excluded-address 192.168.2.254
R1(config)#[ ]
```

ip dhcp pool _____

network 192.168.1.0 _____(255.255.255.0)

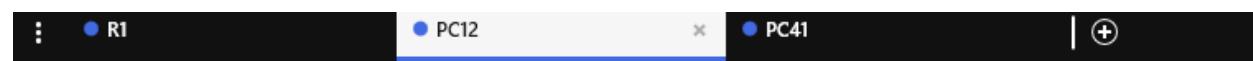
default-router _____

exit

ip dhcp excluded-address _____

Two or pc communicate.

P12



```
Welcome to Virtual PC Simulator, version 0.6.2
Dedicated to Daling.
Build time: Apr 10 2019 02:42:20
Copyright (c) 2007-2014, Paul Meng (mirnshi@gmail.com)
All rights reserved.

VPCS is free software, distributed under the terms of the "BSD" licence.
Source code and license can be found at vpcs.sf.net.
For more information, please visit wiki.freecode.com.cn.

Press '?' to get help.

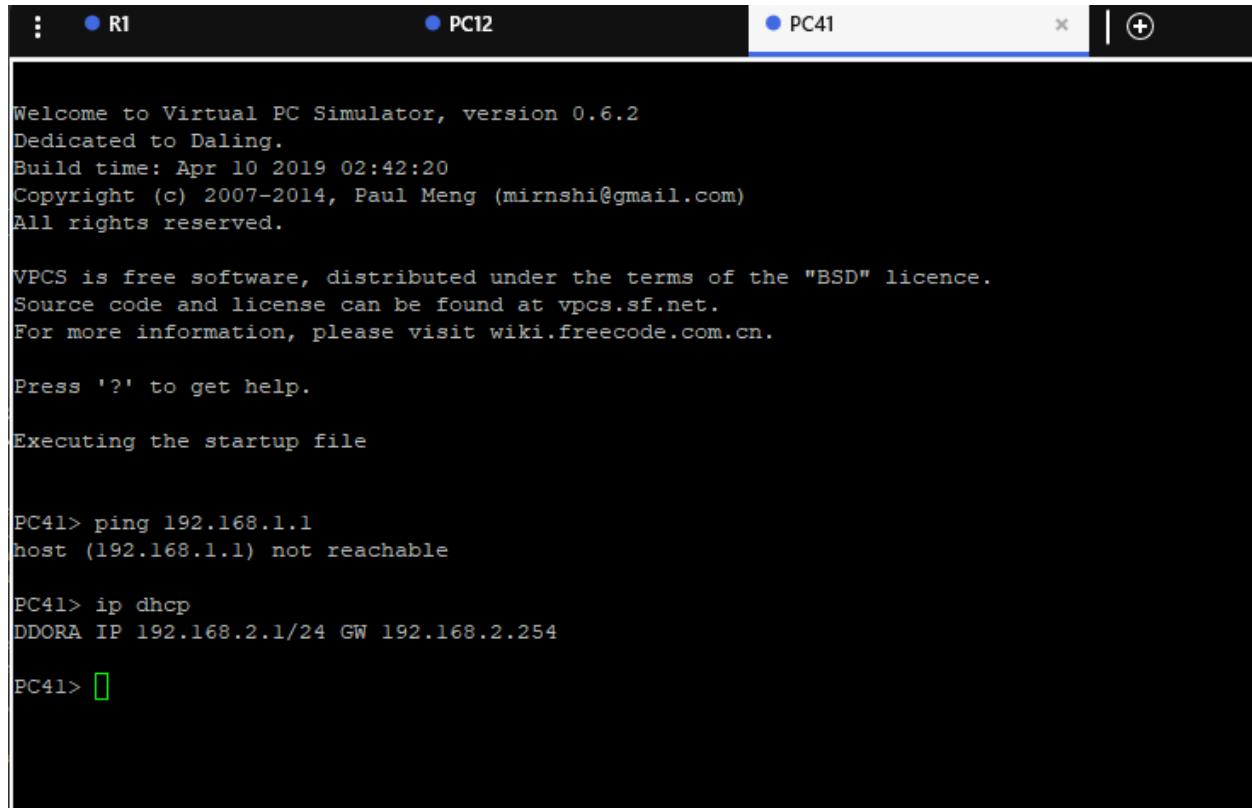
Executing the startup file

PC12> ip dhcp
DDORA IP 192.168.1.1/24 GW 192.168.1.254

PC12> ping 192.168.2.1
192.168.2.1 icmp_seq=1 timeout
192.168.2.1 icmp_seq=2 timeout
84 bytes from 192.168.2.1 icmp_seq=3 ttl=63 time=32.196 ms
84 bytes from 192.168.2.1 icmp_seq=4 ttl=63 time=30.662 ms
84 bytes from 192.168.2.1 icmp_seq=5 ttl=63 time=31.560 ms

PC12> [redacted]
```

P41



The screenshot shows a window titled "Virtual PC Simulator" with three tabs at the top: "R1" (selected), "PC12", and "PC41". The "PC41" tab is active, displaying a terminal window with the following text:

```
Welcome to Virtual PC Simulator, version 0.6.2
Dedicated to Daling.
Build time: Apr 10 2019 02:42:20
Copyright (c) 2007-2014, Paul Meng (mirnshi@gmail.com)
All rights reserved.

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Source code and license can be found at vpcs.sf.net.
For more information, please visit wiki.freecode.com.cn.

Press '?' to get help.

Executing the startup file

PC41> ping 192.168.1.1
host (192.168.1.1) not reachable

PC41> ip dhcp
DDORA IP 192.168.2.1/24 GW 192.168.2.254

PC41> [redacted]
```

POST-LAB

In the context of the Dynamic Host Configuration Protocol (DHCP), **DORA** is an acronym for **Discover, Offer, Request, and Acknowledge**. It represents the four-step process a client uses to obtain an IP address and other network configuration parameters from a DHCP server.

Timeline Diagram of the DHCP DORA Process

The following steps illustrate the communication between a DHCP client and server to lease an IP address. The client uses source IP 0.0.0.0 initially as it does not yet have an address.

- **Discover (DHCPDISCOVER):** The client, upon connecting to the network, sends a broadcast message to locate any available DHCP servers. The message uses the client's own MAC address as the source and a broadcast MAC/IP address as the destination.
- **Offer (DHCPOFFER):** Any DHCP server that receives the Discover message responds with a unicast Offer message to the client's MAC address, proposing an available IP address, subnet mask, default gateway, DNS server information, and a lease duration.
- **Request (DHCPREQUEST):** The client receives one or more offers and selects one (usually the first one it received). It then broadcasts a Request message to formally accept the offered IP address and inform other DHCP servers that their offers have been declined.
- **Acknowledge (DHCPACK):** The chosen DHCP server receives the Request and sends a final unicast Acknowledge (ACK) message to the client. This message confirms the IP address assignment and finalizes the leasing process. The client can now configure its network interface with the assigned IP address and fully communicate on the network.