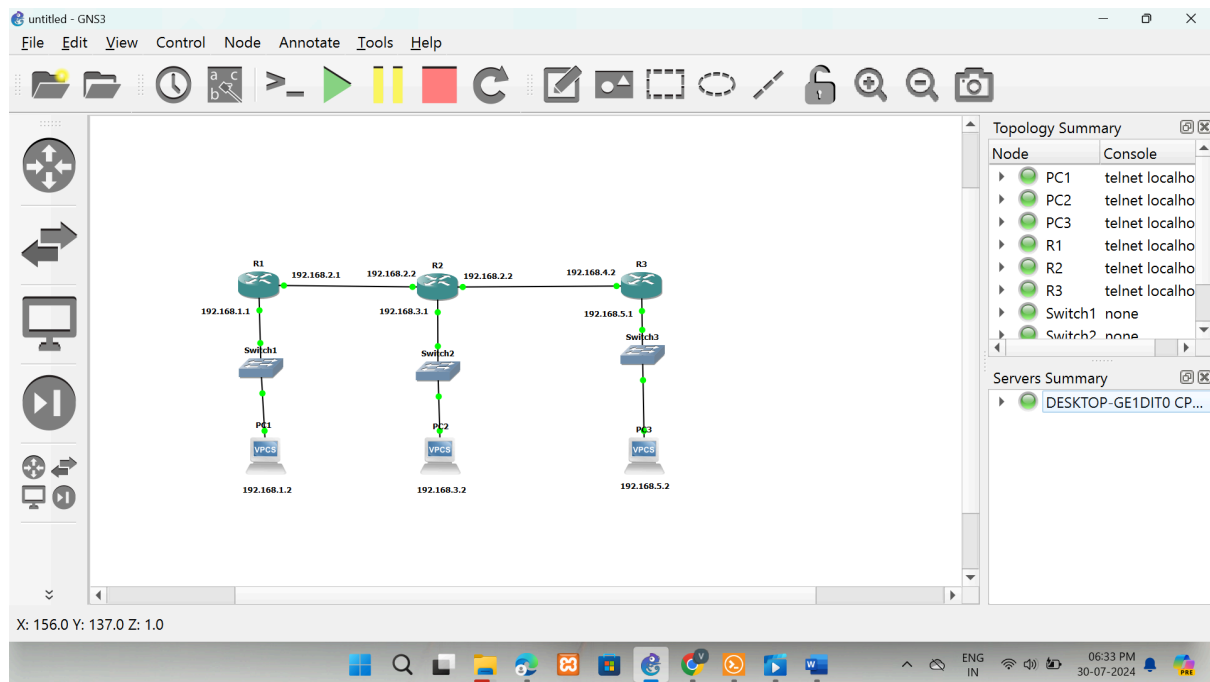


Computer Networks




Computer Networks

Configuring PCs

PC1

Assign IP Address:



```

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

PC1> show ip

NAME       : PC1[1]
IP/MASK     : 0.0.0.0/0
GATEWAY     : 0.0.0.0
DNS         :
MAC        : 00:50:79:66:68:00
LPORT      : 10000
RHOST:PORT  : 127.0.0.1:10001
MTU        : 1500

PC1> ip 192.168.1.2/24 192.168.1.1
Checking for duplicate address...
PC1 : 192.168.1.2 255.255.255.0 gateway 192.168.1.1

PC1> █

```

solarwinds | Solar-PuTTY free tool

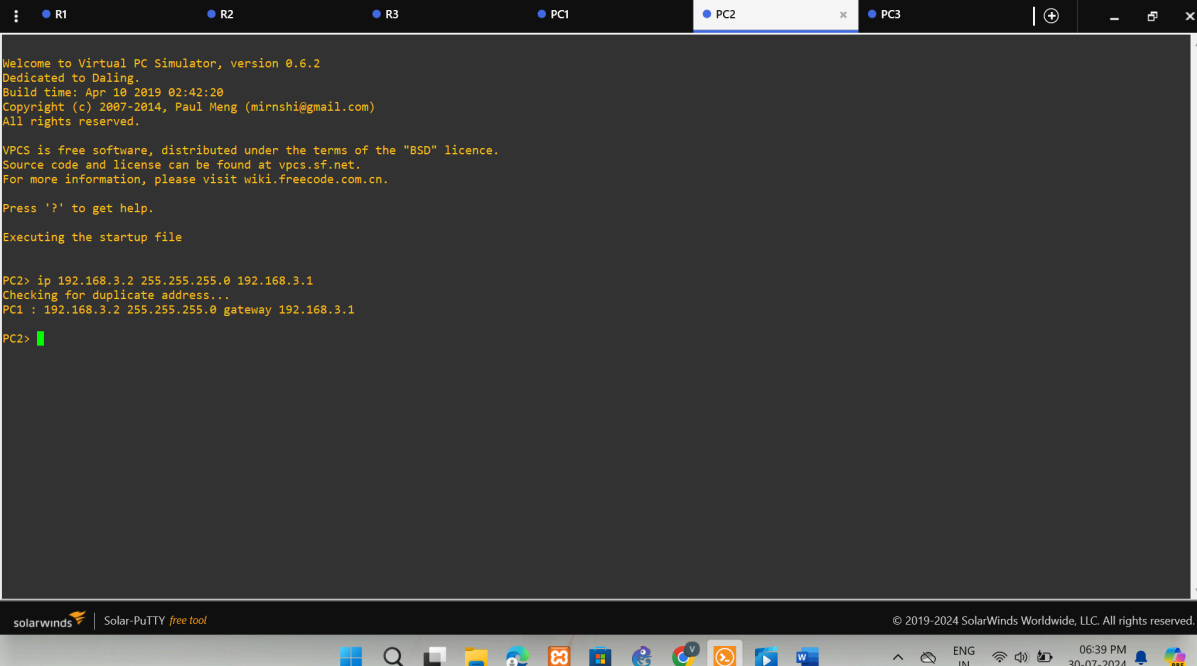
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06:39 PM
30-07-2024

Computer Networks

PC2

Assign IP Address:



The screenshot shows a SolarWinds Solar-PuTTY terminal window with a tab for PC2 selected. The terminal displays 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.

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

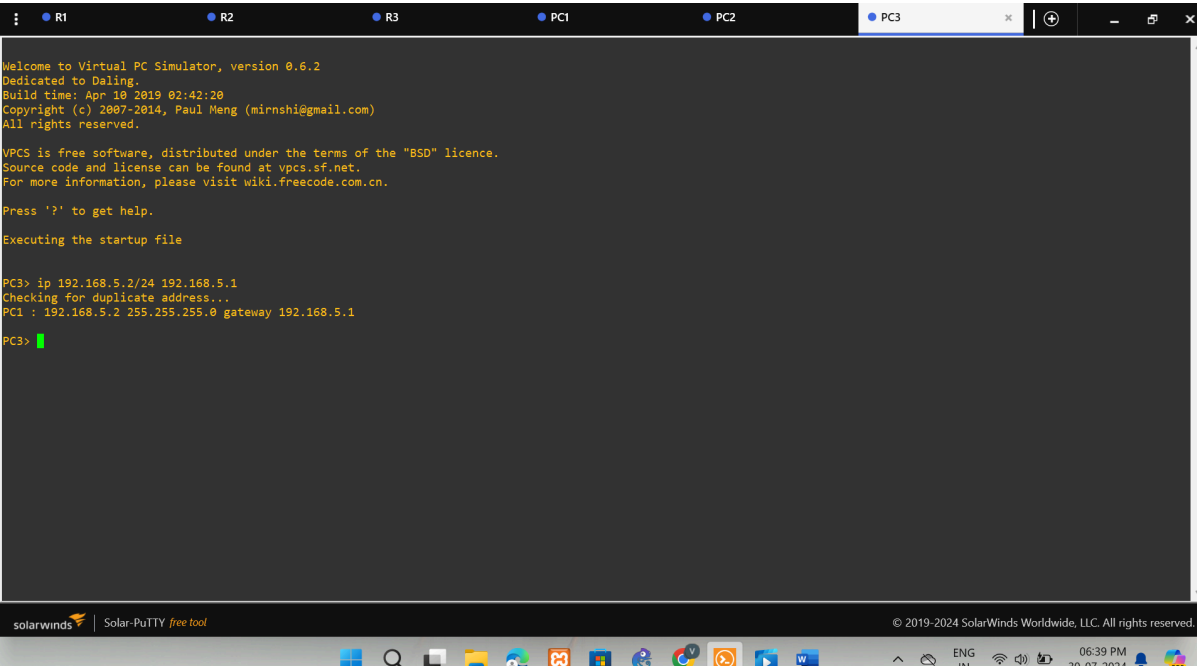
PC2> ip 192.168.3.2 255.255.255.0 192.168.3.1
Checking for duplicate address...
PC1 : 192.168.3.2 255.255.255.0 gateway 192.168.3.1

PC2> 
```

The bottom of the window shows the SolarWinds logo, the text "Solar-PuTTY free tool", and a copyright notice: "© 2019-2024 SolarWinds Worldwide, LLC. All rights reserved." The taskbar at the bottom includes icons for Windows, Search, File Explorer, and other applications, along with a system clock showing 06:39 PM on 30-07-2024.

PC3

Assign IP Address:



The screenshot shows a SolarWinds Solar-PuTTY terminal window with a tab for PC3 selected. The terminal displays 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.

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

PC3> ip 192.168.5.2/24 192.168.5.1
Checking for duplicate address...
PC1 : 192.168.5.2 255.255.255.0 gateway 192.168.5.1

PC3> 
```

The bottom of the window shows the SolarWinds logo, the text "Solar-PuTTY free tool", and a copyright notice: "© 2019-2024 SolarWinds Worldwide, LLC. All rights reserved." The taskbar at the bottom includes icons for Windows, Search, File Explorer, and other applications, along with a system clock showing 06:39 PM on 30-07-2024.

Computer Networks

Configuring Routing

Router 1

```

R1
R2
R3
PC1
PC2
PC3

*Jul 30 17:12:39.791: %LINK-5-CHANGED: Interface FastEthernet0/0, changed state to administratively down
*Jul 30 17:12:39.799: %LINK-5-CHANGED: Interface FastEthernet1/0, changed state to administratively down
*Jul 30 17:12:39.811: %LINK-5-CHANGED: Interface GigabitEthernet2/0, changed state to administratively down
*Jul 30 17:12:39.819: %LINK-5-CHANGED: Interface Serial3/0, changed state to administratively down
*Jul 30 17:12:39.847: %LINK-5-CHANGED: Interface Serial3/1, changed state to administratively down
*Jul 30 17:12:39.847: %LINK-5-CHANGED: Interface Serial3/2, changed state to administratively down
*Jul 30 17:12:39.847: %LINK-5-CHANGED: Interface Serial3/3, changed state to administratively down
*Jul 30 17:12:39.847: %LINK-5-CHANGED: Interface Serial3/4, changed state to administratively down
*Jul 30 17:12:39.847: %LINK-5-CHANGED: Interface Serial3/5, changed state to administratively down
*Jul 30 17:12:39.847: %LINK-5-CHANGED: Interface Serial3/6, changed state to administratively down
R1#show ip
% Incomplete command.

R1# show ip
% Incomplete command.

R1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#interface fa0/0
R1(config-if)#ip address 192.168.1.1 255.255.255.0
R1(config-if)#no shutdown
R1(config-if)#
*Jul 30 18:21:30.251: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Jul 30 18:21:31.251: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, c
hanged state to up
R1(config-if)#exit
R1(config)#interface fa1/0
R1(config-if)#no shutdown
R1(config-if)#
*Jul 30 18:36:58.843: %LINK-3-UPDOWN: Interface FastEthernet1/0, changed state to up
*Jul 30 18:36:59.843: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, c
hanged state to up
R1(config-if)#configure terminal
^
% Invalid input detected at '^' marker.

R1(config-if)#exit
R1(config)#exit
R1(config)#exit

```

Router 2

```

R1
R2
R3
PC1
PC2
PC3

*Jul 30 17:12:39.907: %LINK-5-CHANGED: Interface Serial3/1, changed state to adm
inistratively down
*Jul 30 17:12:39.907: %LINK-5-CHANGED: Interface Serial3/2, changed state to adm
inistratively down
*Jul 30 17:12:39.907: %LINK-5-CHANGED: Interface Serial3/3, changed state to adm
inistratively down
*Jul 30 17:12:39.907: %LINK-5-CHANGED: Interface Serial3/4, changed state to adm
inistratively down
*Jul 30 17:12:39.907: %LINK-5-CHANGED: Interface Serial3/5, changed state to adm
inistratively down
*Jul 30 17:12:39.907: %LINK-5-CHANGED: Interface Serial3/6, changed state to adm
inistratively down
R2#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R2(config)#interface GigabitEthernet0/0
^
% Invalid input detected at '^' marker.

R2(config)#interface fa0/0
R2(config-if)#ip address 192.168.3.1 255.255.255.0
R2(config-if)#no shut
R2(config-if)#
*Jul 30 18:52:01.519: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Jul 30 18:52:02.519: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, c
hanged state to up
R2(config-if)#exit
R2(config)#interface fa1/0
R2(config-if)#ip address 192.168.2.2 255.255.255.0
R2(config-if)#no shut
R2(config-if)#
*Jul 30 18:54:35.767: %LINK-3-UPDOWN: Interface FastEthernet1/0, changed state to up
*Jul 30 18:54:36.767: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, c
hanged state to up
R2(config-if)#exit
R2(config)#interface g2/0
R2(config-if)#ip 192.168.4.1 255.255.255.0
^

```

Computer Networks

Router 3

```
R1 R2 R3 PC1 PC2 PC3
*Jul 30 17:12:40.003: %LINK-5-CHANGED: Interface Serial3/4, changed state to adm
*Jul 30 17:12:40.003: %LINK-5-CHANGED: Interface Serial3/5, changed state to adm
*Jul 30 17:12:40.003: %LINK-5-CHANGED: Interface Serial3/6, changed state to adm
*Jul 30 17:12:40.003: %LINK-5-CHANGED: Interface Serial3/6, changed state to adm
*Jul 30 17:12:40.003: %LINK-5-CHANGED: Interface Serial3/6, changed state to adm
R3#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R3(config)#interface g2/0
R3(config-if)#ip address 192.168.4.2 255.255.255.0
R3(config-if)#no shutdown
R3(config-if)#
*Jul 30 19:01:28.727: %LINK-3-UPDOWN: Interface GigabitEthernet2/0, changed state to up
*Jul 30 19:01:29.727: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet2/0
, changed state to up
R3(config-if)#exit
R3(config)#interface fa0/0
R3(config-if)#ip address 192.168.5.1 255.255.255.0
R3(config-if)#no shut
R3(config-if)#
*Jul 30 19:04:11.355: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Jul 30 19:04:12.355: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, c
hanged state to up
R3(config-if)#exit
R3(config)#exit
R3#
*Jul 30 19:10:37.163: %SYS-5-CONFIG_I: Configured from console by console
R3#show ip route
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, H - NHRP, I - LISP
+ - replicated route, % - next hop override
```

Configur rip version1

R1

```
R1 R2 R3 PC1 PC2 PC3
R1#
*Jul 30 19:08:53.155: %SYS-5-CONFIG_I: Configured from console by console
R1#show ip route
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, H - NHRP, I - LISP
+ - replicated route, % - next hop override

Gateway of last resort is not set

192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C 192.168.1.0/24 is directly connected, FastEthernet0/0
L 192.168.1.1/32 is directly connected, FastEthernet0/0
R1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#router rip
R1(config-router)#version 1
R1(config-router)#network 192.168.1.0
R1(config-router)#network 192.168.2.0
R1(config-router)#exit
R1(config)#exit
R1#
*Jul 30 19:31:27.823: %SYS-5-CONFIG_I: Configured from console by console
R1#show router
^
% Invalid input detected at '^' marker.

R1#show ip route
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
```

Computer Networks

R2

```
R1 R2 R3 PC1 PC2 PC3
R2(config)#interface fa0/0
R2(config-if)#ip address 192.168.3.1 255.255.255.0
R2(config-if)#no shut
R2(config-if)#
*Jul 30 18:52:01.519: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Jul 30 18:52:02.519: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, c
hanged state to up
R2(config-if)#exit
R2(config)#interface fa1/0
R2(config-if)#ip address 192.168.2.2 255.255.255.0
R2(config-if)#no shut
R2(config-if)#
*Jul 30 18:54:35.767: %LINK-3-UPDOWN: Interface FastEthernet1/0, changed state to up
*Jul 30 18:54:36.767: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet1/0, c
hanged state to up
R2(config-if)#exit
R2(config)#interface g2/0
R2(config-if)#ip 192.168.4.1 255.255.255.0
R2(config-if)#
% Invalid input detected at '^' marker.

R2(config-if)#ip address 192.168.4.1 255.255.255.0
R2(config-if)#no shut
R2(config-if)#
*Jul 30 18:56:58.919: %LINK-3-UPDOWN: Interface GigabitEthernet2/0, changed state to up
*Jul 30 18:56:59.919: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet2/0
, changed state to up
R2(config-if)#exit
R2(config)#router rip
R2(config-router)#network 192.168.2.0
R2(config-router)#network 192.168.3.0
R2(config-router)#network 192.168.4.0
R2(config-router)#version 1
R2(config-router)#exit
R2(config)#exit
R2#
*Jul 30 19:31:15.963: %SYS-5-CONFIG_I: Configured from console by console
R2#
```

R3

```
R1 R2 R3 PC1 PC2 PC3
R3(config-if)#no shut
R3(config-if)#
*Jul 30 19:04:11.355: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state to up
*Jul 30 19:04:12.355: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, c
hanged state to up
R3(config-if)#exit
R3(config)#exit
R3#
*Jul 30 19:10:37.163: %SYS-5-CONFIG_I: Configured from console by console
R3#show ip route
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, H - NHRP, l - LISP
+ - replicated route, % - next hop override

Gateway of last resort is not set

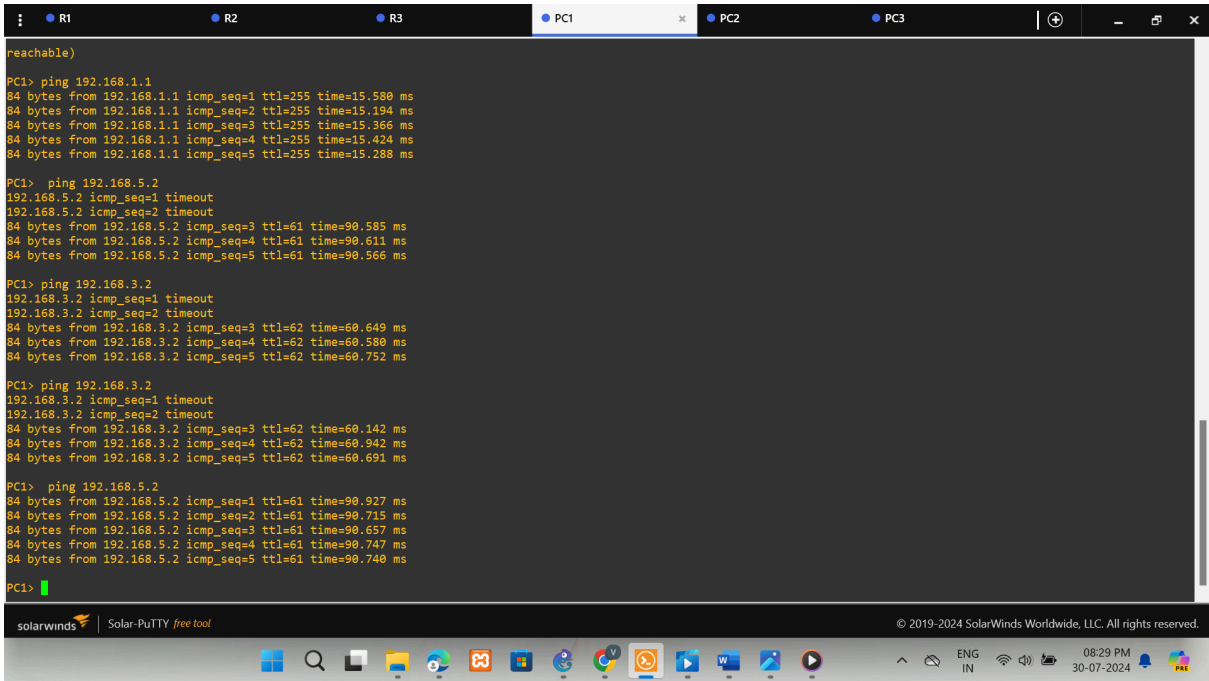
192.168.4.0/24 is variably subnetted, 2 subnets, 2 masks
C    192.168.4.0/24 is directly connected, GigabitEthernet2/0
L    192.168.4.2/32 is directly connected, GigabitEthernet2/0
C    192.168.5.0/24 is variably subnetted, 2 subnets, 2 masks
C    192.168.5.0/24 is directly connected, FastEthernet0/0
L    192.168.5.1/32 is directly connected, FastEthernet0/0
R3#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#router rip
R3(config-router)#version 1
R3(config-router)#network 192.168.4.0
R3(config-router)#network 192.168.5.0
R3(config-router)#exit
R3(config)#exit
R3#
*Jul 30 19:31:05.083: %SYS-5-CONFIG_I: Configured from console by console
R3#show
```

Computer Networks

Verification

Ping Test:

PC1



Computer Networks

PC2

```
PC1 : 192.168.3.2 255.255.255.0 gateway 192.168.3.1

PC2> ping 192.168.5.2
84 bytes from 192.168.5.2 icmp_seq=1 ttl=62 time=120.276 ms
84 bytes from 192.168.5.2 icmp_seq=2 ttl=62 time=60.680 ms
84 bytes from 192.168.5.2 icmp_seq=3 ttl=62 time=60.163 ms
84 bytes from 192.168.5.2 icmp_seq=4 ttl=62 time=60.191 ms
84 bytes from 192.168.5.2 icmp_seq=5 ttl=62 time=60.784 ms

PC2> ping 192.168.3.2
192.168.3.2 icmp_seq=1 ttl=64 time=0.001 ms
192.168.3.2 icmp_seq=2 ttl=64 time=0.001 ms
192.168.3.2 icmp_seq=3 ttl=64 time=0.001 ms
192.168.3.2 icmp_seq=4 ttl=64 time=0.001 ms
192.168.3.2 icmp_seq=5 ttl=64 time=0.001 ms

PC2> ping 192.168.1.2
192.168.1.2 icmp_seq=1 timeout
192.168.1.2 icmp_seq=2 timeout
84 bytes from 192.168.1.2 icmp_seq=3 ttl=62 time=60.634 ms
84 bytes from 192.168.1.2 icmp_seq=4 ttl=62 time=60.139 ms
84 bytes from 192.168.1.2 icmp_seq=5 ttl=62 time=60.110 ms

PC2> ping 192.168.5.2
192.168.5.2 icmp_seq=1 timeout
192.168.5.2 icmp_seq=2 timeout
84 bytes from 192.168.5.2 icmp_seq=3 ttl=62 time=60.634 ms
84 bytes from 192.168.5.2 icmp_seq=4 ttl=62 time=60.217 ms
84 bytes from 192.168.5.2 icmp_seq=5 ttl=62 time=60.262 ms

PC2> ping 192.168.5.2
84 bytes from 192.168.5.2 icmp_seq=1 ttl=62 time=60.816 ms
84 bytes from 192.168.5.2 icmp_seq=2 ttl=62 time=60.806 ms
84 bytes from 192.168.5.2 icmp_seq=3 ttl=62 time=60.627 ms
84 bytes from 192.168.5.2 icmp_seq=4 ttl=62 time=60.165 ms
84 bytes from 192.168.5.2 icmp_seq=5 ttl=62 time=60.194 ms

PC2> █
```

PC3

```
192.168.5.2 icmp_seq=5 ttl=64 time=0.001 ms

PC3> ping 192.168.1.2
84 bytes from 192.168.1.2 icmp_seq=1 ttl=61 time=90.538 ms
84 bytes from 192.168.1.2 icmp_seq=2 ttl=61 time=91.057 ms
84 bytes from 192.168.1.2 icmp_seq=3 ttl=61 time=90.663 ms
84 bytes from 192.168.1.2 icmp_seq=4 ttl=61 time=90.591 ms
84 bytes from 192.168.1.2 icmp_seq=5 ttl=61 time=90.537 ms

PC3> ping 192.168.3.2
192.168.3.2 icmp_seq=1 timeout
192.168.3.2 icmp_seq=2 timeout
84 bytes from 192.168.3.2 icmp_seq=3 ttl=62 time=60.774 ms
84 bytes from 192.168.3.2 icmp_seq=4 ttl=62 time=60.814 ms
84 bytes from 192.168.3.2 icmp_seq=5 ttl=62 time=60.830 ms

PC3> ping 192.168.3.2
84 bytes from 192.168.3.2 icmp_seq=1 ttl=62 time=60.244 ms
84 bytes from 192.168.3.2 icmp_seq=2 ttl=62 time=60.927 ms
84 bytes from 192.168.3.2 icmp_seq=3 ttl=62 time=60.775 ms
84 bytes from 192.168.3.2 icmp_seq=4 ttl=62 time=60.665 ms
84 bytes from 192.168.3.2 icmp_seq=5 ttl=62 time=60.184 ms

PC3> ping 192.168.1.2
192.168.1.2 icmp_seq=1 timeout
192.168.1.2 icmp_seq=2 timeout
84 bytes from 192.168.1.2 icmp_seq=3 ttl=61 time=92.516 ms
84 bytes from 192.168.1.2 icmp_seq=4 ttl=61 time=91.574 ms
84 bytes from 192.168.1.2 icmp_seq=5 ttl=61 time=90.576 ms

PC3> ping 192.168.1.2
84 bytes from 192.168.1.2 icmp_seq=1 ttl=61 time=91.229 ms
84 bytes from 192.168.1.2 icmp_seq=2 ttl=61 time=90.692 ms
84 bytes from 192.168.1.2 icmp_seq=3 ttl=61 time=90.629 ms
84 bytes from 192.168.1.2 icmp_seq=4 ttl=61 time=90.664 ms
84 bytes from 192.168.1.2 icmp_seq=5 ttl=61 time=90.169 ms

PC3> █
```