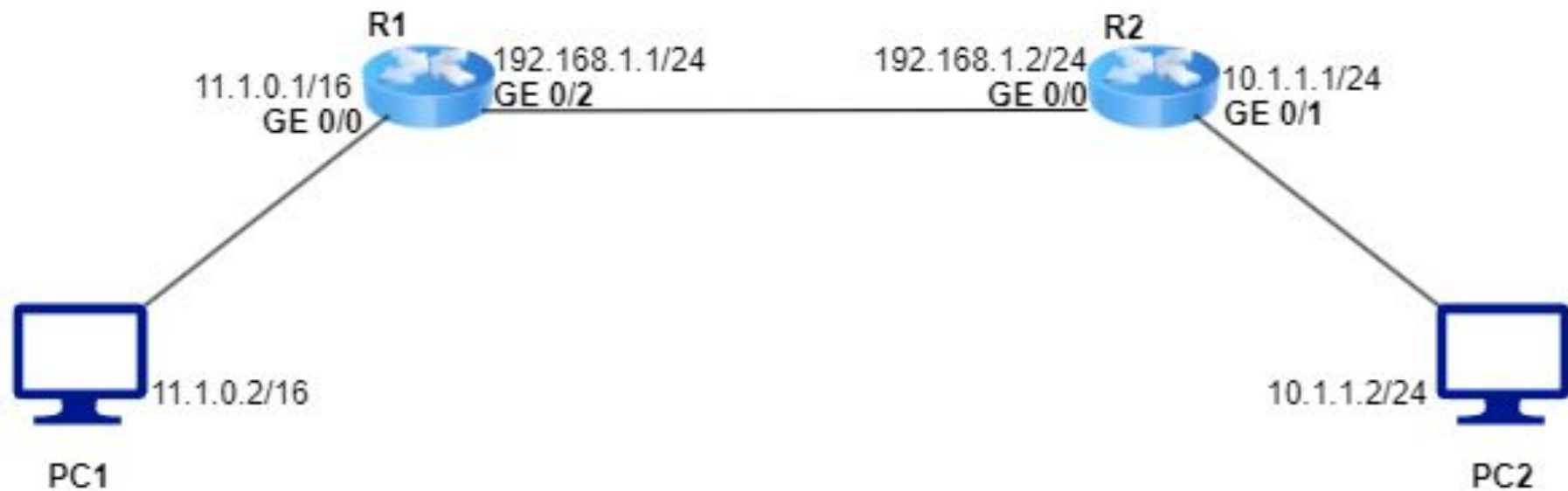


# Demo - Network Setup and Route Configuration in Router

## Network Setup -



## Network Setup - (Contd.)

- 2 Cisco Routers (Model 2900), 3 LAN cables, 1 Console cable(serial to USB) and 3 generic PCs (1 to connect to console port for router configuration).
- Connect one LAN cable from PC1 to GE 0/0 of R1.
- Similarly connect another LAN cable from PC2 to GE 0/1 of R2.
- Connect GE 0/2 of R1 with GE 0/0 of R2 using the third LAN.

## Network Setup -



## Distribution of IP across respective interfaces -

Devices	IP	Subnet Mask	Gateway	Interfaces
PC1	11.1.0.2	255.255.0.0	11.1.0.1	Ethernet
PC2	10.1.1.2	255.255.255.0	10.1.1.1	Ethernet
Router (R1)	11.1.0.1	255.255.0.0		GE 0/0
Router (R1)	192.168.1.1	255.255.255.0		GE 0/2
Router (R2)	10.1.1.1	255.255.255.0		GE 0/1
Router (R2)	192.168.1.2	255.255.255.0		GE 0/0

# Static IP allocation - (for PC1 & PC2)

PC1

Manual

**IPv4**

☒ On

IP address

11.1.0.2

Subnet mask

255.255.0.0

Gateway

11.1.0.1

Preferred DNS

0.0.0.0

Preferred DNS encryption

Unencrypted only

Alternate DNS

PC2

Editing wired connection 1

Connection name: Wired connection 2

General Ethernet 802.1x Security DCB IPv4 Settings IPv6 Settings

Method: Manual

**Addresses**

Address	Netmask	Gateway	
10.1.1.2	24	10.1.1.1	<div>Add</div> <div>Delete</div>

DNS servers:

Search domains:

DHCP client ID:

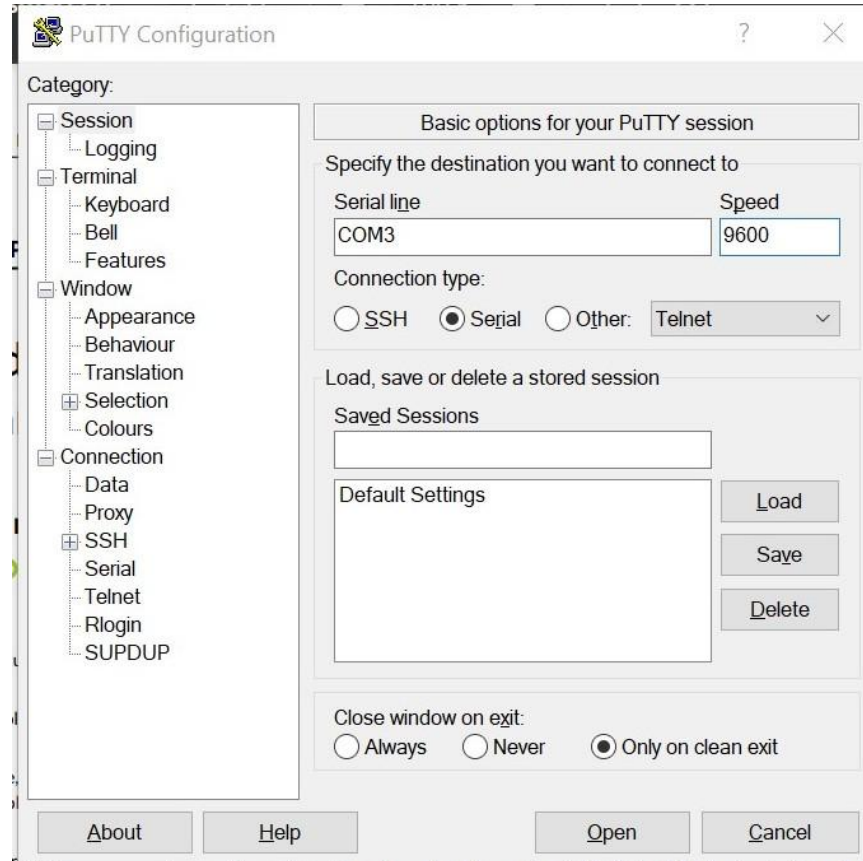
☒ Require IPv4 addressing for this connection to complete

Routes...

Cancel Save

# Router Configuration (For R1) -

## Configure PuTTY -



# Router Configuration (For R1) -

Set Router Name-

```
Router>enable
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname R1
R1(config)#
```



# Router Configuration (For R1) -

Assign IP address to interface GE 0/0

```
R1#config t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#interface gigabitethernet 0/0
R1(config-if)#ip address 11.1.0.1 255.255.0.0
R1(config-if)#no shutdown
R1(config-if)#
```

# Router Configuration (For R1) -

Assign IP address to interface GE 0/2

```
R1(config-if)#no shutdown  
R1(config-if)#interface gigabitethernet 0/2  
R1(config-if)#ip address 192.168.1.1 255.255.255.0  
R1(config-if)#no shutdown  
R1(config-if)#
```

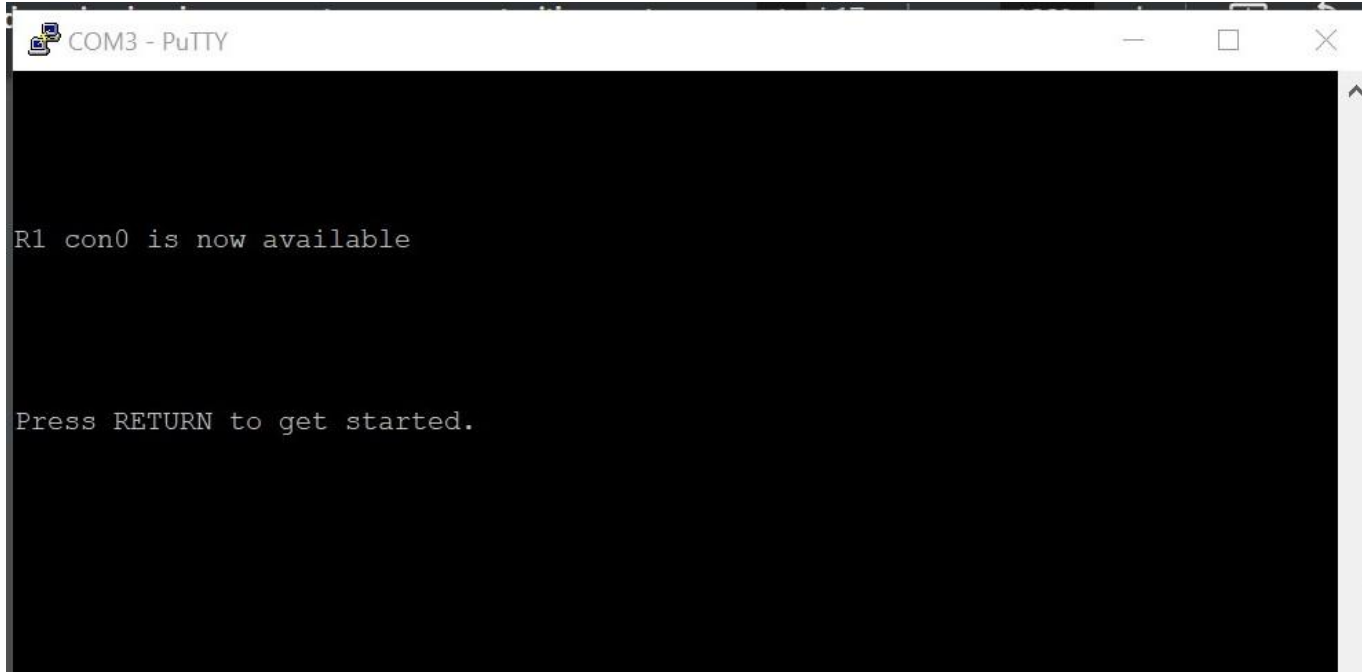
# Router Configuration (For R1) -

Set static IP Route -

```
R1(config-if)#exit  
R1(config)#ip route 10.1.1.0 255.255.255.0 192.168.1.2  
R1(config)#
```

# Router Configuration (For R1) -

Switch from the Configuration mode and move to user mode using exit command



```
COM3 - PuTTY

R1 con0 is now available

Press RETURN to get started.
```

## Router Configuration (For R2) -

Plug in the console cable to Router R2 and assign IP address to interface GE 0/1

```
R2(config-if)#interface gigabitethernet 0/1
R2(config-if)#ip address 10.1.1.1 255.255.255.0
R2(config-if)#no shutdown
R2(config-if)#
*Oct 14 10:13:41.103: %LINK-3-UPDOWN: Interface GigabitEthernet0/1, changed state to down
*Oct 14 10:13:50.271: %LINK-3-UPDOWN: Interface GigabitEthernet0/1, changed state to up
*Oct 14 10:13:51.271: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up
```

# Router Configuration (For R2) -

Assign IP address to interface GE 0/0

```
R2(config)#interface gigabitethernet 0/0
R2(config-if)#ip address 192.168.1.2 255.255.255.0
R2(config-if)#no shutdown
R2(config-if)#
*Oct 14 10:11:03.827: %LINK-3-UPDOWN: Interface GigabitEthernet0/0, changed state to down
*Oct 14 10:11:07.271: %LINK-3-UPDOWN: Interface GigabitEthernet0/0, changed state to up
*Oct 14 10:11:08.271: %LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
```

# Router Configuration (For R2) -

Set static IP route -

```

R2(config-if)#exit
R2(config)#ip route 11.1.0.0 255.255.255.0 192.168.1.1
R2(config)#
```

# Testing-

```
C:\WINDOWS\system32>ping 10.1.1.2
```

Pinging 10.1.1.2 with 32 bytes of data:

Reply from 10.1.1.2: bytes=32 time=1ms TTL=62

Reply from 10.1.1.2: bytes=32 time=1ms TTL=62

Reply from 10.1.1.2: bytes=32 time=1ms TTL=62

Reply from 10.1.1.2: bytes=32 time=1ms TTL=62

Ping statistics for 10.1.1.2:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),

Approximate round trip times in milli-seconds:

Minimum = 1ms, Maximum = 1ms, Average = 1ms

```
C:\WINDOWS\system32>
```

```
oem@dell-desktop:~$ ping 11.1.0.2
PING 11.1.0.2 (11.1.0.2) 56(84) bytes of data.
64 bytes from 11.1.0.2: icmp_seq=1 ttl=126 time=1.37 ms
64 bytes from 11.1.0.2: icmp_seq=2 ttl=126 time=1.79 ms
64 bytes from 11.1.0.2: icmp_seq=3 ttl=126 time=1.63 ms
64 bytes from 11.1.0.2: icmp_seq=4 ttl=126 time=1.46 ms
64 bytes from 11.1.0.2: icmp_seq=5 ttl=126 time=1.22 ms
64 bytes from 11.1.0.2: icmp_seq=6 ttl=126 time=1.32 ms
64 bytes from 11.1.0.2: icmp_seq=7 ttl=126 time=1.63 ms
64 bytes from 11.1.0.2: icmp_seq=8 ttl=126 time=1.10 ms
64 bytes from 11.1.0.2: icmp_seq=9 ttl=126 time=2.51 ms
64 bytes from 11.1.0.2: icmp_seq=10 ttl=126 time=2.41 ms
64 bytes from 11.1.0.2: icmp_seq=11 ttl=126 time=2.67 ms
64 bytes from 11.1.0.2: icmp_seq=12 ttl=126 time=2.15 ms
64 bytes from 11.1.0.2: icmp_seq=13 ttl=126 time=2.15 ms
^C
--- 11.1.0.2 ping statistics ---
13 packets transmitted, 13 received, 0% packet loss, time 12022ms
rtt min/avg/max/mdev = 1.101/1.804/2.677/0.504 ms
oem@dell-desktop:~$
```



## Testing(Trace Route)

```
C:\WINDOWS\system32>tracert 10.1.1.2
```

```
Tracing route to 10.1.1.2 over a maximum of 30 hops
```

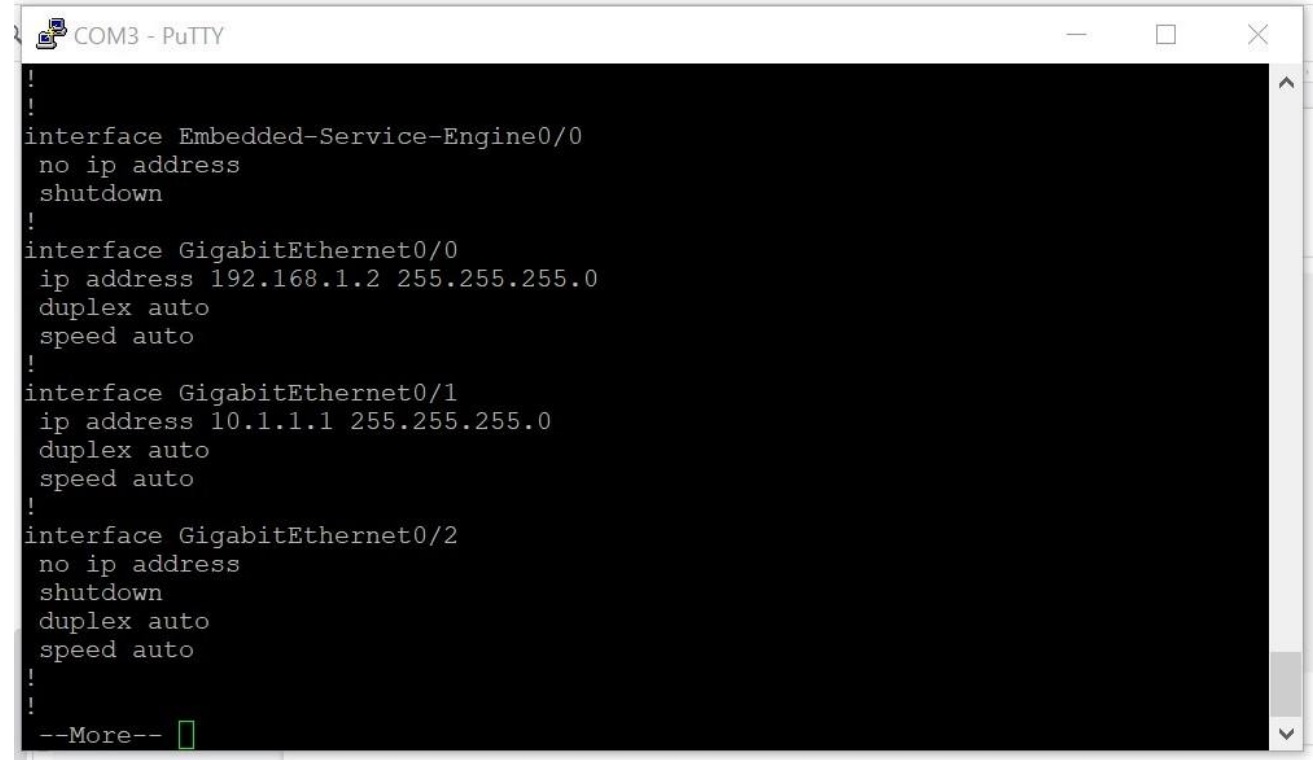
1	1 ms	<1 ms	<1 ms	11.1.0.1
2	1 ms	<1 ms	<1 ms	192.168.1.2
3	2 ms	2 ms	1 ms	10.1.1.2

```
Trace complete.
```

```
C:\WINDOWS\system32>
```

# Testing (Check router configuration using 'sh run' command)

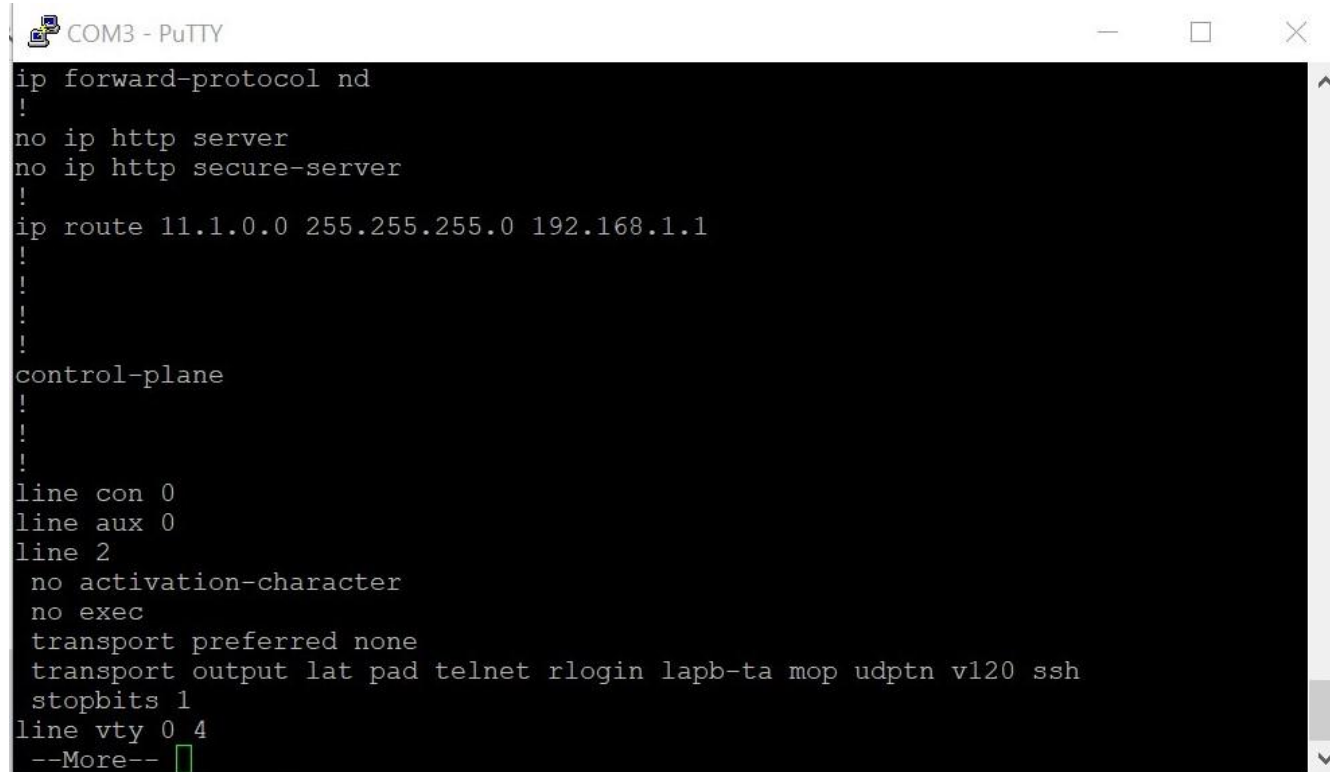
For IP -

A screenshot of a PuTTY terminal window titled 'COM3 - PuTTY'. The window displays a configuration script for a router. The script includes comments (lines starting with '!') and configuration commands for three interfaces: Embedded-Service-Engine0/0, GigabitEthernet0/0, GigabitEthernet0/1, and GigabitEthernet0/2. The Embedded-Service-Engine0/0 interface is configured with 'no ip address' and 'shutdown'. The GigabitEthernet0/0 interface is configured with 'ip address 192.168.1.2 255.255.255.0', 'duplex auto', and 'speed auto'. The GigabitEthernet0/1 interface is configured with 'ip address 10.1.1.1 255.255.255.0', 'duplex auto', and 'speed auto'. The GigabitEthernet0/2 interface is configured with 'no ip address', 'shutdown', 'duplex auto', and 'speed auto'. The terminal ends with '--More--' and a green cursor.

```
!
!  
interface Embedded-Service-Engine0/0  
  no ip address  
  shutdown  
!  
interface GigabitEthernet0/0  
  ip address 192.168.1.2 255.255.255.0  
  duplex auto  
  speed auto  
!  
interface GigabitEthernet0/1  
  ip address 10.1.1.1 255.255.255.0  
  duplex auto  
  speed auto  
!  
interface GigabitEthernet0/2  
  no ip address  
  shutdown  
  duplex auto  
  speed auto  
!  
!  
--More--
```

# Testing (Check router configuration)

For static Route -

A screenshot of a PuTTY terminal window titled "COM3 - PuTTY". The window has standard window controls (minimize, maximize, close) in the top right corner. The terminal displays a series of configuration commands for a router. The commands are: "ip forward-protocol nd", "no ip http server", "no ip http secure-server", "ip route 11.1.0.0 255.255.255.0 192.168.1.1", "control-plane", "line con 0", "line aux 0", "line 2", "no activation-character", "no exec", "transport preferred none", "transport output lat pad telnet rlogin lapb-ta mop udptn v120 ssh", "stopbits 1", "line vty 0 4", and "--More--". A green cursor is visible at the end of the "--More--" line.

```
COM3 - PuTTY
ip forward-protocol nd
!
no ip http server
no ip http secure-server
!
ip route 11.1.0.0 255.255.255.0 192.168.1.1
!
!
!
!
control-plane
!
!
!
!
line con 0
line aux 0
line 2
  no activation-character
  no exec
  transport preferred none
  transport output lat pad telnet rlogin lapb-ta mop udptn v120 ssh
  stopbits 1
line vty 0 4
--More--
```

Thank you