



# COMPUTER NETWORKS

SEN366

Final Project

DEPARTMENT OF SOFTWARE ENG

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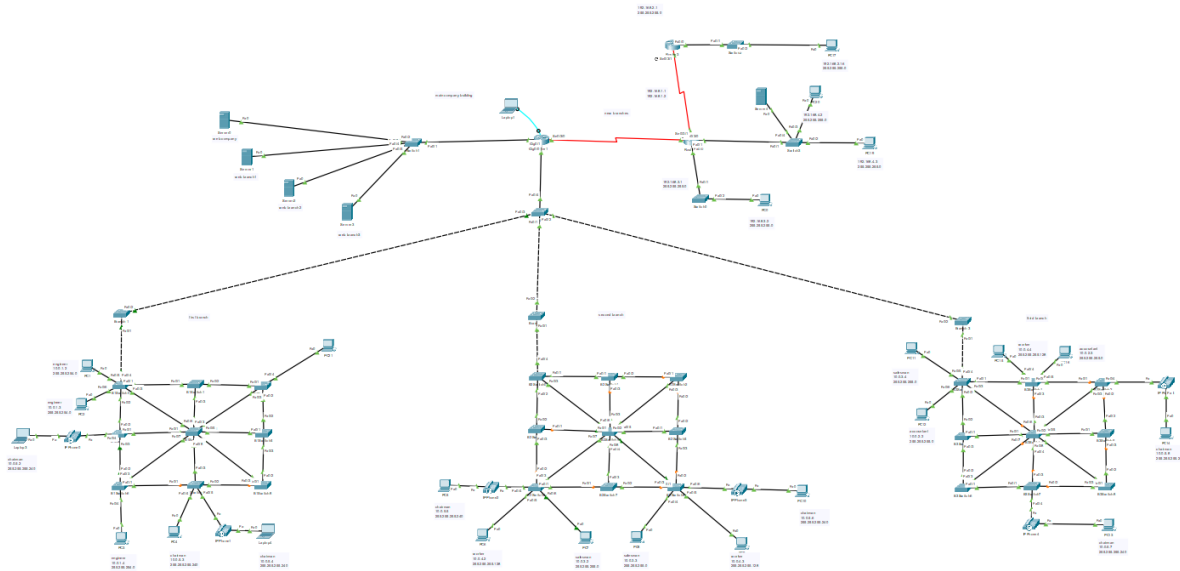
Spring semester

2018-2019

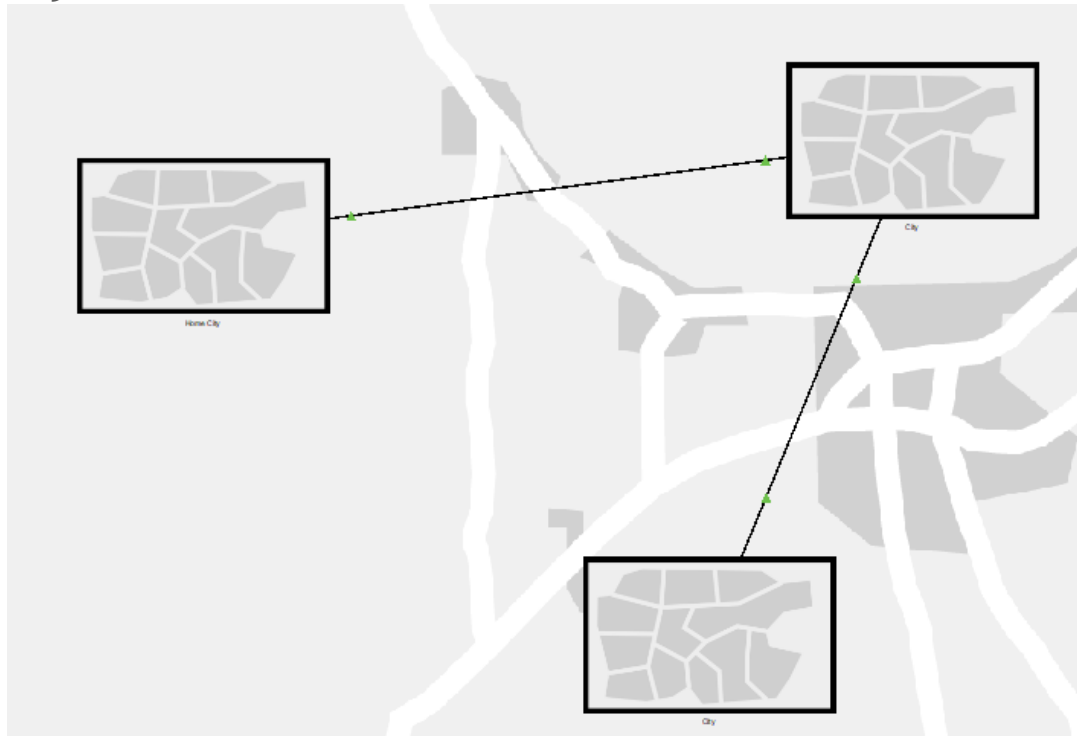
## *Project's main scenario:*

The scenario of the project assumes that a company has three main branches in three different locations. Each branch consists of three buildings where each building has three floors and each floor contains three switches, the company continuous to grow and invest in new branches in a different cities.

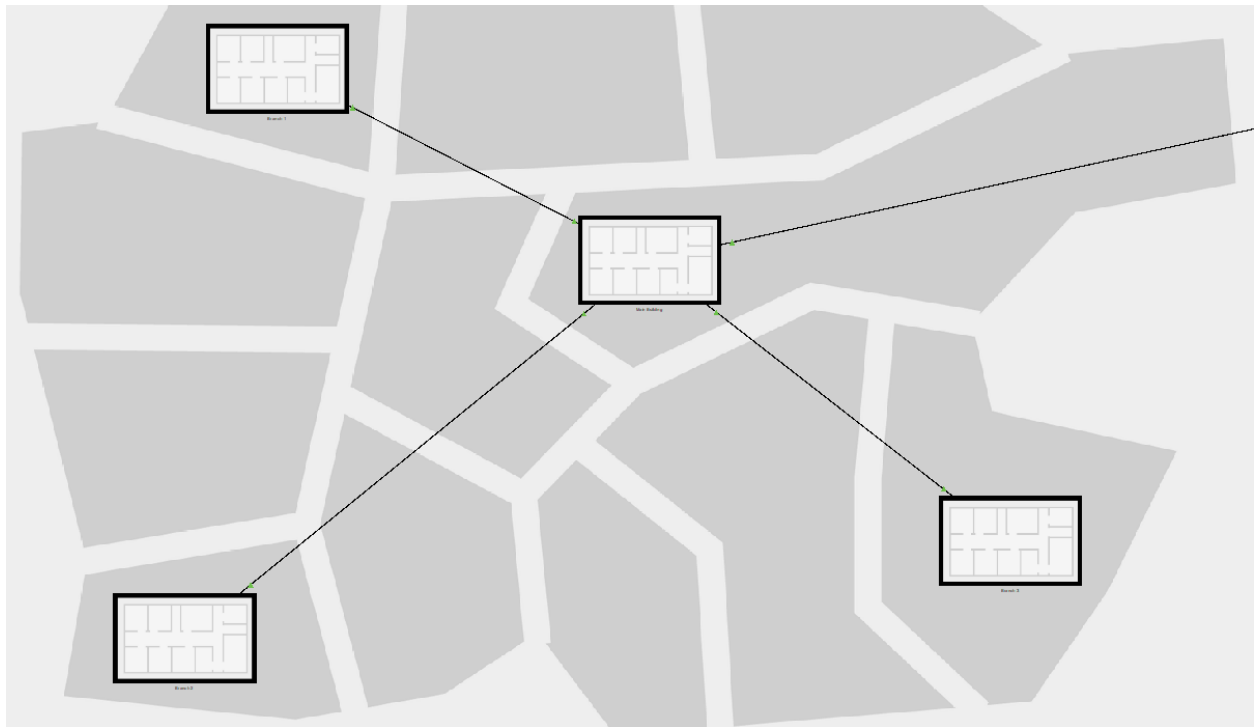
## *Logical view:*



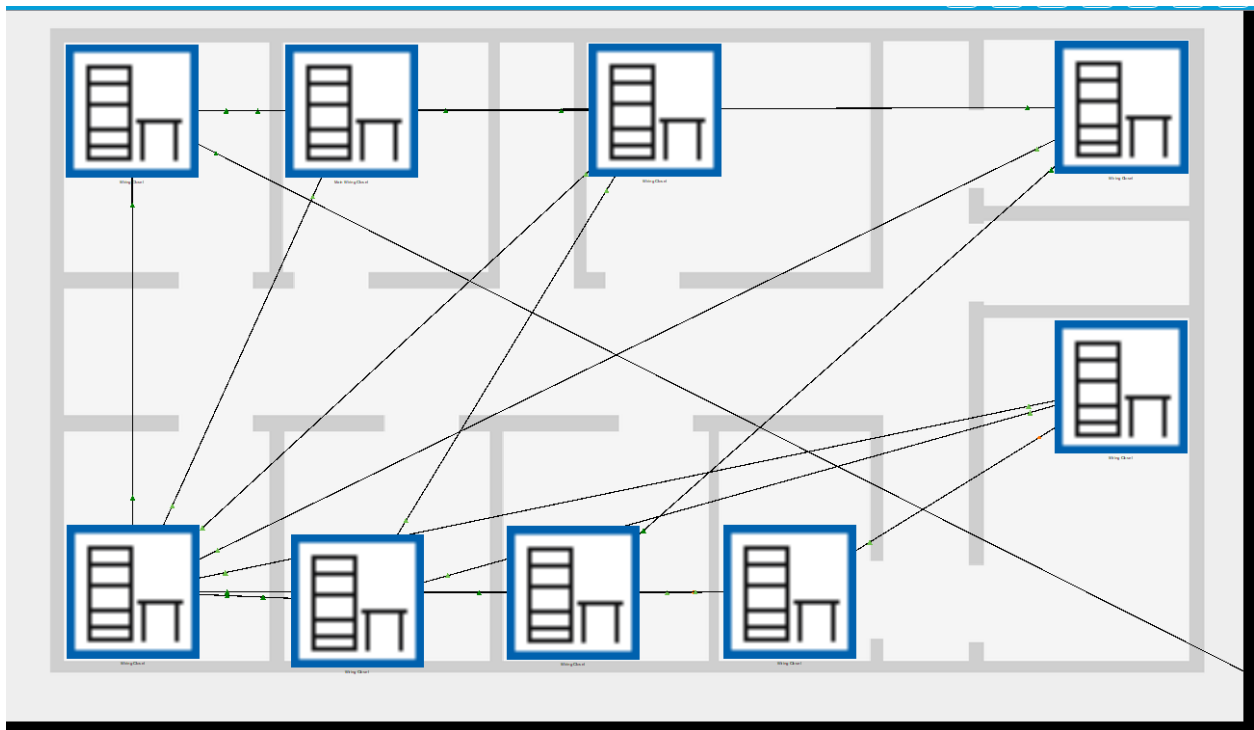
## *Physical view:*



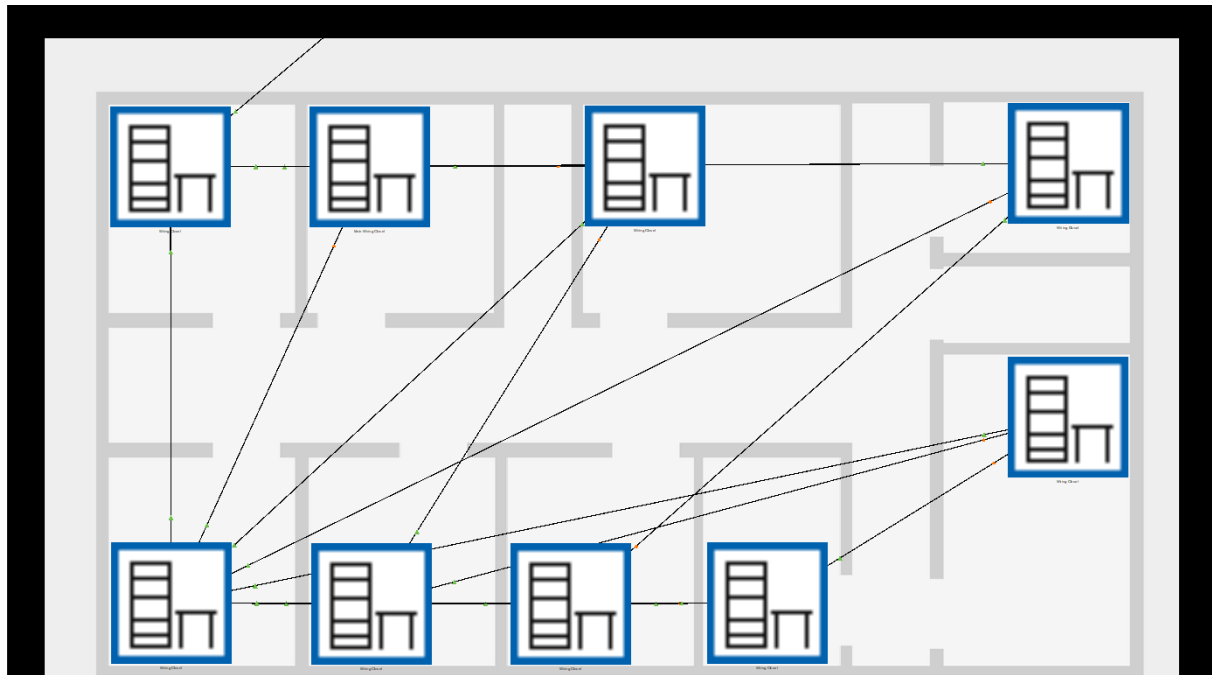
*Home city:*



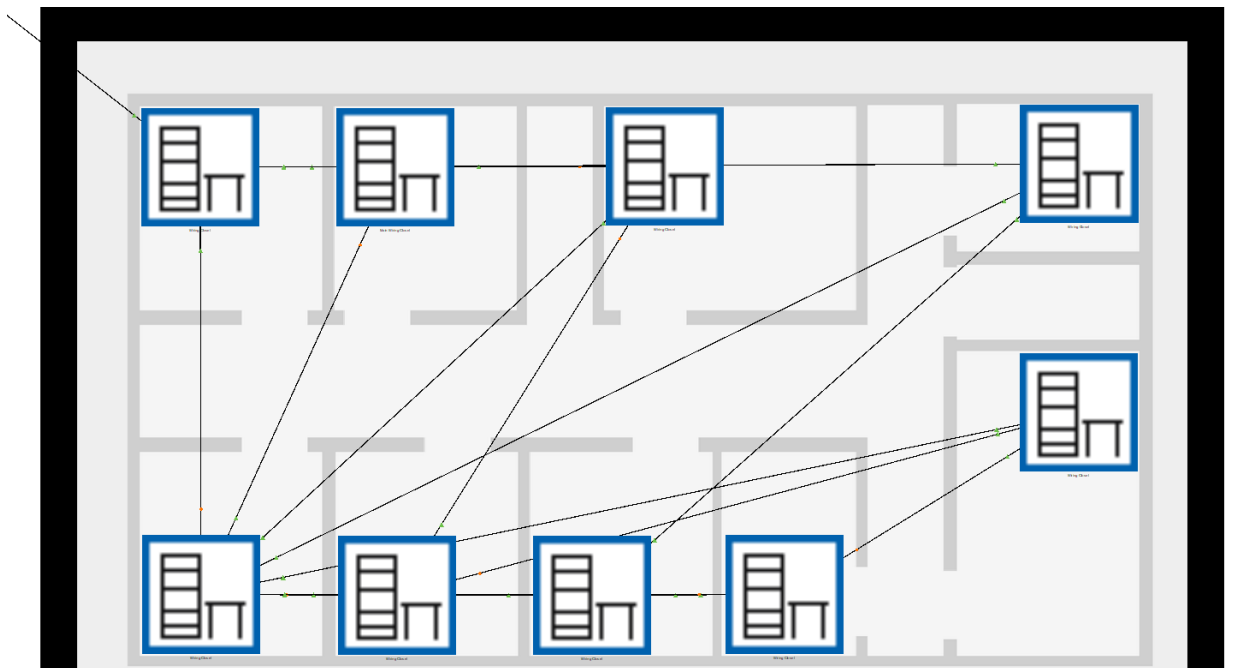
*Branch 1:*



**Branch 2:**



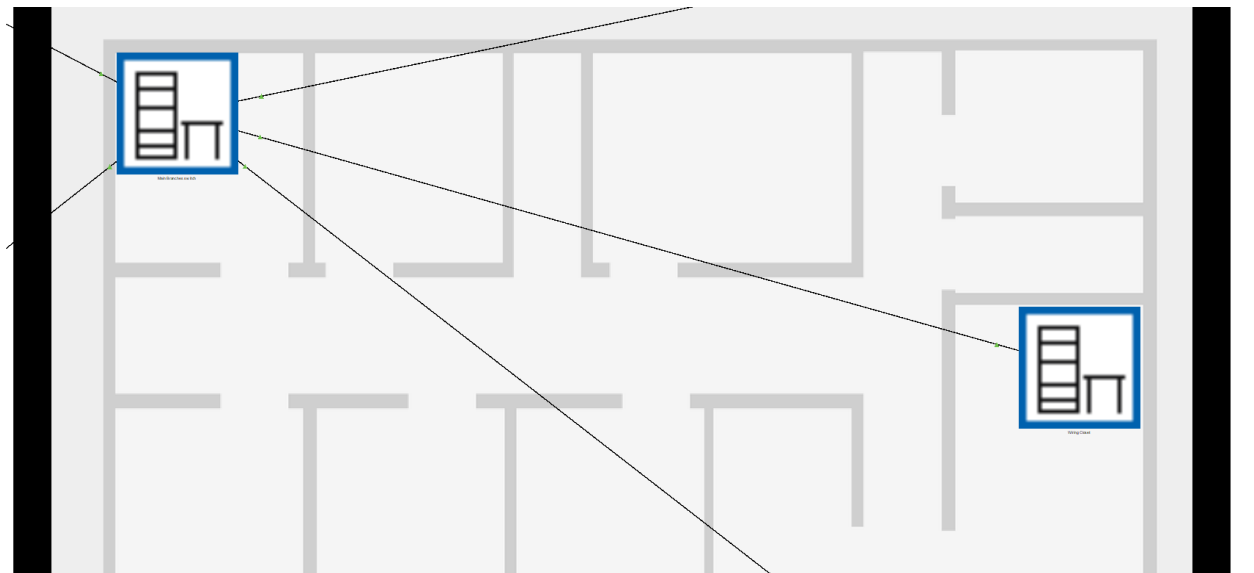
**Branch 3:**



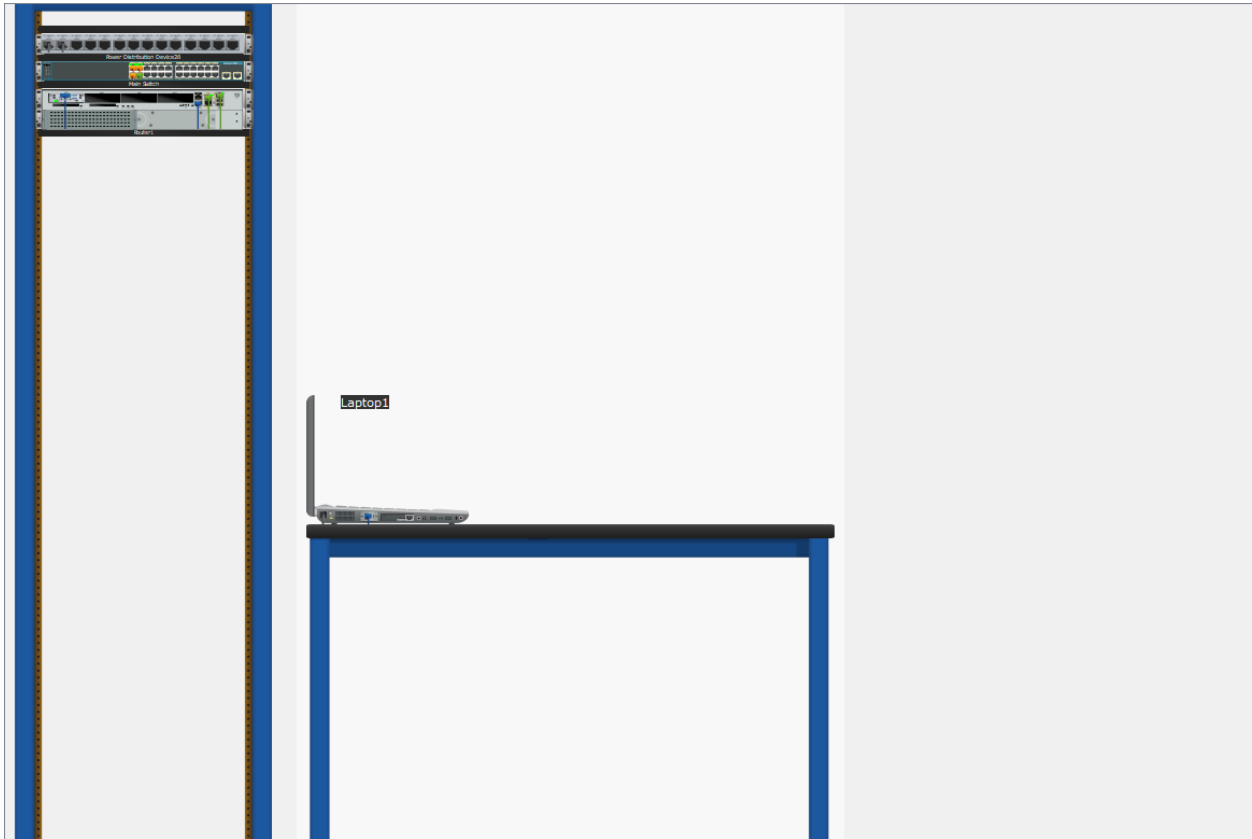
*Inside rooms:*



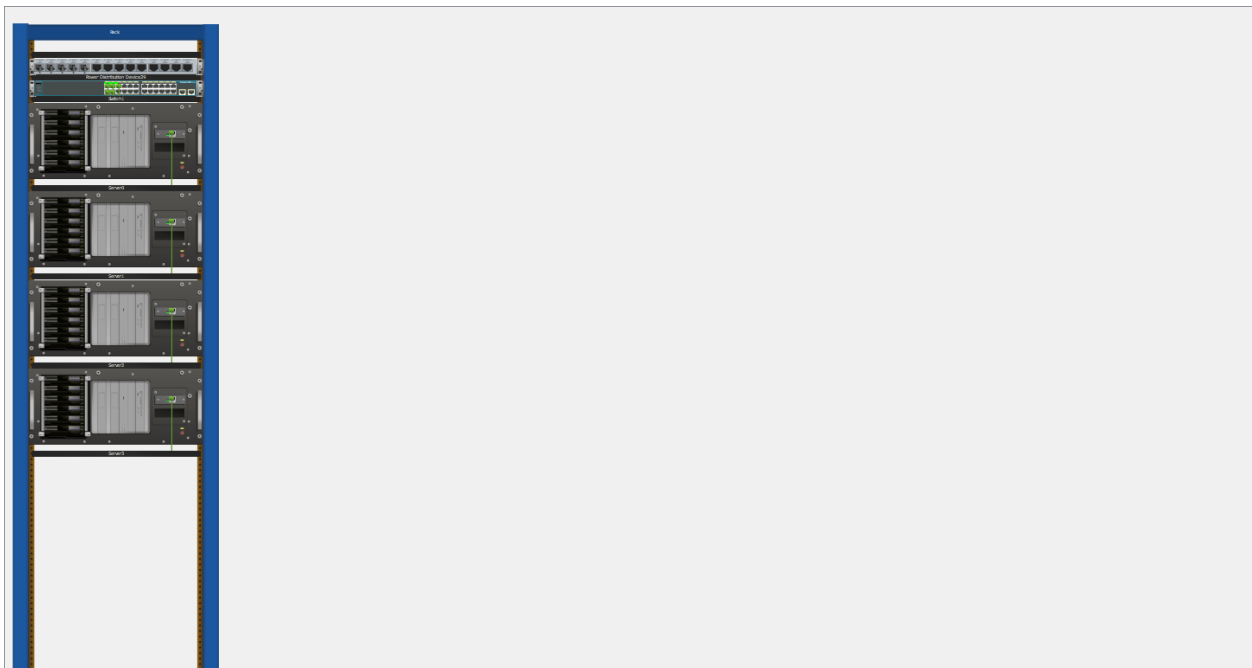
*Main building:*



### *Main branches switch room:*



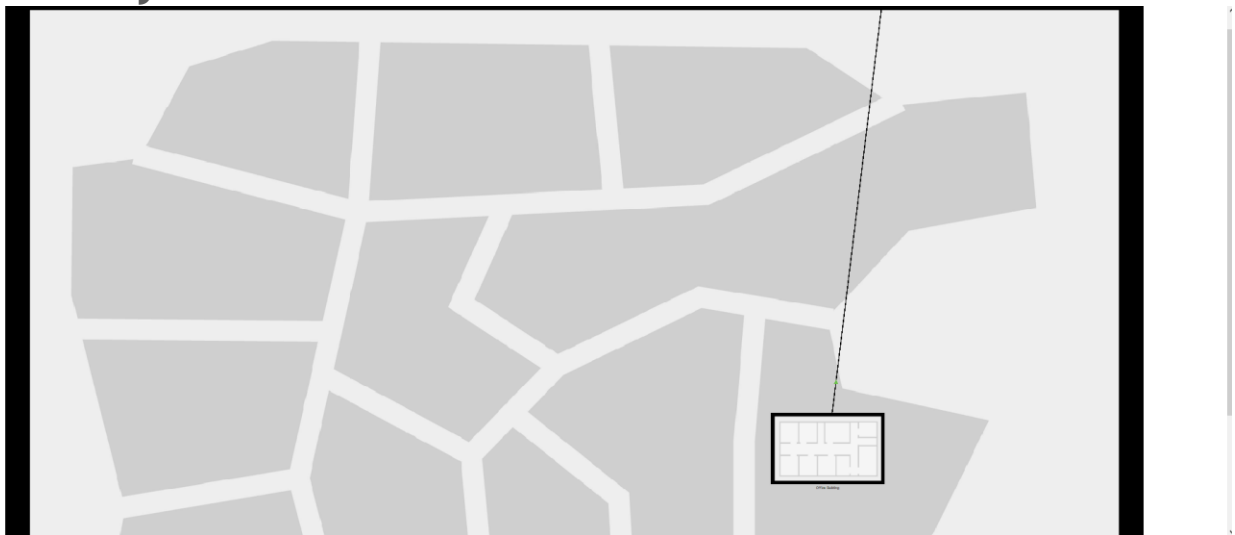
### *Wiring closet:*



*Second city:*



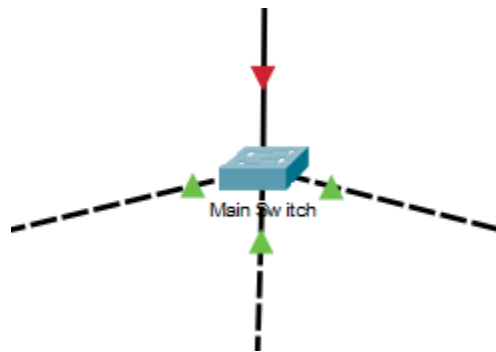
*Third city:*



*staff network information for the main three branches:*

Name	vlan	Network address	Broadcast address
engineers	Vlan 10	10.0.1.0	255.255.254.0
accountants	Vlan 20	10.0.2.0	255.255.255.0
salesmen	Vlan 30	10.0.3.0	255.255.255.0
workers	Vlan 40	10.0.4.0	255.255.255.128
chairmen	Vlan 50	10.0.5.0	255.255.255.240
phone1	Vlan 60	10.0.6.0	255.255.255.240
phone2	Vlan 70	10.0.7.0	255.255.255.240
phone3	Vlan 80	10.0.8.0	255.255.255.240

*Main switch:*



en

conf t

int range f0/1-8

switchport mode trunk

no shutdown

enable

ctrl+z

configure terminal

vlan 10

name engineers



```
end
configure terminal
vlan 20
name accountants
end
conf t
vlan 30
name salesmen
end
conf t
vlan 40
name workers
end
conf t
vlan 50
name chairmen
end
conf t
vlan 60
name phone1
end
conf t
vlan 70
name phone2
end
conf t
vlan 80
name phone3
```

```

end
conf t
line con 0
pass 123456
login
exit
line vty 0 4
pass 123456
login
exit
line vty 5 15
pass 123456
login
exit

```

show vlan

MainSwitch#show vlan

VLAN	Name	Status	Ports
1	default	active	Fa0/1, Fa0/2, Fa0/3, Fa0/4 Fa0/5, Fa0/6, Fa0/7, Fa0/8 Fa0/9, Fa0/10, Fa0/11, Fa0/12 Fa0/13, Fa0/14, Fa0/15, Fa0/16 Fa0/17, Fa0/18, Fa0/19, Fa0/20 Fa0/21, Fa0/22, Fa0/23, Fa0/24 Gig0/1, Gig0/2
10	engineers	active	
20	accountants	active	
30	salesmen	active	
40	workers	active	
50	chairmen	active	
60	phone1	active	
70	phone2	active	
80	phone3	active	
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

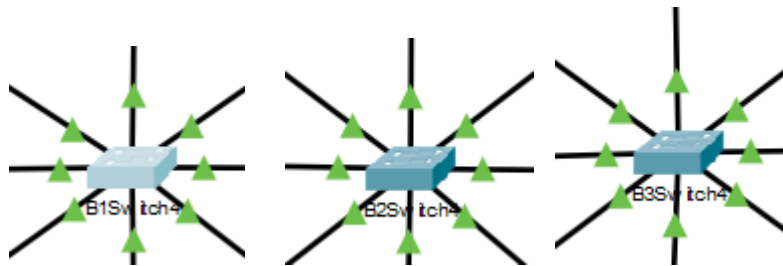
Do show vtp status

```

MainSwitch(config)#do show vtp status
VTP Version                : 2
Configuration Revision      : 16
Maximum VLANs supported locally : 255
Number of existing VLANs    : 13
VTP Operating Mode          : Server
VTP Domain Name             :
VTP Pruning Mode            : Disabled
VTP V2 Mode                 : Disabled
VTP Traps Generation        : Disabled

```

***B1Switch4, B2Switch4, B3Switch4:***



```

en

```

```

conf t

```

```

int range f0/1-8

```

```

switchport mode trunk

```

```

no shutdown

```

applying trunk mode to all connection between switches and switch and router:

```

en

```

```

conf t

```

```

int range f0/1-x(where x is the number of connections between switches)

```

```

switchport mode trunk

```

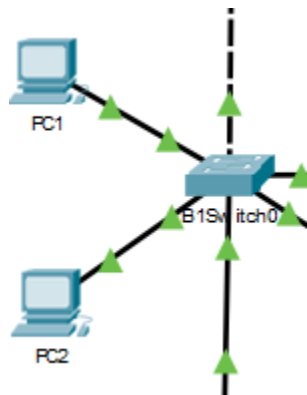
```

no shutdown

```

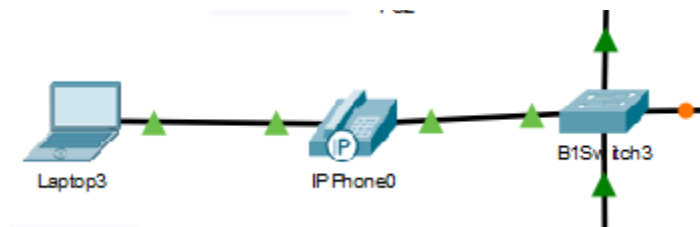
## *First Branch:*

B1Switch0:



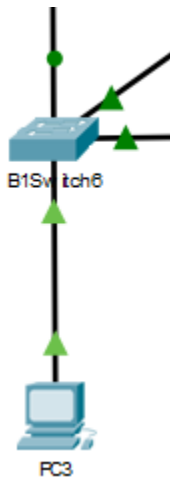
```
En
Conf t
Int range f0/5-6
switchport mode access
switchport access vlan 10
no shutdown
exit
```

## *B1Switch3:*



```
En
Conf t
Int f0/4
switchport mode access
switchport access vlan 50
no shutdown
exit
```

B1Switch6:

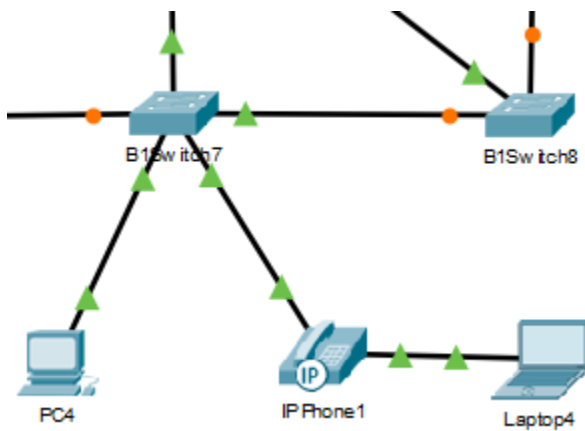


**B1Switch7:**

```

En
Conf t
Int f0/4
switchport mode access
switchport access vlan 10
no shutdown
exit

```

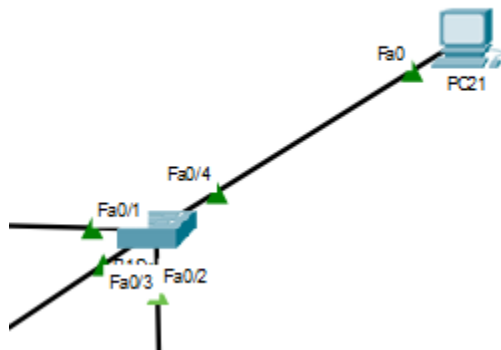


```

En
Conf t
Int range f0/4-5
switchport mode access
switchport access vlan 50
no shutdown
exit

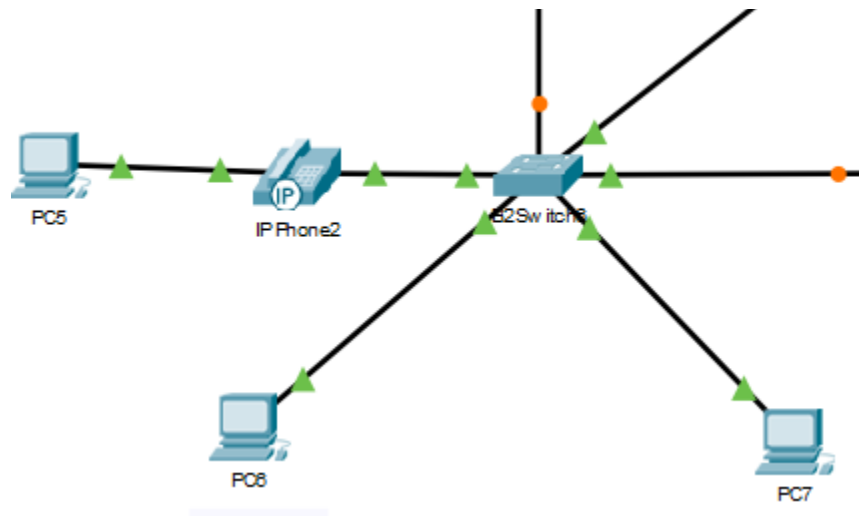
```

## ***B1Switch2:***



```
en
conf t
int f0/4
no shutdown
vlan 10
show-spanning tree
exit
conf t
int f0/4
exit
show spanning-tree
spanning-tree vlan 10 root secondary
exit
int f0/4
switchport port-security violation shutdown
vtp domain majd
vtp mode client
```

**Second Branch:**  
**B2Switch6:**



En

Conf t

Int f0/4

switchport mode access

switchport access vlan 50

no shutdown

exit

En

Conf t

int f0/6

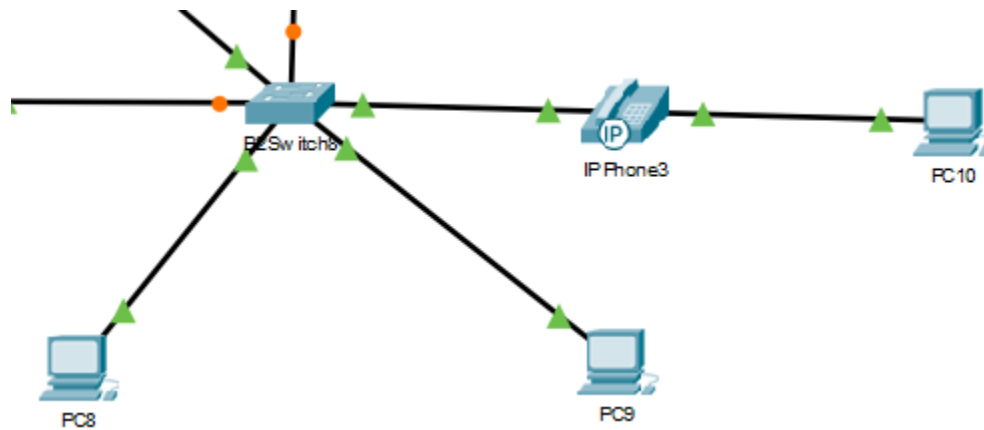
switchport mode access

switchport access vlan 30

no shutdown

exit

### *B2Switch8:*



En

Conf t

int f0/4

switchport mode access

switchport access vlan 30

no shutdown

exit

En

Conf t

int f0/5

switchport mode access

switchport access vlan 40

no shutdown

En

Conf t

int f0/6

switchport mode access

switchport access vlan 50

no shutdown

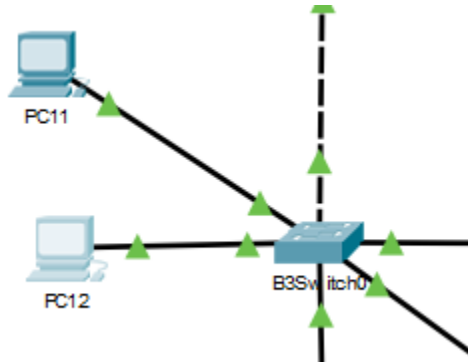


exit

exit

**Third Branch:**

**B3Switch0:**



En

Conf t

int f0/5

switchport mode access

switchport access vlan 30

no shutdown

exit

En

Conf t

int f0/6

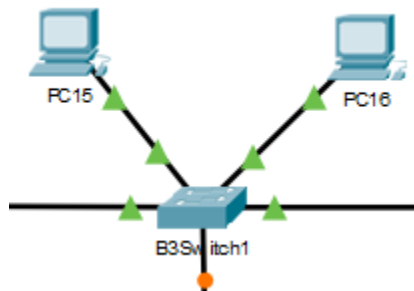
switchport mode access

switchport access vlan 20

no shutdown

exit

### ***B3Switch1:***



En

Conf t

int f0/4

switchport mode access

switchport access vlan 40

no shutdown

exit

En

Conf t

int f0/5

switchport mode access

switchport access vlan 20

no shutdown

exit

### ***B3Switch2:***



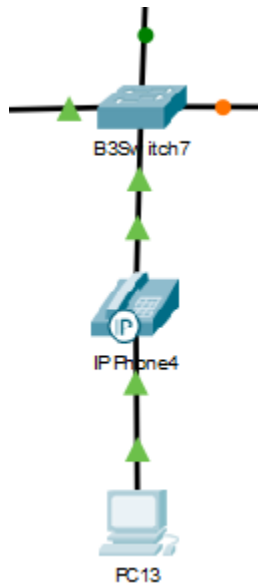
En

Conf t

int f0/4

```
switchport mode access
switchport access vlan 50
no shutdown
exit
```

B3Switch7:



En

Conf t

```
int f0/4
```

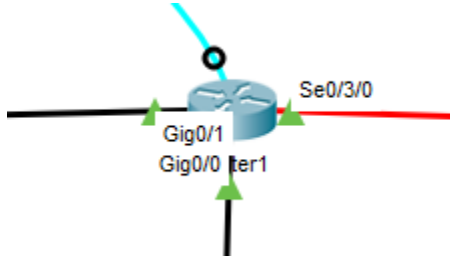
```
switchport mode access
```

```
switchport access vlan 50
```

```
no shutdown
```

```
exit
```

## Router1:



```
en
conf t
hostname companynet
line con 0
password 123456
login
exit
conf t
line aux 0
pass 123456
login
exit
conf t
line vty 0 4
pass 123456
login
exit
line vty 5 15
pass 123456
login
exit
conf t
int g0/0.10
encapsulation dot1Q 10
ip address 10.0.0.1 255.255.254.0
exit
int g0/0.20
encapsulation dot1Q 20
ip address 10.0.2.1 255.255.255.0
exit
int g0/0.30
encapsulation dot1Q 30
ip address 10.0.3.1 255.255.255.0
exit

conf t
int g0/0.40
```

```
encapsulation dot1Q 40
ip address 10.0.4.1 255.255.254.128
exit
int g0/0.50
encapsulation dot1Q 50
ip address 10.0.5.1 255.255.255.240
exit
int g0/0.60
encapsulation dot1Q 60
ip address 10.0.6.1 255.255.255.240
exit

int g0/0.70
encapsulation dot1Q 70
ip address 10.0.7.1 255.255.255.240
exit
int g0/0.80
encapsulation dot1Q 80
ip address 10.0.8.1 255.255.255.240
exit

int g0/0

no shutdown

exit

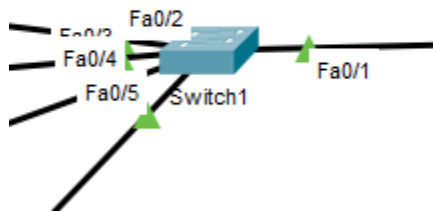
int s0/3/0
ip address 11.11.11.1 255.0.0.0
router eigrp 10
network 11.0.0.0
network 10.0.0.0
no auto-summary
exit
exit
conf t
ip dhcp pool voice1
network 10.0.6.0 255.255.255.240
default-router 10.0.0.1
option 150 ip 10.0.0.1
ip dhcp pool net1
network 10.0.7.0 255.255.255.240
default-router 10.0.0.1
option 150 ip 10.0.0.1
ip dhcp pool voice2
network 10.0.8.0 255.255.255.240
default-router 10.0.0.1
option 150 ip 10.0.0.1
```

```

exit
conf t
int g0/1
no shutdown
exit
ip dhcp pool servers
network 10.0.10.0 255.255.255.240
default-router 10.0.0.1
exit

```

### ***switch1:***

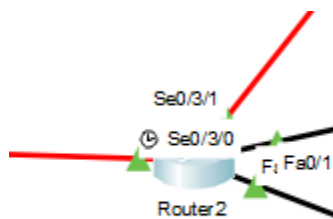


```

En
Conf t
Int f0/1
Switchport mode trunk
No shutdown
Exit

```

### ***Router2:***



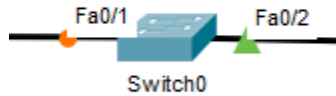
```

int s0/3/0
ip address 11.11.11.2 255.0.0.0
router eigrp 10
network 11.0.0.0
network 12.0.0.0
no auto-summary
exit
conf t

```

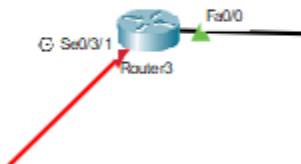
```
int f0/0
no shutdown
exit
conf t
int se0/3/1
no shutdown
exit
int f0/1
no shut down
exit
conf t
int se0/3/1
ip address 192.168.1.2 255.255.255.0
no shutdown
clock rate 64000
int f0/0
ip address 192.168.3.1 255.255.255.0
no shutdown
exit
ip route 192.168.2.0 255.255.255.0 192.168.1.1
access-list 1 permit 192.168.1.0 255.255.255.0
int f0/0
ip access-group 1 in
exit
conf t
int f0/0
ip address 192.168.4.1 255.255.255.0
no shutdown
int f0/0
ip address 192.168.4.1 255.255.255.0
no shutdown
exit
ip route 192.168.2.0 255.255.255.0 192.168.1.1
access-list 1 permit 192.168.4.0 0.0.0.255
ip nat pool majd
% Incomplete command.
ip nat pool majd 192.168.1.2 192.168.1.1 netmask 255.255.255.0
Router(config)#no
ip nat inside source list pool majd
```

**switch0:**



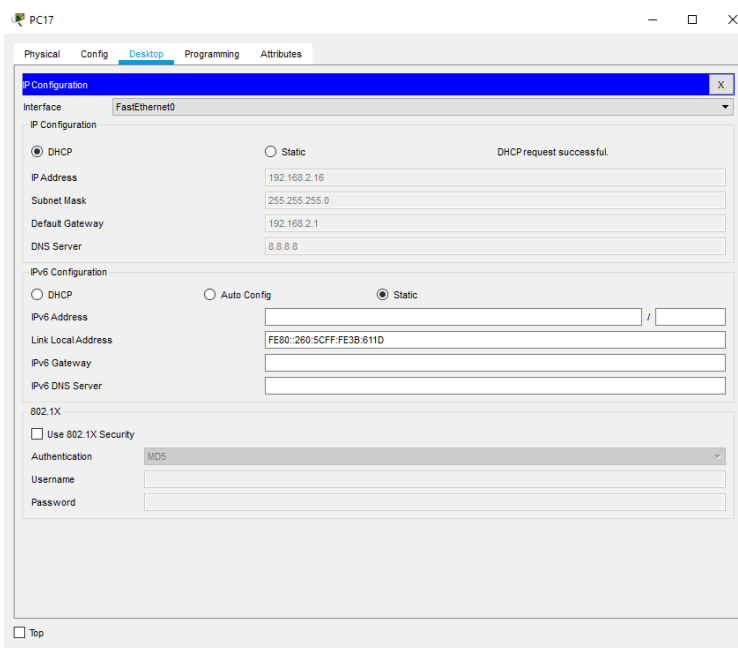
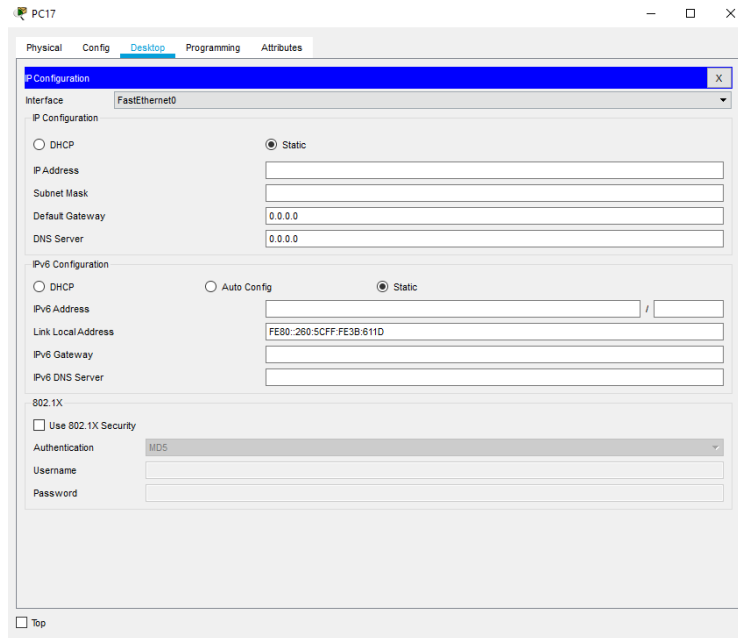
```
En
Conf t
Int f0/1
Switchport mode trunk
No shutdown
Exit
```

**Router 3:**



```
en
conf t
int g0/0
int f0/0
ip address 192.168.2.1 255.255.255.0
no shutdown
exit
ip dhcp pool cisco
default-router 192.168.2.1
dns-server 8.8.8.8
network 192.168.2.0 255.255.255.0
exit
ip dhcp excluded-address 192.168.2.2 192.168.2.15
exit
conf t
int se0/3/1
no shutdown
```

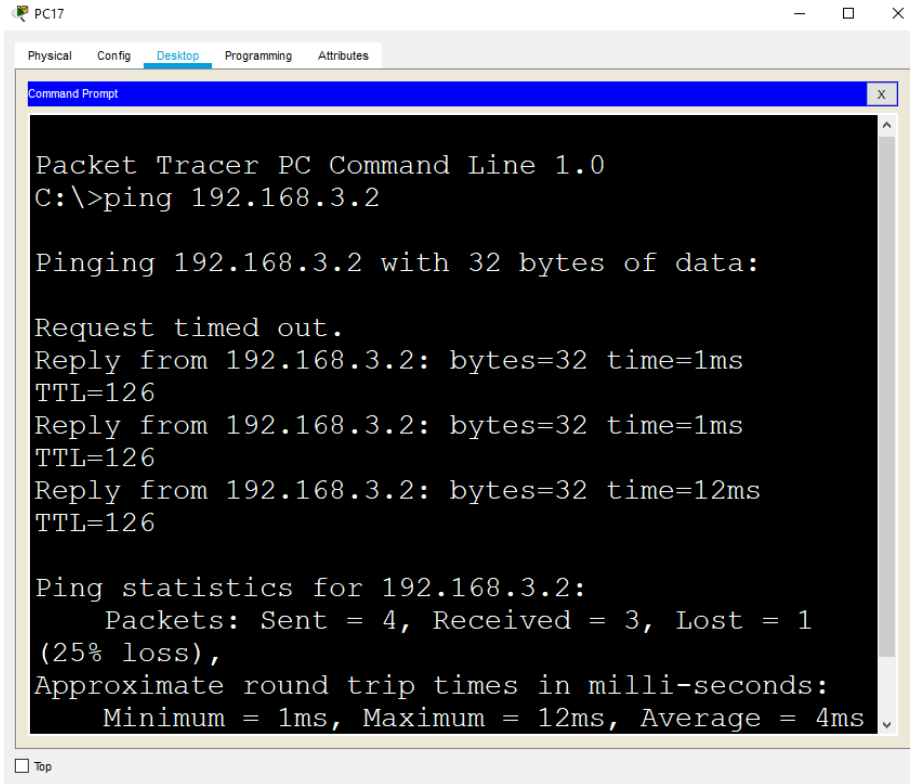




```

conf t
int se0/3/1
ip address 192.168.1.1 255.255.255.0
no shutdown
int f0/0
ip address 192.168.2.1 255.255.255.0
no shutdown
exit
ip route 192.168.3.0 255.255.255.0 192.168.1.2

```



```
PC17
Physical Config Desktop Programming Attributes
Command Prompt
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.3.2

Pinging 192.168.3.2 with 32 bytes of data:

Request timed out.
Reply from 192.168.3.2: bytes=32 time=1ms
TTL=126
Reply from 192.168.3.2: bytes=32 time=1ms
TTL=126
Reply from 192.168.3.2: bytes=32 time=12ms
TTL=126

Ping statistics for 192.168.3.2:
    Packets: Sent = 4, Received = 3, Lost = 1
    (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 12ms, Average = 4ms
```

```
En
Conf t
router os
router ospf 1
network 192.168.2.1 0.0.0.255 area 0
```