# **COL 334 Assignment 4**

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**Entry Number - 2020CS50436** 

**Part B Network Layer** 

(i.)

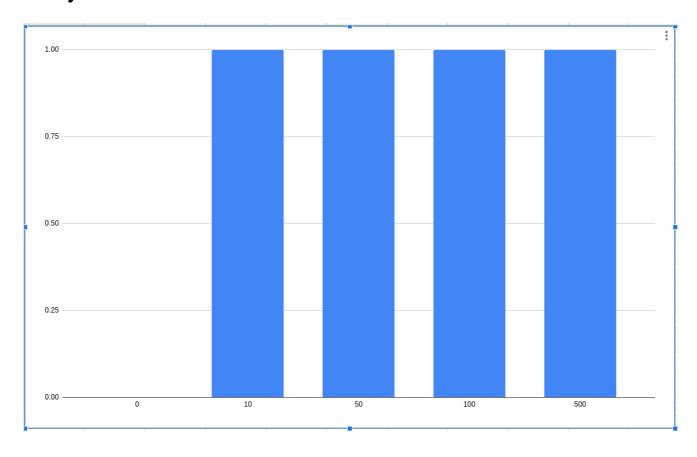
## a. Running the simulation for different delays

## For all the graphs

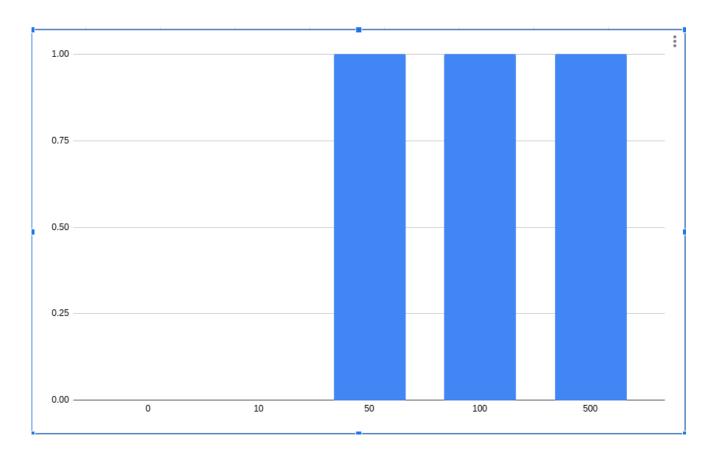
x-axis - time in seconds (logarithmic scale)

x-axis - It is set to 0 if the table is converging and it is set to 1 if it has not yet converged

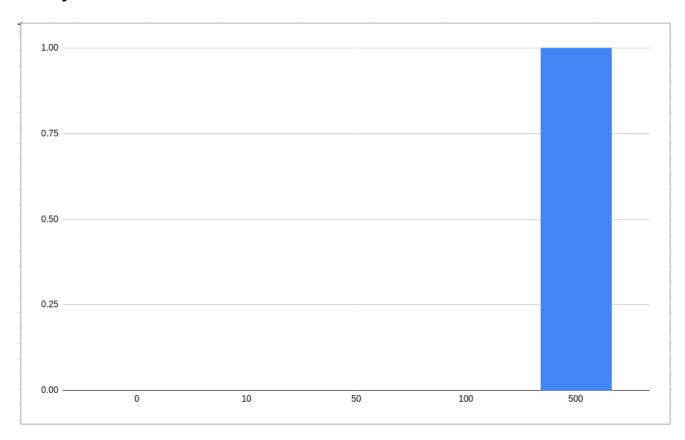
## Delay = 100ms



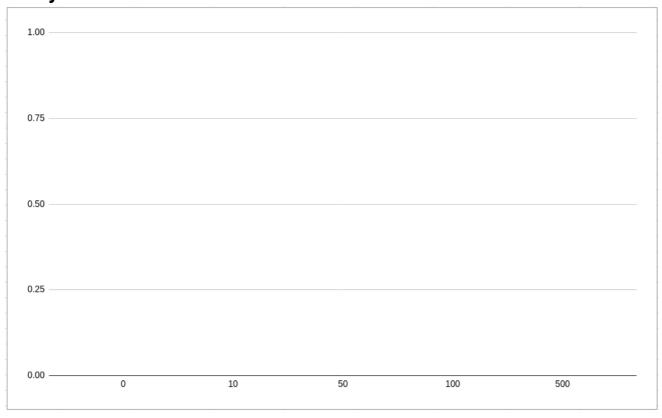
## Delay = 1000ms



## **Delay = 20000ms**



## **Delay = 80000ms**



## b) Explanation of the plots

The routers fill up their routing tables by taking out information from the neighboring routers. Now initially routers only have the information of the neighboring routers. Initially,

R1 has only 3 entries in the table, R2 has only 2 entris, R3 has 3 entries. When the tables converge, all the routers come to know about at which output interface should it send the datagram if the destination is a specific ip address. It takes some amount of datagram exchange before reaching that stage.)

Now channel Delay is the time a datagram takes to go from one router to other. As the channel delay increase, therefore the time for reaching that convergance stage increases.

As we can see from the graphs, The amount of time it takes for the table to converge is minimum at delay of 100 and it increases as the delay increase.

Thus we can say it takes more time for the routers to get the sense of the network if the delay is more as it will take more amount of time to exchange same number of datagrams.

(ii)

t = 121

#### Node = r1

```
Node: 2, Time: +121.0s, Local time: +121.0s, Ipv4ListRouting table
Priority: 0 Protocol: ns3::Rip
Node: 2, Time: +121.0s, Local time: +121.0s, IPv4 RIP table
Destination Gateway Genmask Flags Metric Ref Use Iface
10.0.0.0 0.0.0.0 255.255.255.0 U 1 - - 1
```

#### Node = r2

```
Node: 3, Time: +121.0s, Local time: +121.0s, Ipv4ListRouting table
 Priority: 0 Protocol: ns3::Rip
Node: 3, Time: +121.0s, Local time: +121.0s, IPv4 RIP table
Destination
                Gateway
                                Genmask
                                                 Flags Metric Ref
                                                                      Use Iface
10.0.4.0
                                 255.255.255.0
                                                 UGS
                                                       2
                                                                          2
                10.0.2.2
                                                                          2
10.0.3.0
                                                       2
                10.0.2.2
                                 255.255.255.0
                                                 UGS
                                                                          2
10.0.0.0
                10.0.2.2
                                255.255.255.0
                                                 UGS
                                                       3
                                                                          2
10.0.2.0
                0.0.0.0
                                 255.255.255.0
                                                 U
                                                       1
```

#### Node = r3

```
Node: 4, Time: +121.0s, Local time: +121.0s, Ipv4ListRouting table
  Priority: 0 Protocol: ns3::Rip
Node: 4, Time: +121.0s, Local time: +121.0s, IPv4 RIP table
Destination
                Gateway
                                Genmask
                                                Flags Metric Ref
                                                                     Use Iface
10.0.1.0
                10.0.2.1
                                255.255.255.0
                                                UGS
                                                      16
                                                                         1
                                                                        1
10.0.2.0
                                255.255.255.0
                                                U
                                                      1
                0.0.0.0
                                                      1
10.0.4.0
                0.0.0.0
                                255.255.255.0
                                                U
                                                                        3
```

#### t = 180

#### Node = r1

```
Node: 2, Time: +180.0s, Local time: +180.0s, Ipv4ListRouting table
Priority: 0 Protocol: ns3::Rip
Node: 2, Time: +180.0s, Local time: +180.0s, IPv4 RIP table
Destination Gateway Genmask Flags Metric Ref Use Iface
10.0.0.0 0.0.0.0 255.255.255.0 U 1 - - 1
```

#### Node = r2

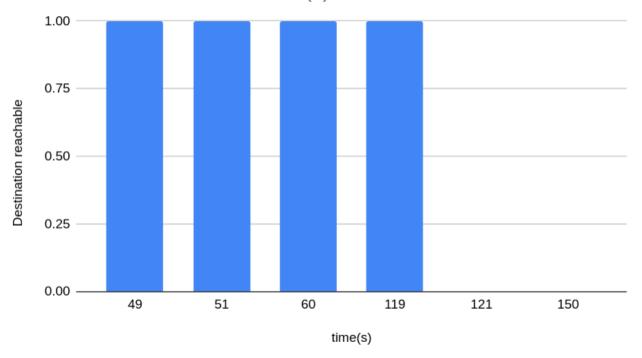
```
Node: 3, Time: +180.0s, Local time: +180.0s, Ipv4ListRouting table
  Priority: 0 Protocol: ns3::Rip
Node: 3, Time: +180.0s, Local time: +180.0s, IPv4 RIP table
Destination
                                                 Flags Metric Ref
                                                                     Use Iface
                Gateway
                                Genmask
10.0.4.0
                10.0.2.2
                                255.255.255.0
                                                 UGS
                                                       2
                                                                          2
                                                       1
                                                                         2
10.0.2.0
                0.0.0.0
                                255.255.255.0
                                                 U
```

#### Node = r3

```
Node: 4, Time: +180.0s, Local time: +180.0s, Ipv4ListRouting table
  Priority: 0 Protocol: ns3::Rip
Node: 4, Time: +180.0s, Local time: +180.0s, IPv4 RIP table
Destination
                Gateway
                                 Genmask
                                                 Flags Metric Ref
                                                                      Use Iface
                                 255.255.255.0
10.0.1.0
                10.0.2.1
                                                 UGS
                                                        16
                                                                          1
10.0.2.0
                0.0.0.0
                                 255.255.255.0
                                                                          1
                                                 U
                                                        1
                0.0.0.0
                                                        1
                                                                          3
10.0.4.0
                                 255.255.255.0
                                                 U
```

## b)

## Destination reachable vs. time(s)



## c)

Node: 2 is the router R1 Node: 3 is the router R2 Node: 4 is the router R3

	rotocol: ns3::Ri					
Node: 2, Time:	+49.0s, Local ti	me: +49.0s, IPv4	RIP t	able		
Destination	Gateway	Genmask	Flags	Metric	Ref	
Use Iface						
10.0.4.0	10.0.3.2	255.255.255.0	UGS	2		-
3						
10.0.2.0	10.0.3.2	255.255.255.0	UGS	2		-
3						
10.0.0.0	0.0.0.0	255.255.255.0	U	1		-
1						
10.0.1.0	0.0.0.0	255.255.255.0	U	1		-

2 10.0.3.0 3	0.0.0.0	255.255.255.0	U	1		
	+49.0s, Local ti Protocol: ns3::Ri	me: +49.0s, Ipv4	ListRo	outing t	able	
•		me: +49.0s, IPv4	RTP t	able		
Destination	Gateway	Genmask		Metric	Ref	
Use Iface	ou coma y	oo:maon		, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
	10.0.2.2	255.255.255.0	UGS	2		
10.0.3.0 1	10.0.1.1	255.255.255.0	UGS	2		
10.0.0.0 1	10.0.1.1	255.255.255.0	UGS	2		
10.0.1.0 1	0.0.0.0	255.255.255.0	U	1		
10.0.2.0 2	0.0.0.0	255.255.255.0	U	1		
	+49.0s, Local ti Protocol: ns3::Ri	me: +49.0s, Ipv4	ListRo	outing t	able	
Node: 4, Time:	+49.0s, Local ti	me: +49.0s, IPv4	RIP t	able		
Destination Use Iface	Gateway	Genmask	Flags	Metric	Ref	
10.0.1.0 2	10.0.3.1	255.255.255.0	UGS	2		
10.0.0.0	10.0.3.1	255.255.255.0	UGS	2		
10.0.2.0 1	0.0.0.0	255.255.255.0	U	1		
- 10.0.3.0 2	0.0.0.0	255.255.255.0	U	1		
10.0.4.0	0.0.0.0	255.255.255.0	U	1		
Priority: 0 P	rotocol: ns3::Ri				able	
		me: +51.0s, IPv4				
Destination Use Iface	Gateway	Genmask	Flags	Metric	Ref	
10.0.4.0 3	10.0.3.2	255.255.255.0	UGS	2		
10.0.2.0 3	10.0.3.2	255.255.255.0	UGS	2		
10.0.0.0	0.0.0.0	255.255.255.0	U	1		

1 10.0.3.0 3	0.0.0.0	255.255.255.0	U	1	-	-	
	+51.0s, Local ti rotocol: ns3::Ri		ListRo	uting t	able		
	+51.0s, Local ti			able Metric	Ref		
	10.0.2.2	255.255.255.0	UGS	2			
	0.0.0.0	255.255.255.0	U	1			
	+51.0s, Local ti Protocol: ns3::Ri		ListRo	uting t	able		
	+51.0s, Local ti						
Destination Use Iface	Gateway	Genmask	Flags	Metric	Ref		
	10.0.3.1	255.255.255.0	UGS	2			
10.0.0.0	10.0.3.1	255.255.255.0	UGS	2			
10.0.2.0 1	0.0.0.0	255.255.255.0	U	1			
10.0.3.0 2	0.0.0.0	255.255.255.0	U	1			
10.0.4.0 3	0.0.0.0	255.255.255.0	U	1			
Node: 2, Time: +60.0s, Local time: +60.0s, Ipv4ListRouting table Priority: 0 Protocol: ns3::Rip							
Destination	+60.0s, Local ti Gateway	me: +60.0s, IPv4 Genmask			Ref		
Use Iface 10.0.4.0 3	10.0.3.2	255.255.255.0	UGS	2			
10.0.2.0	10.0.3.2	255.255.255.0	UGS	2			
10.0.0.0	0.0.0.0	255.255.255.0	U	1			
10.0.3.0 3	0.0.0.0	255.255.255.0	U	1			

Node: 3, Time: +60.0s, Local time: +60.0s, Ipv4ListRouting table Priority: 0 Protocol: ns3::Rip

Node: 3, Time:	+60.0s, Local ti	me: +60.0s, IPv4	RIP t	able		
Destination	Gateway	Genmask	Flags	Metric	Ref	
Use Iface						
10.0.4.0 2	10.0.2.2	255.255.255.0	UGS	2		
10.0.2.0	0.0.0.0	255.255.255.0	U	1		
	+60.0s, Local ti Protocol: ns3::Ri	me: +60.0s, Ipv4	ListRo	uting t	able	
		me: +60.0s, IPv4	RIP t	able		
Destination Use Iface				Metric	Ref	
10.0.0.0	10.0.3.1	255.255.255.0	UGS	2		
10.0.2.0 1	0.0.0.0	255.255.255.0	U	1		
10.0.3.0	0.0.0.0	255.255.255.0	U	1		
10.0.4.0	0.0.0.0	255.255.255.0	U	1		
3						
	+119.0s, Local t Protocol: ns3::Ri	ime: +119.0s, Ip p	v4List	Routing	table	
Node: 2, Time:	+119.0s, Local t	ime: +119.0s, IP	v4 RIP	table		
Destination Use Iface	Gateway	Genmask	Flags	Metric	Ref	
10.0.4.0 3	10.0.3.2	255.255.255.0	UGS	2		
10.0.2.0	10.0.3.2	255.255.255.0	UGS	2		
10.0.0.0	0.0.0.0	255.255.255.0	U	1		
10.0.1.0	10.0.3.2	255.255.255.0	UGS	16		
3	0.0.0.0	255.255.255.0	U	1		
3						
	+119.0s, Local t Protocol: ns3::Ri	ime: +119.0s, Ip p	v4List	Routing	table	
Node: 3, Time:	+119.0s, Local t	ime: +119.0s, IP	v4 RIP	table		
Destination Use Iface	Gateway	Genmask	Flags	Metric	Ref	
10.0.4.0	10.0.2.2	255.255.255.0	UGS	2		
10.0.3.0	10.0.2.2	255.255.255.0	UGS	2		

2						
10.0.0.0	10.0.2.2	255.255.255.0	UGS	3		
2						
10.0.2.0	0.0.0.0	255.255.255.0	U	1		
2						
	+119.0s, Local t rotocol: ns3::Ri		v4ListI	Routing	table	
Node: 4, Time:	+119.0s, Local t	ime: +119.0s, IP	v4 RIP	table		
Destination	Gateway	Genmask	Flags	Metric	Ref	
Use Iface						
10.0.1.0	10.0.2.1	255.255.255.0	UGS	16		
1						
10.0.0.0	10.0.3.1	255.255.255.0	UGS	2		
2						
10.0.2.0	0.0.0.0	255.255.255.0	U	1		
1						
10.0.3.0	0.0.0.0	255.255.255.0	U	1		
2						
10.0.4.0	0.0.0.0	255.255.255.0	U	1		
3						
	+121.0s, Local t		v4ListI	Routing	table	
Priority: 0 P	rotocol: ns3::Ri	p				
Node: 2, Time:	+121.0s, Local t	ime: +121.0s, IP	v4 RIP	table		
Destination	Gateway	Genmask	Flags	Metric	Ref	
Use Iface						
10.0.0.0	0.0.0.0	255.255.255.0	U	1		
1						
Node: 3, Time:	+121.0s, Local t	ime: +121.0s, Ip	v4ListI	Routing	table	
Priority: 0 P	rotocol: ns3::Ri	p				
Node: 3, Time:	+121.0s, Local t					
Destination	Gateway	Genmask	Flags	Metric	Ref	
Use Iface						
10.0.4.0	10.0.2.2	255.255.255.0	UGS	2		
2						
10.0.3.0	10.0.2.2	255.255.255.0	UGS	2		
2						
10.0.0.0	10.0.2.2	255.255.255.0	UGS	3		
2						
10.0.2.0	0.0.0.0	255.255.255.0	U	1		
2						
Node: 4. Time:	+121.0s. Local +	ime: +121.0s. Ip	v4l ist	Routing	table	

Node: 4, Time: +121.0s, Local time: +121.0s, Ipv4ListRouting table Priority: 0 Protocol: ns3::Rip

```
Node: 4, Time: +121.0s, Local time: +121.0s, IPv4 RIP table
Destination
              Gateway
                             Genmask
                                           Flags Metric Ref
Use Iface
10.0.1.0
              10.0.2.1
                             255.255.255.0 UGS
                                                 16
1
10.0.2.0
              0.0.0.0
                             255.255.255.0 U
                                                 1
1
10.0.4.0
             0.0.0.0
                            255.255.255.0 U
                                                  1
Node: 2, Time: +150.0s, Local time: +150.0s, Ipv4ListRouting table
 Priority: 0 Protocol: ns3::Rip
Node: 2, Time: +150.0s, Local time: +150.0s, IPv4 RIP table
Destination
             Gateway
                       Genmask
                                           Flags Metric Ref
Use Iface
10.0.0.0
             0.0.0.0
                            255.255.255.0 U 1
Node: 3, Time: +150.0s, Local time: +150.0s, Ipv4ListRouting table
 Priority: 0 Protocol: ns3::Rip
Node: 3, Time: +150.0s, Local time: +150.0s, IPv4 RIP table
Destination
              Gateway
                            Genmask
                                           Flags Metric Ref
Use Iface
10.0.4.0
                           255.255.255.0 UGS
                                                 2
              10.0.2.2
2
10.0.2.0
            0.0.0.0
                       255.255.255.0 U 1
2
Node: 4, Time: +150.0s, Local time: +150.0s, Ipv4ListRouting table
 Priority: 0 Protocol: ns3::Rip
Node: 4, Time: +150.0s, Local time: +150.0s, IPv4 RIP table
Destination
              Gateway
                             Genmask
                                           Flags Metric Ref
Use Iface
10.0.1.0
              10.0.2.1
                        255.255.255.0 UGS
                                                  16
1
10.0.2.0
              0.0.0.0
                            255.255.255.0
                                            U
1
10.0.4.0
              0.0.0.0
                             255.255.255.0
                                            U
3
```

At 51 seconds, the link between router r2 and router r1 is broken down, now still the destination is reachable, as we can see from the routing tables the r1 sends any datagram meant for the destination via interface 3. Interface 3 is the interface of r1 connected to r3. Therefore the datagrams are still finding path from source to destination via r3

At t = 119 seconds, the path from source to destination remains same. That is any datagram from source can still reach to destination via src->r1->r3->dest. The difference here is that, r2 also discorvers that if it wants to send any datagram to some destination, it can send it via interface 2, i.e. the interface of r2 connected with r3.

At t = 121 seconds, the path between r1 and r3, r1 and r2 both are broken, we can see from the routing tables that there is no interface for the ip address of the destination. Thus the datagrams cant reach the destination at this point of time.

## Part B. iii)

# I have mentioned Node: R1, Node: R2, Node: R3 respectively for nodes R1, R2, R3

#### For t = 70 seconds

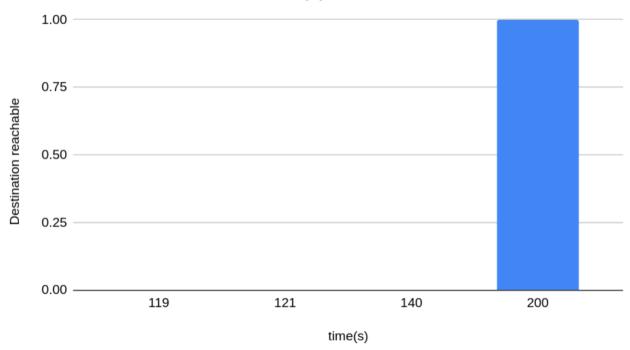
```
Priority: 0 Protocol: ns3::Rip
Node: R1, Time: +70.0s, Local time: +70.0s, IPv4 RIP table
Destination
            Gateway
                          Genmask
                                        Flags Metric Ref
Use Iface
10.0.0.0
         0.0.0.0 255.255.255.0 U 1
1
Node: R2, Time: +70.0s, Local time: +70.0s, Ipv4ListRouting table
 Priority: 0 Protocol: ns3::Rip
Node: 3, Time: +70.0s, Local time: +70.0s, IPv4 RIP table
Destination
           Gateway
                       Genmask
                                        Flags Metric Ref
Use Iface
10.0.4.0
         10.0.2.2 255.255.255.0 UGS
                                               2
2
10.0.2.0 0.0.0.0
                      255.255.255.0 U 1
Node: R3, Time: +70.0s, Local time: +70.0s, Ipv4ListRouting table
 Priority: 0 Protocol: ns3::Rip
Node: 4, Time: +70.0s, Local time: +70.0s, IPv4 RIP table
Destination Gateway
                       Genmask
                                        Flags Metric Ref
Use Iface
10.0.2.0
          0.0.0.0
                          255.255.255.0 U
10.0.4.0
         0.0.0.0
                           255.255.255.0 U 1
3
```

For t = 180 seconds

Priority: 0 F	Protocol: ns3::Ri	ip				
Node: R1, Time:	+180.0s, Local	time: +180.0s,	IPv4 RI	P table		
Destination	Gateway	Genmask	Flags	Metric	Ref	
Use Iface						
10.0.4.0	10.0.3.2	255.255.255.0	UGS	2		
3						
10.0.2.0	10.0.3.2	255.255.255.0	UGS	2		
3						
10.0.0.0	0.0.0.0	255.255.255.0	U	1		
1						
10.0.1.0	10.0.3.2	255.255.255.0	UGS	16		
3						
10.0.3.0	0.0.0.0	255.255.255.0	U	1		
3	0.0.0.0	233.233.233.0	Ü	_		
3						
Node: P2 Time:	+180.0s, Local	time: +180 0s	Tnv/llic	+Poutin	σ table	s 1
	rotocol: ns3::Rf		трутста	CROUCIII	g cabte	
_	+180.0s, Local		TDv/ DT	D tahla		
Destination		Genmask				
Use Iface	Gateway	Gerillask	rtags	Meti ic	Kei	
10.0.4.0	10.0.2.2	255.255.255.0	UGS	2		
	10.0.2.2	255,255,255,0	003	2	_	_
2	10 0 0 0	255 255 255 2	1166	2		
10.0.3.0	10.0.2.2	255.255.255.0	UGS	2		
2						
10.0.0.0	10.0.2.2	255.255.255.0	UGS	3		
2				_		
	0.0.0.0	255.255.255.0	U	Т		
2						
	+180.0s, Local		Ipv4Lis	tRoutin	g table	à
•	Protocol: ns3::Rf					
	+180.0s, Local					
Destination	Gateway	Genmask	Flags	Metric	Ref	
Use Iface						
10.0.1.0	10.0.2.1	255.255.255.0	UGS	16		
1						
10.0.0.0	10.0.3.1	255.255.255.0	UGS	2		
2						
10.0.2.0	0.0.0.0	255.255.255.0	U	1		
1						
10.0.3.0	10.0.2.1	255.255.255.0	UGS	16		
1						
10.0.4.0	0.0.0.0	255.255.255.0	U	1		
3						
10.0.3.0	0.0.0.0	255.255.255.0	U	1		
2						

## b)





#### **Routing tables**

Here n2 = R1 and n3 = R2 and n4 = R3

```
Priority: 0 Protocol: ns3::Rip
Node: 2, Time: +119.0s, Local time: +119.0s, IPv4 RIP table
Destination
           Gateway
                                          Flags Metric Ref
                       Genmask
Use Iface
10.0.0.0
           0.0.0.0 255.255.255.0 U 1
Node: 3, Time: +119.0s, Local time: +119.0s, Ipv4ListRouting table
 Priority: 0 Protocol: ns3::Rip
Node: 3, Time: +119.0s, Local time: +119.0s, IPv4 RIP table
Destination
           Gateway
                       Genmask
                                          Flags Metric Ref
Use Iface
10.0.4.0
                                                 2
            10.0.2.2
                       255.255.255.0 UGS
2
10.0.2.0 0.0.0.0 255.255.255.0 U
                                                 1
2
Node: 4, Time: +119.0s, Local time: +119.0s, Ipv4ListRouting table
 Priority: 0 Protocol: ns3::Rip
Node: 4, Time: +119.0s, Local time: +119.0s, IPv4 RIP table
Destination Gateway
                             Genmask
                                           Flags Metric Ref
```

Use Iface						
10.0.1.0	10.0.2.1	255.255.255.0	UGS	16		
1 10.0.0.0	10.0.2.1	255.255.255.0	UGS	16		
1 10.0.2.0	0.0.0.0	255.255.255.0	U	1		
1						
10.0.3.0 1	10.0.2.1	255.255.255.0	UGS	16		
10.0.4.0	0.0.0.0	255.255.255.0	U	1		
3						
	+121.0s, Local t Protocol: ns3::Ri	cime: +121.0s, Ip	v4ListI	Routing	table	
Node: 2, Time:	+121.0s, Local t	ime: +121.0s, IP	v4 RIP	table		
Destination Use Iface		Genmask			Ref	
10.0.0.0	0.0.0.0	255.255.255.0	U	1		
1 10.0.3.0	0.0.0.0	255.255.255.0		1		
3	0.0.0.0	255.255.255.0	U	1	_	_
Node: 3, Time:	+121.0s, Local t	:ime: +121.0s, Ip	v4ListI	Routing	table	
Priority: 0 P	rotocol: ns3::Ri	р				
		p :ime: +121.0s, IP				
Node: 3, Time: Destination	+121.0s, Local t		v4 RIP			
Node: 3, Time: Destination Use Iface 10.0.4.0	+121.0s, Local t	ime: +121.0s, IP	v4 RIP Flags	table Metric		
Node: 3, Time: Destination Use Iface 10.0.4.0 2 10.0.2.0	+121.0s, Local t Gateway 10.0.2.2	cime: +121.0s, IP Genmask	VV4 RIP Flags UGS	table Metric		
Node: 3, Time: Destination Use Iface 10.0.4.0 2 10.0.2.0 2	+121.0s, Local to Gateway  10.0.2.2  0.0.0.0	cime: +121.0s, IP Genmask 255.255.255.0 255.255.255.0	VV4 RIP Flags UGS U	table Metric 2	Ref - -	
Node: 3, Time: Destination Use Iface 10.0.4.0 2 10.0.2.0 2 Node: 4, Time:	+121.0s, Local to Gateway  10.0.2.2  0.0.0.0	cime: +121.0s, IP Genmask  255.255.255.0  255.255.255.0	VV4 RIP Flags UGS U	table Metric 2	Ref - -	
Node: 3, Time: Destination Use Iface 10.0.4.0 2 10.0.2.0 2 Node: 4, Time: Priority: 0 P	+121.0s, Local to Gateway  10.0.2.2  0.0.0.0  +121.0s, Local to Protocol: ns3::Rid	cime: +121.0s, IP Genmask  255.255.255.0  255.255.255.0  cime: +121.0s, Ip	V4 RIP Flags UGS U	table Metric  2  1 Routing table	Ref - - table	
Node: 3, Time: Destination Use Iface 10.0.4.0 2 10.0.2.0 2 Node: 4, Time: Priority: 0 P	+121.0s, Local to Gateway  10.0.2.2  0.0.0.0  +121.0s, Local to Protocol: ns3::Rid	cime: +121.0s, IP Genmask  255.255.255.0  255.255.255.0	V4 RIP Flags UGS U	table Metric  2  1 Routing table	Ref - - table	
Node: 3, Time: Destination Use Iface 10.0.4.0 2 10.0.2.0 2 Node: 4, Time: Priority: 0 P Node: 4, Time: Destination Use Iface 10.0.1.0	+121.0s, Local to Gateway  10.0.2.2  0.0.0.0  +121.0s, Local to rotocol: ns3::Richer to the color of the colo	cime: +121.0s, IP Genmask  255.255.255.0  255.255.255.0  cime: +121.0s, Ip	V4 RIP Flags UGS U	table Metric  2  1 Routing table	Ref - - table	
Node: 3, Time: Destination Use Iface 10.0.4.0 2 10.0.2.0 2 Node: 4, Time: Priority: 0 P Node: 4, Time: Destination Use Iface 10.0.1.0 1 10.0.0.0	+121.0s, Local to Gateway  10.0.2.2  0.0.0.0  +121.0s, Local to rotocol: ns3::Richer to the color of the colo	cime: +121.0s, IP Genmask  255.255.255.0  255.255.255.0  cime: +121.0s, Ip cime: +121.0s, IP Genmask	V4 RIP Flags UGS U	table Metric  2  1  Routing table Metric	Ref - - table	
Node: 3, Time: Destination Use Iface 10.0.4.0 2 10.0.2.0 2 Node: 4, Time: Priority: 0 P Node: 4, Time: Destination Use Iface 10.0.1.0 1	+121.0s, Local to Gateway  10.0.2.2  0.0.0.0  +121.0s, Local to Protocol: ns3::Rin   +121.0s, Local to Gateway  10.0.2.1  10.0.2.1	cime: +121.0s, IP Genmask  255.255.255.0  255.255.255.0  cime: +121.0s, Ip cime: +121.0s, IP Genmask  255.255.255.0	V4 RIP Flags UGS U V4List	table Metric  2  1  Routing table Metric  16	Ref - - table	
Node: 3, Time: Destination Use Iface 10.0.4.0 2 10.0.2.0 2 Node: 4, Time: Priority: 0 P Node: 4, Time: Destination Use Iface 10.0.1.0 1 10.0.0.0	+121.0s, Local to Gateway  10.0.2.2  0.0.0.0  +121.0s, Local to Protocol: ns3::Rin   +121.0s, Local to Gateway  10.0.2.1  10.0.2.1	cime: +121.0s, IP Genmask  255.255.255.0  255.255.255.0  cime: +121.0s, Ip Genmask  255.255.255.0  255.255.255.0	V4 RIP Flags UGS U V4List V4 RIP Flags UGS UGS	table Metric  2  1  Routing table Metric  16	Ref - - table	
Node: 3, Time: Destination Use Iface 10.0.4.0 2 10.0.2.0 2 Node: 4, Time: Priority: 0 P Node: 4, Time: Destination Use Iface 10.0.1.0 1 10.0.0.0 1 10.0.2.0 1	+121.0s, Local to Gateway  10.0.2.2  0.0.0.0  +121.0s, Local to Protocol: ns3::Rin   +121.0s, Local to Gateway  10.0.2.1  10.0.2.1  0.0.0.0	cime: +121.0s, IP Genmask  255.255.255.0  255.255.255.0  cime: +121.0s, Ip cime: +121.0s, IP Genmask  255.255.255.0  255.255.255.0	V4 RIP Flags UGS U V4List V4 RIP Flags UGS UGS	table Metric  2  1  Routing table Metric  16  16	Ref - - table	

3 10.0.3.0 2	0.0.0.0	255.255.255.0	U	1	-	-
	+140.0s, Local t rotocol: ns3::Ri		v4ListF	Routing	table	
				+abla		
	+140.0s, Local t					
	Gateway	Genmask	Flags	Metric	Ret	
Use Iface						
10.0.0.0	0.0.0.0	255.255.255.0	U	1		
1						
10.0.3.0	0.0.0.0	255.255.255.0	U	1		
3						
Node: 3, Time:	+140.0s, Local t	ime: +140.0s, Ip	v4ListF	Routing	table	
Priority: 0 P	rotocol: ns3::Ri	р				
Node: 3, Time:	+140.0s, Local t	ime: +140.0s, IP	v4 RIP	table		
Destination		Genmask			Ref	
Use Iface			Ü			
	10.0.2.2	255.255.255.0	UGS	2		
2	10.0.1.1	2001200120010	000	_		
	10.0.2.2	255.255.255.0	UGS	2	_	_
2	10.0.2.2	233.233.233.0	003	2		
	0 0 0 0	255 255 255 0		1		
	0.0.0.0	255.255.255.0	U	1	_	_
2						
			41			
	+140.0s, Local t		v4Lıstŀ	Routing	table	
	rotocol: ns3::Ri					
	+140.0s, Local t					
Destination	Gateway	Genmask	Flags	Metric	Ref	
Use Iface						
10.0.1.0	10.0.2.1	255.255.255.0	UGS	16		
1						
10.0.0.0	10.0.2.1	255.255.255.0	UGS	16		
1						
10.0.2.0	0.0.0.0	255.255.255.0	U	1		
1						
10.0.3.0	10.0.2.1	255.255.255.0	UGS	16		
1						
	0.0.0.0	255.255.255.0	U	1		
3						
	0.0.0.0	255.255.255.0	U	1		
2						

Node: 2, Time: +200.0s, Local time: +200.0s, Ipv4ListRouting table Priority: 0 Protocol: ns3::Rip

Node: 2, Time:	+200.0s, Local t	ime: +200.0s, IF	°∨4 RIP	table		
Destination	Gateway	Genmask	Flags	Metric	Ref	
Use Iface						
10.0.4.0	10.0.3.2	255.255.255.0	UGS	2		
3						
10.0.2.0	10.0.3.2	255.255.255.0	UGS	2		
3						
10.0.0.0	0.0.0.0	255.255.255.0	U	1		
1						
10.0.1.0	10.0.3.2	255.255.255.0	UGS	16	_	_
3	10.0.3.2	233.233.233.0	005	10		
10.0.3.0	0.0.0.0	255.255.255.0	U	1	_	_
	0.0.0.0	233,233,233.0	U	_		
3						
Nadas O Tâmas		······································	41	D	4-61-	
	+200.0s, Local t		0V4L1ST	Routing	table	
	Protocol: ns3::Ri					
· ·	+200.0s, Local t					
Destination	Gateway	Genmask	Flags	Metric	Ref	
Use Iface						
10.0.4.0	10.0.2.2	255.255.255.0	UGS	2		
2						
10.0.3.0	10.0.2.2	255.255.255.0	UGS	2		
2						
10.0.0.0	10.0.2.2	255.255.255.0	UGS	3		
2						
10.0.2.0	0.0.0.0	255.255.255.0	U	1		
2						
Node: 4, Time:	+200.0s, Local t	ime: +200.0s, Ip	v4List	Routing	table	
<i>'</i>	Protocol: ns3::Ri			S		
Ť	+200.0s, Local t		v4 RIP	table		
· ·	Gateway				Ref	
Use Iface	daceway	Germask	i cago	110 01 10	ite i	
10.0.1.0	10.0.2.1	255.255.255.0	lics	16	_	_
	10.0.2.1	233,233,233.0	003	10		
1	10 0 2 1	255 255 255 0	ucc	2		
10.0.0.0	10.0.3.1	255.255.255.0	065	2	_	_
2						
10.0.2.0	0.0.0.0	255.255.255.0	U	1		
1						
10.0.3.0	10.0.2.1	255.255.255.0	UGS	16		
1						
10.0.4.0	0.0.0.0	255.255.255.0	U	1		
3						
10.0.3.0	0.0.0.0	255.255.255.0	U	1		
2						

# Files explanation

1. rip-simple-network.cc - This file contains the main code