

COL 334 Assignment 4

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Entry Number - 2020CS50436

Part B Network Layer

(i.)

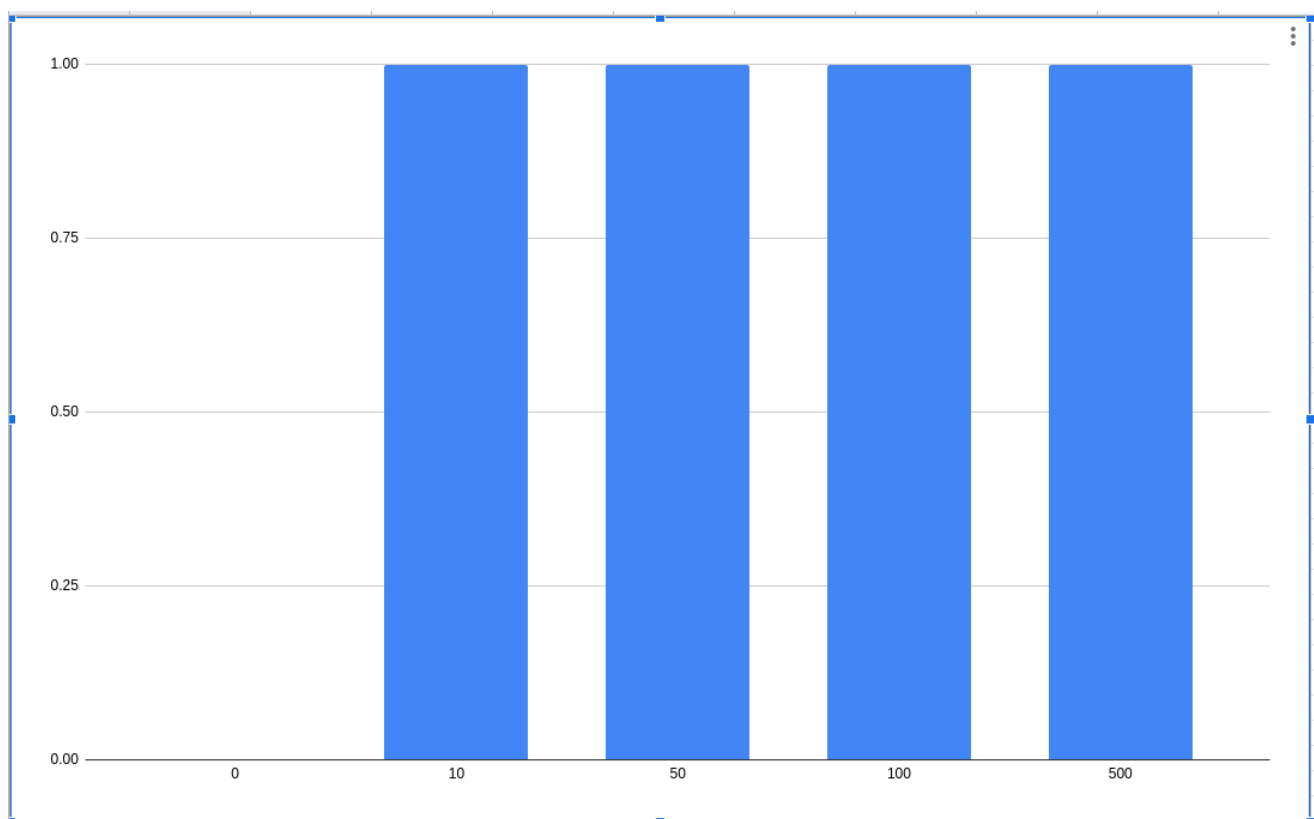
a. Running the simulation for different delays

For all the graphs

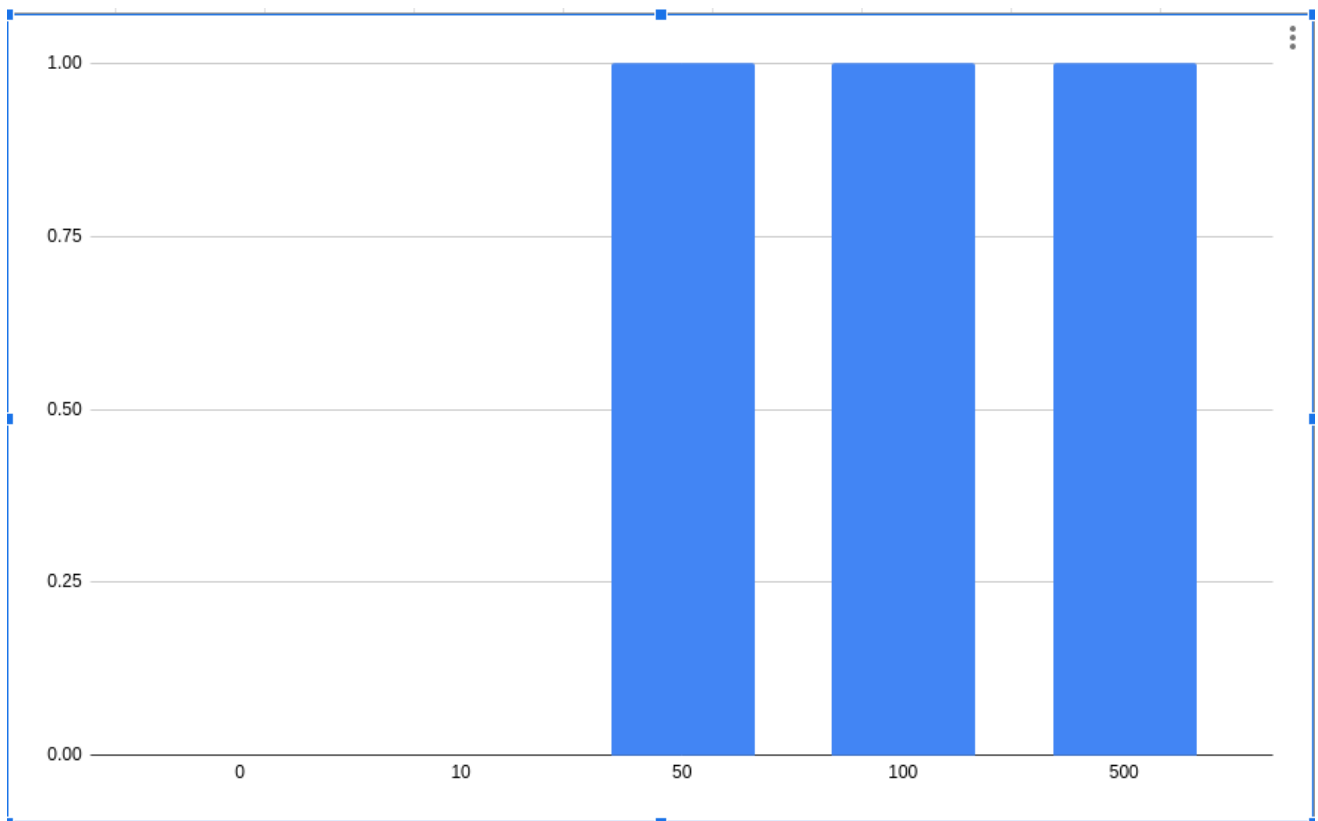
x-axis - time in seconds (logarithmic scale)

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

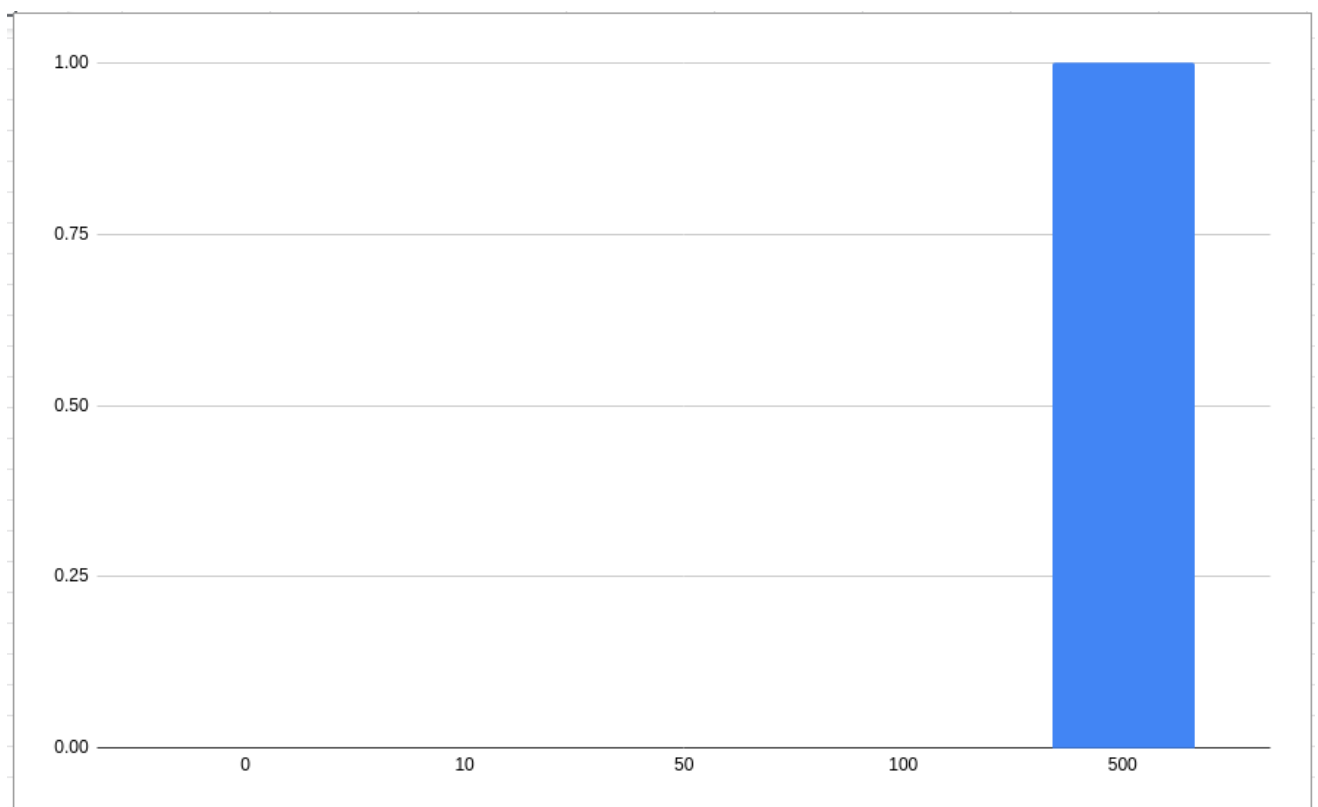
Delay = 100ms



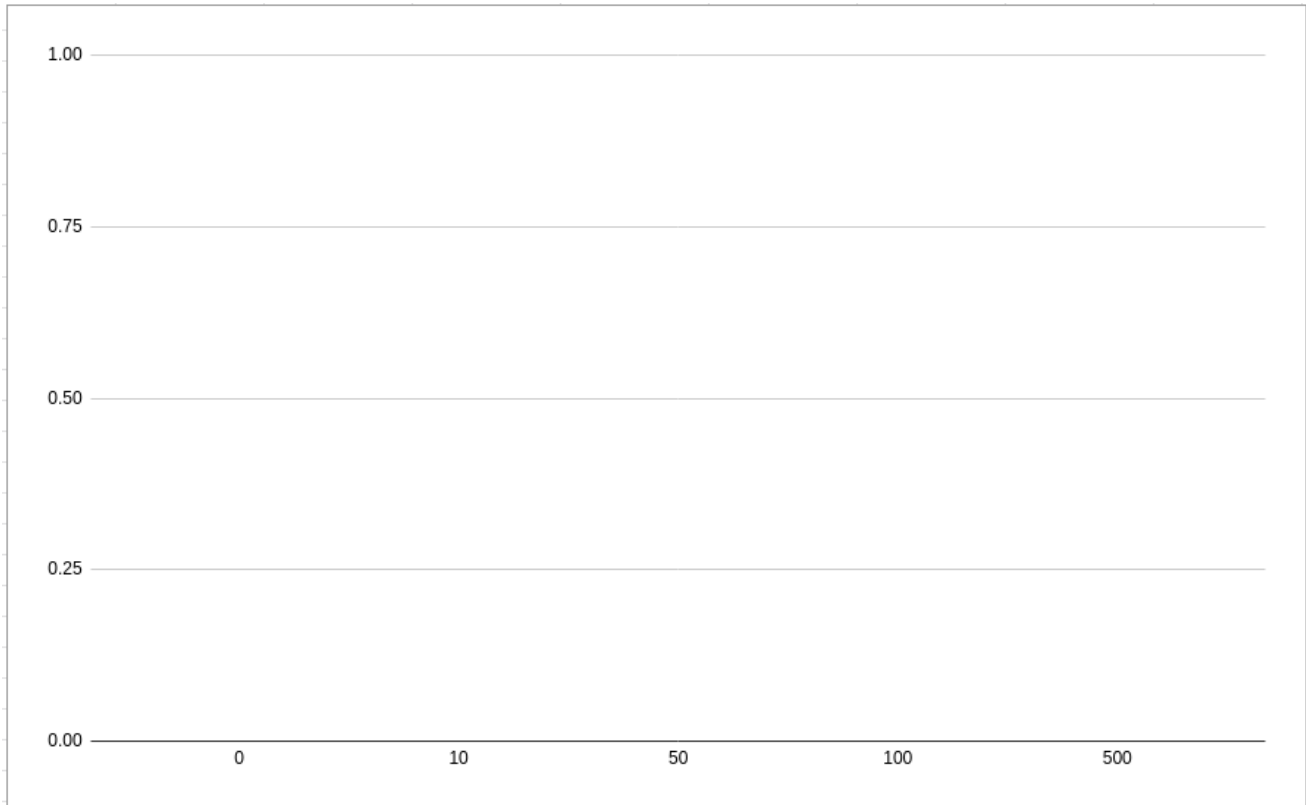
Delay = 1000ms



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 entries, 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 convergence 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          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 = 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
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      -      -      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      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      -      -      2
```

Node = r3

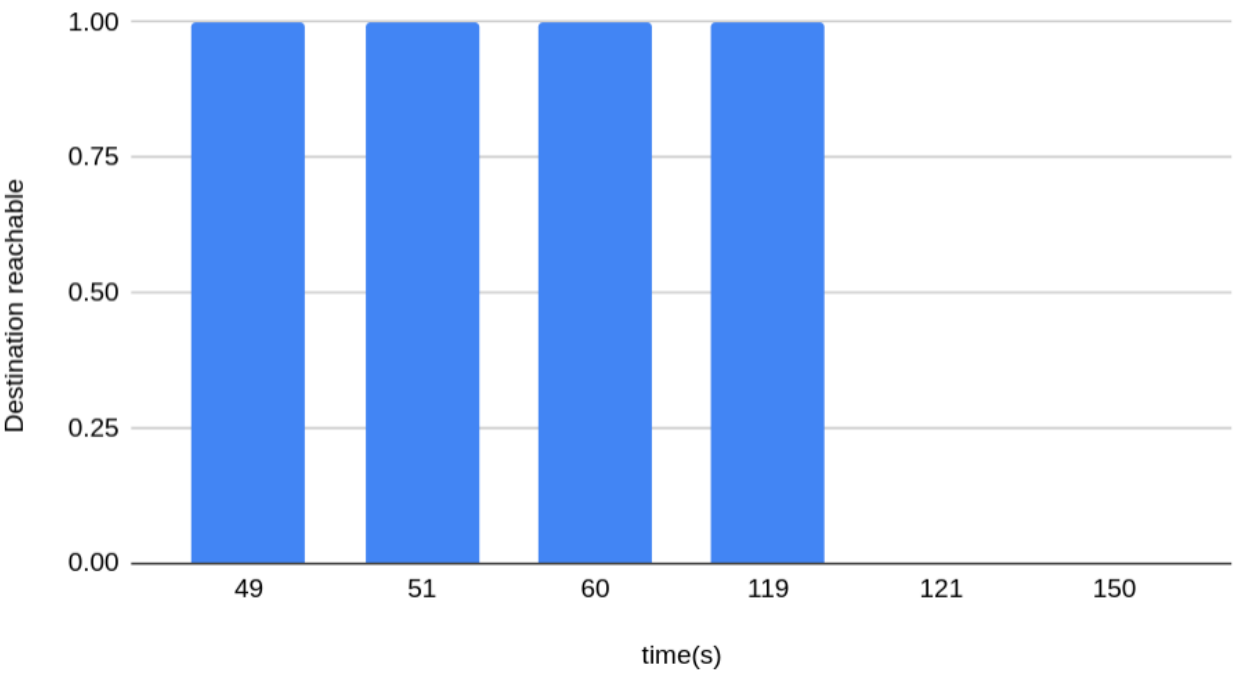
```

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
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     -    -    3

```

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

```

Priority: 0 Protocol: ns3::Rip
Node: 2, Time: +49.0s, Local time: +49.0s, IPv4 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         0.0.0.0      255.255.255.0 U      1     -    -    1

```

2
10.0.3.0 0.0.0.0 255.255.255.0 U 1 - -
3

Node: 3, Time: +49.0s, Local time: +49.0s, Ipv4ListRouting table
Priority: 0 Protocol: ns3::Rip

Node: 3, Time: +49.0s, Local time: +49.0s, 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					
10.0.3.0	10.0.1.1	255.255.255.0	UGS	2	-
1					
10.0.0.0	10.0.1.1	255.255.255.0	UGS	2	-
1					
10.0.1.0	0.0.0.0	255.255.255.0	U	1	-
1					
10.0.2.0	0.0.0.0	255.255.255.0	U	1	-
2					

Node: 4, Time: +49.0s, Local time: +49.0s, Ipv4ListRouting table
Priority: 0 Protocol: ns3::Rip

Node: 4, Time: +49.0s, Local time: +49.0s, IPv4 RIP table

Destination	Gateway	Genmask	Flags	Metric	Ref
Use Iface					
10.0.1.0	10.0.3.1	255.255.255.0	UGS	2	-
2					
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					

Node: 2, Time: +51.0s, Local time: +51.0s, Ipv4ListRouting table
Priority: 0 Protocol: ns3::Rip

Node: 2, Time: +51.0s, Local time: +51.0s, IPv4 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
10.0.3.0      0.0.0.0      255.255.255.0  U    1    -    -
3

Node: 3, Time: +51.0s, Local time: +51.0s, Ipv4ListRouting table
  Priority: 0 Protocol: ns3::Rip
Node: 3, Time: +51.0s, Local time: +51.0s, 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    -    -
2

Node: 4, Time: +51.0s, Local time: +51.0s, Ipv4ListRouting table
  Priority: 0 Protocol: ns3::Rip
Node: 4, Time: +51.0s, Local time: +51.0s, IPv4 RIP table
Destination      Gateway      Genmask      Flags Metric Ref
Use Iface
10.0.1.0      10.0.3.1      255.255.255.0  UGS    2    -    -
2
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

Node: 2, Time: +60.0s, Local time: +60.0s, Ipv4ListRouting table
  Priority: 0 Protocol: ns3::Rip
Node: 2, Time: +60.0s, Local time: +60.0s, IPv4 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
10.0.3.0      0.0.0.0      255.255.255.0  U    1    -    -
3

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

```

```
Node: 3, Time: +60.0s, Local time: +60.0s, 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      -      -
2
```

```
Node: 4, Time: +60.0s, Local time: +60.0s, Ipv4ListRouting table
Priority: 0 Protocol: ns3::Rip
```

```
Node: 4, Time: +60.0s, Local time: +60.0s, IPv4 RIP table
Destination      Gateway          Genmask          Flags Metric Ref
Use Iface
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
```

```
Node: 2, Time: +119.0s, Local time: +119.0s, Ipv4ListRouting table
Priority: 0 Protocol: ns3::Rip
```

```
Node: 2, Time: +119.0s, Local time: +119.0s, IPv4 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
10.0.3.0          0.0.0.0          255.255.255.0    U      1      -      -
3
```

```
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          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: +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       10.0.3.1       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
```

```
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: 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       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 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    -    -
3

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    -    -
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          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    -    -
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    -    -
1
10.0.4.0          0.0.0.0          255.255.255.0    U      1    -    -
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 discovers 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      -    -
2

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        1      -    -
1
10.0.4.0          0.0.0.0          255.255.255.0    U        1      -    -
3
```

For t = 180 seconds

Priority: 0 Protocol: ns3::Rip

Node: R1, Time: +180.0s, Local time: +180.0s, IPv4 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						
10.0.3.0	0.0.0.0	255.255.255.0	U	1	-	-
3						

Node: R2, Time: +180.0s, Local time: +180.0s, Ipv4ListRouting table

Priority: 0 Protocol: ns3::Rip

Node: R2, Time: +180.0s, Local time: +180.0s, 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						
10.0.3.0	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: R3, Time: +180.0s, Local time: +180.0s, Ipv4ListRouting table

Priority: 0 Protocol: ns3::Rip

Node: R3, Time: +180.0s, Local time: +180.0s, IPv4 RIP table

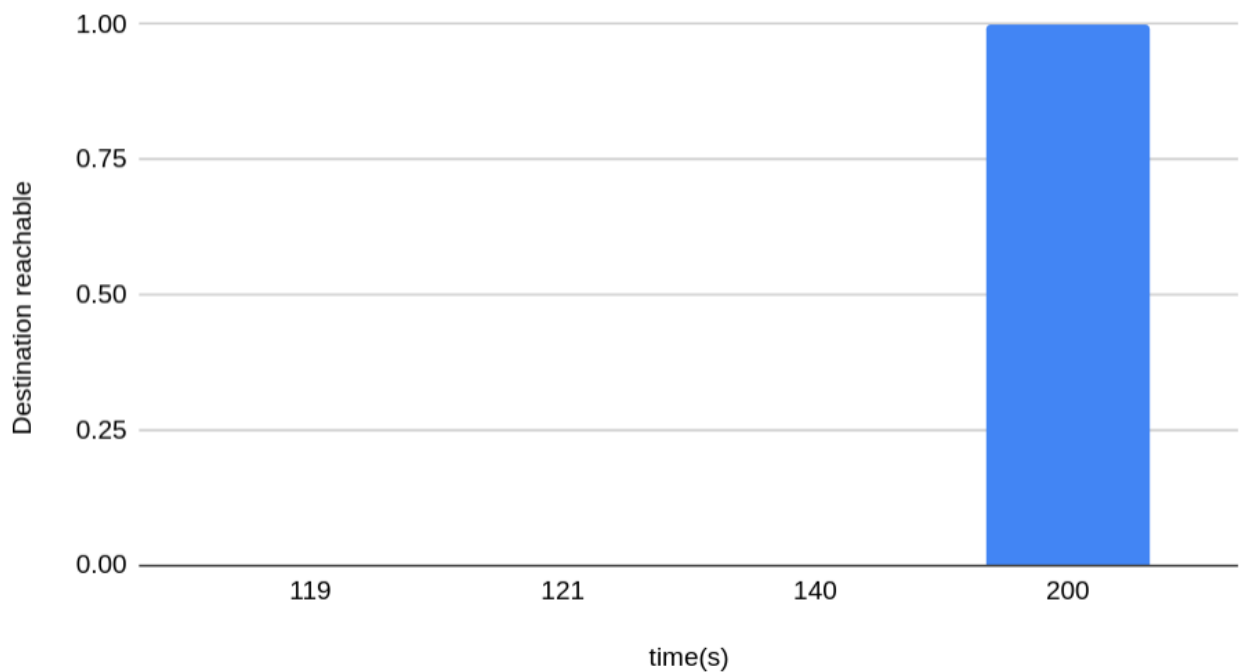
Destination	Gateway	Genmask	Flags	Metric	Ref
-------------	---------	---------	-------	--------	-----

Use Iface

10.0.1.0	10.0.2.1	255.255.255.0	UGS	16	-	-
1						
10.0.0.0	10.0.3.1	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)

Destination reachable vs. time(s)



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      Genmask      Flags Metric Ref
Use Iface
10.0.0.0          0.0.0.0      255.255.255.0  U        1      -      -
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          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      -      -
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	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						

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					
10.0.3.0	0.0.0.0	255.255.255.0	U	1	-
3					

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	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	-
2					

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					
10.0.0.0	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					
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

Node: 2, Time: +140.0s, Local time: +140.0s, Ipv4ListRouting table
  Priority: 0 Protocol: ns3::Rip
Node: 2, Time: +140.0s, Local time: +140.0s, 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
10.0.3.0          0.0.0.0          255.255.255.0    U    1    -    -
3

Node: 3, Time: +140.0s, Local time: +140.0s, Ipv4ListRouting table
  Priority: 0 Protocol: ns3::Rip
Node: 3, Time: +140.0s, Local time: +140.0s, 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
10.0.3.0          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    -    -
2

Node: 4, Time: +140.0s, Local time: +140.0s, Ipv4ListRouting table
  Priority: 0 Protocol: ns3::Rip
Node: 4, Time: +140.0s, Local time: +140.0s, 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          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

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

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Node: 2, Time: +200.0s, Local time: +200.0s, IPv4 RIP table

Destination	Gateway	Genmask	Flags	Metric	Ref
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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						

Node: 3, Time: +200.0s, Local time: +200.0s, Ipv4ListRouting table

Priority: 0 Protocol: ns3::Rip

Node: 3, Time: +200.0s, Local time: +200.0s, IPv4 RIP table

Destination	Gateway	Genmask	Flags	Metric	Ref
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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 time: +200.0s, Ipv4ListRouting table

Priority: 0 Protocol: ns3::Rip

Node: 4, Time: +200.0s, Local time: +200.0s, IPv4 RIP table

Destination	Gateway	Genmask	Flags	Metric	Ref
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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						

Files explanation

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