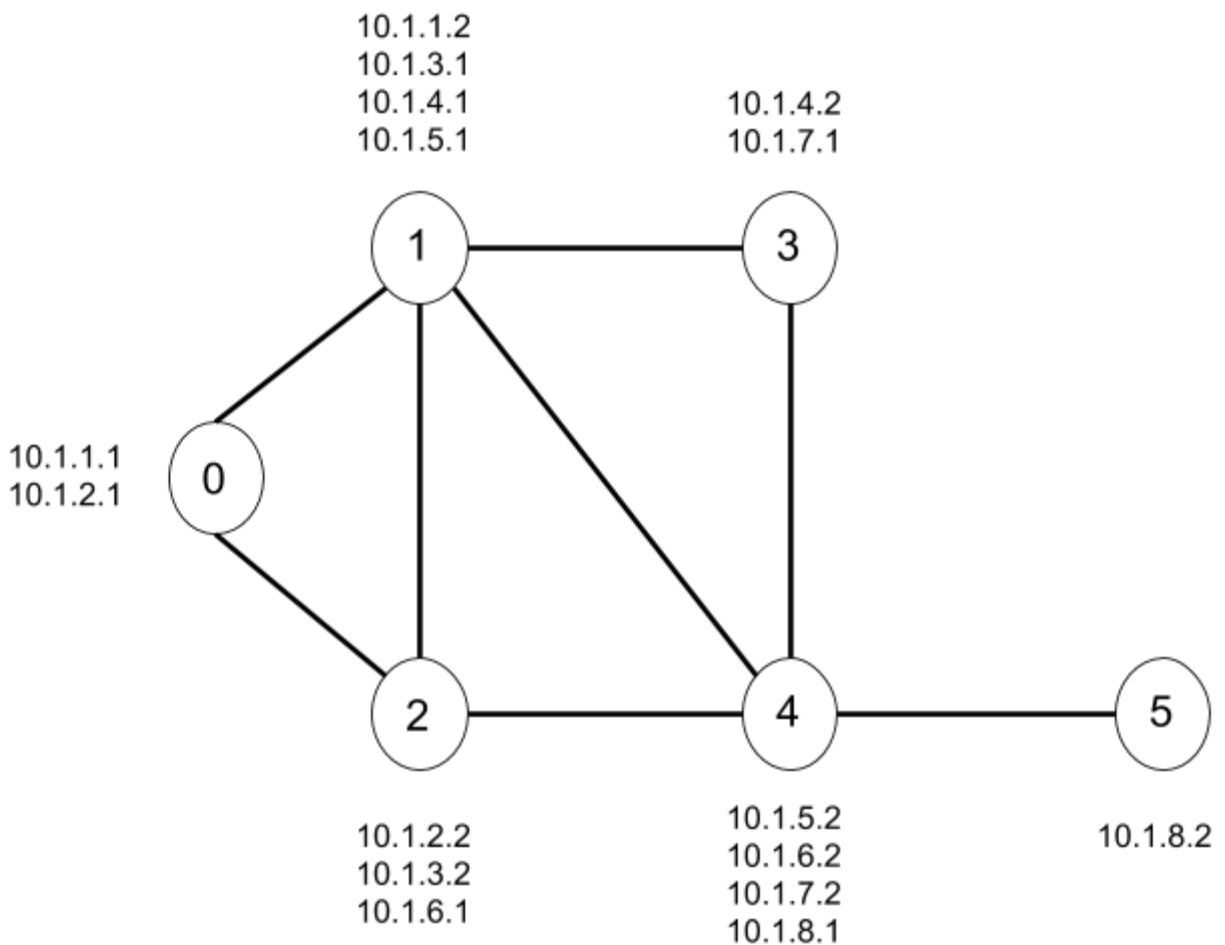Name : Hazem Morsy Hassan
ID : 16

Code Contribution:

By using topology helper , I established six nodes with eight edges in which each edge represents a point to point connection between the nodes and network cards are installed in for each node.

10.1.1.2
10.1.3.1
10.1.4.1
10.1.5.1

10.1.4.2
10.1.7.1

1   3

10.1.1.1
10.1.2.1

0

2   4   5

10.1.2.2
10.1.3.2
10.1.6.1

10.1.5.2
10.1.6.2
10.1.7.2
10.1.8.1

10.1.8.2

For each edge , I created new IP base addresses ranging from (10.1.1.0 to 10.1.8.0).

Applications must be created to simulate traffic , Node (0) is considered as the client and Node (5) is the server. Assuming that the data rate of each edge is 5 Mbps and transmission delay is 2 ms.The client sends one packet of size 1024 bytes to the server.

Finally I start the simulator for a maximum limit of 100 seconds and then destroy it.

Results:

Routing table of node (0):

```
Node: 0, Time: +100.0s, Local time: +100.0s, Ip'
Destination      Gateway          Genmask
10.1.1.2         10.1.1.2         255.255.255.255
10.1.3.1         10.1.1.2         255.255.255.255
10.1.4.1         10.1.1.2         255.255.255.255
10.1.5.1         10.1.1.2         255.255.255.255
10.1.2.2         10.1.2.2         255.255.255.255
10.1.3.2         10.1.2.2         255.255.255.255
10.1.6.1         10.1.2.2         255.255.255.255
10.1.4.2         10.1.1.2         255.255.255.255
10.1.7.1         10.1.1.2         255.255.255.255
10.1.5.2         10.1.1.2         255.255.255.255
10.1.5.2         10.1.2.2         255.255.255.255
10.1.6.2         10.1.1.2         255.255.255.255
10.1.6.2         10.1.2.2         255.255.255.255
10.1.7.2         10.1.1.2         255.255.255.255
10.1.7.2         10.1.2.2         255.255.255.255
10.1.8.1         10.1.1.2         255.255.255.255
10.1.8.1         10.1.2.2         255.255.255.255
10.1.8.2         10.1.1.2         255.255.255.255
10.1.8.2         10.1.2.2         255.255.255.255
```

Routing table of node (1):

```
Node: 1, Time: +100.0s, Local time: +100.0s, Ip
Destination      Gateway            Genmask
10.1.1.1         10.1.1.1           255.255.255.255
10.1.2.1         10.1.1.1           255.255.255.255
10.1.2.2         10.1.3.2           255.255.255.255
10.1.3.2         10.1.3.2           255.255.255.255
10.1.6.1         10.1.3.2           255.255.255.255
10.1.4.2         10.1.4.2           255.255.255.255
10.1.7.1         10.1.4.2           255.255.255.255
10.1.5.2         10.1.5.2           255.255.255.255
10.1.6.2         10.1.5.2           255.255.255.255
10.1.7.2         10.1.5.2           255.255.255.255
10.1.8.1         10.1.5.2           255.255.255.255
10.1.8.2         10.1.5.2           255.255.255.255
```

Routing table of node (2):

```
Node: 2, Time: +100.0s, Local time: +100.0s, Ip
Destination      Gateway            Genmask
10.1.1.1         10.1.2.1           255.255.255.255
10.1.2.1         10.1.2.1           255.255.255.255
10.1.1.2         10.1.3.1           255.255.255.255
10.1.3.1         10.1.3.1           255.255.255.255
10.1.4.1         10.1.3.1           255.255.255.255
10.1.5.1         10.1.3.1           255.255.255.255
10.1.5.2         10.1.6.2           255.255.255.255
10.1.6.2         10.1.6.2           255.255.255.255
10.1.7.2         10.1.6.2           255.255.255.255
10.1.8.1         10.1.6.2           255.255.255.255
10.1.4.2         10.1.3.1           255.255.255.255
10.1.4.2         10.1.6.2           255.255.255.255
10.1.7.1         10.1.3.1           255.255.255.255
10.1.7.1         10.1.6.2           255.255.255.255
10.1.8.2         10.1.6.2           255.255.255.255
```

Routing table of node (3):

```
Node: 3, Time: +100.0s, Local time: +100.0s, Ip
Destination      Gateway          Genmask
10.1.1.2         10.1.4.1         255.255.255.255
10.1.3.1         10.1.4.1         255.255.255.255
10.1.4.1         10.1.4.1         255.255.255.255
10.1.5.1         10.1.4.1         255.255.255.255
10.1.5.2         10.1.7.2         255.255.255.255
10.1.6.2         10.1.7.2         255.255.255.255
10.1.7.2         10.1.7.2         255.255.255.255
10.1.8.1         10.1.7.2         255.255.255.255
10.1.1.1         10.1.4.1         255.255.255.255
10.1.2.1         10.1.4.1         255.255.255.255
10.1.2.2         10.1.4.1         255.255.255.255
10.1.2.2         10.1.7.2         255.255.255.255
10.1.3.2         10.1.4.1         255.255.255.255
10.1.3.2         10.1.7.2         255.255.255.255
10.1.6.1         10.1.4.1         255.255.255.255
10.1.6.1         10.1.7.2         255.255.255.255
10.1.8.2         10.1.7.2         255.255.255.255
```
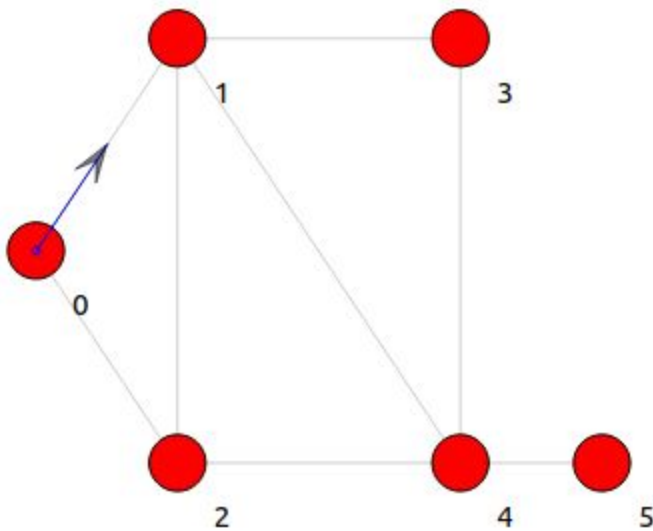
Routing table of node (4):

```
Node: 4, Time: +100.0s, Local time: +100.0s, Ip
Destination      Gateway          Genmask
10.1.1.2         10.1.5.1         255.255.255.255
10.1.3.1         10.1.5.1         255.255.255.255
10.1.4.1         10.1.5.1         255.255.255.255
10.1.5.1         10.1.5.1         255.255.255.255
10.1.2.2         10.1.6.1         255.255.255.255
10.1.3.2         10.1.6.1         255.255.255.255
10.1.6.1         10.1.6.1         255.255.255.255
10.1.4.2         10.1.7.1         255.255.255.255
10.1.7.1         10.1.7.1         255.255.255.255
10.1.8.2         10.1.8.2         255.255.255.255
10.1.1.1         10.1.5.1         255.255.255.255
10.1.1.1         10.1.6.1         255.255.255.255
10.1.2.1         10.1.5.1         255.255.255.255
10.1.2.1         10.1.6.1         255.255.255.255
```

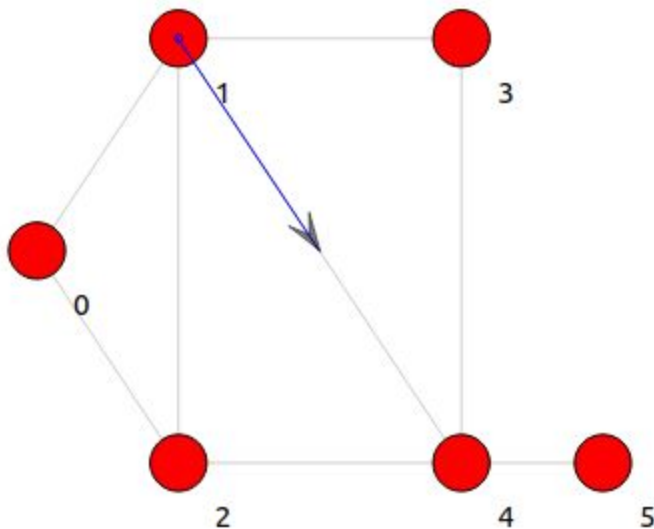Routing table of node (5):

```
Node: 5, Time: +100.0s, Local time: +100.0s
Destination       Gateway              Genmask
0.0.0.0           10.1.8.1             0.0.0.0
```
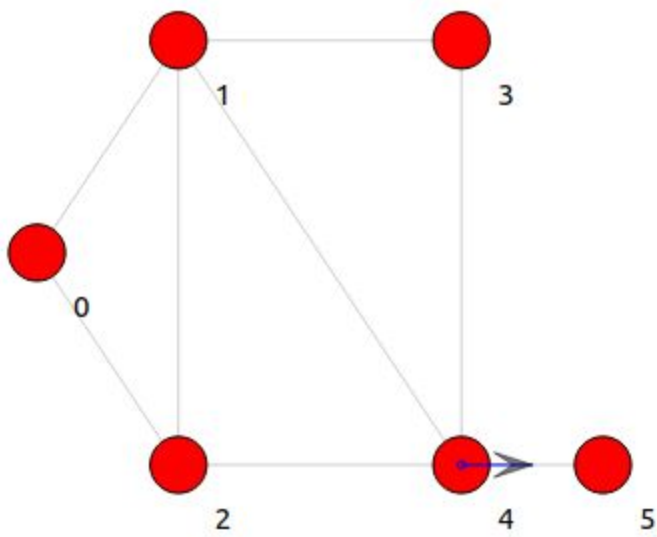
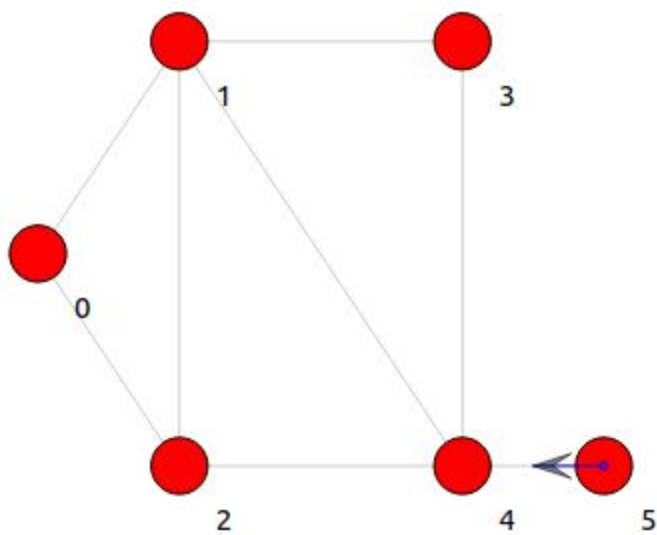## **Simulation :**

Packet moves through the path (0 1 4 5)
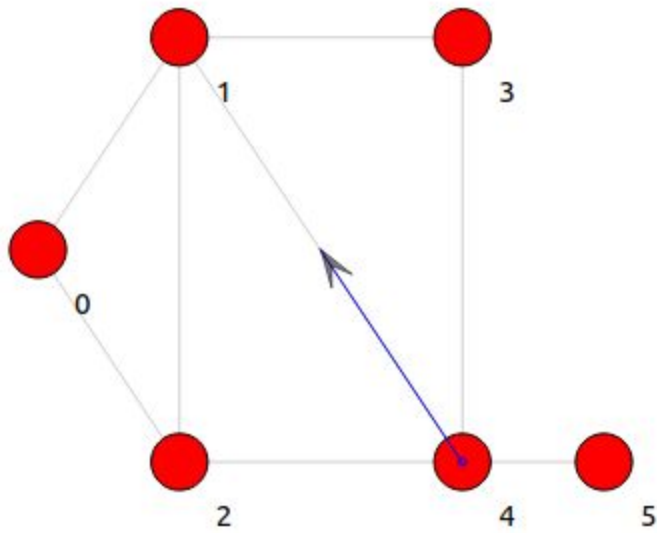

Client msg moves
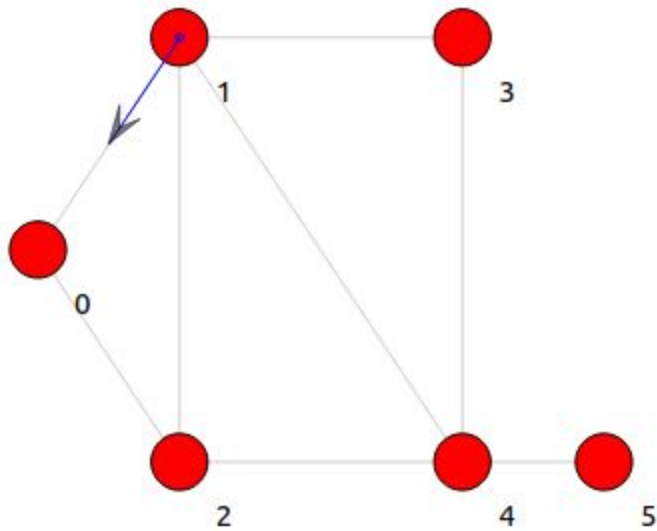from 0 to 1

Client msg moves
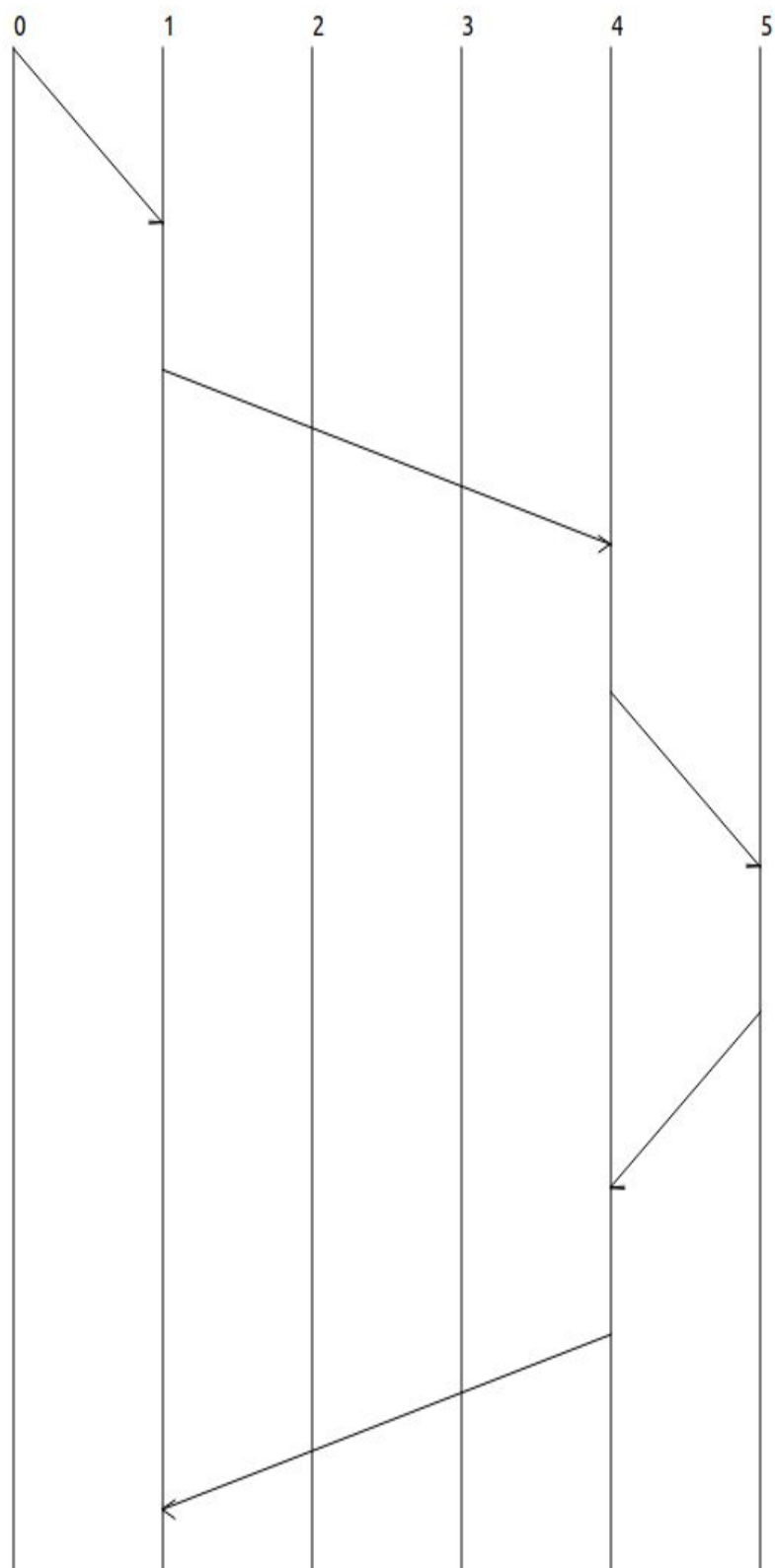from 1 to 4

Client msg moves from 4 to 5

Server response moves from 5 to 4

Server response moves
from 4 to 1

Server response moves
from 1 to 0

	From Id	To Id	Tx	Meta
1	0	1	2	
2	1	4	2.00369	
3	4	5	2.00737	
4	5	4	2.01106	
5	4	1	2.01475	