DCN LAB
FAT

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19MID0014

Question No: 3

b) Compare & contrast Network congestion & collision.

Network Congestion	Network collision
* Network congestion is the reduced quality of service that occurs when node carries more data than it can handle.	* Network collision occurs when two / more devices attempts to transmit data over a network at same time.
* Effects are - queueing delay, packet loss, blocking new connections.	* Effects are - loss of data & need for retransmission.
* Testing → check ping, LAN performance test, Bandwidth monitoring.	* Testing → Comparing datas if amplitude on bus is higher than normal.
* Detection : TCP/IP congestion control.	* Detection : CSMA/CD
* Control : If packet not received, congestion window size is decreased or retransmission	* Control: CSMA/CA or retransmission

a) RIP protocol manages routers with internal operations

LANGUAGE = C.

AIM:

To use distance vector routing protocol on Routing Information Protocol (RIP) which is a dynamic routing protocol.

PROBLEM ANALYSIS:

→ RIP uses bellman-ford algorithm to determine the best route to a destination.

→ It uses hop count as the metric.

→ Each node constructs an one-D array containing distances to all other nodes

→ Each node knows the cost to its direct neighbour. If link is down-infinity.

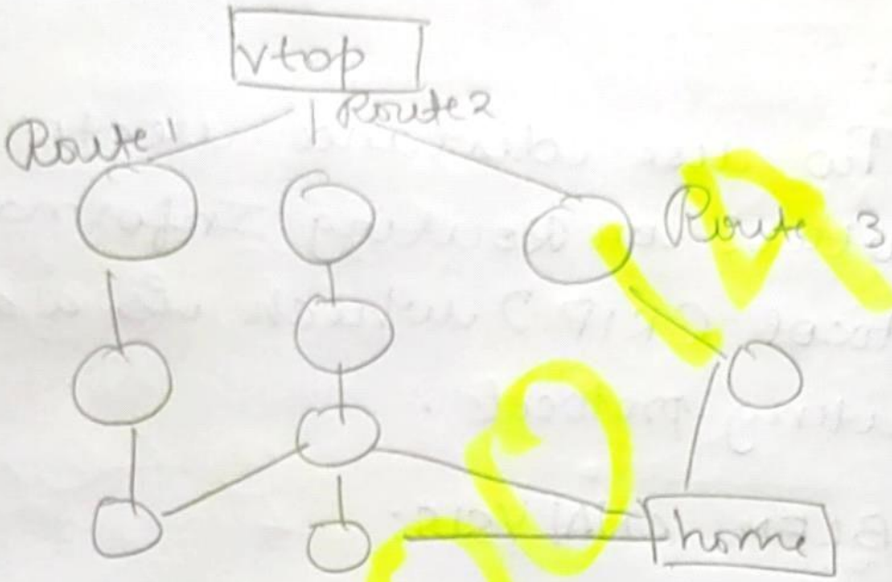
→ Minimum distance to every node is calculated.

Analogy: If the user wants to reach a site (vtop.vit.ac.in)

• The user might have many paths, the RIP will count

the number of routers required to reach destination from each route.

- The minimum route is decided



- Route 3 only has 2 hops, so the server would use route 3.

* In this case, I've used Bellman ford to implement the RIP.

→ To trace the route we use tracert command in cmd.

Implementation:

Case: 1 Routers 2

3 1
4 2

Distance from.

=

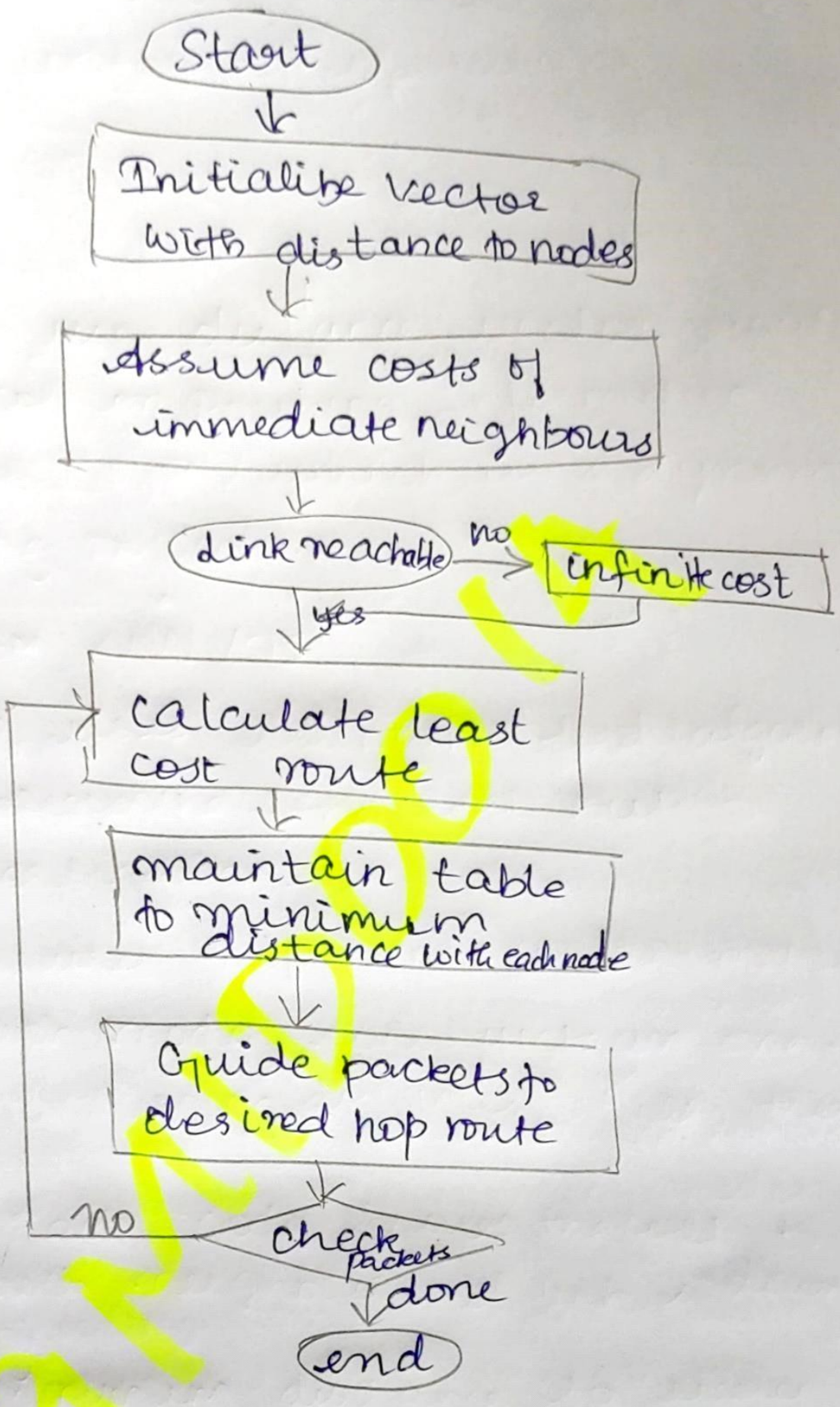
Case 2: Routers 2

-1 0
0 -1

(No negative weights)

Error

FLOW CHART:



RESULT:

- RIP is easy to configure, doesnt require updates whenever topology changes (dynamic) and supports all routers.
- We have successfully implemented RIP with internal operations using C.

DATA COMMUNICATION AND NETWORK LAB FAT

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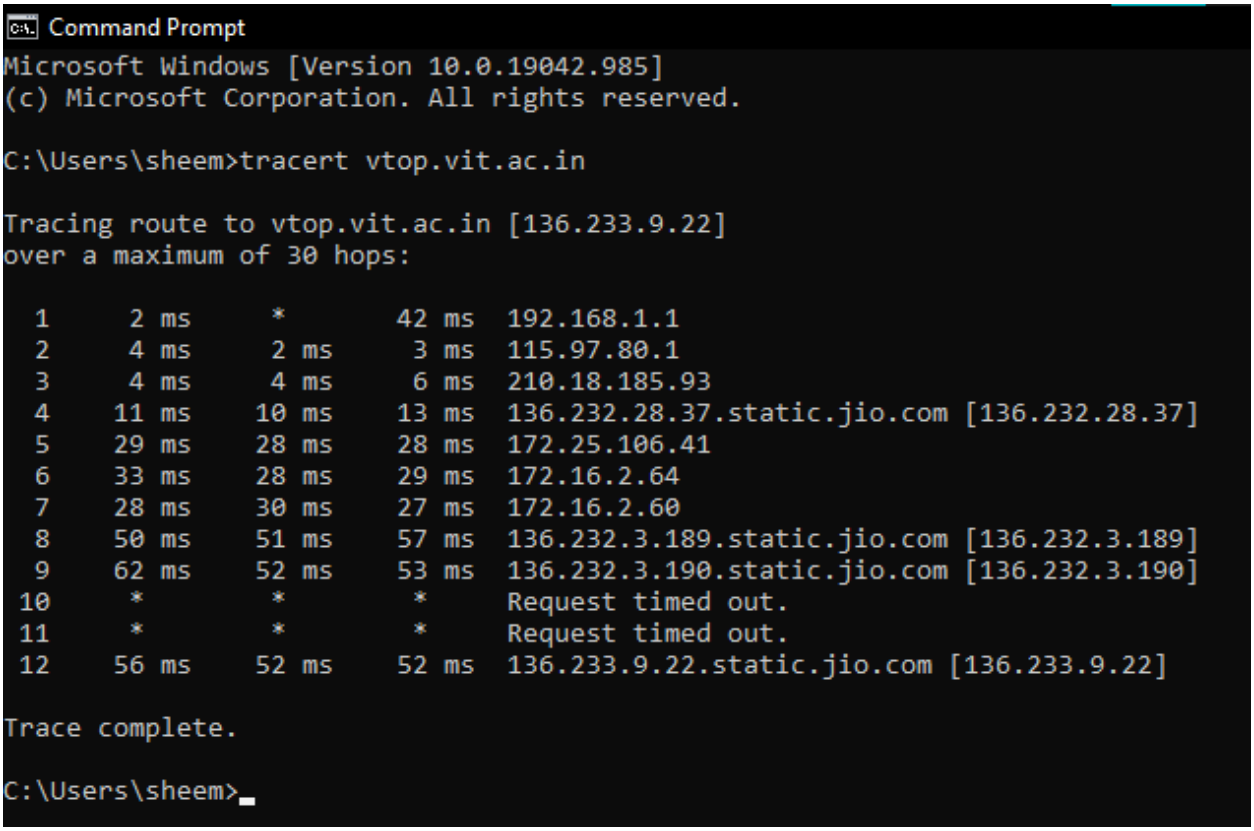
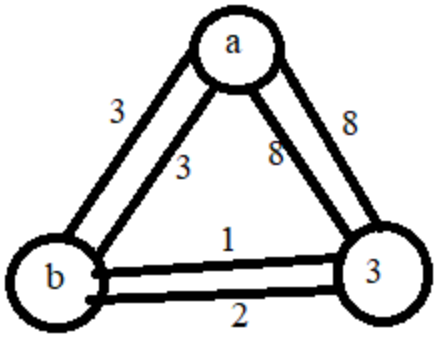
QUESTION:

Show how RIP protocol manages a router with complete internal operations using C/ python programming language.

TRACERT COMMAND:



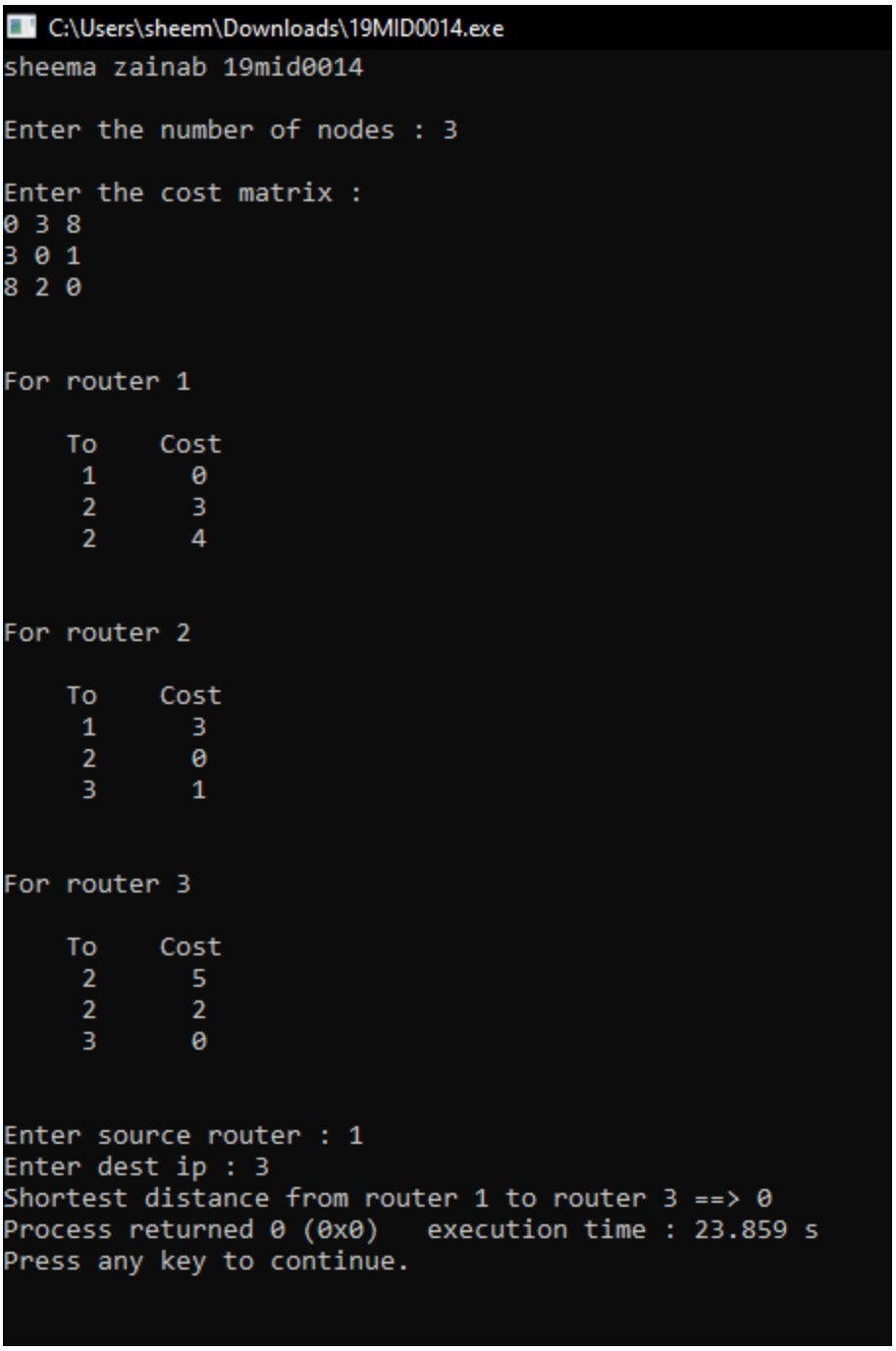
.IMPLEMENTATION:



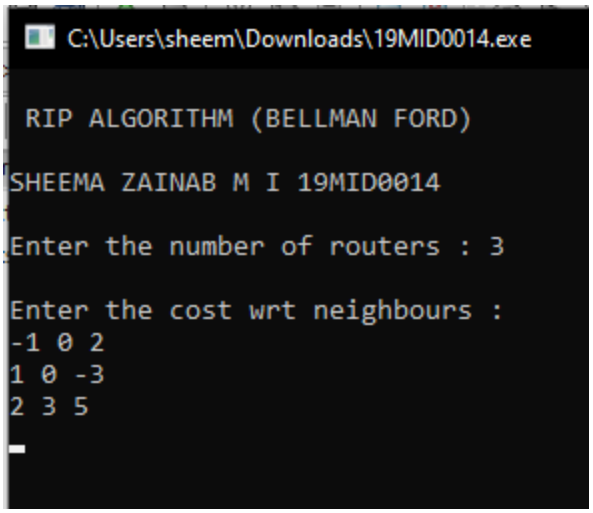
1,2 hops

TEST CASES:

Case1:


C:\Users\sheem\Downloads\19MID0014.exe
sheema zainab 19mid0014
Enter the number of nodes : 3
Enter the cost matrix :
0 3 8
3 0 1
8 2 0
For router 1
To Cost
1 0
2 3
2 4
For router 2
To Cost
1 3
2 0
3 1
For router 3
To Cost
2 5
2 2
3 0
Enter source router : 1
Enter dest ip : 3
Shortest distance from router 1 to router 3 ==> 0
Process returned 0 (0x0) execution time : 23.859 s
Press any key to continue.

Case 2:



No output --- no negative weighed graphs

Observation: we have employed bellman ford method in RIP protocol for router management which enhances performance as the computation Is very quick(less runtime) and efficient as the change in topology doesn't bother the algorithm . So it's very suitable for dynamic routing