

# CSE 538 Graph Database and Graph Analytics

## Project 1

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1)

1.1)

Simple, Undirected, Cyclic and Weighted.

1.2)

The shortest path from node 1 to node 8 is

$1 \Rightarrow 2 \Rightarrow 5 \Rightarrow 3 \Rightarrow 8$

And has a distance of 14.96.

1.3)

The shortest path from node 5 to node 8 is

$5 \Rightarrow 3 \Rightarrow 8$

And has a distance of 4.96.

1.4)

The shortest path from node 5 to node 8 after removing the edge is

$5 \Rightarrow 4 \Rightarrow 7 \Rightarrow 8$

And has a distance of 20.05.

It is important to know more than one shortest path between 2 nodes because imagine a logistics company having the routes of the trucks that will take the merchandise from their warehouse to the stores and a road from that route is blocked or under construction having the shortest path that doesn't use that road may save a lot of time.

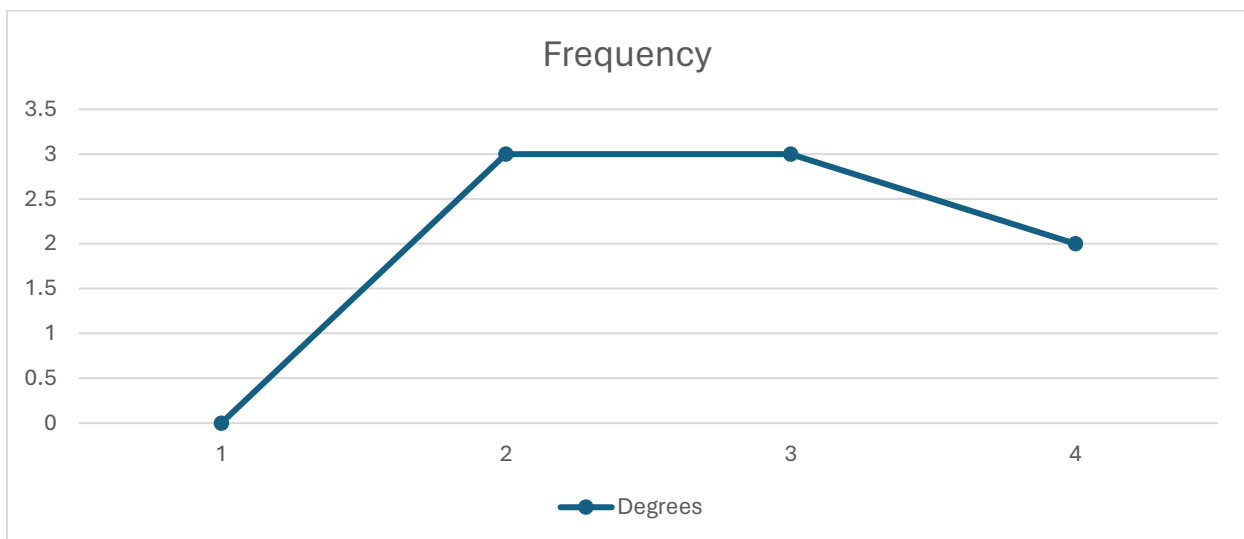
I used Dijkstra's Algorithm to solve problems 1.2 to 1.4.

2)

2.1)

Node	Degree
A	4
B	2
C	4
D	3
E	3
F	3
G	2
H	2

Degree	Frequency
1	0
2	3
3	3
4	2



2.2)

Triangles	Nodes
1	A-B-C
2	A-C-D
3	A-C-E
4	A-D-E
5	C-D-E
6	F-G-H

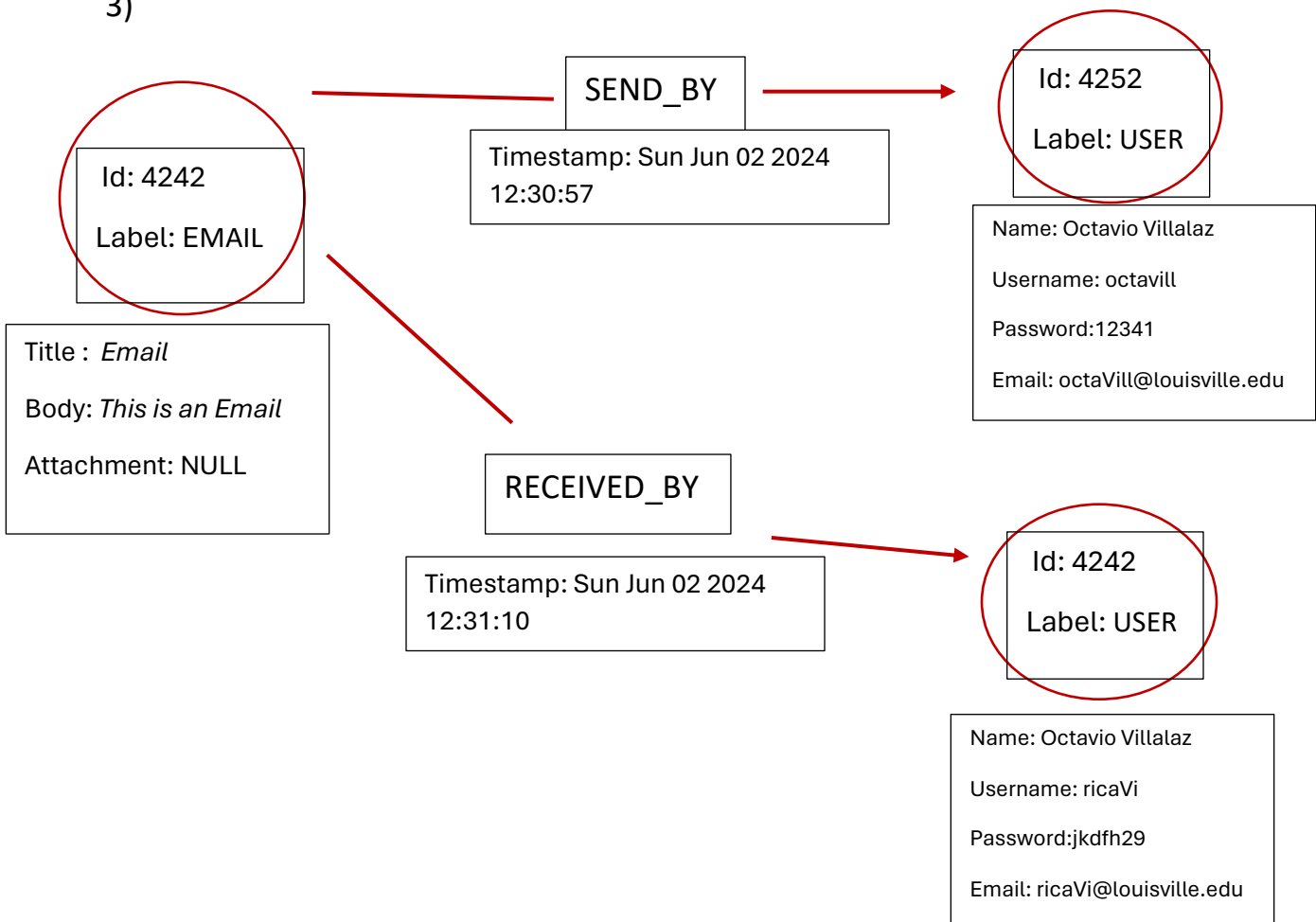
2.3)

Number of Nodes = 6

Number of Relationships = 12

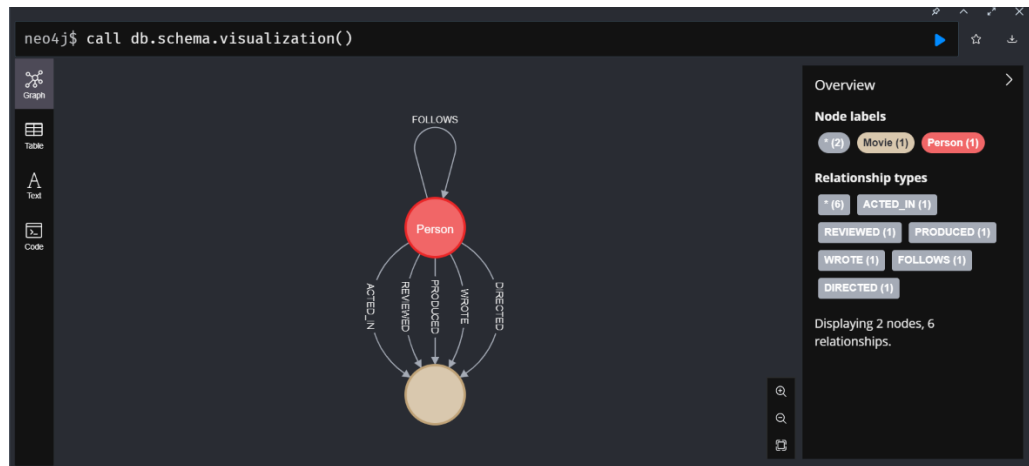
**Density =  $2(12)/8(8-1) = 24/56 = 3/7$**

3)



4)

4.1)



4.2)

Meg Ryan would be the best person to introduce Tom Cruise to Tom Hanks because Meg Ryan was a co-actor with Tom Cruise in the movie Top Gun and Meg Ryan know Tom Hanks very well because they were co-actors in 3 movies.



4.3)

What the checkbox for Connect result nodes that appears in the Browser Settings does is that when a query is run the result won't be shown with their respective relationships. Meaning that the nodes won't be connected to each other.