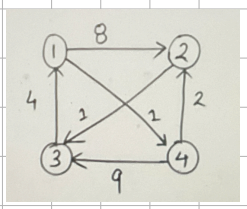
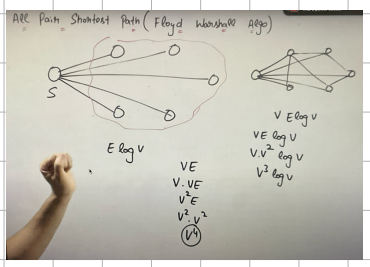
Final Exam CPS688

Floyd Warshall Shortest Path Algorithm:



$D_0 =$

	1	2	3	4
1	0	8	∞	1
2	∞	0	1	∞
3	4	∞	0	∞
4	∞	2	9	0



$D_1 =$

	1	2	3	4
1	0	8	∞	1
2	∞	0	1	∞
3	4	12	0	5
4	∞	2	9	0

$D_2 =$

	1	2	3	4
1	0	8	9	1
2	∞	0	1	∞
3	4	12	0	5
4	∞	2	3	0

$D_3 =$

	1	2	3	4
1	0	8	9	1
2	5	0	1	6
3	4	12	0	5
4	7	2	3	0

$D_4 =$

	1	2	3	4
1	0	3	4	1
2	5	0	1	6
3	4	7	0	5
4	7	2	3	0

2 to 3 = 1
2-1 1-3

2 to 4 = ∞
2-1 1-4 = ∞

3 to 2 = ∞
3-1 1-2 = 12

3 to 4 = ∞
3-1 1-4 = 5

4 to 2 = 2
4-1 1-2 = ∞

4 to 3 = 9
4-1 1-3 = ∞

1 to 3 = ∞
1-2 2-3 = 9

1 to 4 = 1
1-2 2-4 = ∞

3 to 1 = 4
3-2 2-1 = ∞

3 to 4 = 5
3-2 2-4 = ∞

4 to 1 = ∞
4-2 2-1 = ∞

4 to 2 = 9
4-2 2-3 = 3

1 to 2 = 8
1-3 3-2 = ∞

1 to 4 = 1
1-3 3-4 = ∞

2 to 1 = ∞
2-3 3-1 = 5

2 to 4 = ∞
2-3 3-4 = ∞ X
2-3 3-4
1 + 5 = 6

4 to 1 = ∞
4-3 3-1 = 13 but faster path
4-2 2-3 3-1 = 7
3 4

4 to 2 = 2
4-3 3-2 = ∞

1 to 2 = 8
1-4 4-2 = 3

2 to 1 = 5

2 to 3 = 1

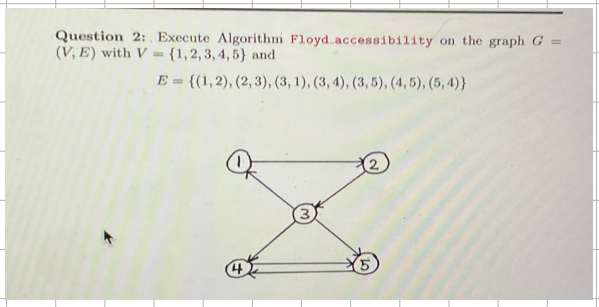
3 to 1 = 4

1 to 2 = ∞
1-4 4-3 = 10
Still Shorter Path

1-4 4-2 2-3 = 4

3 to 2 = 12

3-1 1-4 4-2 = 7



Question 2: Execute Algorithm Floyd_accessibility on the graph $G = (V, E)$ with $V = \{1, 2, 3, 4, 5\}$ and

$$E = \{(1,2), (2,3), (3,1), (3,4), (3,5), (4,5), (5,4)\}$$

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