**Algorithms Assignment 3**

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**Connected Graph**

Input:

10 0 1 1 2 2 3 0 4 4 5 0 6 6 7 7 8 0 9 -1

Output:

Number of nodes: 10

Edge 0: 0 1

Edge 1: 1 2

Edge 2: 2 3

Edge 3: 0 4

Edge 4: 4 5

Edge 5: 0 6

Edge 6: 6 7

Edge 7: 7 8

Edge 8: 0 9

Adjacency Matrix:

0 1 0 0 1 0 1 0 0 1

1 0 1 0 0 0 0 0 0 0

0 1 0 1 0 0 0 0 0 0

0 0 1 0 0 0 0 0 0 0

1 0 0 0 0 1 0 0 0 0

0 0 0 0 1 0 0 0 0 0

1 0 0 0 0 0 0 1 0 0

0 0 0 0 0 0 1 0 1 0

0 0 0 0 0 0 0 1 0 0

1 0 0 0 0 0 0 0 0 0

Distance Matrix:

0 1 2 3 1 2 1 2 3 1

1 0 1 2 2 3 2 3 4 2

2 1 0 1 3 4 3 4 5 3

3 2 1 0 4 5 4 5 6 4

1 2 3 4 0 1 2 3 4 2

2 3 4 5 1 0 3 4 5 3

1 2 3 4 2 3 0 1 2 2

2 3 4 5 3 4 1 0 1 3

3 4 5 6 4 5 2 1 0 4

1 2 3 4 2 3 2 3 4 0

Graph Diameter: 6

ConnectedComponentMatrix:

0 1 2 3 4 5 6 7 8 9

**Disconnected Graph**

Input:

10 0 1 1 2 2 3 4 5 4 6 4 7 8 9 -1

Output:

Number of nodes: 10

Edge 0: 0 1

Edge 1: 1 2

Edge 2: 2 3

Edge 3: 4 5

Edge 4: 4 6

Edge 5: 4 7

Edge 6: 8 9

Adjacency Matrix:

0 1 0 0 0 0 0 0 0 0

1 0 1 0 0 0 0 0 0 0

0 1 0 1 0 0 0 0 0 0

0 0 1 0 0 0 0 0 0 0

0 0 0 0 0 1 1 1 0 0

0 0 0 0 1 0 0 0 0 0

0 0 0 0 1 0 0 0 0 0

0 0 0 0 1 0 0 0 0 0

0 0 0 0 0 0 0 0 0 1

0 0 0 0 0 0 0 0 1 0

Distance Matrix:

0 1 2 3 -1 -1 -1 -1 -1 -1

1 0 1 2 -1 -1 -1 -1 -1 -1

2 1 0 1 -1 -1 -1 -1 -1 -1

3 2 1 0 -1 -1 -1 -1 -1 -1

-1 -1 -1 -1 0 1 1 1 -1 -1

-1 -1 -1 -1 1 0 2 2 -1 -1

-1 -1 -1 -1 1 2 0 2 -1 -1

-1 -1 -1 -1 1 2 2 0 -1 -1

-1 -1 -1 -1 -1 -1 -1 -1 0 1

-1 -1 -1 -1 -1 -1 -1 -1 1 0

Graph Diameter: -1

ConnectedComponentMatrix:

0 1 2 3

4 5 6 7

8 9