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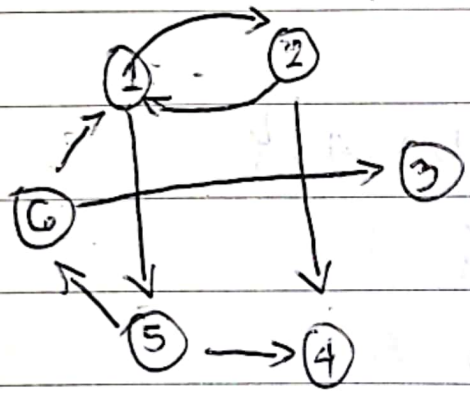
Date. No.

BSCPE 2-2

Exercises. Give the formal description of the directed Graph



Graph Ga

$G_a = \{V_a, E_a\}$

$V_a = \{1,2,3,4,5,6\}$

$E_a = \{(1,2),(2,1),(1,5),(5,4),(5,6),(6,1),(6,3)\}$

PATHS with length of 2 : $V = \{(1,2,4),(1,2,1),(1,5,6),(1,5,4),(2,1,2),(5,6,1),(5,6,3),(6,1,2),(6,1,5)\}$

PATHS with length of 3 : $V = \{(1,5,6,1),(1,5,6,3),(2,1,5,6),(2,1,5,4),(6,1,5,6),(6,1,2,4),(5,6,1,2),(5,6,1,5),(6,1,5,4)\}$

PATHS with length if 4 : $V = \{(2,1,5,6,3),(5,6,1,2,4)\}$

SIMPLE PATHS w/length of 2 : $V = \{(1,2,4),(1,5,6),(1,5,4),(5,6,1),(5,6,3),(6,1,2),(6,1,5)\}$

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SIMPLE PATHS w/ length of 3:

V = {(1,5,6,3), (2,1,5,4), (2,1,5,6), (5,6,1,2), (6,1,5,4), (6,1,2,4)}

SIMPLE PATHS w/ length of 4:

V = {(2,1,5,6,3), (5,6,1,2,4)}

SIMPLE CYCLE w/ length of 2:

V = {(1,2,1), (2,1,2)}

" " w/ length of 3:

V = {(1,5,6,1), (5,6,1,5), (6,1,5,6)}

In degree of node 1: V = {2,6}

" " " node 2: V = 1

" " " node 3: V = 6

" " " node 4: V = {2,5}

" " " node 5: V = 1

" " " node 6: V = 3

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Out degree of node 1 : V = {2,5}

" " " node 2 : V = {1,4}

" " " node 3 : V =

" " " node 4 : V =

" " " node 5 : V = {4,6}

" " " node 6 : V = {1,3}

vertices adjacent to node 1 : V = {2,6}

node 2 : V = 1

node 3 : V = 6

node 4 : V = {2,5}

node 5 : V = 1

node 6 : V = 5

Vertice adjacent to node 1 : V = {2,5}

node 2 : V = {1,4}

node 3 : V =

node 4 : V =

node 5 : V = {4,6}

node 6 : V = {1,3}

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Edges incident to node 1:

$E = \{(1,2), (2,1), (1,5), (6,1)\}$

node 2:

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

node 3:

$E = \{(6,3)\}$

node 4:

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

node 5:

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

node 6:

$E = \{(6,1), (6,3), (5,6)\}$

Give the Formal description of the directed graph.

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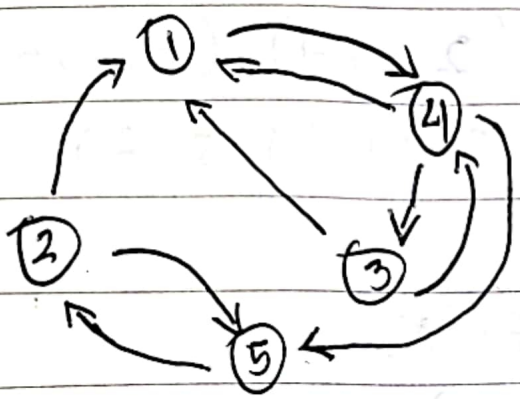

Graph G_{10}

$G_{10} = \{V_{10}, E_{10}\}$

$V_{10} = \{1, 2, 3, 4, 5\}$

$E_{10} = \{(1,4), (2,1), (3,1), (3,4), (4,1), (4,3), (4,5), (5,2)\}$

PATHS w/ length of 2 : $V = \{(1,4,3), (1,4,1), (1,4,5), (2,1,4), (2,5,2), (3,1,4), (3,4,3), (3,4,1), (3,4,5), (4,1,4), (4,3,1), (4,3,4), (4,5,2), (5,2,5), (5,2,1)\}$

length of 3 : $V = \{(1,4,3,1), (1,4,5,2), (2,1,4,3), (2,1,4,5), (3,4,5,2), (3,1,4,3), (3,1,4,5), (4,3,1,4), (4,5,2,1), (5,2,1,4)\}$

length of 4 : $V = \{(1,4,5,2,1), (2,1,4,5,2), (3,1,4,5,2), (3,4,5,2,1), (4,5,2,1,4), (5,2,1,4,3), (5,2,1,4,5)\}$

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SIMPLE PATHS w/length of 2:

V = {(1,4,3), (1,4,5), (2,1,4), (3,1,4), (3,4,1), (3,4,5), (4,3,1), (4,5,2), (5,2,1)}

" " w/length of 3:

V = {(1,4,5,2), (2,1,4,3), (2,1,4,5), (3,4,5,2), (3,1,4,5), (4,5,2,1), (5,2,1,4)}

" " w/length of 4:

V = {(3,1,4,5,2), (3,4,5,2,1), (5,2,1,4,3)}

SIMPLE CYCLE w/length of 2:

V = {(1,4,1), (2,5,2), (3,4,3), (4,1,4), (4,3,4), (5,2,5)}

" " w/length of 3:

V = {(1,4,3,1), (3,1,4,3), (4,3,1,4)}

" " w/length of 4:

V = {(1,4,5,2,1), (2,1,4,5,2), (4,5,2,1,4), (5,2,1,4,5)}

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Indegree of node 1 : V = {2, 3, 4}

node 2 : V = 5

node 3 : V = 4

node 4 : V = {1, 3}

node 5 : V = {2, 4}

Outdegree of node 1 : V = 4

node 2 : V = {1, 5}

node 3 : V = {1, 4}

node 4 : V = {1, 3, 5}

node 5 : V = 2

Vertices adjacent to node 1 : V = {2, 3, 4}

node 2 : V = 5

node 3 : V = 4

node 4 : V = {1, 3}

node 5 : V = {2, 4}

Vertices adjacent from node 1 : V = 4

node 2 : V = {1, 5}

node 3 : V = {1, 4}

node 4 : V = {1, 3, 5}

node 5 : V = 2

Date. No.

Edges incident to node 1:

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

node 2:

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

node 3:

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

node 4:

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

node 5:

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