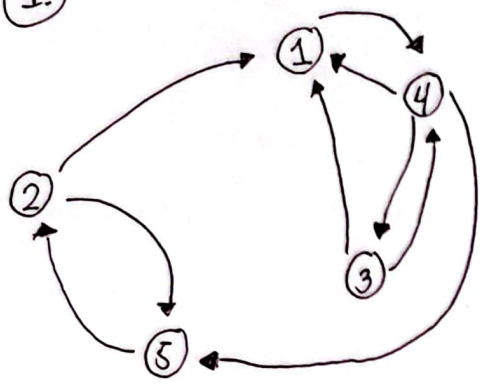
Exercise

Give the formal description of the directed graph below.

1.



Graph G_{10}

$G_{10} = (V_{10}, E_{10})$

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

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

Paths = {1, 4, 5, 2}

length is 3

simple path or

V = {1, 4, 5, 2}

length = 3

V = {2, 1, 4, 5}

length = 3

V = {5, 2, 1, 4}

length = 3

V = {4, 5, 2, 1}

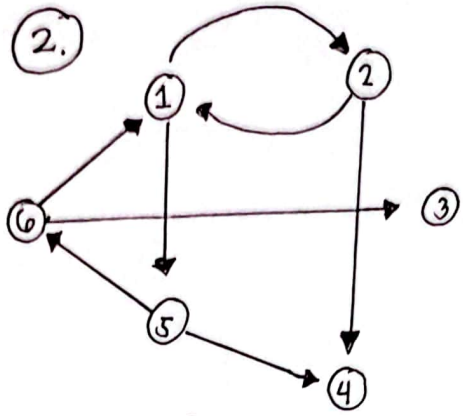
length = 3

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

length = 4

Simple cycle = {1, 4, 5, 2, 1}, {4, 3, 1, 4}, {5, 2, 1, 4, 5}, {2, 1, 4, 5, 2}

2.



Graph G_9

$G_9 = (V_9, E_9)$

$V_9 = \{1, 2, 3, 4, 5, 6\}$

$E_9 = \{(1,2), (1,5), (2,1), (2,4), (5,4), (5,6), (6,1), (6,3)\}$

Paths = {1, 2, 4}

length is 2

simple path or V = {1, 2, 4}; length = 2

V = {1, 5, 4}

length = 2

V = {6, 1, 5, 4}

length = 3

V = {1, 5, 6}

length = 2

V = {5, 6, 1}

length = 2

simple cycle = {1, 5, 6, 1}, {5, 6, 1, 5}, {6, 1, 5, 6}

(1)

Indegree of	no. of indegree
Node 1 : V = (2,3,4)	3
Node 2 : V = (5)	1
Node 3 : V = (4)	1
Node 4 : V = (1,3)	2
Node 5 : V = (2,4)	2

Out degree of	no of. outdegree
Node 1 : V = {4}	1
Node 2 : V = (1,5)	2
Node 3 : V = (1,4)	2
Node 4 : V = (1,3,5)	3
Node 5 : V = (2)	1

adjacent to: of

Node 1 : (2,3,4)
Node 2 : (5)
Node 3 : (4)
Node 4 : (1,3)
Node 5 : (2,4)

adjacent from:

Node 1 : (4)
Node 2 : (1,5)
Node 3 : (1,4)
Node 4 : (1,3,5)
Node 5 : (2)

The edges incident to:

Node 1 : (1,4), (2,1), (3,1), (4,1)
Node 2 : (2,1), (2,5), (5,2)
Node 3 : (3,1), (3,4), (4,3)
Node 4 : (1,4), (4,1), (4,3), (3,4), (4,5)
Node 5 : (5,2), (2,5), (4,5)

(2)

Indegree of	no. of Indegree
Node 1 : V = (2,6)	2
Node 2 : V = (1)	1
Node 3 : V = (6)	1
Node 4 : V = (2,5)	2
Node 5 : V = (1)	1
Node 6 : V = (5)	1

Out degree of	Number of out degree:
Node 1 : V = (2,5),	2
Node 2 : V = (4,1),	2
Node 3 : V = None,	0
Node 4 : V = None,	0
Node 5 : V = (4,6),	2
Node 6 : V = (1,3),	2

adjacent to:

Node 1 : (2,6)
Node 2 : (1)
Node 3 : (6)
Node 4 : (2,5)
Node 5 : (1)
Node 6 : (5)

adjacent from:

Node 1 : (2,5)
Node 2 : (4,1)
Node 3 : None
Node 4 : None
Node 5 : (4,6)
Node 6 : (1,3)

The edges incident to:

Node 1 : (1,2), (2,1), (1,5), (6,1)
Node 2 : (2,1), (1,2), (
Node 3 : (6,3)
Node 4 : (2,4), (5,4)
Node 5 : (5,4), (1,5), (5,6)
Node 6 : (6,1), (3,6)