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202101633

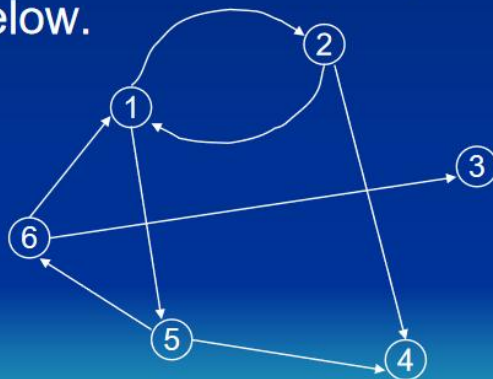
BSCPE 2-1
13/01/2023

QUIZ on Trees

1. Free Trees, Rooted Trees & Ordered Trees
2. Yes
3. Root
4. one
5. Yes
6. 13, 6, 60
7. 7
8. none
9. 4, 12, 7, 22
10. 13, 6, 60, 23, 21
11. 23, 21, 20, 9, 1
12. 13, 10, 60, 12, 4, 7, 22
13. 3 (depth)
14. 3 (degree)
15. 4 (height)
16. 6 (leaves)
17. No
18. No
19. No
20. No
21. Yes
22. n^h
23. $\log n^h$
24. $\frac{n^h - 1}{n - 1}$
25. $n^h - 1$

Exercise

Give the formal description of the directed graph below.



$$G_9 = (V_9, E_9)$$

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

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

Graph G_9

Indegree

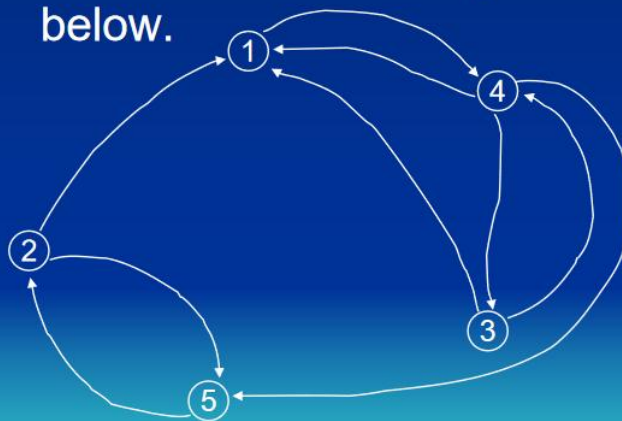
1 is 2
2 is 1
3 is 1
4 is 2
5 is 1
6 is 1

Outdegree

1 is 2
2 is 2
3 is 0
4 is 0
5 is 1
6 is 2

Exercise

Give the formal description of the directed graph below.



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

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

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

Graph G_{10}

Indegree

1 is 3
2 is 1
3 is 1
4 is 2
5 is 2

Outdegree

1 is 1
2 is 2
3 is 2
4 is 3
5 is 1

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2021GIG99

BSCPE 2-1
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EXERCISES on GRAPHS Graph G₂₈ Vertex E

Kruskal's Algorithm

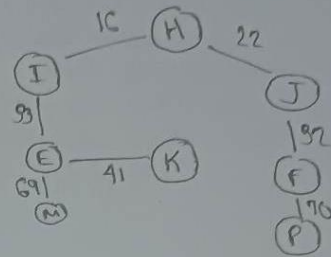
$w(H, I) = 16$
 $w(H, J) = 22$
 $w(F, J) = 92$
 $w(E, I) = 33$
 $w(E, K) = 41$
 $w(E, M) = 69$
 $w(F, P) = 70$

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Prim's Algorithm

$w(E, I) = 33$
 $w(H, I) = 16$
 $w(H, J) = 22$
 $w(F, J) = 92$
 $w(F, P) = 70$
 $w(E, K) = 41$
 $w(E, M) = 69$

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Graph G₂₉ Vertex A

Kruskal's Algorithm

$w(B, C) = 1$
 $w(M, N) = 1$
 $w(C, I) = 5$
 $w(D, L) = 6$
 $w(C, M) = 8$
 $w(F, I) = 9$
 $w(A, B) = 11$
 $w(D, K) = 13$
 $w(C, D) = 14$
 $w(G, J) = 16$
 $w(M, P) = 17$
 $w(C, F) = 21$
 $w(E, N) = 35$
 $w(M, P) = 40$

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Prim's Algorithm

$w(A, B) = 11$
 $w(B, C) = 1$
 $w(C, M) = 8$
 $w(M, N) = 1$
 $w(E, N) = 35$
 $w(M, P) = 17$
 $w(L, P) = 40$
 $w(C, D) = 14$
 $w(D, L) = 6$
 $w(D, K) = 13$
 $w(C, F) = 21$
 $w(F, I) = 9$
 $w(G, I) = 5$
 $w(G, J) = 16$

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