DSA - Answer key
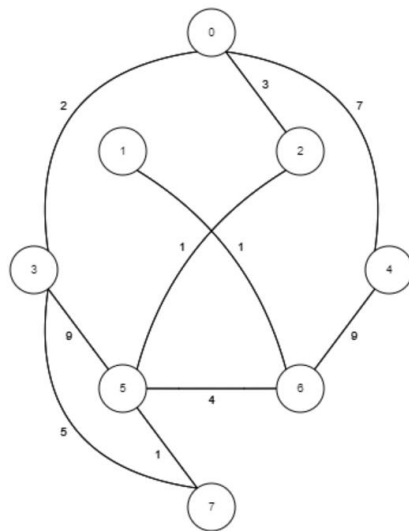
1. False
2.
   a) Pre-Order - [5,4,3,2,1,6,9,7,8,10]
   b) Post-Order [1,2,3,4,8,7,10,9,6,5]
   c) In-order : [1,2,3,4,5,6,7,8,9,10
3. TATT or ATAG
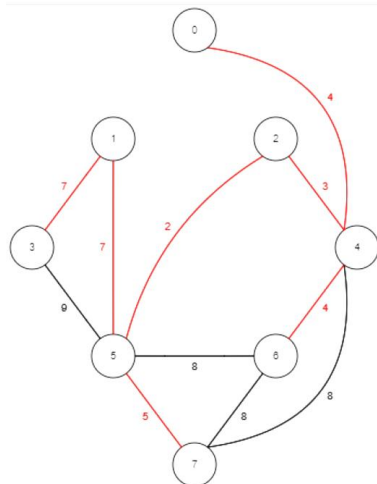4. Insertion sort
5. [0 1 3 1 6 2 4 7 5 7 4 2 6 1 0]

Cost Table

	0	1	2	3	4	5	6	7
0	INF	9	3	2	7	4	8	5
1	9	INF	6	11	10	5	1	6
2	3	6	INF	5	10	1	5	2
3	2	11	5	INF	9	6	10	5
4	7	10	10	9	INF	11	9	12
5	4	5	1	6	11	INF	4	1
6	8	1	5	10	9	4	INF	5
7	5	6	2	5	12	1	5	INF

Path Table

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

6.
7. E0 E1 E2 E3 E4 D0 E6 D1 E5 D2 D3 E7 D4 D6 D5 D7
8. 2 variables. Edges and Vertices. Time complexity depends on implementatino VLogV or ElogE or E log V
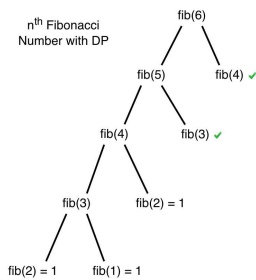9. 2,62,144 total spanning trees using n^(n-2).

MST cost = 32.
10. False
11. True
12. True
13. Tim sort (Insertion+ merge)
14. Top-down (Recursive). Bottom-Up (Iterative)
15. False
16.

Without memoization

nth Fibonacci Number with DP
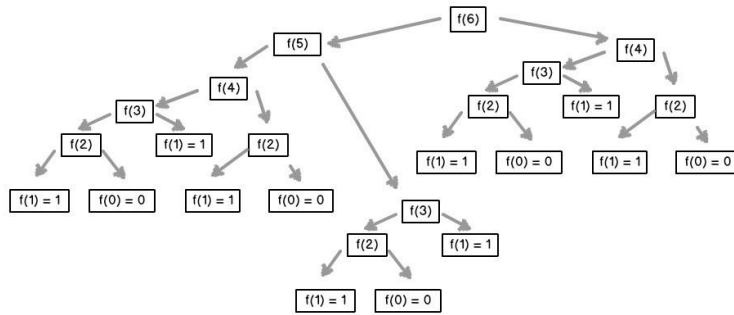
With memoization

17. False
18. DFS - stack based, recursive algorithm. BFS - Iterative algorithm, queue-based
19. Kruskal's algorithm grows a forest.
20. False
21. Node 9