

Practice Examples: SET - 1

Example - 1:

Capacity of Knapsack = 14

Number of objects = 6

The profit and weight details are as:

Object	1	2	3	4	5	6
Profit	12	15	11	9	7	14
Weight	4	3	2	3	4	3

Solve the problem with P_i/W_i option. If the minimum weight option is selected, find profit.

Example - 2

Capacity of Knapsack = 21

Number of objects = 9

The profit and weight details are as:

Object	1	2	3	4	5	6	7	8	9
Profit	11	10	6	8	14	16	12	9	10
Weight	3	2	1	2	4	3	5	2	3

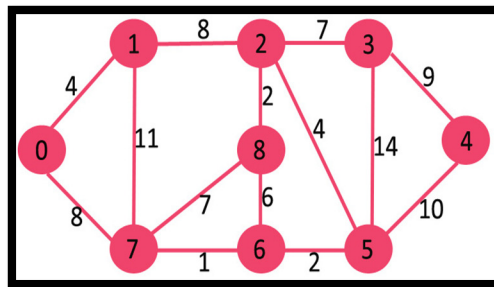
Solve the problem with P_i/W_i option. If maximum profit option is selected find profit

Example - 3

For the following graph. Design Minimum cost spanning tree using (a) Prim's (b) Kruskal's algorithm.

For Prim's algorithm: array "near" is generated in every step, find the contents of near array after each step.

Explain the role of Union-Join function in Kruskal's algorithm. Find the contents of sets used of union-join function.

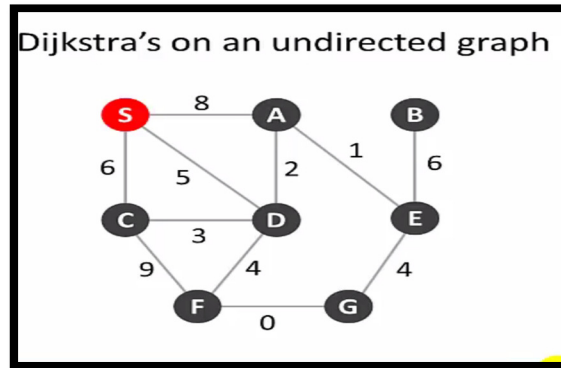


Comment on the complexity equation of Prim's and Kruskal's algorithm.

Write any three differences between Prim's and Kruskal's algorithm with reference to software engineering.

Example - 4

Implement single source shortest path on following graph. Draw the distance tree. Find the contents of "dist" and "parent" array after each step. If it is required to generate "path" from source to one of the destination, write "gen-path" function, which will accept source and destination and using "dist" and "parent" array generate the path sequence.



For example: for "S" is source and "E" is destination, "gen-path" algorithm will return S-D-A-E = 8.

Example - 5

For the following empty array perform Binary Search Analysis. Write the relationship between EPL, IPL, A_s and A_u .

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Significance of Binary Search with respect to Parallel Computing.

Any two applications of Binary search, if available data for searching is not complete.

Example - 6

Implement Min-Max algorithm on student's marks data as given in the array. Write the complexity equation. Find the size of stack, also comment on depth of recursion.

Write relationship between number of elements in array, size of stack and depth of recursion.

1	2	3	4	5	6	7	8	9	10	11	12	13	14
22	89	11	20	78	65	14	10	34	45	67	12	99	5

If regular scan algorithm is used, find out time required for computing Min-Max values. Write algorithm and convert algorithm in any programming language.