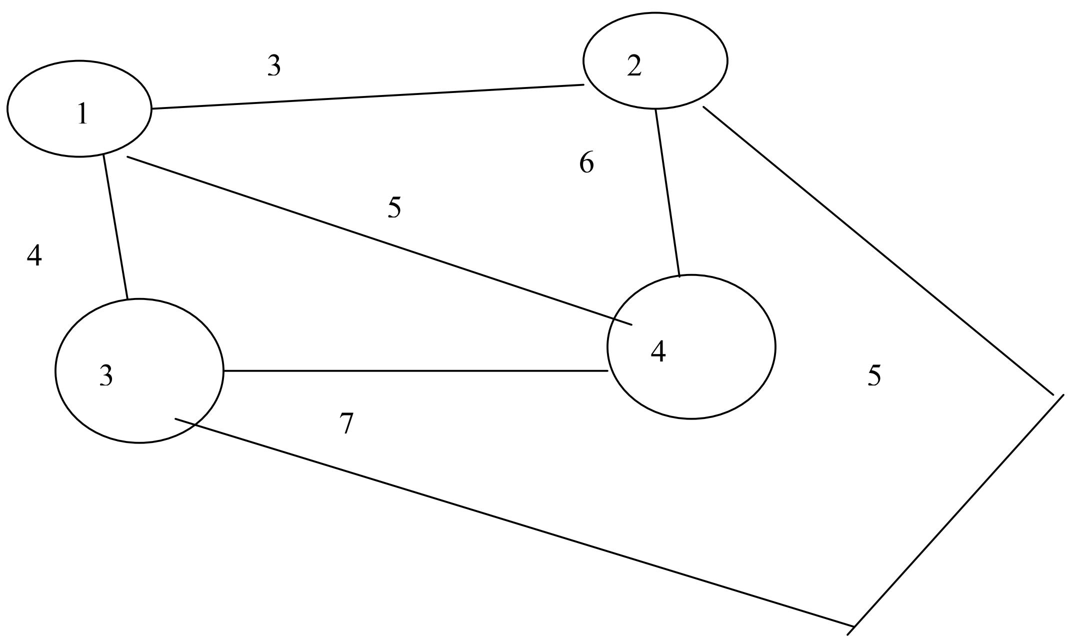
MINIMUM SPANNING TREES
PRIM'S ALGORITHM

COMPLEXITY
$T(n) = O(n^2)$

Consider a undirected graph of four vertices, v_i, 1<=i <=4, with edge (vi, vj) having a weight of i+j.

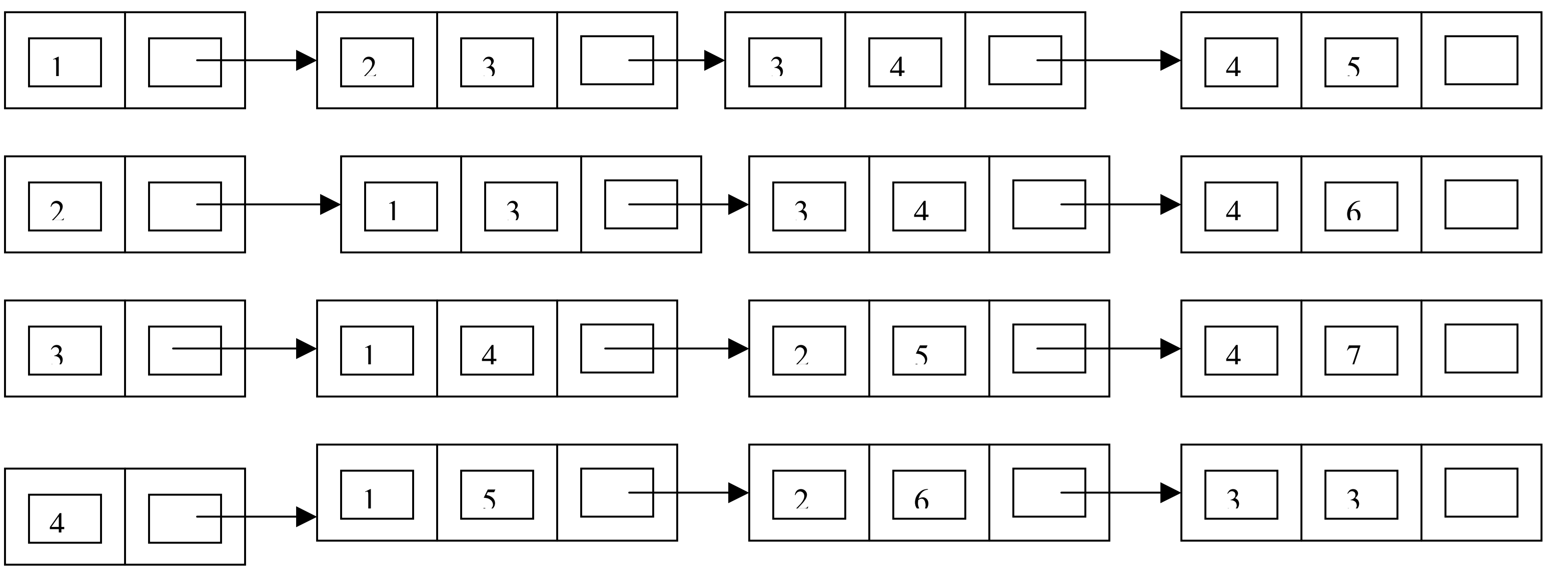
Pictorial view of the graph:



ADJACENCY MATRIX REPRESENTATION OF THE GRAPH

	1	2	3	4
1	∞	3	4	5
2	3	∞	5	6
3	4	5	∞	7

ADJACENCY LIST REPRESENTATION OF THE GRAPH



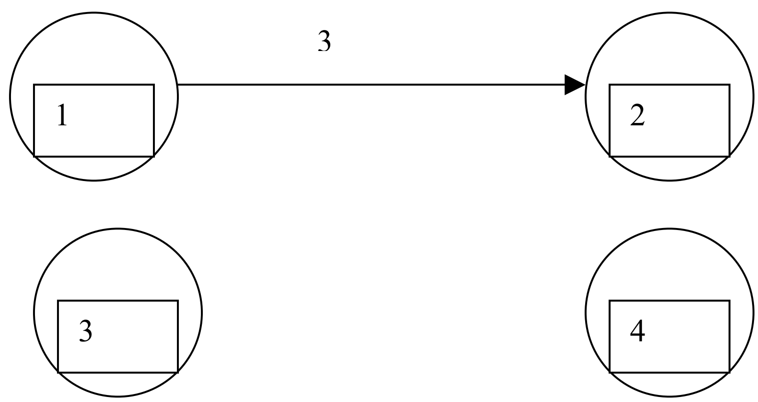
<u>**PRIM'S ALGORITHMS** SIMULATION</u>

Select edge of least cost, this is (1,2) with a cost of 3.

Node number	1	2	3	4
Nearest of those selected	0	0	1	1
Cost	0	0	4	5

Note:- The above means that as far as node 3 is concerned 1 is nearest from the nodes selected {1,2} and as far as node 4 is concerned 1 is nearest from the nodes selected {1,2}.

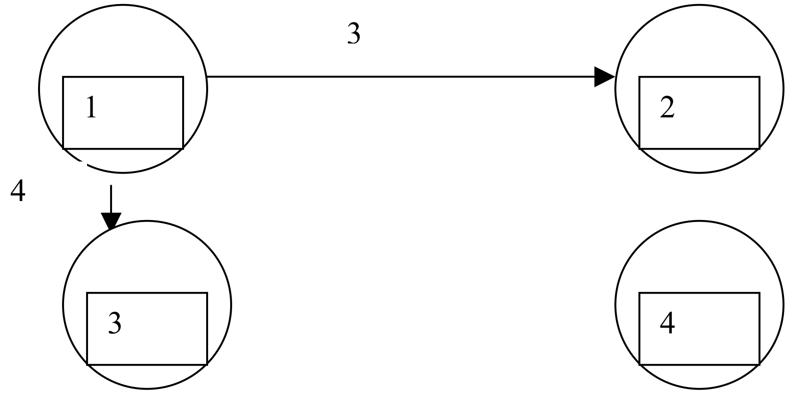
The spanning tree is



Now cost 4 is minimal so 3 is the node selected, i.e. edge (1,3) at a cost of 4. We have adjust for the node number 4. So far 1 was closest with a cost of 5, 3 has been selected now and cost(3,5) is 8, so 1 remains closest with a cost of 5.

Node number	1	2	3	4
Nearest of those selected	0	0	0	1
Cost	0	0	0	5

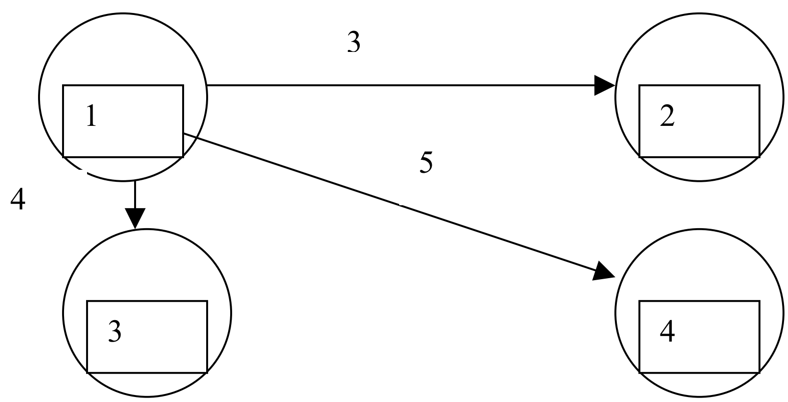
The spanning tree so far is:



Now node 4 is selected:

Node number	1	2	3	4
Nearest of those selected	0	0	0	0
Cost	0	0	0	0

The final spanning tree is:



The minimum cost spanning tree has a cost of 11.