SNS COLLEGE OF TECHNOLOGY

Coimbatore-37.
An Autonomous Institution

COURSE NAME : 23ITT201 &DATA STRUCTURES
II YEAR/ III SEMESTER

UNIT – 4 MULTIWAY SEARCH TREE AND GRAPHS
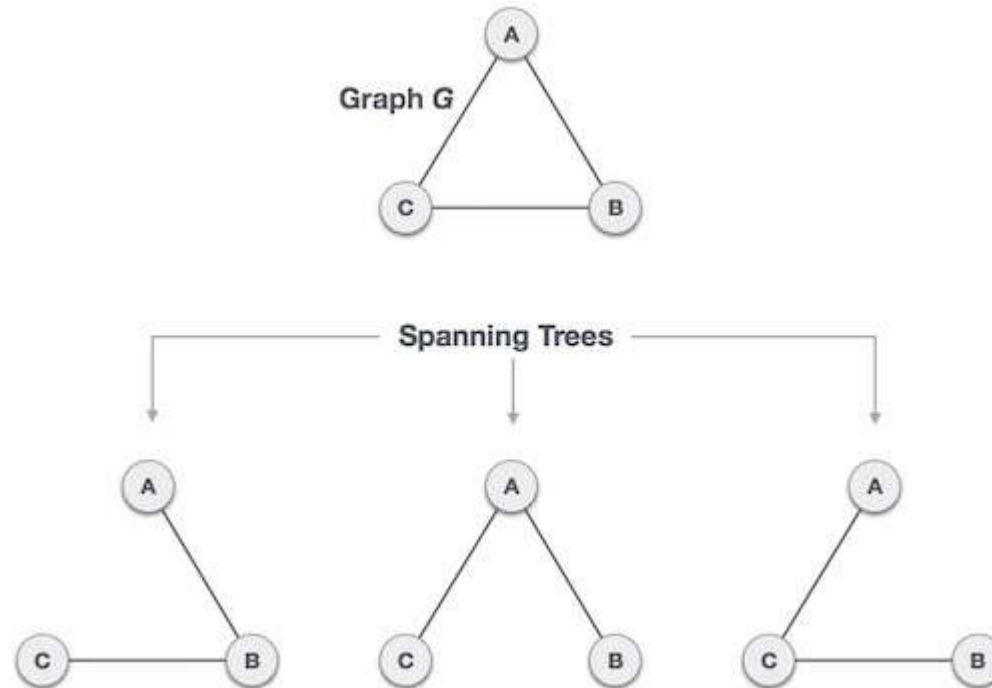**Topic:**

Prim's algorithm

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Minimum Spanning Tree

- A spanning tree is a subset of Graph G, which has all the vertices covered with minimum possible number of edges. Hence, a spanning tree does not have cycles and it cannot be disconnected..
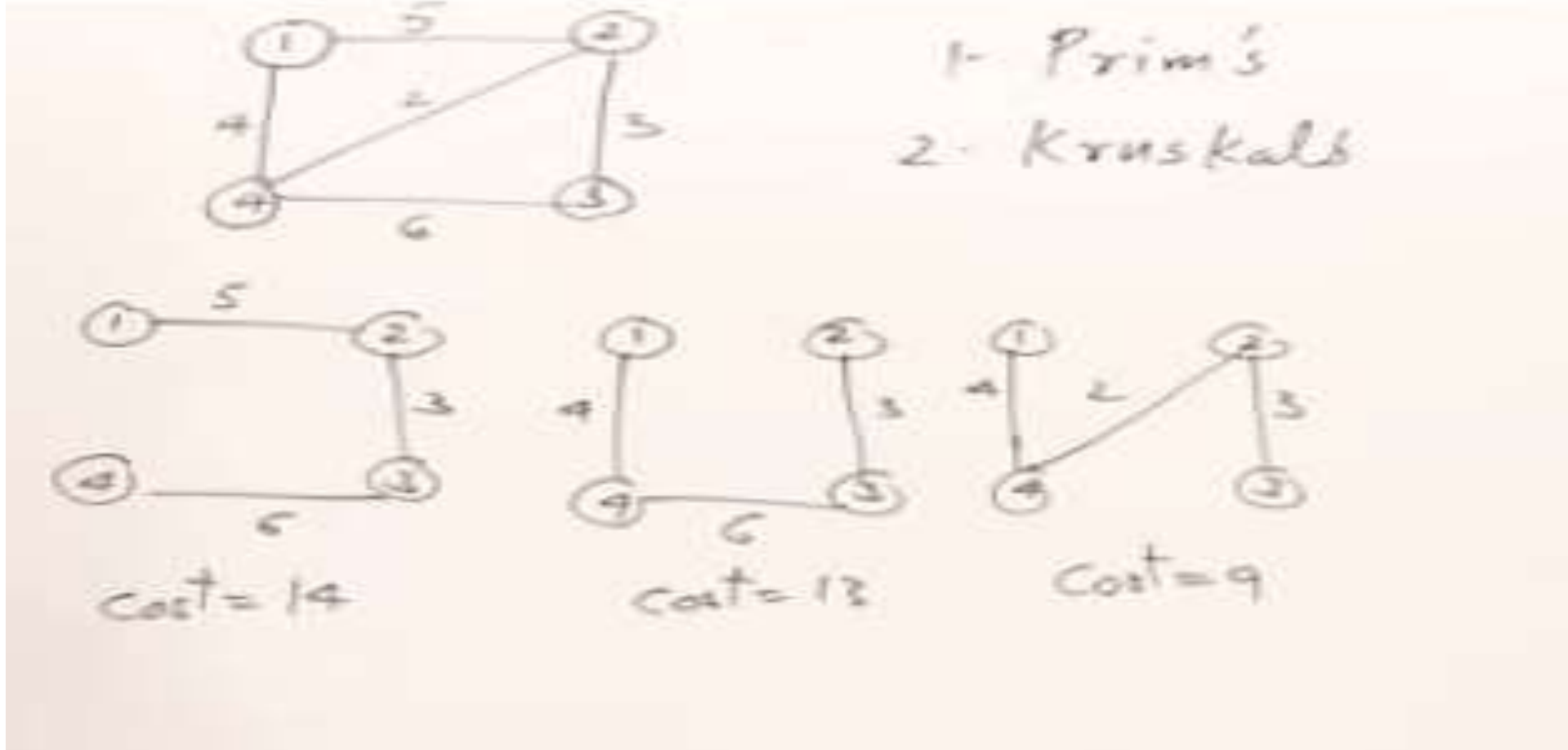
Minimum Spanning Tree

- Application of Spanning Tree

  ➢ Civil Network Planning

  ➢ Computer Network Routing Protocol

  ➢ Cluster Analysis

Minimum Spanning Tree (MST)

➢ In a weighted graph, a minimum spanning tree is a spanning tree that has minimum weight than all other spanning trees of the same graph
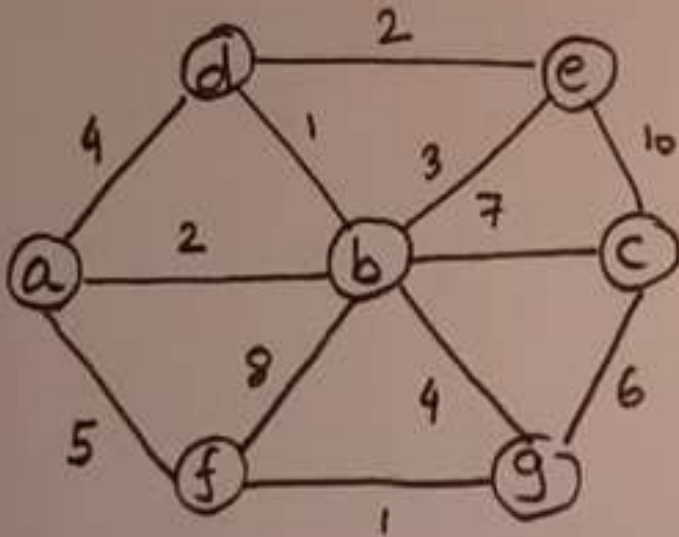
Minimum Spanning Tree

Prim's Algorithm

The steps for implementing Prim's algorithm are as follows:

➢Initialize the minimum spanning tree with a vertex chosen at random.

➢Find all the edges that connect the tree to new vertices, find the minimum and add it to the tree

➢Keep repeating step 2 until we get a minimum spanning tree
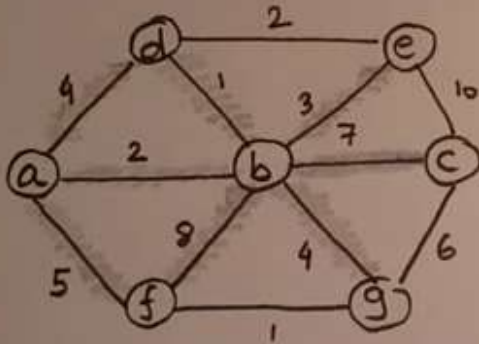
Prim - Minimum Spanning Tree

Minimum Spanning Tree

SUBGRAPH
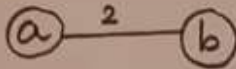→ ALL vertices
→ Connected
→ No CYCLES

Min? ∮ wts.edges is min

Prim - Minimum Spanning Tree

① Choose an arbitrary start vertex

② Keep including connected edges

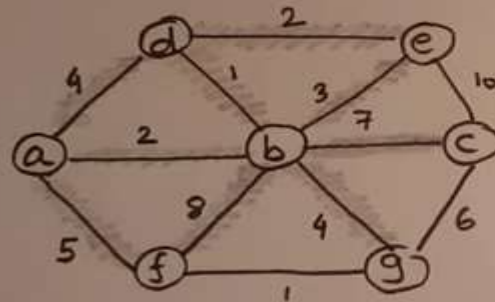Unit IV/MinimumSpanning Tree& Prims Algorithm/VINODHINI.B/CSE/SNSCT
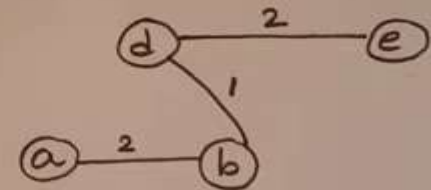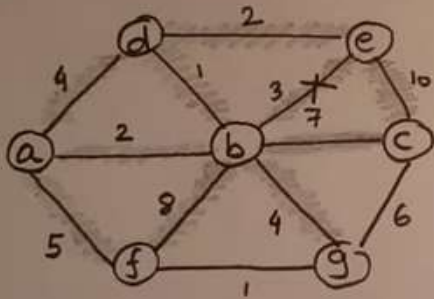
Prim – Minimum Spanning Tree

① Choose an arbitrary start vertex

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Prim – Minimum Spanning Tree

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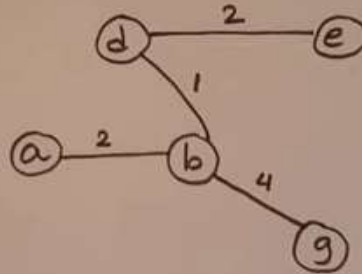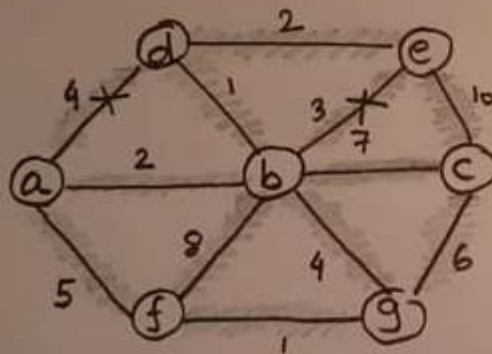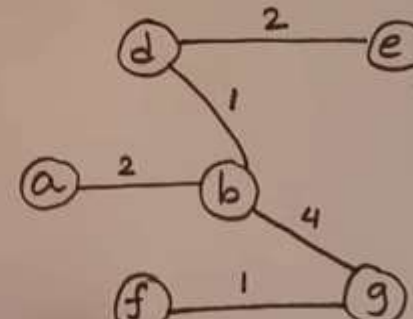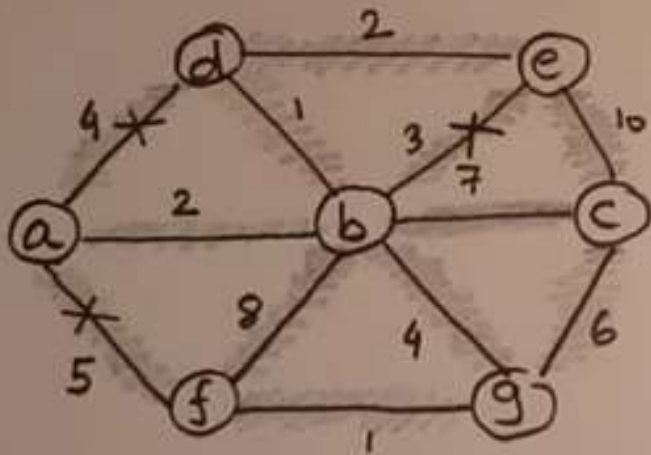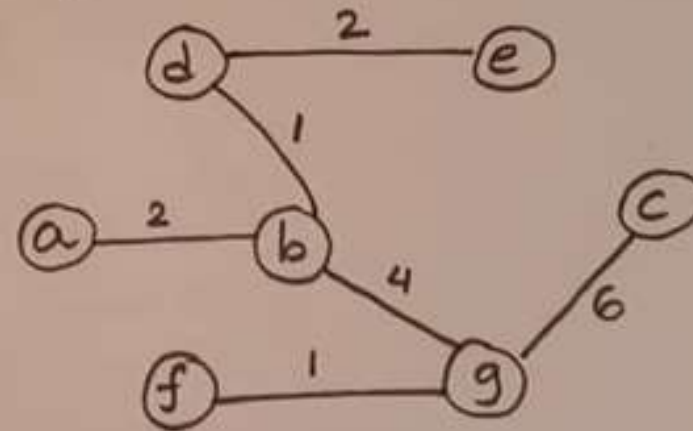Unit IV/MinimumSpanning Tree& Prims Algorithm/VINODHINI.B/CSE/SNSCT

Prim - Minimum Spanning Tree

① Choose an arbitrary start vertex

② Keep including connected min edges [NO CYCLE]

wt = 16

References

1. Anany Levitin, "Introduction to the Design and Analysis of Algorithms", Pearson Education, 3rd Edition, 2012

2. Ellis Horowitz, SartajSahni and SanguthevarRajasekaran, "Fundamentals of Computer Algorithms", Galgotia Publications, 2nd edition, 2003