

Lecture 14

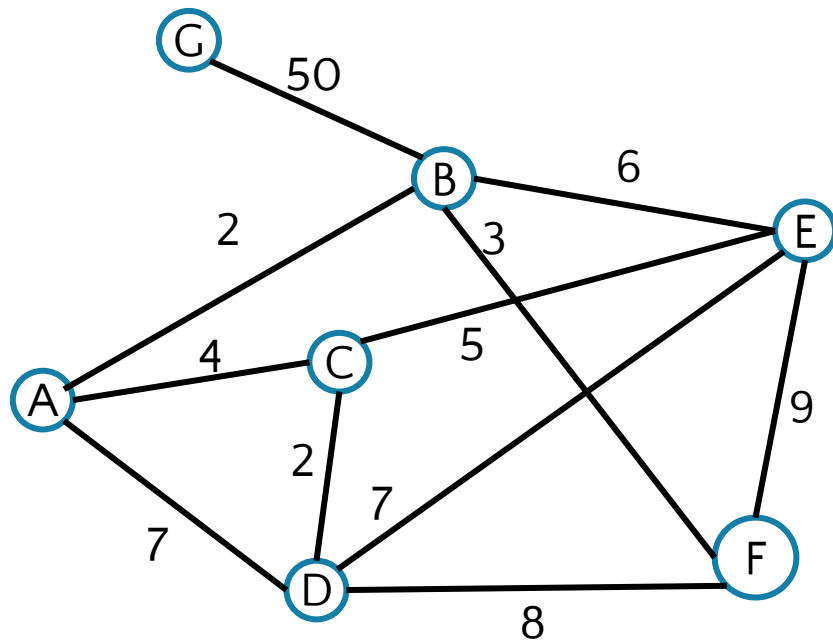
Minimum Spanning Trees

Exercises ANS

Department of Computer Science
Hofstra University

Q. Prim's Algorithm

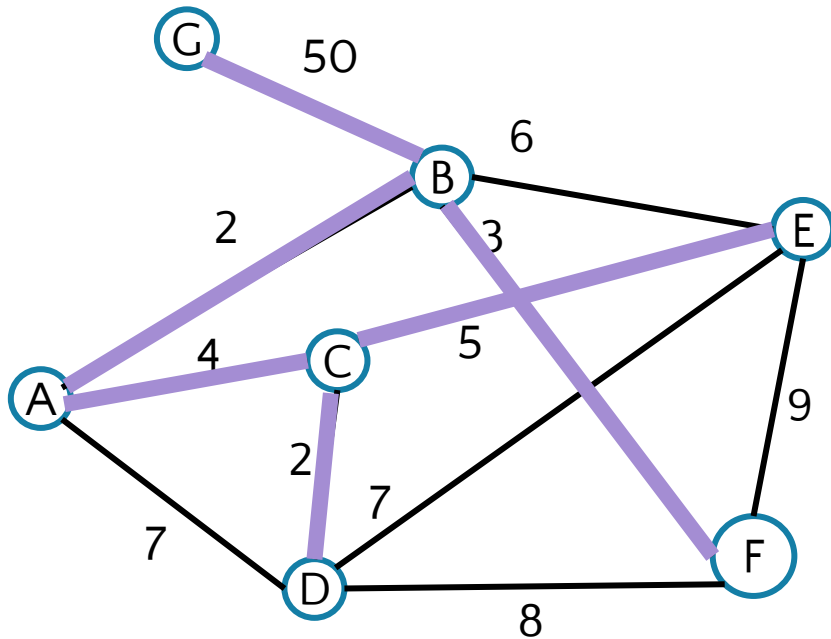
Run Prim's algorithm starting from node A. Fill in the table with the order in which each node is added, the best edge with minimum distance to the tree, and its distance to the current tree. Highlight the final MST in the graph. For an undirected edge, write the nodes in alphabetical order, e.g., (E, F) instead of (F, E).



| Order added | Edge | Edge Weight |
|-------------|------|-------------|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |

Q. Prim's Algorithm ANS

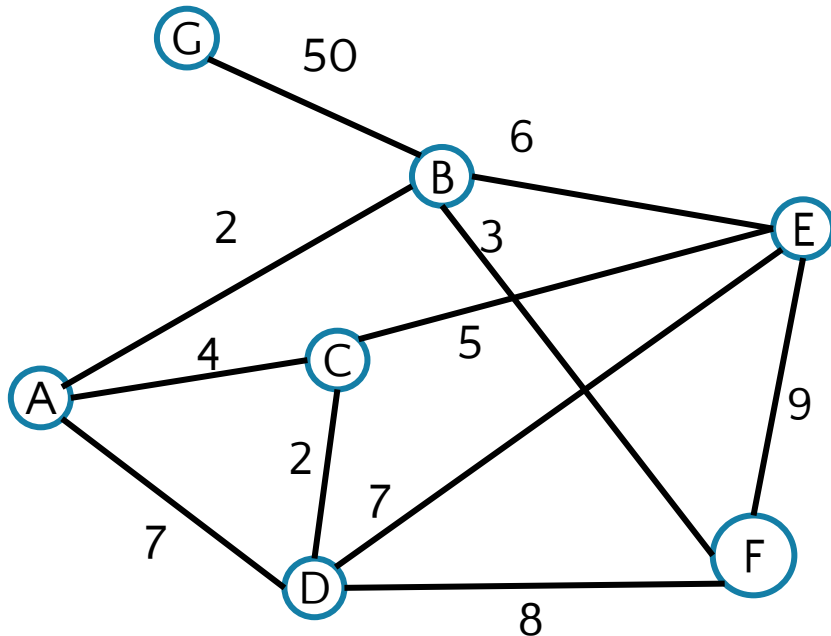
Run Prim's algorithm starting from node A. Fill in the table with the order in which each edge is added, and its weight. Break ties in alphabetical or numerical order. Highlight the final MST in the graph. For an undirected edge, write the nodes in alphabetical order, e.g., (E, F) instead of (F, E).



| Order added | Edge | Edge Weight |
|-------------|--------|-------------|
| 1 | (A, B) | 2 |
| 2 | (A, C) | 4 |
| 3 | (C, D) | 2 |
| 4 | (B, F) | 3 |
| 5 | (C, E) | 5 |
| 6 | (B, G) | 50 |

Q. Kruskal's Algorithm

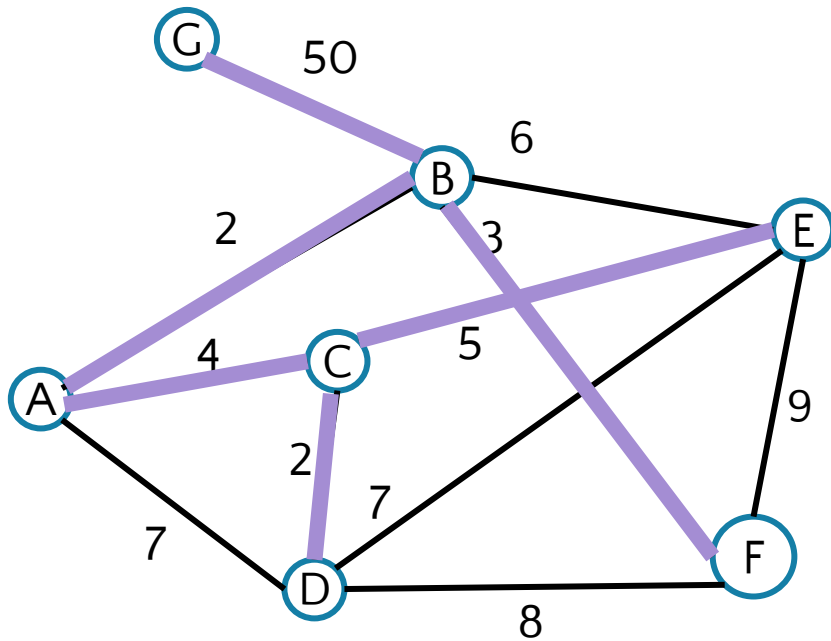
Run Kruskal's algorithm. Fill in the table with the order in which each node is added, the best edge with minimum distance to the tree, and its distance to the current tree. Highlight the final MST in the graph. For an undirected edge, write the nodes in alphabetical order, e.g., (E, F) instead of (F, E).



| Order added | Edge | Edge Weight |
|-------------|------|-------------|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |

Q. Kruskal's Algorithm ANS

Run Kruskal's algorithm. Fill in the table with the order in which each edge is added, and its weight. Break ties in alphabetical or numerical order. Highlight the final MST in the graph. For an undirected edge, write the nodes in alphabetical order, e.g., (E, F) instead of (F, E).



| Order added | Edge | Edge Weight |
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| 1 | (A, B) | 2 |
| 2 | (C, D) | 2 |
| 3 | (B, F) | 3 |
| 4 | (A, C) | 4 |
| 5 | (C, E) | 5 |
| 6 | (B, G) | 50 |