**CS2023 - Data Structures and Algorithms**

**In Class Lab Exercise**

Week 11

Index Number: 200105F

GitHub Link: https://github.com/UlinduP/CS2023/tree/main/In%20Class%20Labs/Lab%2011

A picture containing text, font, number, typography

Description automatically generated

2.

A picture containing line, diagram, plot, parallel

Description automatically generated

Minimum wiring cost = 1+3+2+1+4 = 11

3.

A screen shot of a computer

Description automatically generated with medium confidence

4. Yes, the MST does not depend on the starting node.

If each edge has a distinct weight, then the graph is guaranteed to have only one MST.

5. Kruskal’s algorithm has a time complexity of O((E+V) log(V)). Prim’s algorithm has a time complexity of O(E log(V)). Kruskal’s algorithm has a time complexity dominated by the sorting of edges. Prim's algorithm has a time complexity dominated by the operations in the priority queue. Each vertex is inserted and extracted once, and the priority queue operations take O(log V) time. Therefore, the overall time complexity is O(E log V). Overall Prim’s algorithm has a better time complexity.