

## CSE 208 (Data Structures and Algorithms II Sessional)

### Offline Assignment 4

#### Submission deadline: Week 6

#### Section A1, A2, B2:

You have to implement the **Kruskal's** minimum spanning tree algorithm for an undirected weighted graph  $G = (V, E)$  as the fourth offline assignment of CSE 208. Please consider the following requirements:

- 1) Implement necessary code for graph representation without using standard template libraries.
- 2) Make sure the running time of the algorithm is  $O(E \lg V)$ .
- 3) Use file operations for input and output.
- 4) You may need to use your implementation for the online assignment. So make sure your code is well-organized so you can use it for solving other problems.

Sample Input	Sample Output
10 16 0 1 4 0 7 8 1 7 10 1 2 8 2 3 7 2 8 2 2 5 3 5 6 2 6 7 1 8 6 6 3 5 15 3 4 10 4 5 10 7 8 8 9 7 2 9 5 1	Added edges: [edges can vary] (6, 7) (9, 5) (2, 8) (5, 6) (2, 5) (0, 1) (2, 3) (0, 7) (3, 4)  MST weight: 38

### **Section B1:**

You have to implement the **Prim's** minimum spanning tree algorithm for an undirected weighted graph  $G = (V, E)$  as the fourth offline assignment of CSE 208. Please consider the following requirements:

- 1) Implement necessary code for graph representation without using standard template libraries.
- 2) Make sure the running time of the algorithm is  $O(V \lg V)$ .
- 3) Use file operations for input and output.
- 4) You may need to use your implementation for the online assignment. So make sure your code is well-organized so you can use it for solving other problems.

Sample Input	Sample Output
10 16 0 1 4 0 7 8 1 7 10 1 2 8 2 3 7 2 8 2 2 5 3 5 6 2 6 7 1 8 6 6 3 5 15 3 4 10 4 5 10 7 8 8 9 7 2 9 5 1	Added edges: <b>[edges can vary]</b> (0, 1) (1, 2) (2, 8) (2, 5) (9, 5) (5, 6) (6, 7) (2, 3) (5, 4)  MST weight: 38