

### Offline 5 on MST

In this assignment, you will implement the Kruskal's algorithm for finding the minimum spanning tree from a given graph.

MST-KRUSKAL( $G, w$ )

```
1   $A = \emptyset$ 
2  for each vertex  $v \in G.V$ 
3      MAKE-SET( $v$ )
4  sort the edges of  $G.E$  into nondecreasing order by weight  $w$ 
5  for each edge  $(u, v) \in G.E$ , taken in nondecreasing order by weight
6      if FIND-SET( $u$ )  $\neq$  FIND-SET( $v$ )
7           $A = A \cup \{(u, v)\}$ 
8          UNION( $u, v$ )
9  return  $A$ 
```

- You must take input from a .txt file. The first line represents the node number and edge number. Rest of the lines represent each edge info. [leftnode rightnode weight]
- For sort operation, you can directly use the sort() function from algorithm library.
- For your MAKE-SET, FIND-SET, UNION operations, use the disjoint set codes as discussed in the class.
- In the output, print all the edges of this MST and also print the sum of the edge weights of this MST

Sample Input	Sample Output
9 14 1 2 4 1 8 8 2 8 11 2 3 8 8 9 7 8 7 1 3 9 2 3 4 7 3 6 4 4 5 9 5 6 10 4 6 14 6 7 2 9 7 6	MST Edges: 8 7 3 9 6 7 1 2 3 6 3 4 1 8 4 5 Minimum weight of MST = 37

**[Miss at your own risk]**

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