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CSC 4520
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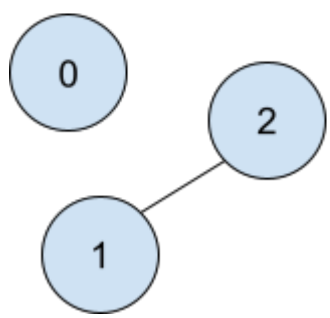
HW7: Minimum Spanning Tree
Reference

Example Undirected Graph

Visual	Adjacency List	Adjacency Matrix
	[[], [2], [1]]	[[0, 0, 0] [0, 0, 1] [0, 1, 0]]

Questions start on next page ⤵

Q1. Say we had |V|-1 edges picked from a connected, weighted, and undirected graph. Are we guaranteed that these edges form a MST? Why or why not?

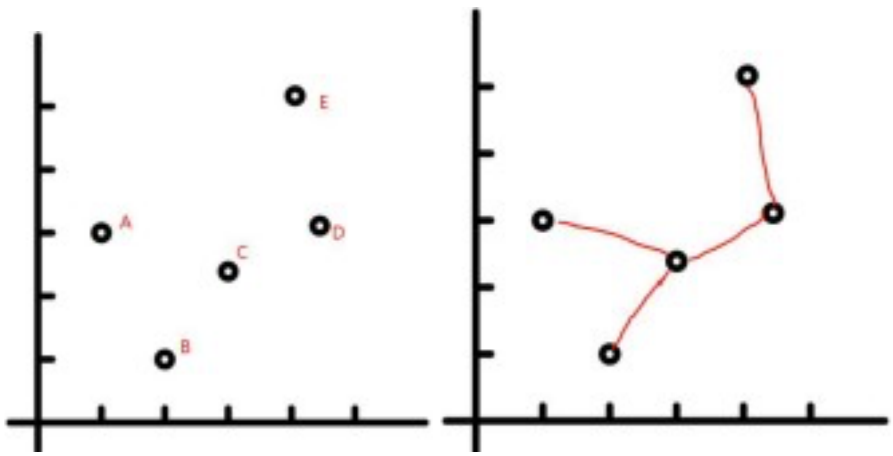
No, we are not guaranteed that these edges can form a MST. The sum of the |V|-1 edges might be greater than the MST weight, or the minimum edge sum, due to having no restrictions on which edge to choose from.

Q2. Programming problem(submit a .java file) On a 2D-plane shown as below, some points with coordinates $[x_i, y_i]$ are located. The cost of connecting two points $[x_i, y_i]$ and $[x_j, y_j]$ is the manhattan distance between them: $|x_i - x_j| + |y_i - y_j|$, where $|val|$ denotes the absolute value of val.

Return the minimum cost and connected edges to make all points connected. You can use either Prim or Kruskal algorithm. Suppose the number of points is no more than 100. You don't need to further improve the algorithm.

The coordinates can be Integer or Float (It doesn't matter. Your code and test case can use

Integer). Example: Input Explanation:



My Code: Q2.java
* this file will be submitted into the Dropbox