

CSCI 256: Exercise # 8

Your Name: _____

Due: Fri, Oct 2

- Assigned reading for this lecture: Kleinberg Tardos Section 4.5
- If Friday is Mountain Day, this exercise's will be due Wed Oct 7

Recall that a **spanning tree** of a graph $G = (V, E)$ is a tree $T \subseteq E$ that contains all nodes of G . So far, we have seen spanning trees of unweighted graphs by performing BFS or DFS on them.

When graph edges have cost or weight associated to them, choosing different subset of edges to include in the spanning tree leads to trees of different costs. A **minimum spanning tree** (MST) is a spanning tree that minimizes the total weight of edges.

There are many simple greedy algorithms to find the minimum spanning tree of a graph. For this exercise, read the description of Prim's algorithm on Page 4.5 of KT.

Question. Run Prim's algorithm on the following undirected graph starting from s . **Give the order** in which Prim's algorithm adds the edges to the tree.

