CSE 101 - ALGORITHMS - SUMMER 2000

Lecture Notes 8

Wednesday, July 26, 2000.

Today's material can be also found in Chapter 4 of the textbook (Skiena).

5.1 Minimum Spanning Tree

A **tree** is a connected graph without cycles. The following is an immediate property of trees:

Proposition 5.1 *If* $T = (V_T, E_T)$ *is a tree then* $|V_T| = |E_T| + 1$.

A **spanning tree of** $G = (V, E)$ is a tree $T = (V_T, E_T)$ such that $V_T = V$ and $E_T \subseteq E$. If G is a weighted graph, so there is a function $w\colon E \to \mathbb{R}$, then a **minimum spanning tree of** G is a spanning tree of minimum total weight.

5.1.1 Prim's Algorithm

See subsection 4.7.1. in the textbook.

5.1.2 Kruskal's Algorithm

See subsection 4.7.2 in the textbook.

5.2 Shortest Paths

See section 4.8 in the textbook.

5.2.1 Dijkstra's Algorithm

See subsection 4.8.1 in the textbook.