Problem Set 6 — Due Friday, November 15

Problem 6–1

(a) Exercise 17.3-2 (p. 344).

(b) Show that if the characters are already sorted by frequency, Huffman's algorithm can be implemented in linear time.

Problem 6–2. Draw the splay tree which results from inserting, in order, elements with keys 10, 20, 5, 25, 2, 28. Show your work.

Problem 6–3. Problem 17-1 (page 353).

Exercise 6–4. Exercise 23.1–6 (page 468).

Problem 6–5. In class last Wednesday your crazy professor said something to the effect:

> As you can see, if the edge weights of graph G are all distinct, then Kruskal's algorithm produces a unique minimum spanning tree. Thus the minimum spanning tree of a graph G is unique when the edge weights are distinct.

(a) Explain why this reasoning is ludicrous.

(b) But that doesn't mean the result is wrong! Carefully prove the claim given — that if the edge weights of G are distinct, G has a unique minimum spanning tree.