Design and Analysis of Algorithms

Problem #1.
Give an *O(n log k)*-time algorithm to merge *k* sorted lists into one sorted list, where *n* is the total number of elements in all the input lists.

Problem #2.
Professor Marley hypothesizes that he can obtain substantial performance gains in hashing by modifying the chaining scheme to keep each linked list in sorted order. How does the professor's modification effect the running time for successful searches, unsuccessful searches, insertions, deletions?

Problem #3.
Suppose that all edge weights in a graph are integers in the range from 1 to |V|. How fast can you make Prim's algorithm run? Explain.