CSCI 303 Algorithms

Homework 4

Due: 11:00 in class, October 2, 2001

1. (6 points) Insert 3, 1, 4, 5, 9, 2, 6, 8, 7, 0 one by one into an empty 2-3 tree. Delete 0 and then 9 from the 2-3 tree. You must show the tree after each insertion and each deletion.

2. Given an input sequence \{4371, 1323, 6173, 4199, 4344, 9679, 1989\} and a hash function \( h(x) = x \mod 10 \), show the resulting
   (a) (2 points) open hash table.
   (b) (3 points) closed hash table using linear probing (i.e., \( f(i) = i \)).
   (c) (4 points) closed hash table using quadratic probing (i.e., \( f(i) = i^2 \)).
   (d) (5 points) closed hash table with a second hash function
       \[ h'(x) = 7 - (x \mod 7). \]