

# 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  $h(x) = x \bmod 10$ , 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

$$h'(x) = 7 - (x \bmod 7).$$