CSci2111: Assignment and Project Set # 4

Handed Out on: Tuesday March 21, 2000

Revised on: Sunday April 2, 2000

Due Date: Thursday April 6, 2000

Very Important: No Assignment will be accepted past Midnight on Thursday Night since there will not be enough time for the TAs to grade them before the grades have to be received by the registrar's office.

1 Written Exercises

Question 1: Problems 2, 3, and 6 p. 420 (Chapter 9).

Question 2: Problem 3, 9, 11, 13 and 14 pp. 458-459 (Chapter 10).

2 Programming Project, Part IV (of IV)

If Using Java:

1. Write an insertion procedure for a Binary Search Tree (BST).
2. Build a BST by inserting, one by one, the record keys of the court-case file used in Assignment 3 (URL: http://borg.cs.dal.ca/~nat/Courses/DFS-Course/court-cases). Do not sort the file prior to building the tree. [To make your job easier, keep the tree in memory rather than saving it onto disk]. Alternatively, you can insert the letter of the alphabet, though not in alphabetical order.
3. Write a procedure to print your BST level by level. Print the first 4 levels of your tree.

4. Write a search procedure that locates a key in your BST. Demonstrate that this procedure works well by searching for a key and showing, the path followed by your procedure from the tree root to the searched key (i.e., print all the intermediate nodes it traverses). Demonstrate your search procedure in the cases where a) the key searched for is in your tree and b) the key searched for is not in your tree.

Extra Credits

1. Rather than a BST, implement an AVL tree and answer all the questions above.

Even More Extra Credits

1. Rather than a BST or AVL tree, implement a B-Tree and answer all the questions asked in the original assignment (Assignment 4).

If Using C++

1. Problems 13, 15 and 18 p. 421. [Use the code of Appendix I as a starting point; Demonstrate the functionning of your programs on examples of your choice].