CSci2111: Assignment and Project Set # 3
Handed Out on: Thursday February 17, 2000
Due Date: Thursday March 9, 2000

1 Written Exercises

Question 1: Problems 3, 7, 8, and 9 pp. 284-285 (Chapter 7).

Question 2: Problem 4, 7, 8 and 10 pp. 364-365 (Chapter 8).

2 Programming Project, Part III (of V)

Use Java or C++ to do the following (for grading purposes, this will be considered the programming project even though you will not have to implement the project from the textbook anymore):

Question 1:

1. Download the Kansas Court Case Name List from http://borg.cs.dal.ca/~nat/Courses/DFS-Course/court-cases
2. Each case is fomatted as follows: Name1 v. Name2 (d1d2d3d4d5) where Name1 and Name2 are strings of variable size and d1, d2, d3, d4, and d5 are digits (0, 1, .. 9).
3. Think of this data as a series of variable length records of variable length fields with fields: "key"=d1d2d3d4d5, "party1"= Name1, "party2"= Name2, and "year"= d1d2.
4. Write a program that reads in this data file and creates a primary index file (where "key" corresponds to the primary key).
5. Write a program that performs a Keysort (Section 6.4). Do not, however, sort the file directly nor re-write the file in sorted order once the keys have been sorted. Use any sorting method you want that is better than $O(n^2)$ to sort the index.

6. Print all the records in sorted key order.

Question 2:

1. Write a program that creates two secondary index files. The first one should be indexed by Name2 while the second one should be indexed by year. Both secondary indexes should refer to addresses in the primary index.

2. Sort the two secondary indexes.

3. Use a Binary Search technique to print all the records that involve "State" as a second party (be careful to find *all* the records that involve "State" as the second party. i.e., once you found one instance using a binary search, you did not necessarily find the first one that occurs in the index). (Section 6.3).

4. Print all the records that took place between 76 and 78 (included). (The same comment as above regarding binary search applies).

Question 3:

1. Write a program that performs cosequential processing of the two secondary indexes. (Section 8.1).

2. Use your program to output all the records involving "State" as a second party and that took place beyween 76 and 78 (included).