Lab 3 Student Information Management System

1. Experimental objectives

1.1 Master various storage structures and algorithms for search operation and for sort operation.

1.2 Use search algorithms and sort algorithms to solve practical problems.

1.3 Can analyze the efficiency performance of different search and sorting algorithms.

2. Experimental content

To design a student information management system, the student as a record should at least includes: student number, name, sex, score1, score2, total score and so on. Basic functions as follows:

2.1 At least 10 student records in file (at least two student records with the same name) .

2.2 Can calculate total score automatically.

2.3 Search operation: find the student’s information according with the given student number or the given name. (at least two search algorithms are used to realize the operation).

2.4 Sort operation: sorting by student’s number, name, grade1, grade2 and total score separately. Please select a stable sort algorithm (such as: bubble sort, straight insert sort, simple select sort), and an unstable sort algorithm (such as: shell sort, quick sort, heap sort))

2.5 Record and compare the search length between different search algorithms, which search different student information on unsorted list, and calculate the Average Search Length.

2.6 Record and compare the search length between different search algorithms which search different student information on sorted list, and calculate the Average Search Length.

2.7 Record and analyze the characters of different sort algorithms. The characters are the stability, the number of comparisons, the number of moves.