

Lab 4 - Searching and Sorting

Problem 1. Write a program that stores an array of 1000 random integers between 1 and 10000. The program should include the following functions:

- a) Input and output data of the array.
- b) Sort the array by using all sorting algorithms that you have studied.
- c) Compare the execution time of the sorting algorithms and write the result to a file named "SortingTime.txt".
- d) Search for a given element x from the array using linear search technique.
- e) Search for a given element x from the array using binary search technique

Problem 2. You want to develop an application managing a list of students. The information of a student is defined as follows:

struct Student

```
{  
    char id[12];  
    char name[30];  
    char class[10];  
    float mMath;  
    float mPhysical;  
};
```

Write a program including the following functions:

- a) Input, output a list of student.
- b) Search a student by identification.
- c) Sort the list in descending order based on avg ($avg = (mMath + mPhysical)/2$).