

Kadir Has University
Department of Computer Engineering
CE 242 - Data Structures and Algorithms
Spring 2010 – Ahmet Ardal
Project Assignment 1

1. Implement the find() method of the StudentArray class. StudentArray class source code is provided on the Blackboard (StudentArray.java). find() method should perform a binary search on the StudentArray's data member "studArr" with the key "StudentId" and if it finds the Student it should return that Student object's index in the array otherwise it should return -1.

Method signature:

```
public int find(int studentId)
```

2. Implement the insert() method of the StudentArray class. StudentArray class source code is provided on the Blackboard (StudentArray.java). insert() method should insert the new Student object into the array without breaking the order of the array. Note that the StudentArray always remains sorted by the "StudentId" because the insert() operation is a "sorted insert". Therefore, the find() method utilizes the binary search algorithm in order to find a student in the array by its "StudentId".

Function signature:

```
public void insert(Student st)
```

3. Write a program that accomplishes the following tasks:
 - Create a new StudentArray object with name -let's say- "stArr".
 - Read Student objects from the text file "students_1.txt" and insert them to "stArr". You should avoid duplicate insertions, namely, there should not be any two Student objects in "stArr" with same "StudentId". (Hint: You may use the find() method before every insertion to accomplish this)
 - Read Student objects from the text file "students_2.txt" and insert them to "stArr". Again, you should avoid duplicate insertions.

- Write all Student objects in the array "stArr" to the file named "all_students.txt" in the following format:
<StudentID>, <FullName>, <Age>

Notes:

- Write your code for questions 1 and 2 into the file "StudentArray.java".
- Write your code for question 3 into the file "Main.java" into the method "main()".
- All the source code is provided on the Blackboard as a Netbeans project folder. You should download it and work on it.
- "students_1.txt", "students_2.txt", "all_students.txt" text files are also provided in the project folder.
- There is also a class named "Proj1_SampleCode" in the project folder that contains some sample code explaining how to use the Student and the StudentArray classes, how to read a Student from a text file and how to write it to a text file. So, before going on, make sure that you fully understand the sample code in the file "Proj1_SampleCode.java".
- After writing your code and making the required modifications, you should compress the project folder as one file (.rar or .zip) and then submit it.