

Object-Oriented Programming and Design (CSE600A-ECE600A)

LAB ASSIGNMENT 1

You have to implement a system which stores **Student** record. These records will be stored based upon priority. You have to implement this as a MAX - binary heap. The key on which two records is compared is their FIRST and LAST name in a lexicographical manner. You have to define a comparator for that. You cannot use the default implementation of the heap of any programming language.

Student will have the following attribute

- FIRST name : String
- LAST name : String
- CoursesTaken : List of Strings

Following operation must be supported by the system:

- Insert() - register a new student in the system.
- Maximum() –returns the student with maximum priority but do **NOT** remove it from the system.
- Extract-Max() –return the student with maximum priority **AND** remove it from the system.
- Delete(string firstname, String lastname) –delete the user with given name from the system.
- Show() –displays all users of the system.

Input:

Will be given from a text file with a operation in each line. First word will be ID of the operation followed by arguments. Supported operations and arguments are as follows:

```
INSERT firstname lastname <list of courses, space separated>
MAXIMUM
EXTRACT-MAX
DELETE firstname lastname
SHOW
```

Trivia:

1. There will NOT be any two students with the same name.
2. Operation string as well as student names or course names are case insensitive
3. Handle all corner cases such as deleting a student name when the student is not present, requesting a max in empty heap etc.
4. Make any assumptions which are not mentioned in the problem statement and submit it in a separate file along with your assignment.
5. Assignment should be submitted on backpack and contain all binaries as well as source code in a single zip file.