Object Oriented Programming Lab

Lab 06 **Marks 05**

Instructions

Work on this lab individually. You can use your books, notes, handouts etc. but you are not allowed to borrow anything from your peer student. *You are strictly **NOT ALLOWED** to include any additional data-members/functions/constructors* in your class.

Marking Criteria

Show your work to the instructor before leaving the lab to get some or full credit.

What you must do

Program the following task in your C++ compiler and then compile and execute them. *Write the **main** function first and keep testing the functionality of each function once created.*

ADT: Student

Write a class named **Student** that has the following:

1. The class should have following **five private data members**
    1. An **int** named **regNo** that holds the student's **registration number**. The value of **registration number** should fall in **between 501 to 565 both inclusive**, **0** otherwise.
    2. A **string** named **firstName** that holds the student's **first name**.
    3. A **string** named **lastName** that holds the student's **last name**.
    4. A **string** named **program** that holds the student's **degree program** in which he/she is registered.
    5. A **float** named **cgpa** that holds the student's **current CGPA**. The value of **cgpa** must fall in **between 0.0 and 4.00 both inclusive**, **-1** otherwise.
2. Provide the implementation of **mutators** for all the data members (regNo, firstName, lastName, program and cgpa) of the class.
3. Provide the implementation of **accessors** for all the data members (regNo, firstName, lastName, program and cgpa) of the class.
4. Provide the implementation of following **constructors** and a **destructor**
    1. The constructor should accept the **student's registration number**, **first name**, **last name** and **program** as arguments. These values should be assigned to the object's appropriate member variables. The constructor should also assign **-1** to the **cgpa** member variable.
    2. The constructor should accept the **student's registration number**, **first name** and **program** as arguments. These values should be assigned to the object's appropriate member variables. The constructor should also assign **empty string ("")** to **last name** and **-1** to the **cgpa** member variable.
    3. The constructor should accept the **student's registration number**, **first name**, **last name**, **program** and **cgpa** as arguments. These values should be assigned to the object's appropriate member variables.
    4. A **copy constructor** to initialize a student's object with already existing object.
    5. A **destructor** that do nothing except displaying a simple message "Destructor executed…" on the screen.
5. Provide the implementation of following member functions
    1. **set** method accepts **student's registration number**, **first name**, **last name**, **program** and **cgpa** as arguments and assigns them to the appropriate member variables.
    2. **read** method to **initialize the data** of a student **taken** from the user.
    3. **write** method to display the information of a particular student.
    4. **isFirstSemester** method should return **true** if the student is **enrolled in first semester** i.e., a student having **CGPA -1**, **false** otherwise.
    5. **getPercentage** method should provide the facility to **calculate and return the percentage** of the students' **CGPA** only if the value of **CGPA is greater than or equal to 0.0**, otherwise return **-1**.
    6. **isPromoted** method should return **true** if the students' **CGPA** is greater than or equal to **2.00**, **false** otherwise.
6. Once you have written the class, write **main** function and test its functionality by creating some objects of **Student**.

☺ ☺ ☺ **BEST OF LUCK** ☺ ☺ ☺