Object Oriented Programming Lab

Lab 05 **Marks 10**

Instructions

- Work in this lab individually.
- You can use your books, notes, handouts etc. but you are not allowed to borrow anything from your peer student.
- Make sure to follow the best coding practices.
- Include comments to explain the logic where necessary.
- *You are strictly **NOT ALLOWED** to include any additional data-members/functions/constructors in your class.*
- Test your program thoroughly with various inputs to ensure proper functionality and error handling.
- Show your work to the instructor before leaving the lab to get some or full credit.

ADT: Faculty

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

1. The class should have following **five private data members.**
   - An integer named **id** that holds the faculty's identification number. The value of identification number should fall in between 1001 to 1065 both inclusive, 0 otherwise.
   - A string named **firstName** that holds the faculty's first name.
   - A string named **lastName** that holds the faculty's last name.
   - A string named **qualification** that holds the faculty's qualification in which he/she mastered.
   - A float named **salary** that holds the faculty's current monthly salary. The value of **salary** must fall in between 20000.00 and 100000.00 both inclusive, -1 otherwise.

2. Provide the implementation of mutators for all the data members (**id**, **firstName**, **lastName**, **qualification** and **salary**) of the class.

3. Provide the implementation of accessors for all the data members (**id**, **firstName**, **lastName**, **qualification** and **salary**) of the class.

4. Provide the implementation of following **constructors** and a **destructor**.
   - The constructor should accept the faculty's **identification number**, **first name**, **last name,** and **qualification** as arguments. These values should be assigned to the object's appropriate member variables. The constructor should also assign $-\mathbf{1}$ to the **salary** member variable.
   - The constructor should accept the faculty's **identification number**, **first name** and **qualification** 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 **salary** member variable.
   - The constructor should accept the faculty's **identification number**, **first name**, **last name**, **qualification,** and **salary** as arguments. These values should be assigned to the object's appropriate member variables.
   - A copy constructor to initialize a faculty's object with already existing object.
   - A destructor that does nothing except displaying a simple message "Destructor executed…" on the screen.

5. Provide the implementation of following member functions.
   - **set** method accepts faculty's **identification number**, **first name**, **last name**, **qualification,** and **salary** as arguments and assigns them to the appropriate member variables.
   - **read** method to initialize the data of a faculty taken from the user through the console.
   - **write** method to display the information of a particular faculty on the console.
   - **isPostGraduate** method should return *true* if the faculty's qualification is post graduated. i.e., a faculty having MS or Phd. degree(s), *false* otherwise.
   - **getTakeHomeSalary** method should provide the facility to calculate and return the take home salary i.e., $salary - tax$ where tax = 7% of actual salary only if the value of salary is greater than or equal to 20000.00, otherwise return -1.
   - **isJoined** method should return *true* if the faculty's **salary** is greater than or equal to 20000.00, *false* otherwise.

6. In the **main** function, create instances of the **Faculty** class and demonstrate the functionality of each function clearly.