**CASE ANALYSIS**

ABC College develops a system in which the finance department can manage the accounting operations under two account types: one for the students and one for the teachers

Write a C++ with file management with OOP implementation program which creates a class named as **Person** which represents a person by its

1. ID (this should be unique),
2. First Name,
3. Last Name,
4. Gender,
5. Phone Number,
6. Address

Create a class named **Student** that inherits publicly from class **Person**. A student is distinguished by the same attributes as a Person but which also includes the following:

1. Number of Modules
2. Number of Repeat Modules
3. Amount Paid

**Number of Modules**

A selection of new subjects for the current semester. The tuition fee for each module is PHP 525. E.g. a student taking 5 modules will have to pay 5 x 525 = 2625 Pesos. \*\* Can also set dynamic setting.

**Number of Repeated Modules**

The number of repeated modules in previous semester and the student wants to take them in current semester. The tuition fee for each repeated module is 110. \*\* Can also set dynamic setting.

**Amount paid**

Pertains to how much money has been paid by the student at the time of registration and how much balance is remaining.

**Constraints**

The following constrains must be applied

1. A student can take a maximum of 6 modules (new + repeat) in each semester and minimum zero.
2. A student cannot take a new module if he/she wants more than 2 repeated modules.

Similarly, also develop a class named **Teacher** that inherits publicly from class **Person**. A Teacher object is distinguished by the same attributes as a Person but which also includes the following:

1. Department
2. Designation
3. Number of teaching hours

**Department**

There are only two departments. Business and Computing

**Designation**

There are three designations

Head of faculty (**HOF**), Coordinator (**CO**), and Lecturer (**L**).

**Number of teaching Hours**

Salary is calculated according to the number of teaching hours which are: **8** for HOF, **13** for CO, and **18** for L.

If they reach more than their specified hours they will get overtime. The rate for overtime is **325 Pesos** per hour.

Example:

Designation: CO

No. Of Teaching Hours: 16

Overtime (OT): 16 – 13 = 3 hours \* 325 = 975 Pesos

**Allowances**

Calculate the teacher salary by applying the following allowances.

1. The base salary of each teacher is 1200.00 Pesos
2. The total salary = base salary + OT
3. The housing allowance (ha) is 10% of the total salary
4. The medical allowance (ma) is 3% of the total salary
5. The traveling allowance (ta) is 5% of the total salary
6. The net salary = total salary + ha + ma + ta.

\*\* Can also set dynamic setting (retrieve from file)

**Requirements**

Draw the class diagram for the Student, Teacher and Person class.

Your system must provide the following functions to manage the accounting operations for a Student

1. Add new student
2. Update student
3. Delete Student
4. Show remaining balance
5. Fee deposit
6. Display all students with zero balance
7. Display all students with non-zero balance

Accounting operations for a Teacher

1. Add new teacher
2. Update teacher
3. Delete teacher
4. Calculate salary of a teacher
5. Show all teachers

Note:

The application must work without any errors and all functions included within the class should be attempted; in addition, the student should provide a comprehensive user manual