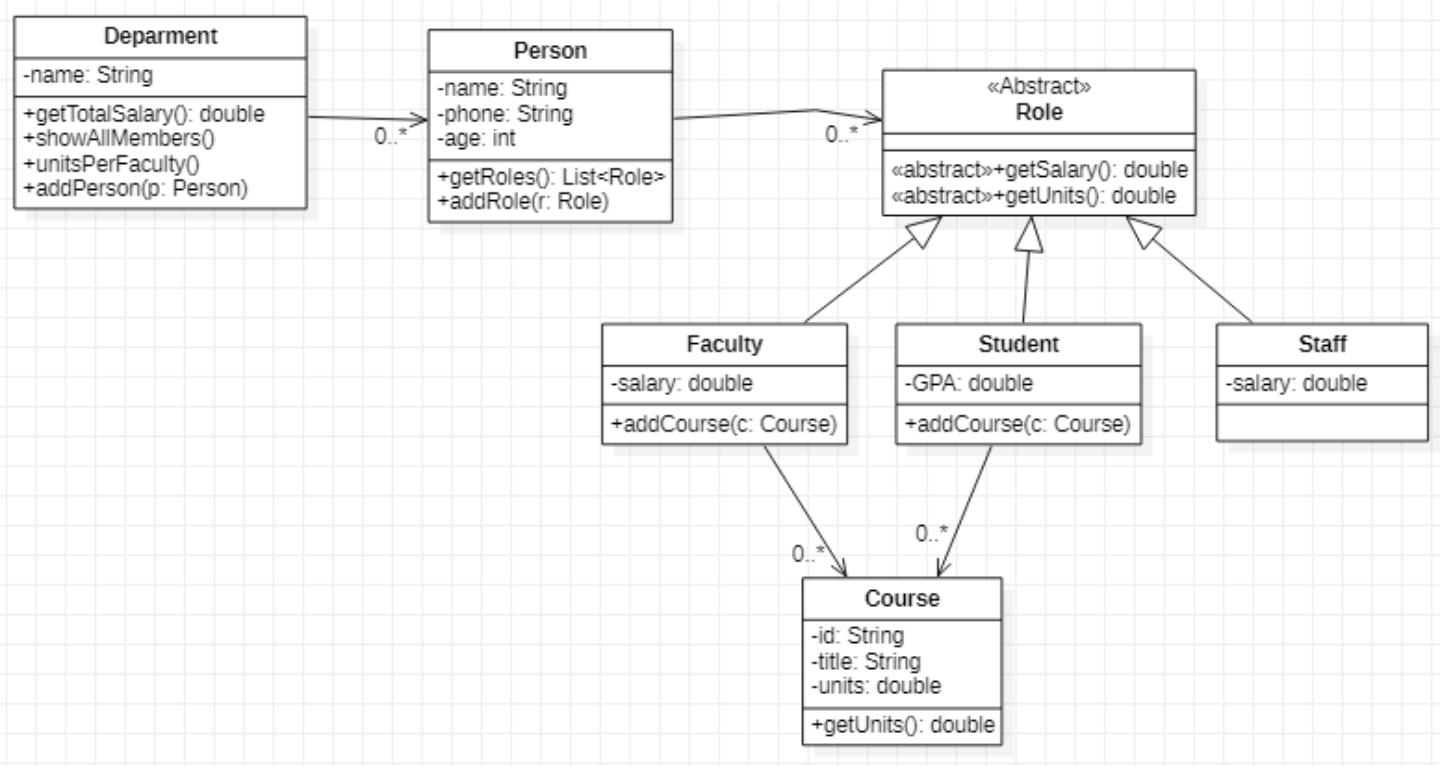
School Lab

Problem1:
Write a program that is used by the computer science department to keep track of Persons within the department, Persons can have many different roles as a student, faculty, or staff. Students take courses, and faculty teach courses. A department has Persons. Person has multiple roles as a faculty, student, or staff. Faculty teaches courses, and students take courses. The class diagram for this program is as follows:



The Department has 3 methods:
double getTotalSalary() // computes the sum of all the salaries (per month) paid to faculty and staff.

void showAllMembers() // shows the name, phone number, age and role (student, faculty or staff) of all members in the department.

void unitsPerFaculty() // shows a list of all faculty names and the total number of units they teach.

If you don't have the previous SchoolLab (**Practice3**) implementation, you may use **Practice3Solution** on **Sakai** to provide following functionalities. Use Lambdas and Streams. You may use Lambda Library element.

To do:
Re-implement the **getTotalSalary, showAllMembers,** and **unitsPerFaculty** functionalities using Lambdas and Streams.

Problem 2:

Write a generic method to count the number of elements in a list that have a specific property (for example, odd integers, prime numbers, palindromes).

public static int countIf(SelectType list, SelectType criteria)

To do:

- Convert it to the generic method. Type parameters as well.
- Then provide two implementations for the generic method:
  - ✓ Imperative style (you may use generics, for loop, lambdas)
  - ✓ Declarative style (you may use generics, lambdas, and streams without loop)

Problem 3: Optional (if you like to practice)

Add the following method to the Department class:

public void **showStudentsByFaculty**(String name)

The method receives a name of a faculty member and prints out the names of all students who take classes that are taught by this faculty member.