CSIT121/CSIT821 - Object Oriented Design and Programming

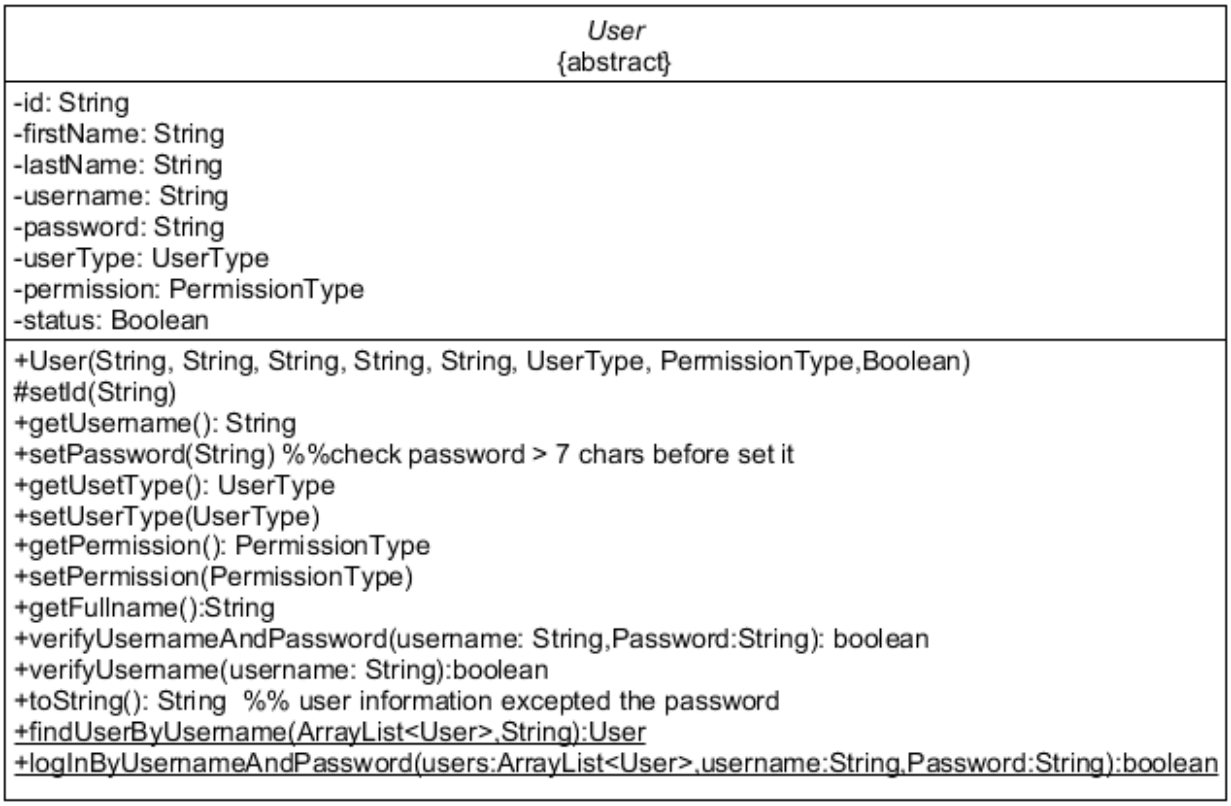
Task	Weight	Due date	Demo date
Homework 3	3%	Week5 Sat 31/August 5PM	Week6 lab (Mon 2/9 - Fri 6/9)

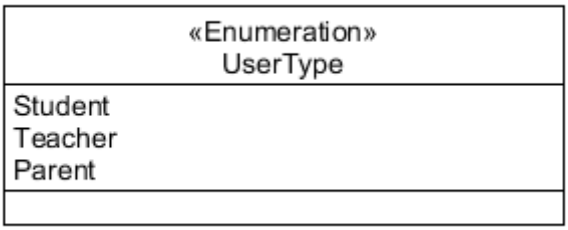
Homeworks need to be submitted on Moodle site by the due date.
Homework demo is in the lab and may involve code modification request or short oral exam to verify the understanding of the code. No demo means zero mark.

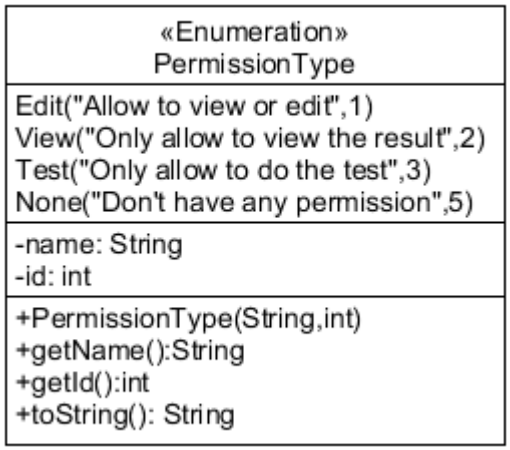
The purpose of this task is to introduce OO design and programming: Inheritance, Polymorphism, and Interface.

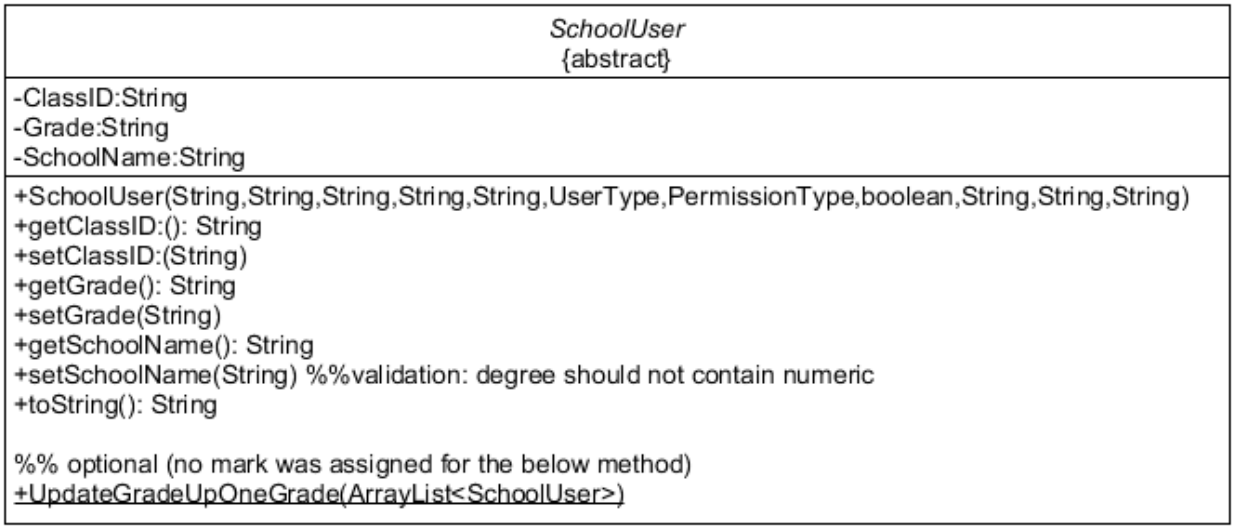
Consider the below online learning system for local school. We start to develop the User registration

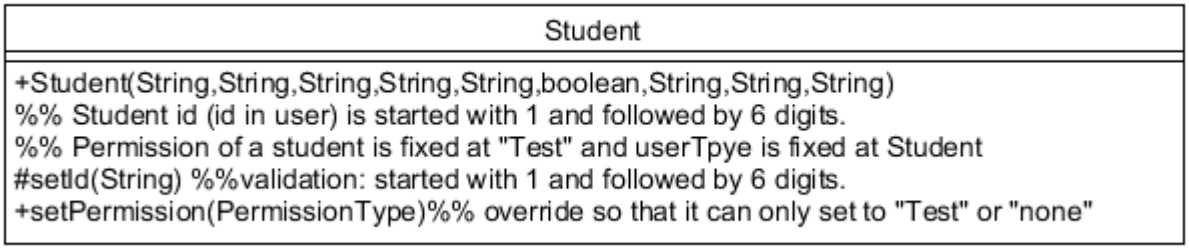
The below image show the UML diagrams of the system.




«Enumeration»
UserType
Student
Teacher
Parent


«Enumeration»
PermissionType
Edit("Allow to view or edit",1)
View("Only allow to view the result",2)
Test("Only allow to do the test",3)
None("Don't have any permission",5)
-name: String
-id: int
+PermissionType(String,int)
+getName():String
+getId():int
+toString(): String


SchoolUser
{abstract}
-ClassID:String
-Grade:String
-SchoolName:String
+SchoolUser(String,String,String,String,String,UserType,PermissionType,boolean,String,String,String)
+getClassID:(): String
+setClassID:(String)
+getGrade(): String
+setGrade(String)
+getSchoolName(): String
+setSchoolName(String) %%validation: degree should not contain numeric
+toString(): String
%% optional (no mark was assigned for the below method)
+UpdateGradeUpOneGrade(ArrayList<SchoolUser>)


Student
+Student(String,String,String,String,String,boolean,String,String,String)
%% Student id (id in user) is started with 1 and followed by 6 digits.
%% Permission of a student is fixed at "Test" and userTpye is fixed at Student
#setId(String) %%validation: started with 1 and followed by 6 digits.
+setPermission(PermissionType)%% override so that it can only set to "Test" or "none"

Teacher
+Teacher(String,String,String,String,String,boolean,String,String,String) %% Teacher id (id in user) is started with 2 and followed by 6 digits. %% UserType is fixed to Teacher and PermissionType is fixed at Edit #setId(String) %%validation: started with 2 and followed by 6 digits. +setPermission(PermissionType)%% override so that teacher can only set to "Edit" or "none" %% optional (no mark was assigned for the below method) +getStudentList(ArrayList<User>):ArrayList<User>

1. From the diagrams, complete the relationship between the diagrams (0.2)
2. Write the code to construct the above classes including attributes, methods and a constructor. (except UserLoginAndRegistration) (1.5 marks)

3. Write a class called "TestCode" and, in its Main method, create 1 instance of Teacher class and test all methods by showing its results on the console. (0.3 marks)

2 marks is awarded for completing up to step 3

4. Implement the UserLoginAndRegistration and continue the previous test code by create an instance of UserLoginAndRegistration. Next, add the teacher object to the UserLoginAndRegistration object by calling "adduser". Finally, verifyLogin() to verify the given username and password. Noted that you should test with both correct and incorrect user-password detail to test your code.

UserLoginAndRegistration
-users: Arraylist<User>= empty list
+UserLoginAndRegistration() +verifyLogIn(String,String):boolean +addUser(User):boolean %% add user to the array list of User in the library

3 marks is awarded for completing up to step 4

Submission instructions.

- Create a folder to store all your Java code and Word document containing your UML diagram. Compressed this folder into a single file HW3.zip. Submit the compressed file via the Homework 3 Submission on Moodle by the due date.
- Late submission is not accepted unless you have Academic Consideration approved.
- Homework demo is in the lab and may involve code modification request or short oral exam to verify the understanding of the code. If you are absent and miss your demo then you will get zero mark.