Software Engineering and Programming Basics - WS2021/22
Assignment 9

TECHNISCHE UNIVERSITÄT
CHEMNITZ

Professorship of Software Engineering

1| 2022

Organisational

Deadline

31.01.2022 - 23:59

Submission

To submit your answers, please use the Task item titled 'Submission' in the menu of the Assignment 9. You can upload your /.java files here. There are sample files shown in the highlighted Samples section.

Please remember that package name is the name of assignment, i.e. assignment9.

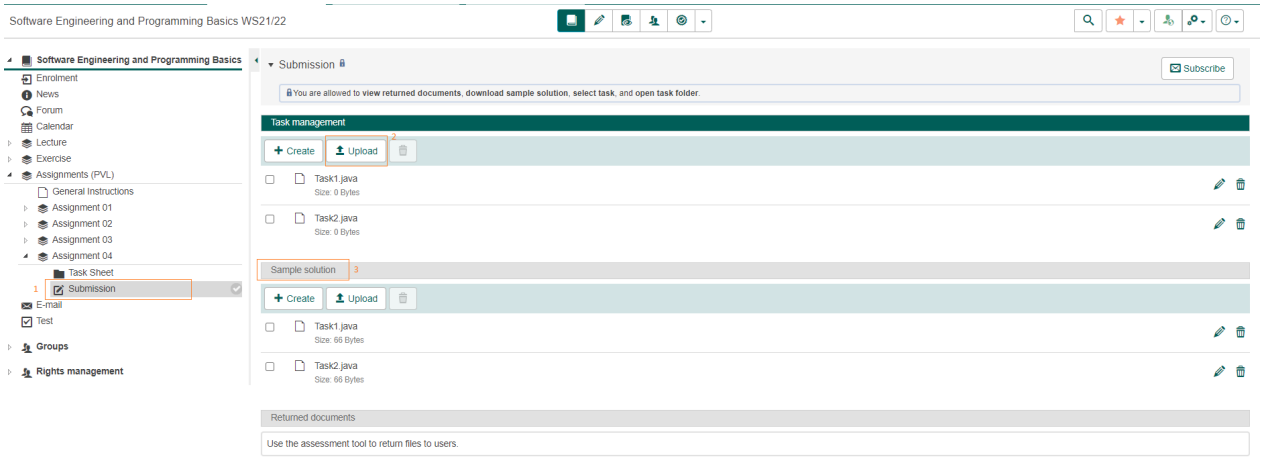
Make sure your files are correctly named: Package, class and method names should be exactly as mentioned on the Task Sheet in order to get grades.

This is an automated checking system. If the uploaded files have wrong names then your code will not be graded.

You also need to adhere to the General Assignment Instructions.

Questions

Since this is a PVL, it is important that all students are able to access all necessary information. Therefore, if you have any questions, please ask them in the course forum in the thread
'Assignment 9: Questions'.



Task 1

This exercise illustrates polymorphism and inheritance. You are provided with a list of files which represent a Firm and its Staff. There are different types of staff members in a firm e.g. Executive, Employee and Volunteer. Staff members are paid on an Hourly basis. You will find implementations of all these classes in the given .zip folder.
In this exercise, you have to add one more employee type to the class hierarchy. The employee will be an hourly employee, however, the employee also earns a commission on sales. Hence, the class, which we'll name **Commission**, will be derived from the **Hourly** class.

Write a class named **Commission** with the following features:

- It extends the Hourly class.
- It has two instance variables (in addition to those inherited): one is the total sales the employee has made (type double) and the second is the commission rate for the employee. The commission rate will be type double and will represent the percentage (in decimal form) commission the employee earns on sales. So .2 would mean the employee earns 20% commission on sales.
- The constructor takes 6 parameters: the first 5 are the same as for Hourly (name, address, phone number, social security number, hourly pay rate) and the 6th is the commission rate for the employee. The constructor should call the constructor of the parent class with the first 5 parameters, then use the 6th to set the commission rate.
- One additional method is needed: **addSales** that receives an amount of sales as a parameter and that adds those sales to the instance variable representing total sales.
- The **pay** method must call the pay method of the parent class to compute the pay for hours worked, then add to that the pay from commission on sales (see the pay method in the Executive class). The total sales should be set back to 0 (note: you don't need to set the hoursWorked back to 0).
- The **toString** method needs to call the toString method of the parent class and then add the total sales to that.

To test your class, update **Staff.java** as follows:

- Increase the size of the array to 8.
- Add two commissioned employees to the staffList—make up your own names, addresses, phone numbers and social security numbers. Have one of the employees earn $6.25 per hour and 20% commission and the other one earn $9.75 per hour and 15% commission.
- For the first additional employee you added, put the hours worked at 35 and the total sales at $400; for the second, put the hours at 40 and the sales at $950.

Compile and run the program. Make sure it is working properly.
Upload the updated files and new files.