**Homework – Payroll Application**

AYJ Cooperation has two types of employees, full-time and part-time. On their record, each employee has an employee number, first name and last name.

Full-time and part-time staffs work under different contracts. Here are the details of each contract:

***Full-time staffs***

Full-time staffs are hired with a yearly (12 months) salary. They are paid monthly. Each of them is given 20 sick days per year.

***Part-time staffs***

Part-time staffs are hired with an hourly rate. Each of them is assigned a certain number of hours per month (same every month). They do not have any sick day benefit, i.e., they do not get paid for the days they are absent.

You are creating a payroll application for AYJ Co., which stores information of all employees. It should have the following functionalities:

* list all employees (employee number, name, full time / part time)
* enter sick day(s) for a specific employee, the smallest unit of sick day is 0.5
* full-time staffs – deduct the sick days from their yearly sick days. If no more sick days are left, print out a warning message
* part-time staffs – add to their number of sick days taken. When the monthly pay stub is printed, these days will be converted into hours (8 hours per day) and deducted from their assigned hours to calculate their pay.

• print monthly pay stub for all employees, depending on the type of the staff, different information is shown on the pay stub

o full time – amount earned, number of sick days left

o part time – number of hours worked, amount earned

• reset yearly sick day for full-time staffs

• reset monthly sick day taken info for part-time staffs

• save employee information to file

• load employee information from file

• output the average salary of full-time staffs

• output the average hourly rate of part-time staffs

• output the full-time staff who has taken the most sick day in the current year • output the part-time staff who has taken the most sick day in the current month

***Design***

The payroll application can be modeled with the following classes:

• **Employee** abstract class

Fields: employeeNumber, firstName, lastName

Methods:

constructor – initializes all fields of the Employee object

pay – an abstract method that returns an employee’s pay

deductSickDay – an abstract method that updates the sick day information for an employee

resetSickDay – an abstract method that resets the sick day information for an employee

printPayStub – an abstract method that prints (display on screen) the monthly pay stub of an employee

toString – return a string with employee number, first name and last name

• **FullTimeStaff** class, which is a subclass of Employee

Fields: yearlySickDay (class constant) yearlySalary, sickDaysLeft Methods**:**

constructor – initializes all fields of the FullTimeStaff Object pay – returns the amount earned monthly based on the yearly salary deductSickDay – updates the number of sick day left for the employee resetSickDay – resets number of sick day left to the yearly allowance printPayStub – prints (on screen) the pay stub for the employee compareToSickDay – compares the number sick day left between two employees

toString – returns a string with employee number, name and title

• **PartTimeStaff** class, which is a subclass of Employee

Fields: numHoursAssigned, hourlyRate, sickDaysTaken Methods**:**

constructor – initializes all fields of the PartTimeStaff Object pay – returns the amount earned based on the hourly rate and the number of hours worked (assigned hours – sick days taken)

deductSickDay – update the number of sick days taken by the employee

resetSickDay – resets number of sick day taken to 0

printPayStub – prints (on screen) the pay stub for the employee compareToSickDay – compare the number sick day taken between two employees

toString – returns a string with employee number, name and title

• **Payroll** class, which store the list of employee

Fields: staffList

Methods**:**

listAllEmployee – lists all employee (employee number, name) enterSickDay – updates sick day information for the employee specified by the employee number

printAllPayStubs – prints on screen the pay stub (for the currently month) for all employees

saveStaffList – saves employee information to the specified file loadStaffList – loads employee information from the specified file averageSalary – calculates (and returns) the average salary of all full time staffs

averageHourlyRate – calculates (and returns) the average hourly rate of all part-time staffs

mostAbsentFullTime – determines (and returns) the full-time staff with the most absence in the current year

mostAbsentPartTime – determines (and returns) the part-time staff with the most absence in the current month

yearlySickDayReset – resets the yearly sick day information for all full time staffs

monthylySickDayReset – resets the monthly sick day information for all part-time staffs

• **PayrollRunner** class

Methods:

main – displays the main menu (listing all options as listed above), and perform the function as requested by user

**Method of input:**

<Number of total employees>

<Full time of part time (F or P)>

**Case P:**

<Employee Number>

<First Name>

<Last Name>

<Number of hours assigned>

<Hourly Rate>

<Sick Days Taken>

**Case F:**

<Employee Number>

<First Name>

<Last Name>

<Yearly Salary>

<Sick Days Left>

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