COSC2081- Programming 1: Assignment 1 → 2013C

Due date: 9 AM Wednesday 13/11/2013 (week 5)

Worth: 7% of the overall assessment.

Submission: Zip your Net Beans – Assignment 1 project and name the zipped archive with your id and name. For example, if your name is Nguyen Van Anh and your id is s1234567, then the zipped archives should be called Assignment1_s1234567_NguyenVanAnh.zip. Submit the zipped archive at Blackboard. Not submitting in this format will mean your submission **will not be graded.**

Late submission: Applications for extension should be via email to the lecturer at least 24 hours before the submission deadline. The duration of extension is decided by the lecturer and is no more than 2 days. Submissions 1 to 5 days late receive 10% penalty per day. Submissions more than 5 days late receive 100% penalty.

Assessment requirements: This is an individual assignment. The minimum penalty for plagiarism is failure for this assignment. If this means that a hurdle requirement is not met, the student fails the course. Please read http://blackboard.rmit.edu.vn/ → assignments section for further information on School plagiarism policy.

Part I: Rainfall statistics and Reverse Integer → `[RainfallReverse.java]`

Design a main () program that displays an interactive menu containing 3 options(use *`switch`* statement) . An example of what your menu would look like is displayed below.

Main Menu:

```
1) Rainfall Statistics
2) Reverse - Integer
3) Exit
Select your option:
```

The program must allow the user to select the options by typing the number and hitting enter. Upon completion of all options except Exit, the user is returned to the main menu.

Menu option #1 requirement

This section will test your programming skills in handling user input, performing basic arithmetic calculations, calling basic library functions in Java, and producing formatted output.

Design a program that reads daily rainfall levels for a specific location and then displays various statistics derived from that rainfall data, in a tabular format. The program should first prompt the user to enter the following information on the keyboard:

- Location for which the data was recorded (town/suburb)

Region of the specified town (one of NE, NW, RRD, NCC, SCC, CH, MRD, SE)

- Daily rainfall total for each day of the week (From Monday through to Sunday)
- Given name and surname of person entering the data

Once the user has finished entering the information the code should calculate the following statistics based on the daily rainfall levels entered by the user:

- Minimum daily rainfall for the seven days
- Maximum daily rainfall for the seven days
- Average daily rainfall across the seven days period
- Total Rainfall for the seven days period

These results of these calculations should then be presented in a formatted table similar to the ones given here.

Sample Input/Output (Input is underlined)

```
Enter suburb/town name: Hochiminh
Enter Region <NE, NW, RRD, NCC, SCC, CH, MRD and SE>: SE

Enter total rainfall on Monday:     232
Enter total rainfall on Tuesday:    45
Enter total rainfall on Wednesday:  0
Enter total rainfall on Thursday:   112
Enter total rainfall on Friday:     331
Enter total rainfall on Saturday:   66
Enter total rainfall on Sunday:     11

Enter your given name: Ashok
Enter your surname: Veerasamy

7-day rainfall report for HCMC, SE
```

```
Minimum Rainfall Maximum Rainfall Average Rainfall Total Rainfall for Week
--------------- ---------------- ---------------- ----------------------
             0mm            331mm           113.9mm                  797mm
-------------------------------------------------------------------------
```

Note:
The rainfall figures shown in the tables above are for demonstration purposes only – the figures may vary based on what the user enters, but you can assume they will always be correctly entered as positive integers (input validation is not required). You may find pre-defined methods such as `Math.max(), Math.min() and System.out.printf()` useful at various points in this program.

Menu option #2 requirement

This section is a problem solving task that covers the areas of simple arithmetic and loop statements. In this task you are required to write a program to prompt the user to enter an integer value from the keyboard, construct a reverse image of the value entered, and then display it to the screen.

You may assume that the value entered by the user will always be 5 digits long (no validation is required). A sample input and output given below that shows how the program should run

Sample Input/Output (Input is underlined)

```
Enter the number to be reversed: 12345

The value 12345 reverse is: 54321
```

Menu option #3 requirement

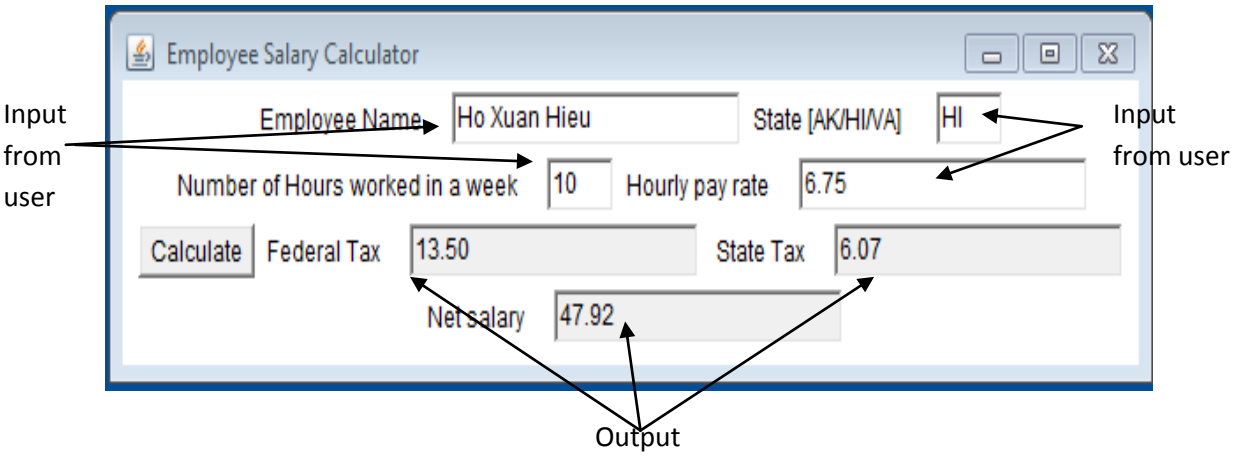
In this task you are required to write a program to exit from main menu with message "Bye see you again"

Part II: Net Salary Calculator → `(NetSalaryCalculator.Java)`

The NetSalaryCalculator.Java file (JApplet) contains the code that calculates the net salary of the employees that work in a company. However, the code is incomplete and you are expected to complete the code based on the details given here.

The gross salary is the product of hourly pay rate and the number of hours worked in the week (e.g., 10*6.75 = 67.5).

Open the file NetSalaryCalculator.Java and complete the code. The sample screenshot is given below (unformatted).



- Federal tax withholding rate is 20%, therefore federal tax holding is the product of gross payment and federal tax withholding rate (67.5 * 20%)
- State tax withholding rate to be calculated according to the following details:

State Code	State Name	Tax rate
AK	Alaska	10%
HI	Hawaii	9%
VA	Virginia	8.2%
All other States		5%

All numerical output must have 2 digits after the decimal point.

Advanced functionality: → `(NetSalaryCalculator.Java)`
Note: These are advanced functionalities, if you choose to implement these; you will have to do some self-research. These will not be covered in the course material.

i. Formatting the text fields and labels of the Net Salary calculator window
ii. Color (background / text/text box / label…)
iii. Clear button (to clear the old data/input)
iv. Input validation (example: typing negative values / inappropriate input).

Hint: Refer `AWTFactorial.java` file in COSC2081_2013C_Assignment1.zip file

Getting Started

1. Download **COSC2081_2013C_Assignment1.zip file** and unzip it. It should contain a NetBeans project folder called **Assignment1_2013C**
2. In NetBeans, open the project **Assignment1_2013C**
3. Complete the code for part I (**`RainfallReverse.java`**), part II (**`NetSalaryCalculator.Java`**) tasks
4. Follow the submission procedures given in the first page of assignment specifications.

ASSIGNMENT 1 – COMPLETION REPORT / MARKING GUIDE

STUDENT ID & NAME ……..

Items	Check if completed	Possible points	Actual points
Part I - Rainfall & Reverse Integer Main menu –Design Return to Main menu		 1 1	
Menu option 1 – Rainfall Statistics			
i. Input statements		1	
ii. Calculations [4 X 0.5]		2	
iii. Output statements – formatted		2	
Menu option 2 – Reverse – Integer			
i. Input & output statements		1	
ii. Using loop – reversing process		2	
Menu option 3 – Exit		0.5	
Part II – Net Salary Calculator i. Calculating federal tax ii. Calculating state tax iii. Calculating net Salary iv. Output statements – formatted		 0.5 3.0 0.5 1.5	
Advanced functionality i. Formatting the text fields and labels ii. Setting color (background / text/text box) iii. Clear button (to clear the existing data) iv. Input validation (example : typing negative values / inappropriate input)		 2 1.5 1.5 2	
Indent and comments		2	
Total possible		25	