The University of Newcastle
SENG6110 Object Oriented Programming
Computer Lab – Week 4

- You will receive instructions in the beginning of each computer lab.
- Try to do all exercises. If you can't finish during the computer labs, finish later.
- Ask questions!!! A lot of them!! Use discussion board in Canvas.

1. Watch the Lab-week4a-SMS_Demo_with_Loops video available in the 'computer lab 4' folder in Canvas.
2. Download the code Salary.java from Canvas. Modify the code adding the following requirements (one by one) and use GUI:
    a. The input will be total number of hours worked in a week (it will not be normal and extra hours).
    b. Calculate the salary as: for the first 40 hours worked in a week the pay rate is $10/hour and after that initial 40 hours the pay rate is $15/hour. For example, if the number of hours is 35 (less than 40), then the salary is 35*10. if the number of hours is 65 (more than 40 hours), then the salary will be 40*10 + (65-40)*15.
    c. Calculate the total salary after 5 weeks. You need to input the number of worked hours every week. For every single week, the salary for that week will be calculated as stated in b. Use a while, do-while or for to complete this task.
    d. Test your code. Try the following inputs (number of hours every week)
        - 10 50 60 20 30 *(the result is 1850)*
        - 0 10 20 30 40 *(the result is 1000)*
        - 40 39 41 45 50 *(the result is 2230)*
        - 20 -1 10 10 10 *(invalid input)*
    e. Add the following bonus: If the total salary (for the entire 5 weeks) is less or equal to $1000, the employee will receive 10% bonus. If the salary is greater than $1000 and less or equal to $2000, the employee will receive 5% bonus. If the salary is greater than $2000 and less or equal to $3000, the employee will receive 1% bonus.
    f. Add name as input: in the beginning of the program, the user will input the name of the employee. In the end of the program, the output should be "Salary of <name> is <value>". If the employee received bonus, the output should include "which includes x% bonus", where x should be 1% or 5% or 10% as stated in e.
    g. In the loop statement, try to use while, do-while and for. Watch the Lab-week4b-All_about_Loops video to understand the difference between while, do-while and for loops.
    h. Instead of 5 weeks, consider changing the program so that the number of weeks is an input.

3. Write a program that calculates the repayment per month when you buy a product which will be paid off in 'M' months with an interest calculated monthly. Inform the user how much the total interest is at the end of the period. See more details in the lecture slides.

4. Using the program structure templates provided via the program files ExampleTio.java and ExampleGui.java that you can download from Canvas, write a Java program for the problems given below. Try to use GUI and TIO. The Labweek4cInput_and_Output_Demo_using_TIO_and_GUI video shows an implementation using TIO and GUI. a. 2 + 4 + 6 + … + n, where n is input

   b. $(1/2)^2 + (2/3)^2 + (3/4)^2 + \ldots + ((n-1)/n)^2$, where n is input

   c. 1*3 + 3*5 + 5*7 + … + n*(n+2) , where n is input

   d. 1! -3! + 5! – 7! + … + n! , where n is input

5. Explore the Java API documentation at http://docs.oracle.com/javase/9/docs/api

   a. Check the different methods in Math class. Try to use a couple of them in the exercises in 4 above.

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