JAVA PROGRAMMING COURSE (SWE2023)

SPRING SEMESTER 2021

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COLLEGE OF SOFTWARE

Assignment 1

This assignment consists of 3 tasks. Guidelines for submission format are given at the end of the assignment file.

Task 1

Develop a Java application that calculates the volume of a cylinder. Your program should input the radius and the height of the cylinder. You can calculate the volume of the cylinder with the following formula:

$$V=\pi r^2 h$$

Input

Radius (cm): 8
Height (cm): 15

Output

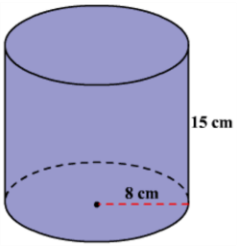
Volume of the cylinder: 3014.4

$\pi = 3.14$

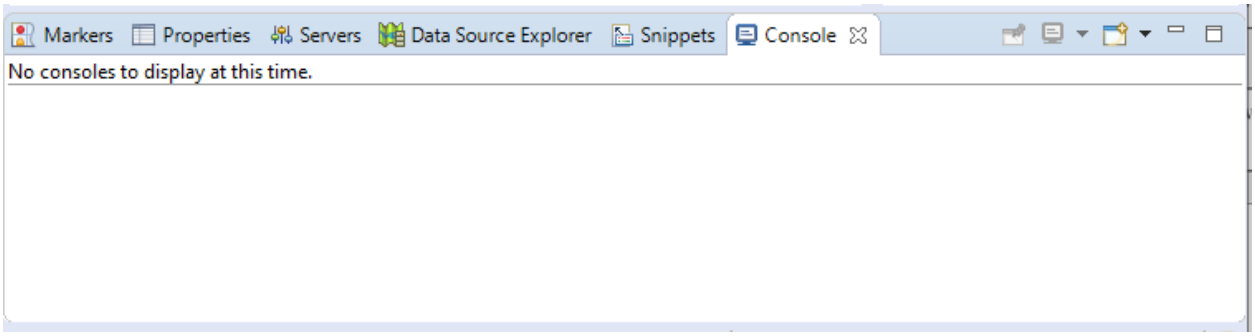
$V=\pi(8)^2(15)$

$V=(3.14)*(64)*(15)$

$V= 3014.4$

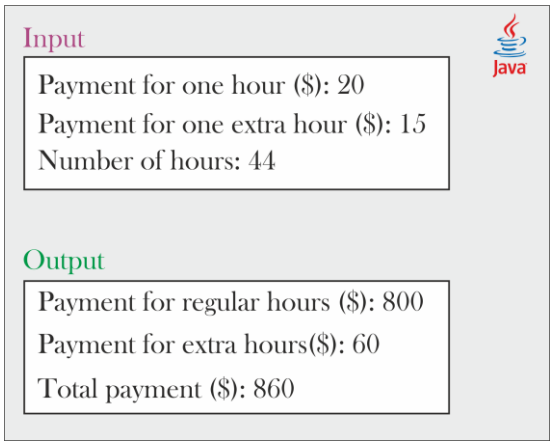


Please note that the input and output of all tasks will appear in the Eclipse Console



Task 2

(Salary Calculator) Develop a Java application that determines the payment for the employee. For calculating the payment of employees, you need the payment for one hour, payment for an extra hour, and the employee's number of hours. Your program should input this information for employees, then determine and display the employee's payment. The number of hours for all employees is 40 hours and all hours worked in excess of 40 are considered extra hours. Use class Scanner to input the data.



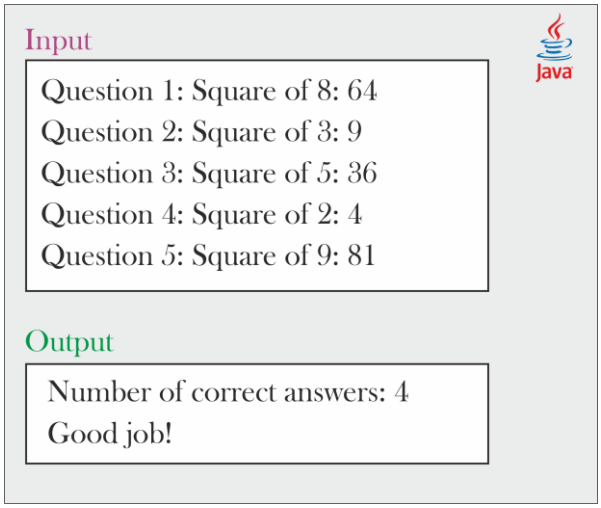
Task 3

(Test System) Computers are playing an increasing role in education. Write a program that will help an elementary school student learn to find the square of the number. Use a **Random object** to produce one positive one-digit integers. The program should then prompt the user with a question, such as

What is the square of 8?

The program asks five questions one by one (all numbers are generated randomly). The student then inputs the answers. Next, the program checks all student's answers and output the number of correct answers with feedback:

- Feedback for 5 correct answers: Excellent!
- Feedback for 4 correct answers: Very good!
- Feedback for 3 correct answers: Good.
- Feedback for 2 correct answers: Not Bad.
- Feedback for 1 correct answers: Very bad.
- Feedback for 0 correct answers: Try again.



Hint:
Question 3 help example for showing how to generate random numbers

```
// import the library
import java.util.Random;
/** Generate 10 random integers in the range 0..99. */
public final class RandomInteger {
        public static void main(String[] args) {
                System.out.print("Generating 10 random integers in range 0..99.");
                // create a single Random object which is reused in here
                Random randomGenerator = new Random();
                int randomInt = randomGenerator.nextInt(100);
        }
}
```

Submission format: Submit **three separate files**. Files must include the implementation code of each task and **comments** for important lines of code to explain the purpose. All the files should be submitted as a **zip** file.

Name of zip file: {student ID}_{Student name}_assignment1.zip
Example: 2020712837_Frank_Thomas_assignment1.zip

Important: Plagiarism is strictly prohibited. If there is any plagiarism found in the code, you will be given an "F" for the assignment evaluation.

If you have any questions about the assignment, you can ask in the discussion section of the week or contact the TAs directly.

Good luck!