Lab 02 Introduction to Java programming language 2

Part One (control flow and loops): ★★☆☆☆

Task 1. Write a JAVA program that:

a. Ask a user to enter his exam score using **args** input.
b. Display a "text mark" according to the entered score, and following this table:

Note Range	17-20	15-17	13-15	10-13	8-10	5-8	0-5
Signification	Excellent	Très bien	Bien	Satisfaisant	Suffisant	Médiocre	Insuffisant

Task 2. Given the following two java programs:

```java
public static void main(String[] args) {
    int N;
    N = 1;
    while (N <= 32) {
       N = 2 * N;
       System.out.println(N);
       }
}
```

```java
public static void main(String[] args) {
    int x,y;
    x = 5;
    y = 1;
    while (x > 0) {
       x = x - 1;
       y = y * x;
       System.out.println(y);
    }
}
```

a. Show the exact output produced by each program
b. Write each one of them and execute to confirm

Task 3. We are interested in computing the sum of the following series: **Sum = 1 + 1/2 + 1/3 + 1/4 +.....1/n**

a. Write a java program that computes this series in which **n** is input by a user.

Task 4. Write a program that:

a. Asks the user to guess the number.

b. Then our program should generate a random number.

- ✓ if the user's guess is higher than the random number, the program should display "Too high."
- ✓ If the user's guess is lower than the random number, the program should display "Too low."
- ✓ if a user choice is correct, the program should display "Great job!."

Task 5. Edit the past program to use a loop that repeats until the user correctly guesses the random number then it exits the program.

Task 6. Write a program a JAVA program asks a user for his credentials (Username and password). After 3 wrong inputs, the user will be rejected. Note: Username and password both must be strings.

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Part Two (Java Scanner, Build your Exercices): ★★★☆☆ Object-Oriented Programming (OOP)- 2nd Year CPI

Task1. Write a small calculator!

a) Ask the user for 2 numbers
b) Ask the user for an operation. (Similar to Exercise 3: 1 -> +, 2 -> -, 3 -> *, 4 -> /)
c) Execute the operation with the two numbers and print the result to the screen

Output could look similar to this

```
First number:
10
Second number:
12
Please specify an operation:
1 -> +
2 -> -
3 -> *
4 -> /
2
Result of 10.0 - 12.0 is -2.0
```

Starting point

```java
public class SimpleCalculator {

    public static void main(String[] args) {

        // Ask the user for the first number
        // Ask the user for the second number
        // Print the operations supported by the calculator
        // Ask the user which operation they want to perform
        // Print the result
    }
}
```

Task 2 *The objective of this task is to use Ai as teacher*

Use ChatGPT or DeepSeek or any LLM-Ai model to generate a problem (exercise) involving arrays (1D or 2D or 3D tables) and covered basic Java syntax.

- **Three to four students** will present their solutions to the class.
- The selected student should already finished all the Lab tasks.
- Solutions for this task must align with the lecture topics without introducing advanced concepts not yet covered.

In the following the table of evaluation criteria for this task:

Criteria	Description	Weight (%)
Exercise Idea	Present the written prompt used to generate the exercise. It should be clear and relevant.	20%
Problem Mastery	Explain the approach and solution clearly, step by step. The code should be run smoothly in different cases	30%
Lecture Alignment	Ensure the solution follows the topics covered in Lectures or Lab sessions. Using unknown concepts reduces the score.	25%
Clarity	Keep explanations structured and easy to follow. Responses to the questions of their colleagues.	15%
Avoiding Redundancy	Exercise design should be concise and meaningful, without repetition with other colleagues.	10%