BÁO CÁO THỰC HÀNH LAP 1 LẬP TRÌNH HƯỚNG ĐỐI TƯỢNG

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2. The Very First Java Programs

2.2.1 Write, compile the first Java application

```
1 //Example 1: HelloWorld.java
2 //Text-printing program
3 public class HelloWorld {
4
5 public static void main(String args[]){
6     System.out.println("Xin chao \n cac ban!");
7     System.out.println("Hello \t world!");
8
9 } // end of method main
10 }
```

Figure 1 2.2.1 example

Kết quả:

```
Main.java × Calculator.java × HelloWorld.java × Fequation.java × HelloNameDialog.java ×

public class HelloWorld {

public static void main(String args[]) {

System.out.println("Xin chao \n cac ban!");

System.out.println("Hello \n world!");

}

}
```

Figure 2 2.2.1 code

```
Git × + v - - - ×

C:\Users\Fuss\Desktop\OOP\lab\IT3103.732874.2023.1.20205219.TrinhPhuQuang\lab01>java HelloWorld

Xin chao
cac ban!

Hello
world!
```

Figure 3 2.2.1 result

2.2.2 Write, compile the first dialog Java program

```
1 // Example 2: FirstDialog.java
2 import javax.swing.JOptionPane;
3 public class FirstDialog{
4    public static void main(String[] args){
5         JOptionPane.showMessageDialog(null, "Hello world! How are you?");
6         System.exit(0);
7    }
8 }
```

Figure 4 2.2.2 example

Figure 5 2.2.2 code



Figure 6 2.2.2 result

2.2.3 Write, compile the first input dialog Java application

```
1 // Example 3: HelloNameDialog.java
2 import javax.swing.JOptionPane;
3 public class HelloNameDialog{[
4 public static void main(String[] args){
5    String result;
6    result = JOptionPane.showInputDialog("Please enter your name:");
7    JOptionPane.showMessageDialog(null, "Hi "+ result + "!");
8    System.exit(0);
9  }
10 }
```

Figure 7 2.2.3 example

Figure 8 2.2.3 code

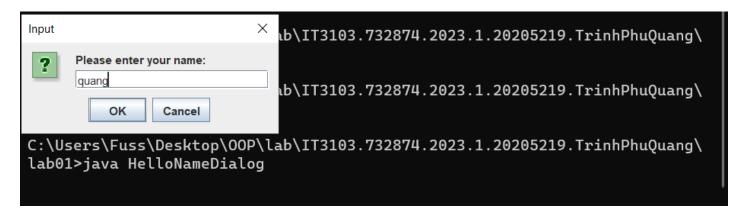


Figure 9 2.2.3 result (1)

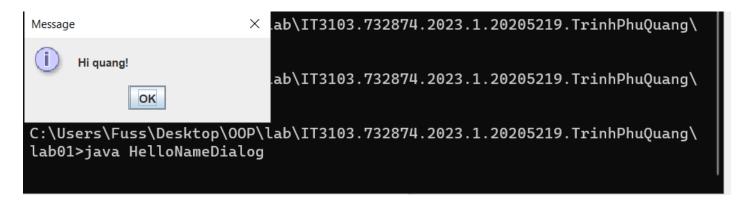


Figure 10 2.2.3 result (2)

```
2.2.4 Write, compile, and run the following example:
  1 // Example 5: ShowTwoNumbers.java
  2 import javax.swing.JOptionPane;
  3 public class ShowTwoNumbers {
       public static void main(String[] args){
         String strNum1, strNum2;
  5
         String strNotification = "You've just entered: ";
  6
  7
         strNum1 = JOptionPane.showInputDialog(null,
  8
                     "Please input the first number: ", "Input the first number",
  9
                     JOptionPane. INFORMATION_MESSAGE);
 10
         strNotification += strNum1 + " and ";
 11
 12
 13
         strNum2 = JOptionPane.showInputDialog(null,
                     "Please input the second number: ", "Input the second number",
 14
                     JOptionPane.INFORMATION_MESSAGE);
 15
 16
         strNotification += strNum2:
 17
         JOptionPane.showMessageDialog(null,strNotification,
 18
 19
                     "Show two numbers", JOptionPane. INFORMATION_MESSAGE);
         System.exit(0);
 20
       }
 21
 22 }
```

Figure 11 2.2.4 example

Figure 12 2.2.4 code

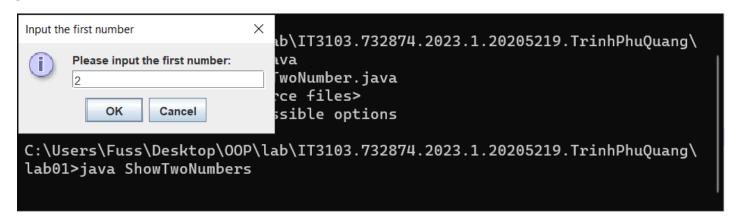


Figure 13 2.2.4 result (1)

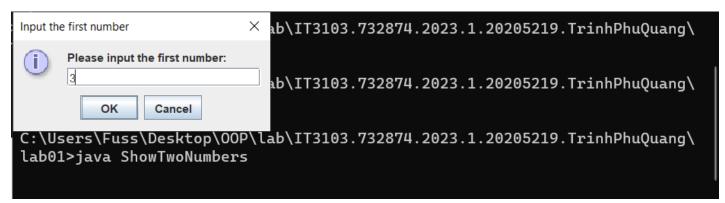


Figure 14 2.2.4 result (2)

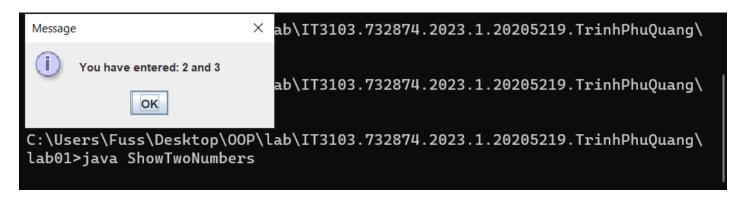


Figure 15 2.2.4 result (3)

2.2.5 Write a program to calculate sum, difference, product, and quotient of 2 double numbers which are entered by users.

Notes

- To convert from String to double, you can use
 - double num1 = Double.parseDouble(strNum1)
- Check the divisor of the division Kết quả

```
ChoosingOptionjava × A FirstDialogjava × A HelioNameDialogjava × A ShowTwoNumbersjava × ProcessTwoNumbersjava ×

import java.awt.event.*;

public class ProcessTwoNumbers {

public static void main(String[] args) {

JFrame frame = new JFrame("Calculator");// Creating the main frame

frame.setDefaultOlesoEperation(JFrame.EXIT_ON_CLOSE); // Set close operation

frame.setSize(1900, 190);// Set size for the frame

JPanel panel = new JPanel(); // Creating the panel to hold components

// Adding components to the panel

JTextField inputField1 = new JTextField(10); // 1st input field

panel.add(inputField1);

JTextField inputField2 = new JTextField(10); // 2rd input field

panel.add(inputField2);

JButton calculateButton = new JButton("Calculate");// Calculate button

panel.add(calculateButton);

JLabel resultLabel = new JLabel("Results:"); // results label

panel.add(calculateButton);

JLabel resultLabel = new JLabel("Results:"); // results label

panel.add(calculateButton); // Adding the panel to the frame

calculateButton.addActionListener(new ActionListener() { // Adding ActionListener to the Calculate button

@Override

public void actionPerformed(ActionEvent e) {

// Retrieving text from input fields

String strNum1 = inputField1.getText();

String strNum2 = inputField2.getText();
```

Figure 16 2.2.5 code (1)

```
String strNuml = inputField1.getText();

String strNum2 = inputField2.getText();

// Converting text to double
double numl = Double.parseDouble(strNuml);
double num2 = Double.parseDouble(strNum2);

//calculate
double sum = num1 + num2;
double gifference = numl - num2;
double product = numl * num2;
double quotient;

//show result
if (num2 != 8) {
    quotient = numl / num2;
    resultLabel.setText("Results: Sum=" + sum + ", Difference=" + difference + "\n Product=" + product - ", Quotient=" + quotient);
} else {
    resultLabel.setText("Cannot divide by zero. Please enter a non-zero second number.");
}

// Displaying the frame
frame.setVisible(true);
```

Figure 17 2.2.5 code (2)

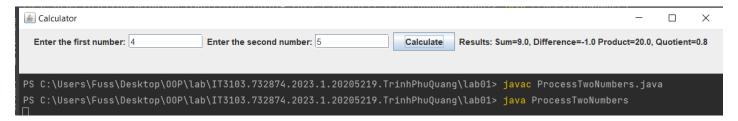


Figure 18 2.2.5 result

6. Exercises

6.1 Write, compile and run the ChoosingOption program:

```
1 import javax.swing.JOptionPane;
   public class ChoosingOption{
 2
 3⊜
     public static void main(String[] args){
        int option = JOptionPane.showConfirmDialog(null,
 4
                    "Do you want to change to the first class ticket?");
 5
 6
       JOptionPane.showMessageDialog(null, "You've chosen: "
 7
 8
                        + (option==JOptionPane. YES_OPTION?"Yes":"No"));
 9
        System.exit(0);
     }
10
11
```

Figure 19 6.1 example

Kết quả:

Figure 20 6.1 code

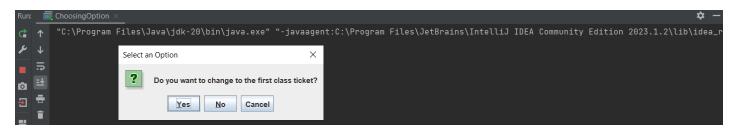


Figure 21 6.1 result (1)

Nếu chon cancel:

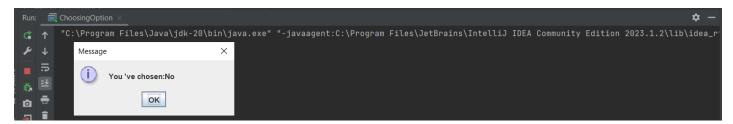


Figure 22 6.1 result (2)

Chon yes:

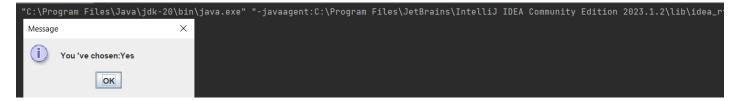


Figure 23 6.1 result (3)

Chon No:

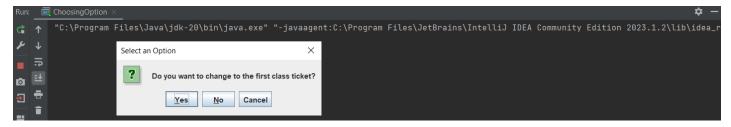


Figure 24 6.1 result (4)

Questions:

- What happens if users choose "Cancel"? Kết quả sẽ hiển thị là No
- How to customize the options to users, e.g. only two options: "Yes" and "No", OR "I do" and "I don't" (Suggestion: Use Javadocs or using Eclipse/Netbean IDE help).

Có thể sửa code thành:

Figure 25 6.1 Question code

Figure 26 6.1 Question result

```
6.2 Write a program for input/output from keyboard
  1 import java.util.Scanner;
  2 public class InputFromKeyboard{
         public static void main(String args[]){
  3⊖
              Scanner keyboard = new Scanner(System.in);
  4
  5
              System.out.println("What's your name?");
  6
              String strName = keyboard.nextLine();
  7
              System.out.println("How old are you?");
  8
              int iAge = keyboard.nextInt();
  9
              System.out.println("How tall are you (m)?");
 10
              double dHeight = keyboard.nextDouble();
 11
 12
 13
             //similar to other data types
              //nextByte(), nextShort(), nextLong()
 14
              //nextFloat(), nextBoolean()
 15
 16
              System.out.println("Mrs/Ms. " + strName + ", " + iAge + " years old. "
 17
                                   + "Your height is " + dHeight + ".");
 18
 19
 20
         }
 21 }
🦹 Markers 📃 Properties 🚜 Servers 📔 Data Source Explorer 📔 Snippets 🥷 Problems 📮 Console 🔀
<terminated> InputFromKeyboard [Java Application] /Library/Java/JavaVirtualMachines/jdk1.8.0_171.jdk/Contents/Home/bin/
What's your name?
Trang
How old are you?
How tall are you (m)?
1.65
Mrs/Ms. Trang, 35 years old. Your height is 1.65.
```

Figure 27 6.2 example

Figure 28 6.2 code

```
"C:\Program Files\Java\jdk-20\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2023.1.2\lib\idea_rt.jar=51860:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2023.1.2\lib\idea_rt.jar=51860:C:\Program
```

Figure 29 6.2 result

6.3 Write a program to display a triangle with a height of n stars (*), n is entered by users

Kết quả:

Figure 30 6.3 code

Figure 31 6.3 result

6.4 Write a program to display the number of days of a month, which is entered by users (both month and year).

You must create a new Java project for this exercise.

- The user can either enter a month in its full name, abbreviation, in 3 letters, or in number. To illustrate, the valid inputs of *January* are January, Jan., Jan, and 1.

- The user must enter a year in a non-negative number and enter all the digits. For instance, the valid inputs of year *1999* is only 1999, but not 99, "one thousand nine hundred ninety-nine", or anything else.

- A year is either a common year of 365 days or a leap year of 366 days. Every year that is divisible by 4 is a leap year, except for years that are divisible by 100, but not by 400. For instance, year 1800 is not a leap year, yet year 2000 is a leap year. In a year, there are twelve months, which are listed in order as follows.

Figure 32 6.4 code (1)

Figure 33 6.4 code (2)

```
"C:\Program Files\Java\jdk-20\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2023.1.2\lib\idea_rt.jar=51193:C:\Program Files\JetBrains\Intel
Enter a month (e.g., January, Jan., Jan, 1): foo.
Enter a year (e.g., 1999): 2000
February 2000 has 29 days (leap year).
```

Figure 34 6.4 result

6.5 Write a Java program to sort a numeric array, and calculate the sum and average value of array elements.

```
💰 Star.java 🗡
륅 ChoosingOption.java 🗴 🦸 InputFromKeyboard.java 🗡
                                                       🦸 🚮 DayAMonth.java 🗡
                                                                          SortArray.java
       import java.util.Arrays;
       import java.util.Scanner;
      public class SortArray {
           public static void main(String[] args) {
               Scanner input = new Scanner(System.in);
               System.out.print("Enter the size of the array: ");
               int size = input.nextInt(); // enter size of array
               double[] arr = new double[size];
               for (int i = 0; i < size; i++) {
                   System.out.print("Enter element " + (i + 1) + ": ");
                   arr[i] = input.nextDouble();
               Arrays.sort(arr);//sort array
               double sum = 0;// var for sum of array
               for (double num : arr) {//calculate sum of array
                   sum += num;
               double average = sum / size;//calculate average of array
               //print infomation
               System.out.println("Sorted array: " + Arrays.toString(arr));
               System.out.println("Sum of array : " + sum);
               System.out.println("Average of array : " + average);
               input.close();
```

Figure 35 6.5 code

```
"C:\Program Files\Java\jdk-20\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2023.1.2\lib\idea_rt.jar=51259:C:\Program Files\JetBrains\IntelliDea Community Edition 2023.1.2\lib\idea_rt.jar=51259:C:\Program Files\JetBrains\IntelliDea Enter the size of the array:

Enter element 1: 

Enter element 2: 

Enter element 3: 

Enter element 3: 

Enter element 4: 

Sorted array: [3.0, 5.0, 7.0, 9.0]

Sum of array: 24.0

Average of array: 6.0
```

Figure 36 6.5 result

6.6 Write a Java program to add two matrices of the same size.

- The matrices can be entered by the user or constants.

```
import java.util.Scanner;

public class Hatrix(

public static void main(String[] args) {

Scanner input = new Scanner(System.atn);

// Input number of rows and columns for matrices

System.out.print("Enter the number of rows: ");

int rows = input.nextint();

System.out.print("Enter the number of columns: ");

int cols = input.nextint();

// Create arrays for matrices and the result matrix

int[[] matrix1 = new int[rows][cols];

int[[] matrix2 = new int[rows][cols];

int[[] resultMatrix = new int[rows][cols];

int[][] resultMatrix = new int[rows, cols);

// Input elements for the first matrix;

System.out.println("Enter elements of the first matrix:");

inputMatrixElements(input, matrix1, rows, cols);

// Perform matrix addition

addHatrices(matrix1, matrix2, rows, cols);

// Display the resultant matrix after addition

displayMatrix(resultMatrix, rows, cols);
```

Figure 37 6.6 code (1)

Figure 38 6.6 code (2)

```
"C:\Program Files\Java\jdk-20\bin\java.exe" "-javaagent:C:\Program Files\JetBrains\IntelliJ IDEA Community Edition 2023.1.2\lib\idea_rt.jar=51354:C:\Program Files\JetBrains\Intell Enter the number of rows: 2
Enter the number of columns: 3
Enter elements of the first matrix:
Enter element [0][0]: 1
Enter element [0][0]: 2
Enter element [0][1]: 2
Enter element [0][2]: 3
Enter element [1][0]: 2
Enter element [1][0]: 3
Enter element [1][0]: 3
Enter element [1][0]: 3
Enter element [0][0]: 3
Enter element [1][0]: 3
Enter element [1][0
```

Figure 39 6.6 result