ĐẠI HỌC BÁCH KHOA HÀ NỘI
TRƯỜNG CÔNG NGHỆ THÔNG TIN VÀ TRUYỀN THÔNG

BÁO CÁO THỰC HÀNH
IT3103-744527-2024.1

BÀI THỰC HÀNH -LAB01

Họ và tên sv: Lê Đồng Cảnh Phú

MSSV: 20225755

Lớp: VN01-K67

GVHD: Lê Thị Hoa

HTGD: Đặng Mạnh Cường

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Danh mục hình ảnh

BÁO CÁO THỰC HÀNH LAP 1

The Very First Java Programs

2.2.1 Write, compile the first Java application:

```java
//Example 1: HelloWorld.java
//Text-printing program
public class HelloWorld {

    public static void main(String args[]){
        System.out.println("Xin chao \n cac ban!");
        System.out.println("Hello \t world!");

    } // end of method main
}
```

Hình 1: Code mẫu ví dụ 1

Kết quả

```
lab1 > HelloWorld.java > HelloWorld
You, 4 days ago | 1 author (You)
1   package lab1;
You, 4 days ago | 1 author (You)
2   //Example 1: HelloWorld.java
3   //Text-printing program.
4   public class HelloWorld {
        Run | Debug
5       public static void main(String args[]) {
6           System.out.println("Le Dong Canh Phu - 20225755");
7           System.out.println("Xin chao \n cac ban");
8           System.out.println("Hello \t World");
9       } // end of method main
10  }       You, 4 days ago • HelloWorld.java

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS  GITLENS  COMMENTS

PS C:\Users\admin\OneDrive - Hanoi University of Science and Technology\Documents\IT3103.744527.2024.1.20225755.LeDongCanhPhu> & 'C:\Program Files
\Java\jre-1.8\bin\java.exe' '-agentlib:jdwp=transport=dt_socket,server=n,suspend=y,address=localhost:52873' '-cp' 'C:\Users\admin\AppData\Roaming\C
ode\User\workspaceStorage\b18e76f7eb616422bebc94328bc57ce2\redhat.java\jdt_ws\IT3103.744527.2024.1.20225755.LeDongCanhPhu_e43b1ebf\bin' 'lab1.Hello
World'
Le Dong Canh Phu - 20225755
Xin chao
 cac ban
Hello    World
PS C:\Users\admin\OneDrive - Hanoi University of Science and Technology\Documents\IT3103.744527.2024.1.20225755.LeDongCanhPhu>
```

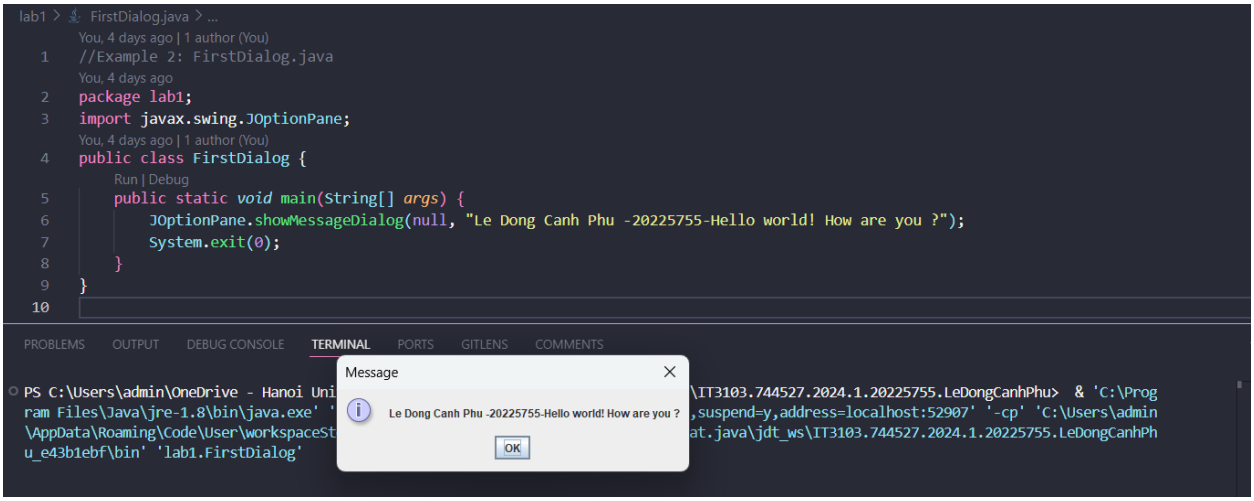
Hình 2: Kết quả ví dụ 1

2.2.2 Write, compile the first dialog Java program

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

Hình 3:Code bài ví dụ 2

Kết quả



Hình 4: Kết quả ví dụ 2

2.2.3 Write, compile the first input dialog Java application

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

Hình 5: Code bài ví dụ 3

Kết quả

Hình 6: Kết quả ví dụ 3

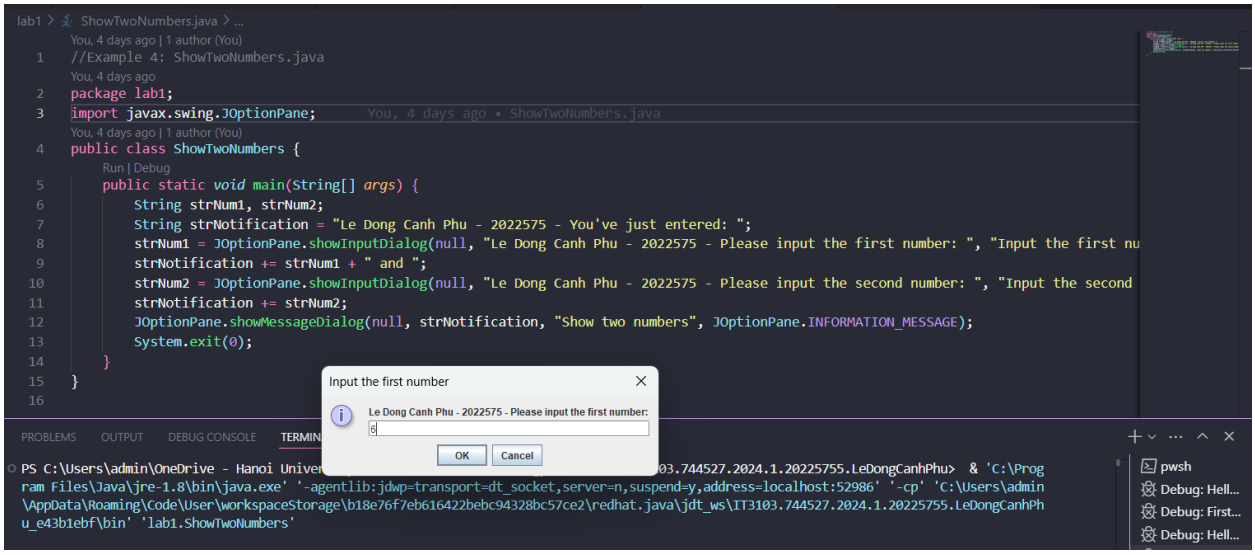
Hình 7: Kết quả ví dụ 3

2.2.4 Write, compile, and run the following example:

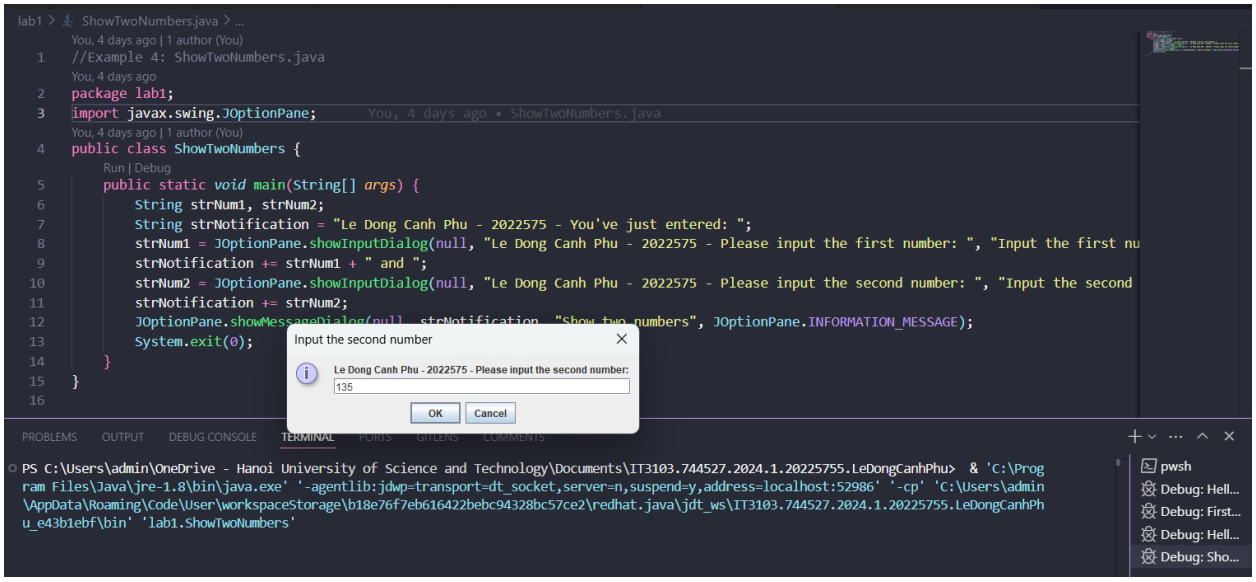
```java
// Example 5: ShowTwoNumbers.java
import javax.swing.JOptionPane;
public class ShowTwoNumbers {
  public static void main(String[] args){
    String strNum1, strNum2;
    String strNotification = "You've just entered: ";

    strNum1 = JOptionPane.showInputDialog(null,
                "Please input the first number: ","Input the first number",
                JOptionPane.INFORMATION_MESSAGE);
    strNotification += strNum1 + " and ";

    strNum2 = JOptionPane.showInputDialog(null,
                "Please input the second number: ","Input the second number",
                JOptionPane.INFORMATION_MESSAGE);
    strNotification += strNum2;

    JOptionPane.showMessageDialog(null,strNotification,
                "Show two numbers", JOptionPane.INFORMATION_MESSAGE);
    System.exit(0);
  }
}
```

Hình 8: Code mẫu ví dụ 4

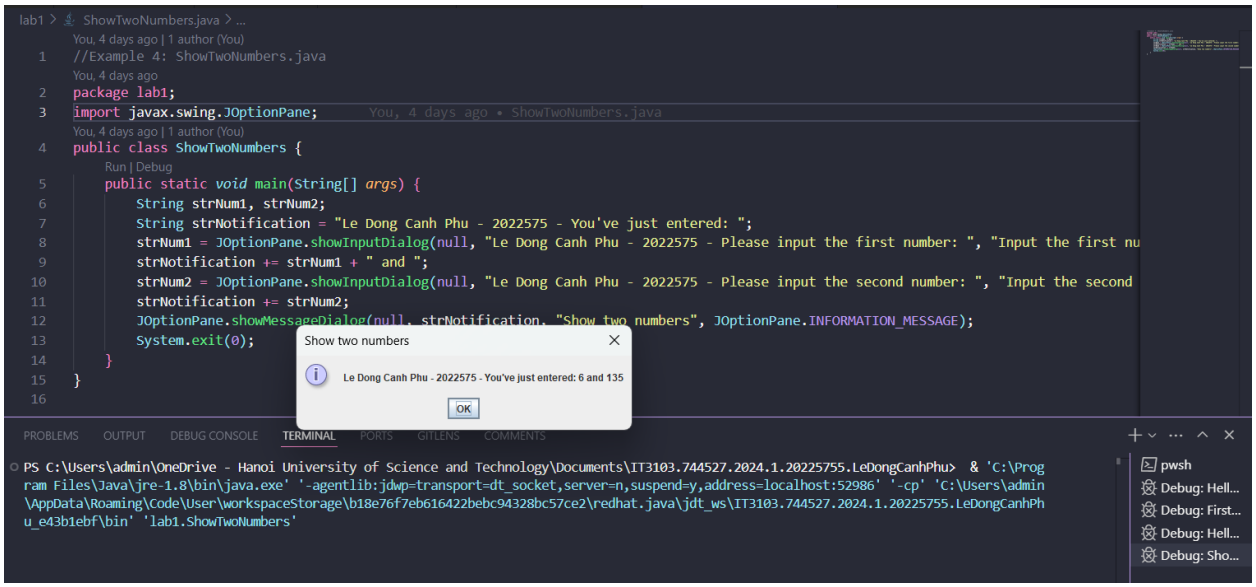
Kết quả



Hình 9: Kết quả ví dụ 4



Hình 10: Kết quả ví dụ 4



Hình 11: Kết quả ví dụ 4

BÀI TẬP

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

2.2.2 ….

Kết quả

```java
package lab1;
import java.util.Scanner;
public class Caculate {
    public static void main(String[] args) {
        // Use Scanner to read from keyboard
        Scanner input = new Scanner(System.in);
        System.out.print("Enter the first number: ");
        String strNum1 = input.nextLine();
        System.out.print("Enter the second number: ");
        String strNum2 = input.nextLine();
        // Parse string to double
        double num1 = Double.parseDouble(strNum1);
        double num2 = Double.parseDouble(strNum2);
        // Caculate sum, difference, product, quotient
        double sum = num1 + num2;
        double difference = num1 - num2;
        double product = num1 * num2;
        double quotient = num1 / num2;
        // Print result
        System.out.println("Le Dong Canh Phu - 20225755");
        System.out.println("Sum: " + sum);
        System.out.println("Difference: " + difference);
        System.out.println("Product: " + product);
        if (num2 == 0) {
            System.out.println("Cannot divide by zero");
            System.exit(0);
        } else {
            System.out.println("Quotient: " + quotient);
        }
        input.close();
    }
}
```

Hình 12: Kết quả bài tập 2.5

```java
package lab1;
import java.util.Scanner;
public class Caculate {
    public static void main(String[] args) {
        // Use Scanner to read from keyboard
        Scanner input = new Scanner(System.in);
        System.out.print("Enter the first number: ");
        String strNum1 = input.nextLine();
        System.out.print("Enter the second number: ");
        String strNum2 = input.nextLine();
        // Parse string to double
        double num1 = Double.parseDouble(strNum1);
        double num2 = Double.parseDouble(strNum2);
        // Caculate sum, difference, product, quotient
        double sum = num1 + num2;
        double difference = num1 - num2;
        double product = num1 * num2;
        double quotient = num1 / num2;
        // Print result
        System.out.println("Le Dong Canh Phu - 20225755");
```

```
PS C:\Users\admin\OneDrive - Hanoi University of Science and Technology\Documents\IT3103.744527.2024.1.20225755.LeDongCanhPhu> & 'C:\Program Files\Java\jre-1.8\bin\java.exe' '-agentlib:jdwp=transport=dt_socket,server=n,suspend=y,address=localhost:53036' '-cp' 'C:\Users\admin\AppData\Roaming\Code\User\workspaceStorage\b18e76f7eb616422bebc94328bc57ce2\redhat.java\jdt_ws\IT3103.744527.2024.1.20225755.LeDongCanhPhu_e43b1ebf\bin' 'lab1.Caculate'
Enter the first number: 135
Enter the second number: 128
Le Dong Canh Phu - 20225755
Sum: 263.0
Difference: 7.0
Product: 17280.0
Quotient: 1.0546875
PS C:\Users\admin\OneDrive - Hanoi University of Science and Technology\Documents\IT3103.744527.2024.1.20225755.LeDongCanhPhu>
```

Hình 13: Kết quả bài tập 2.5

2.2.6. Write a program to solve:

For simplicity, we only consider the real roots of the equations in this task.

- **The first-degree equation (linear equation) with one variable**

Note: A first-degree equation with one variable can have a form such as $ax + b = 0$ $(a \neq 0)$.

You should handle the case where the user input value 0 for a.

- **The system of first-degree equations (linear system) with two variables**

Note: A system of first-degree equations with two variables x_1 and x_2 can be written as follows.

$$\{a_{11}x_1 + a_{12}x_2 = b_1 \; a_{21}x_1 + a_{22}x_2 = b_2$$

You should handle the case where the values of the coefficients produce infinitely many solutions and the case where they produce no solution.

Hint:

Use the following determinants:

$$D = |a_{11}\ a_{12}\ a_{21}\ a_{22}\ | = a_{11}a_{22} - a_{21}a_{12} D_1 = |b_1\ a_{12}\ b_2\ a_{22}\ | = b_1a_{22} - b_2a_{12} D_2 = |a_{11}\ b_1\ a_{21}\ b_2\ | = a_{11}b_2 - a_{21}b_1$$

- **The second-degree equation with one variable**

Note: A second-degree equation with one variable (i.e., quadratic equation) can have a form such as $ax^2 + bx + c = 0$, where x is the variable, and a, b, and c are coefficients ($a \neq 0$).

You should handle the case where the values of the coefficients produce a double root & the case where they produce no root. You should also handle the case where the user input value 0 for a.

Hint:

Use the discriminant $\Delta = b^2 - 4ac$

Kết quả

lab1 > Equation.java > Equation

You, 3 days ago | 1 author (You)

```java
package lab1;
import java.util.Scanner;
import java.lang.Math;
You, 3 days ago | 1 author (You)
public class Equation {        You, 3 days ago • Equation.java
    Run | Debug
    public static void main(String[] args) {
        // Solve the first degree equation with one equation
        Scanner input = new Scanner(System.in);
        System.out.println("Le Dong Canh Phu - 20225755");
        System.out.print("Enter a: "); //Enter a
        Double a = input.nextDouble();
        System.out.print("Enter b: "); //Enter b
        Double b = input.nextDouble();
        // Case a = 0
        if(a==0) {
            if(b==0) {
                System.out.println("Phuong trinh vo so nghiem");
            } else {
                System.out.println("Phuong trinh vo nghiem");
            }
        }
        // Other cases
        System.out.println("Nghiem cua phuong trinh la: " + (0-b)/a);
        //Solve the first degree equation with two variables
```

Hình 14: Kết quả bài tập 2.6

```java
        //Solve the first degree equation with two variables
        System.out.print("Enter a1: ");  //Enter a1
        Double a1 = input.nextDouble();
        System.out.print("Enter b1: ");  //Enter b1
        Double b1 = input.nextDouble();
        System.out.print("Enter c1: ");  //Enter c1
        Double c1 = input.nextDouble();
        System.out.print("Enter a2: ");  //Enter a2
        Double a2 = input.nextDouble();
        System.out.print("Enter b2: ");  //Enter b2
        Double b2 = input.nextDouble();
        System.out.print("Enter c2: ");  //Enter c2
        Double c2 = input.nextDouble();
        Double d = a1*b2 - a2*b1;
        Double d1 = c1*b2 - c2*b1;
        Double d2 = a1*c2 - a2*c1;
        //Exception cases
        if(d==0) {
            if(d1 == 0 && d2 == 0) {
                System.out.println("Phuong trinh co vo so nghiem");
            } else {
                System.out.println("Phuong trinh vo nghiem");
            }
        } else {
            System.out.println("Phuong trinh co cap nghiem duy nhat: x1 = " + d1/d + ", x2 = " + d2/d);
        }
```

Hình 15: Kết quả bài tập 2.6

```
lab1 > Equation.java > Equation > main(String[])
class Equation {
lic static void main(String[] args) {
    } else {
        System.out.println("Phuong trinh co cap nghiem duy nhat: x1 = " + d1/d + ", x2 = " + d2/d);
    }
    System.out.print("Enter a: "); //Enter a
    Double a3 = input.nextDouble();
    System.out.print("Enter b: "); //Enter b
    Double b3 = input.nextDouble();
    System.out.print("Enter c: "); //Enter c
    Double c3 = input.nextDouble();
    Double delta = b3*b3 - 4*a3*c3;
    //Exception cases
    if(a3==0) {      You, 3 days ago • Update Equation.java
        if(b3==0) {
            if(c3==0) {
                System.out.println("Phuong trinh co vo so nghiem");
            } else {
                System.out.println("Phuong trinh vo nghiem");
            }
        } else {
            System.out.println("Phuong trinh co nghiem x = " + -c3/b3);
        }
    } else {
        if(delta<0) {
            System.out.println("Phuong trinh vo nghiem");
        } else if(delta==0) {
            System.out.println("Phuong trinh co nghiem kep x = " + -b3/2*a3);
        } else {
            System.out.println("Phuong trinh co 2 nghiem x1 = " + (-b3-Math.sqrt(delta))/2*a3 + ", x2 = " + (-b3+Math.sqrt(delta))/2*a3);
        }
    }
    input.close();
```

Hình 16: Kết quả bài tập 2.6

Hình 17: Kết quả bài tập 2.6

6.1. Write, compile and run the ChoosingOption program:

Note: We use JavaBasics project for this exercise.

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

Hình 18: Code mẫu bài tập 6.1

Kết quả

```
lab1 > ChoosingOption.java > ...
You, 3 days ago | 1 author (You)
1  package lab1;
2  import javax.swing.JOptionPane;
3
   You, 3 days ago | 1 author (You)
4  public class ChoosingOption {
       Run | Debug
5      public static void main (String[] args) {
6          int option = JOptionPane.showConfirmDialog(null, "Le Dong Canh Phu - 20225755 - Do you want to change to the first class tick
7          JOptionPane.showMessageDialog(null, "Le Dong Canh Phu 20225755 - You've chosen: " + (option == JOptionPane.YES_OPTION ? "Yes"
8          System.exit(0);
9      }
10 }
11 // If the user choose "Cancel", the program will return "No".
12 /*
13 // Define custom options
14 Object[] options = {"I do", "I don't", "Cancel"};
15
16 // Show option dialog with custom options
17 int option = JOptionPane.showOptionDialog(null,
18     "Le Dong Canh Phu - 20225755 - Do you want to change to the first class ticket?",
19     "Choose an option",
20     JOptionPane.YES_NO_OPTION,
21     JOptionPane.QUESTION_MESSAGE,
22     null,
23     options,        You, 3 days ago • ChoosingOption.java
24     options[0]); */
```

Hình 19: Kết quả bài tập 6.1

Hình 20: Kết quả bài tập 6.1

Hình 21: Kết quả bài tập 6.1

Answers

- If the user choose "Cancel", the program will return "No".
- Customize the options:

```
// Define custom options
Object[] options = {"I do", "I don't", "Cancel"};
// Show option dialog with custom options
int option = JOptionPane.showOptionDialog(null,
  "Le Dong Canh Phu - 20225755 - Do you want to change to the first class ticket?",
  "Choose an option",
  JOptionPane.YES_NO_OPTION,
  JOptionPane.QUESTION_MESSAGE,
  null,
  options,
  options[0]); */
```

6.2. Write a program for input/output from keyboard

Note: We use the JavaBasics project for this exercise.

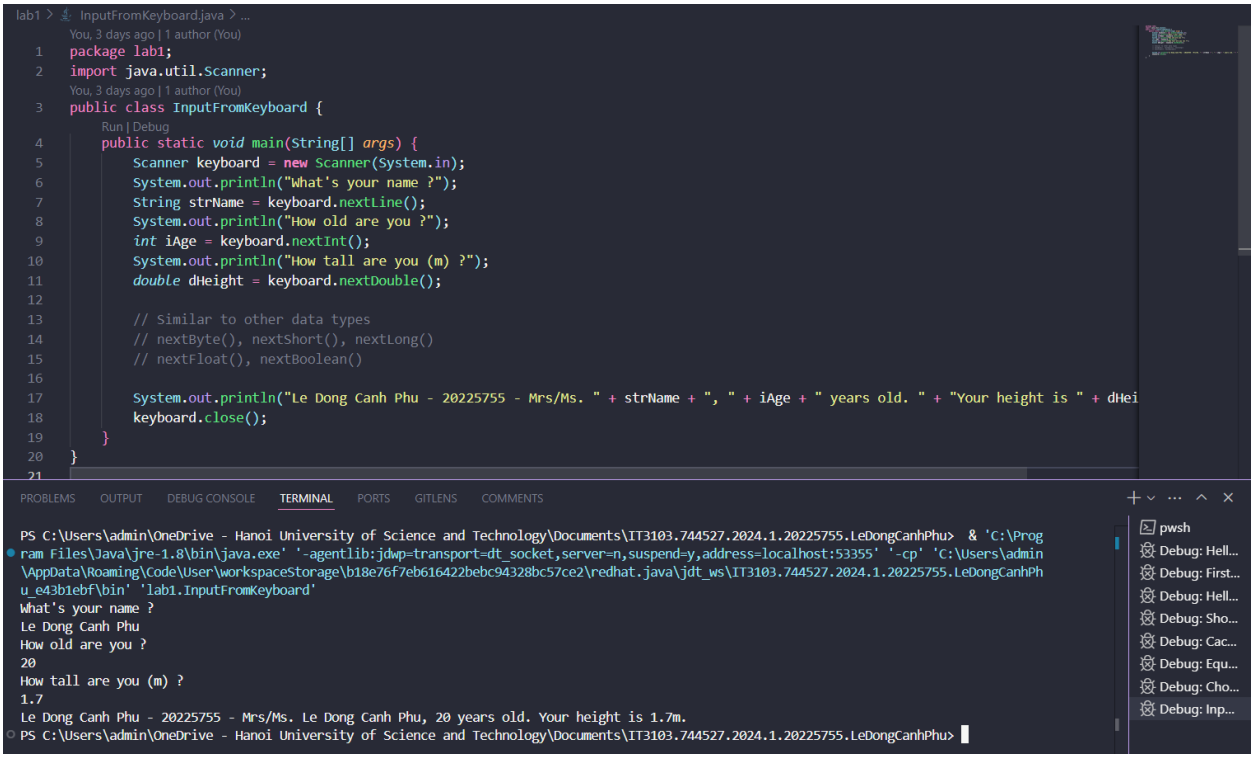
```java
import java.util.Scanner;
public class InputFromKeyboard{
    public static void main(String args[]){
        Scanner keyboard = new Scanner(System.in);

        System.out.println("What's your name?");
        String strName = keyboard.nextLine();
        System.out.println("How old are you?");
        int iAge = keyboard.nextInt();
        System.out.println("How tall are you (m)?");
        double dHeight = keyboard.nextDouble();

        //similar to other data types
        //nextByte(), nextShort(), nextLong()
        //nextFloat(), nextBoolean()

        System.out.println("Mrs/Ms. " + strName + ", " + iAge + " years old. "
                           + "Your height is " + dHeight + ".");

    }
}
```

Markers | Properties | Servers | Data Source Explorer | Snippets | Problems | Console | Searc

```
<terminated> InputFromKeyboard [Java Application] /Library/Java/JavaVirtualMachines/jdk1.8.0_171.jdk/Contents/Home/bin/
What's your name?
Trang
How old are you?
35
How tall are you (m)?
1.65
Mrs/Ms. Trang, 35 years old. Your height is 1.65.
```

Hình 22: Code mẫu bài tập 6.2

Kết quả



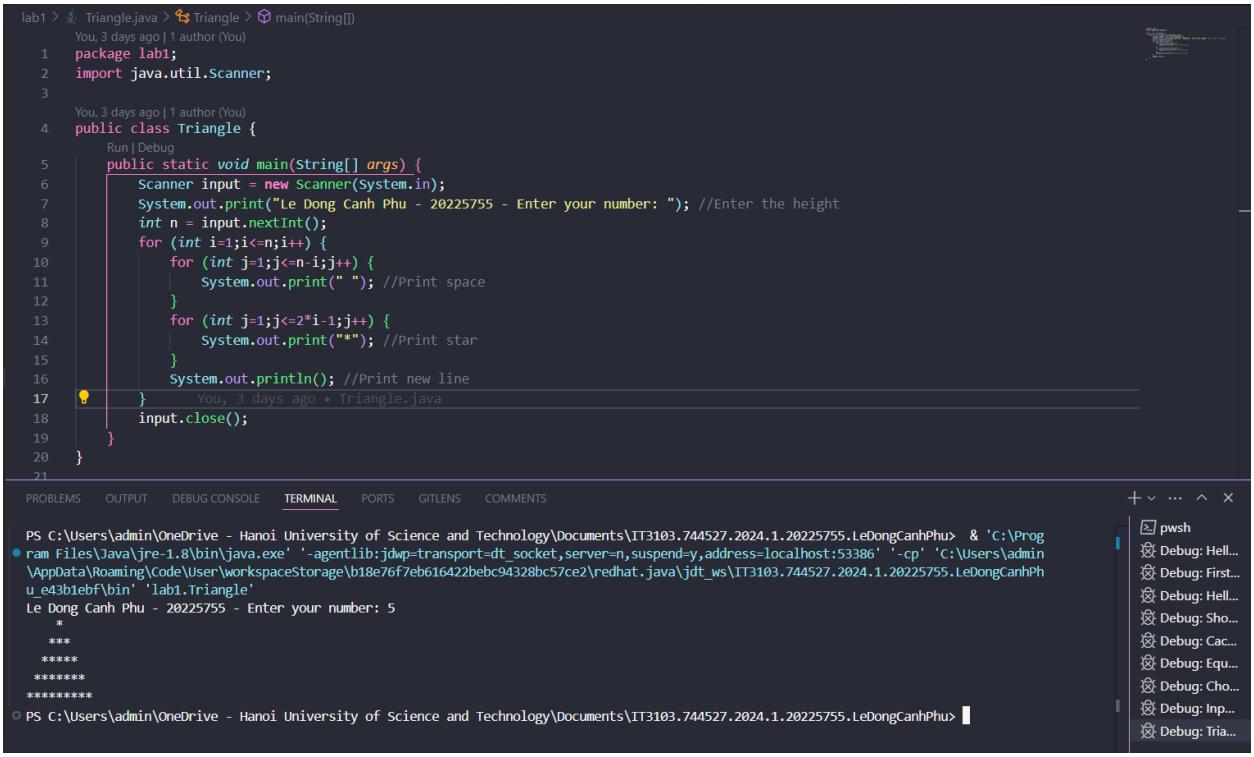
Hình 23: Kết quả bài tập 6.2

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

E.g. n=5:

```
    *
   ***
  *****
 *******
*********
```

Note: You must create a new Java project for this exercise.



Hình 24: Kết quả bài tập 6.3

6.4. Write a program to display the number of days of a month, which is entered by users (both month and year). If it is an invalid month/year, ask the user to enter again.

Note: 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.

Month	January	February	March	April	May	June	July	August	September	October	November	December
Abbreviation	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
In 3 letters	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
In Number	1	2	3	4	5	6	7	8	9	10	11	12
Days of Month in Common Year	31	28	31	30	31	30	31	31	30	31	30	31

Days of Month in Leap Year	31	**29**	31	30	31	30	31	31	30	31	30	31

Kết quả

```java
lab1 > Calendar.java > ...
You, 19 hours ago | 1 author (You)
package lab1;
import java.util.Scanner;
You, 19 hours ago | 1 author (You)
public class Calendar {
    Run | Debug
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        String month = ""; // Store the month
        boolean validMonth = false; // Check if the month is valid
        while(!validMonth) {
            System.out.print("Le Dong Canh Phu - 20225755 - Enter the month: ");
            String strMonth = input.nextLine();
        if(strMonth.equals("January") || strMonth.equals("Jan") || strMonth.equals("Jan.")) {
            // Solve for January
            month = "January";
            validMonth = true;
        } else if(strMonth.equals("February") || strMonth.equals("Feb") || strMonth.equals("Feb.")) {
            // Solve for February
            month = "February";
            validMonth = true;
        } else if(strMonth.equals("March") || strMonth.equals("Mar") || strMonth.equals("Mar.")) {
            // Solve for March
            month = "March";
            validMonth = true;
        } else if(strMonth.equals("April") || strMonth.equals("Apr") || strMonth.equals("Apr.")) {
            // Solve for April
            month = "April";
            validMonth = true;
        } else if(strMonth.equals("May") || strMonth.equals("May.")) {
            // Solve for May
            month = "May";
            validMonth = true;
        } else if(strMonth.equals("June") || strMonth.equals("Jun") || strMonth.equals("Jun.")) {
            // Solve for June
            month = "June";
            validMonth = true;
        } else if(strMonth.equals("July") || strMonth.equals("Jul") || strMonth.equals("Jul.")) {
            // Solve for July
            month = "July";
```

Hình 25: Kết quả bài tập 6.4

```
35          } else if(strMonth.equals("July") || strMonth.equals("Jul") || strMonth.equals("Jul.")) {
36              // Solve for July
37              month = "July";
38              validMonth = true;
39          } else if(strMonth.equals("August") || strMonth.equals("Aug") || strMonth.equals("Aug.")) {
40              // Solve for August
41              month = "August";
42              validMonth = true;
43          } else if(strMonth.equals("September") || strMonth.equals("Sep") || strMonth.equals("Sep.")) {
44              // Solve for September
45              month = "September";
46              validMonth = true;
47          } else if(strMonth.equals("October") || strMonth.equals("Oct") || strMonth.equals("Oct.")) {
48              // Solve for October
49              month = "October";
50              validMonth = true;
51          } else if(strMonth.equals("November") || strMonth.equals("Nov") || strMonth.equals("Nov.")) {
52              // Solve for November
53              month = "November";
54              validMonth = true;
55          } else if(strMonth.equals("December") || strMonth.equals("Dec") || strMonth.equals("Dec.")) {
56              // Solve for December
57              month = "December";
58              validMonth = true;
59          } else if(!strMonth.isEmpty()) { // Check if the input is not empty
60              try {
61                  int monthNumber = Integer.parseInt(strMonth); // Parse the input to integer
62                  switch(monthNumber) {
63                      case 1:
64                          month = "January";
65                          validMonth = true;
66                          break;
67                      case 2:
68                          month = "February";
69                          validMonth = true;
70                          break;
71                      case 3:
0  GitKraken Pro (Trial)  Java: Ready  Reconnect to Discord Gateway  Ln 175, Col 1  Spaces: 4  UTF-8  CRLF  { } Java  Go Live
```

Hình 26: Kết quả bài tập 6.4

```
71                      case 3:
72                          month = "March";
73                          validMonth = true;
74                          break;
75                      case 4:
76                          month = "April";
77                          validMonth = true;
78                          break;
79                      case 5:
80                          month = "May";
81                          validMonth = true;
82                          break;
83                      case 6:
84                          month = "June";
85                          validMonth = true;
86                          break;
87                      case 7:
88                          month = "July";
89                          validMonth = true;
90                          break;
91                      case 8:
92                          month = "August";
93                          validMonth = true;
94                          break;
95                      case 9:
96                          month = "September";
97                          validMonth = true;
98                          break;
99                      case 10:
100                         month = "October";
101                         validMonth = true;
102                         break;
103                     case 11:
104                         month = "November";
105                         validMonth = true;
106                         break;
107                     case 12:
0  GitKraken Pro (Trial)  Java: Ready  Reconnect to Discord Gateway  Ln 175, Col 1  Spaces: 4  UTF-8  CRLF  { } Java  Go Live
```

Hình 27: Kết quả bài tập 6.4

```
                case 12:
                    month = "December";
                    validMonth = true;
                    break;
                default:
                    System.out.println("Invalid month. Please enter again.");
                    validMonth = false;
                    break;
            }
            } catch(NumberFormatException e) { // Catch the exception if the input is not a number
                System.out.println("Invalid month. Please enter again.");
                validMonth = false;
            }
        }
        else { // If the input is empty
            System.out.println("Invalid month. Please enter again.");
        }
        }
    boolean validYear = false; // Check if the year is valid
    String isLeapyear = ""; // Store the leap year
    int years = 0; // Store the year
    while(!validYear) {
        System.out.print("Le Dong Canh Phu - 20225755 - Enter the year: ");
        int year = input.nextInt();
        if(year>0 && year < 10000) {
            validYear = true;
            if(year%4==0) {
                if(year%100==0) {
                    if(year%400==0) {
                        isLeapyear = "leap";
                        years = year;
                    } else {
                        isLeapyear = "not leap";
                        years = year;
                    }
                } else {
                    isLeapyear = "leap";
```

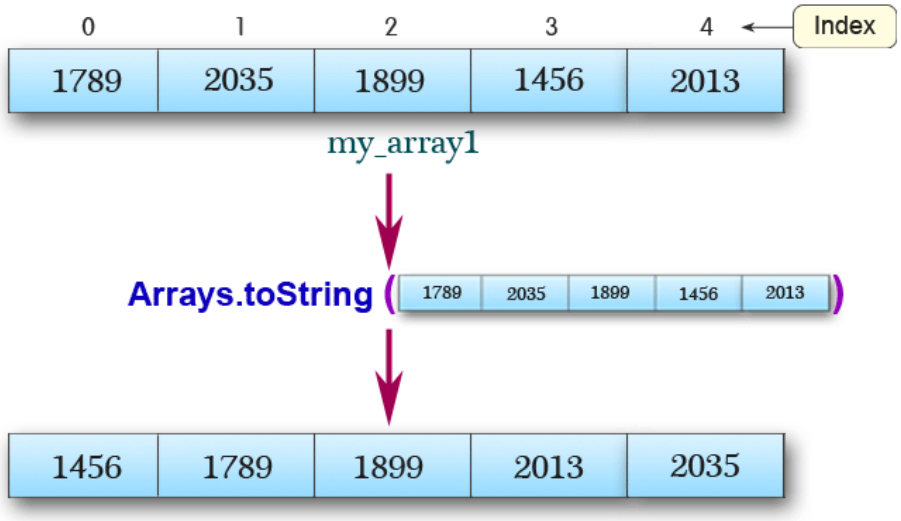
Hình 28: Kết quả bài tập 6.4

```
                    }
                } else {
                    isLeapyear = "leap";
                    years = year;
                }
            } else {
                isLeapyear = "not leap";
                years = year;
            }
        } else {
            validYear = false;
            System.out.println("Invalid year. Please enter again.");
        }
    }
    if(isLeapyear.equals("leap")) {
        if(month.equals("January") || month.equals("March") || month.equals("May") || month.equals("July") || month.equals("August") ||
            System.out.println("The month " + month + " in year " + years + " has 31 days.");
        } else if(month.equals("April") || month.equals("June") || month.equals("September") || month.equals("November")) {
            System.out.println("The month " + month + " in year " + years + " has 30 days.");
        } else {
            System.out.println("The month " + month + " in year " + years + " has 29 days.");
        }
    } else {
        if(month.equals("January") || month.equals("March") || month.equals("May") || month.equals("July") || month.equals("August") ||
            System.out.println("The month " + month + " in year " + years + " has 31 days.");
        } else if(month.equals("April") || month.equals("June") || month.equals("September") || month.equals("November")) {
            System.out.println("The month " + month + " in year " + years + " has 30 days.");
        } else {
            System.out.println("The month " + month + " in year " + years + " has 28 days.");
        }
    }
    input.close();
}
}
```

Hình 29: Kết quả bài tập 6.4

Hình 30: Kết quả bài tập 6.4

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

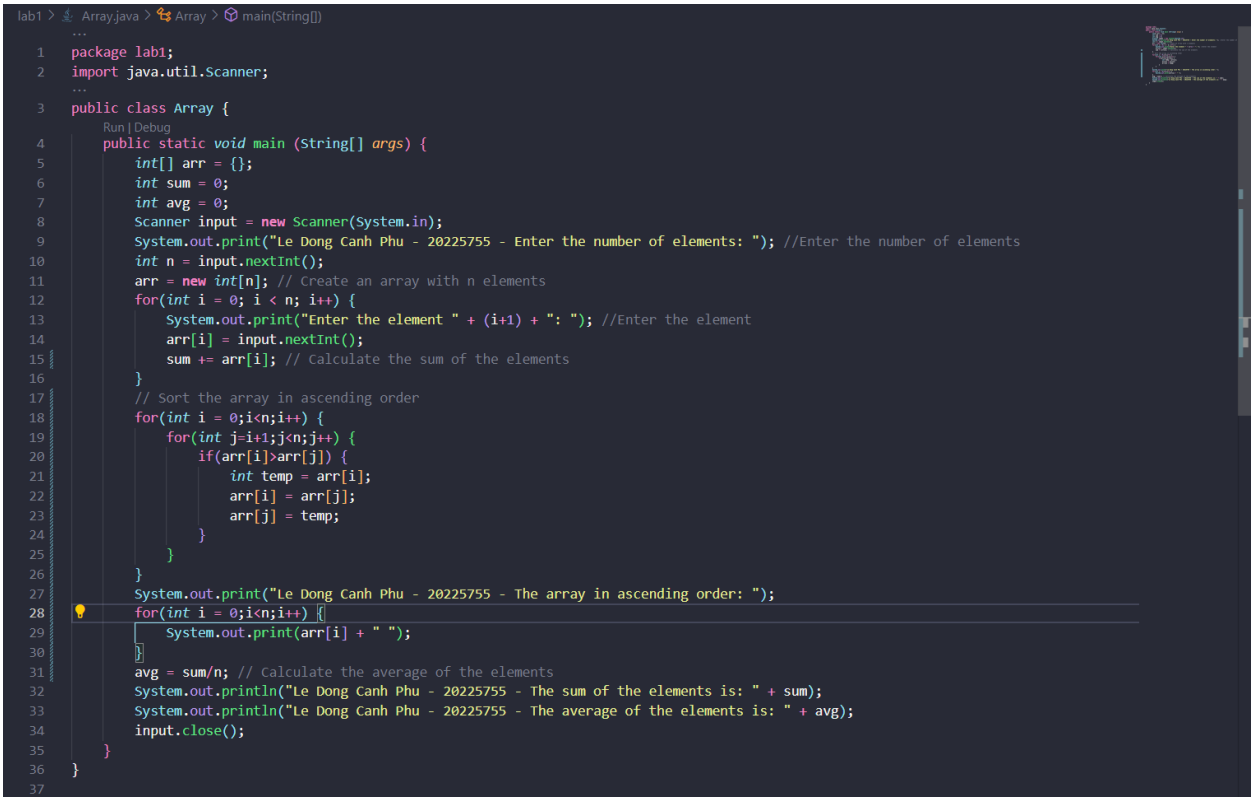


Hình 31: Ví dụ bài tập 6.5

Note: You must create a new Java project for this exercise.

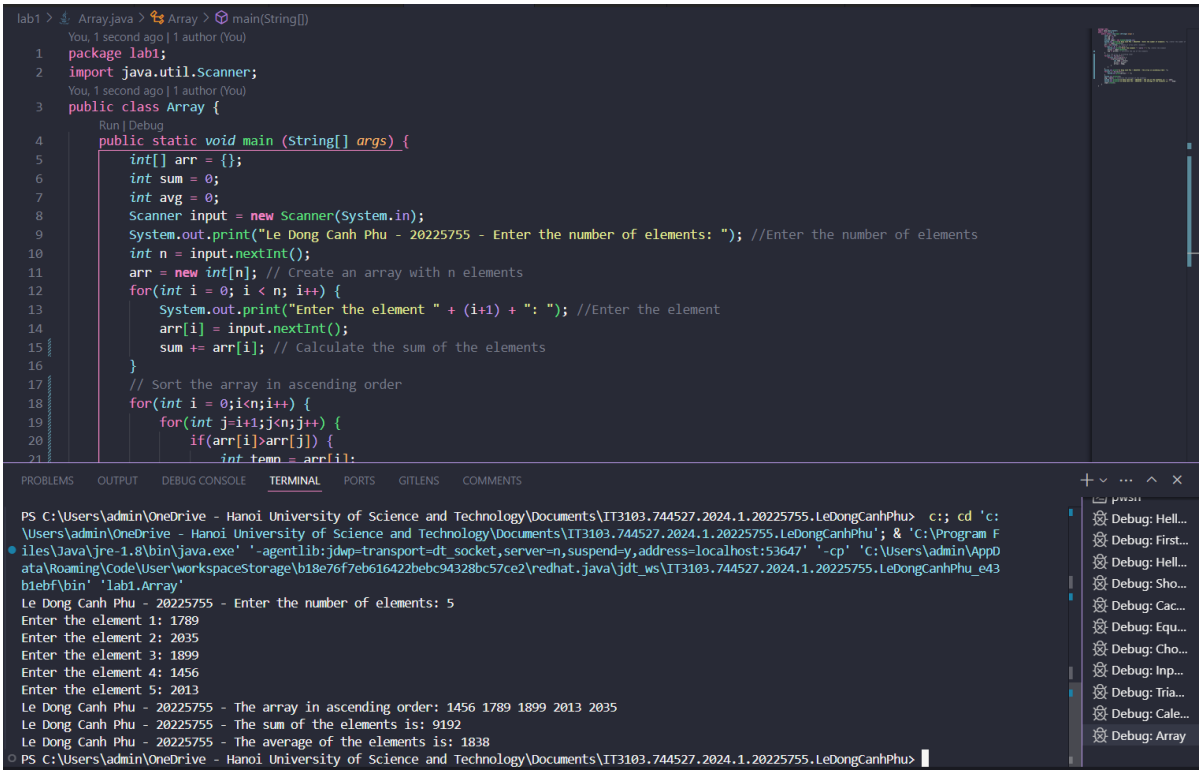
- The array can be entered by the user or a constant.

Kết quả:



```java
package lab1;
import java.util.Scanner;

public class Array {
    Run | Debug
    public static void main (String[] args) {
        int[] arr = {};
        int sum = 0;
        int avg = 0;
        Scanner input = new Scanner(System.in);
        System.out.print("Le Dong Canh Phu - 20225755 - Enter the number of elements: "); //Enter the number of elements
        int n = input.nextInt();
        arr = new int[n]; // Create an array with n elements
        for(int i = 0; i < n; i++) {
            System.out.print("Enter the element " + (i+1) + ": "); //Enter the element
            arr[i] = input.nextInt();
            sum += arr[i]; // Calculate the sum of the elements
        }
        // Sort the array in ascending order
        for(int i = 0;i<n;i++) {
            for(int j=i+1;j<n;j++) {
                if(arr[i]>arr[j]) {
                    int temp = arr[i];
                    arr[i] = arr[j];
                    arr[j] = temp;
                }
            }
        }
        System.out.print("Le Dong Canh Phu - 20225755 - The array in ascending order: ");
        for(int i = 0;i<n;i++) {
            System.out.print(arr[i] + " ");
        }
        avg = sum/n; // Calculate the average of the elements
        System.out.println("Le Dong Canh Phu - 20225755 - The sum of the elements is: " + sum);
        System.out.println("Le Dong Canh Phu - 20225755 - The average of the elements is: " + avg);
        input.close();
    }
}
```

Hình 32: Kết quả bài tập 6.5



```java
package lab1;
import java.util.Scanner;
public class Array {
    Run | Debug
    public static void main (String[] args) {
        int[] arr = {};
        int sum = 0;
        int avg = 0;
        Scanner input = new Scanner(System.in);
        System.out.print("Le Dong Canh Phu - 20225755 - Enter the number of elements: "); //Enter the number of elements
        int n = input.nextInt();
        arr = new int[n]; // Create an array with n elements
        for(int i = 0; i < n; i++) {
            System.out.print("Enter the element " + (i+1) + ": "); //Enter the element
            arr[i] = input.nextInt();
            sum += arr[i]; // Calculate the sum of the elements
        }
        // Sort the array in ascending order
        for(int i = 0;i<n;i++) {
            for(int j=i+1;j<n;j++) {
                if(arr[i]>arr[j]) {
```

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS  GITLENS  COMMENTS

PS C:\Users\admin\OneDrive - Hanoi University of Science and Technology\Documents\IT3103.744527.2024.1.20225755.LeDongCanhPhu>  c:; cd 'c:
\Users\admin\OneDrive - Hanoi University of Science and Technology\Documents\IT3103.744527.2024.1.20225755.LeDongCanhPhu'; & 'C:\Program F
iles\Java\jre-1.8\bin\java.exe' '-agentlib:jdwp=transport=dt_socket,server=n,suspend=y,address=localhost:53647' '-cp' 'C:\Users\admin\AppD
ata\Roaming\Code\User\workspaceStorage\b18e76f7eb616422bebc94328bc57ce2\redhat.java\jdt_ws\IT3103.744527.2024.1.20225755.LeDongCanhPhu_e43
b1ebf\bin' 'lab1.Array'
Le Dong Canh Phu - 20225755 - Enter the number of elements: 5
Enter the element 1: 1789
Enter the element 2: 2035
Enter the element 3: 1899
Enter the element 4: 1456
Enter the element 5: 2013
Le Dong Canh Phu - 20225755 - The array in ascending order: 1456 1789 1899 2013 2035
Le Dong Canh Phu - 20225755 - The sum of the elements is: 9192
Le Dong Canh Phu - 20225755 - The average of the elements is: 1838
PS C:\Users\admin\OneDrive - Hanoi University of Science and Technology\Documents\IT3103.744527.2024.1.20225755.LeDongCanhPhu>
```

Hình 33: Kết quả bài tập 6.5

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

Note: You must create a new Java project for this exercise.

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

```java
package lab1;
import java.util.Scanner;

public class Matrices {
    public static void main (String[] args) {
        Scanner input = new Scanner(System.in);
        System.out.println("Le Dong Canh Phu - 20225755");
        System.out.print("Enter the number of rows: "); //Enter the number of rows
        int m = input.nextInt();
        System.out.print("Enter the number of columns: "); //Enter the number of columns
        int n = input.nextInt();
        int[][] matrix1 = new int[m][n]; // Create a matrix with m rows and n columns
        int[][] matrix2 = new int[m][n];
            System.out.println("Matrix 1: ");
            for(int i = 0; i < m; i++) {
                for(int j = 0; j < n; j++) {
                    matrix1[i][j] = input.nextInt();
                }
            }
            System.out.println("Matrix 2: ");
            for(int i=0;i<m;i++) {
                for(int j=0;j<n;j++) {
                    matrix2[i][j] = input.nextInt();
                }
            }
        System.out.println("Sum of two matrices: ");
        for(int i=0;i<m;i++) {
            for(int j=0;j<n;j++) {
                System.out.print(matrix1[i][j] + matrix2[i][j] + " "); // Print the sum of two matrices
            }
            System.out.println();
        }
        input.close();
    }
}
```

Hình 34: Kết quả bài tập 6.6

```
Le Dong Canh Phu - 20225755
Enter the number of rows: 2
Enter the number of columns: 2
Matrix 1:
1
2
3
4
Matrix 2:
5
6
7
8
Sum of two matrices:
6 8
10 12
```

Hình 35: Kết quả bài tập 6.6