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

BÁO CÁO THỰC HÀNH IT3103-744528-2024.1 BÀI THỰC HÀNH – LAB01

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BÁO CÁO THỰC HÀNH LẠP 1

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 {
      public static void main(String args[]){
 5⊜
           System.out.println("Xin chao \n cac ban!");
           System.out.println("Hello \t world!");
       } // end of method main
 9
10 }
```

Kết quả:

```
1 package Lab01;
 2 //Example 1: HelloWorld.java
 3 //Text-printing program
  4 public class HelloWorld {
        public static void main(String[] args) {
  5•
             System.out.println("Do Dinh Trung - 20226128")
             System.out.println("Xin chao \n cac ban!");
             System.out.println("Hello \t world!");
        }// end of method main
10 }
11
terminated> HelloWorld [Java Application] C:\Program Files\Java\jdk-22\bin\javaw.exe (21:03:54 30 thg 9, 2024 – 21:03:54) [pid: 18284]
Do Dinh Trung - 20226128
Xin chao
 cac ban!
Hello
          world!
```

```
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 }
```

Kết quả:

2.2.3 Write, compile the first input dialog Java application

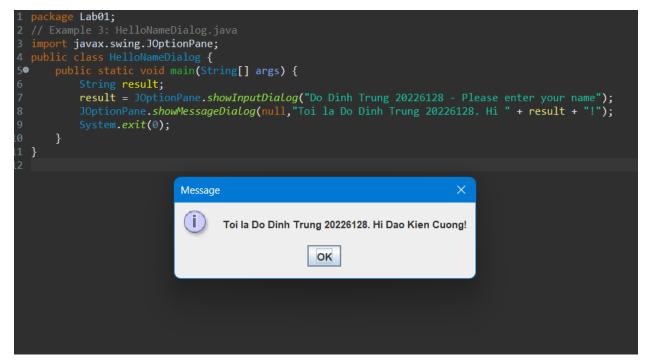
```
1 // Example 3: HelloNameDialog.java
2 import javax.swing.JOptionPane;
3 public class HelloNameDialog{]
4© public static void main(String[] args){
5    String result;
6    result = JOptionPane.showInputDialog("Please enter your name:");
7    JOptionPane.showMessageDialog(null, "Hi "+ result + "!");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

Kết quả:

```
package Lab01;
// Example 3: HelloNameDialog.java
import javax.swing.JOptionPane;
public class HelloNameDialog {
    public static void main(String[] args) {
        String result;
        result = JOptionPane.showInputDialog("Do Dinh Trung 20226128 - Please enter your name");
        JOptionPane.showMessageDialog(null,"Toi la Do Dinh Trung 20226128. Hi " + result + "!");
        System.exit(0);
    }
}

Input

OK Cancel
```



2.2.4 Write, compile, and run the following example:

```
1 // Example 5: ShowTwoNumbers.java
 2 import javax.swing.JOptionPane;
 3 public class ShowTwoNumbers {
40
     public static void main(String[] args){
 5
       String strNum1, strNum2;
       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
       strNum2 = JOptionPane.showInputDialog(null,
13
                    "Please input the second number: ", "Input the second number",
14
                    JOptionPane.INFORMATION_MESSAGE);
15
16
       strNotification += strNum2;
17
       JOptionPane.showMessageDialog(null,strNotification,
18
                    "Show two numbers", JOptionPane.INFORMATION_MESSAGE);
19
       System.exit(0);
20
21
     }
22 }
```

Kết quả:

```
import javax.swing.JOptionPane;
public class ShowTwoNumbers {
   public static void main(String[] args) {
        String strNum1, strNum2;
        String strNotification = "Do Dinh Trung 20226128-You've just entered: ";
         strNum1 = JOptionPane.showInputDialog(null,
                  "Do Dinh Trung - 20226128 - Input the first number", JOptionPane.INFORMATION_MESSAGE);
         strNotification += strNum1 + " and ";
         strNum2 = JOptionPane.showInputDialog(null,
                 "Do Dinh Trung - 20226128-Please input the second number: ",
"Do Dinh Trung - 20226128 - Input the second number", JOptionPane.INFORMATION_MESSAGE);
         strNotification += strNum2;
         JOptionPane.showMessageDialog(null, strNotification,
                  "Do Dinh Trung- 20226128. Show two numbers", JOptionPane. INFORMATION_MESSAGE);
                          Do Dinh Trung - 20226128 - Input the first number
                                  Do Dinh Trung 20226128-Please input the first number:
                                  264
                                                OK
                                                         Cancel
```

```
ge Lab01;
 import javax.swing.JOptionPane;
4 public class ShowTwoNumbers {
5● public static void main(String[] args) {
          String strNum1, strNum2;
String strNotification = "Do Dinh Trung 20226128-You've just entered: ";
           strNum1 = JOptionPane.showInputDialog(null,
                    "Do Dinh Trung - 20226128 - Input the first number", JOptionPane.INFORMATION_MESSAGE);
           strNotification += strNum1 + " and ";
           strNum2 = JOptionPane.showInputDialog(null,
                    "Do Dinh Trung - 20226128-Please input the second number: ",
"Do Dinh Trung - 20226128 - Input the second number", JOptionPane.INFORMATION_MESSAGE);
           strNotification += strNum2;
           Do Dinh Trung - 20226128 - Input the second number
                                   Do Dinh Trung - 20226128-Please input the second number:
                                   151
                                                            Cancel
                                                   OK
  package Lab01;
  import javax.swing.JOptionPane;
4 public class ShowTwoNumbers {
5    public static void main(String[] args) {
6     String strNum1, strNum2;
           String strNotification = "Do Dinh Trung 20226128-You've just entered: ";
           strNum1 = JOptionPane.showInputDialog(null,
                    "Do Dinh Trung 20226128-Please input the first number: ",
"Do Dinh Trung - 20226128 - Input the first number", JOptionPane.INFORMATION_MESSAGE);
           strNotification += strNum1 + " and ";
           strNum2 = JOptionPane.showInputDialog(null,
                    "Do Dinh Trung - 20226128-Please input the second number: ",
"Do Dinh Trung - 20226128 - Input the second number", JOptionPane. INFORMATION_MESSAGE);
           strNotification += strNum2;
           Do Dinh Trung- 20226128. Show two numbers
                                   Do Dinh Trung 20226128-You've just entered: 264 and 151
                                                       OK
```

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 ...
- *Kêt quả* : (Source code :src/Lab01/Bai2_2_5.java)

```
1 package Lab01;
  2 import java.util.Scanner;
  3 //Do Dinh Trung - Bai 2.2.5
       public static void main(String[] args) {
            //Khoi tao doi tuong Scanner đe nhap du lieu tu ban phim
            Scanner scanner = new Scanner(System.in);
            System.out.print("Trung-Nhap so thu nhat: ");
            String str_num1 = scanner.nextLine();
            System.out.print("Trung-Nhap so thu hai: ");
            String str_num2 = scanner.nextLine();
            //Chuven đọi tụ string sang double
            double num1 = Double.parseDouble(str_num1);
            double num2 = Double.parseDouble(str_num2);
            //Tinh tong, chenh lech, tich
            System.out.println("Trung-Tong: " + (num1 + num2));
            System.out.println("Trung-Chenh lech: " + Math.abs(num1 - num2));
            System.out.println("Trung-Tich: " + num1 * num2);
            //Kiem tra uoc so truoc khi thuc hien phep chia
             if(num2 != 0) {
                 System.out.println("Trung-Thuong: " + num1 / num2);
                 System.out.println("Trung-Khong the chia cho 0");
             scanner.close();
 Problems 🏿 a Javadoc 🖳 Declaration 📮 Console 🗵
<terminated> Bai2_2_5 [Java Application] C:\Program Files\Java\jdk-22\bin\javaw.exe (21:36:22 30 thg 9, 2024 – 21:36:24) [
Trung-Nhap so thu nhat: 26
Trung-Nhap so thu hai: 4
Trung-Tong: 30.0
Trung-Chenh lech: 22.0
Trung-Tich: 104.0
Trung-Thuong: 6.5
```

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

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

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

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

<u>Note</u>: 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_1 a_{22} - b_2 a_{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

<u>Note</u>: 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 ($a \ne 0$).

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: (Source code: src/Lab01/Bai2_2_6.java)

```
import java.util.Scanner;
   3 //Do Dinh Trung - Bai 2.2.6
4 public class Bai2_2_6
         //Ham giai phuong trinh bac nhat
public static void linear_equation(double a, double b) {
   if(a == 0) {
                  if(b == 0) {
                      System.out.println("Trung-Phuong trinh co vo so nghiem");
                      System.out.println("Trung-Phuong trinh vo nghiem");
                  System.out.println("Trung-Phuong trinh co nghiem la: x = " + (-b / a));
         public static void linear_system(double a11, double a12, double a21, double a22, double b1, double b2) {
    double D = a11 * a22 - a21 * a12;
                 if(D1 == 0 && D2 == 0) {
                      System.out.println("Trung-He phuong trinh co vo so nghiem");
                      System.out.println("Trung-He phuong trinh vo nghiem");
🖁 Problems @ Javadoc 🚨 Declaration 💂 Console ×
 Trung-Chon loai phuong trinh:
Trung-1: Phuong trinh bac nhat
Trung-2: He phuong trinh bac nhat
Trung-3: Phuong trinh bac hai 1 an
Trung-4: Exit
Trung-Nhap cac he so
Trung-a: 3
Trung-b: 15
Trung-Phuong trinh co nghiem la: x = -5.0
```

6.1 Write, compile and run the ChoosingOption program:

Kết quả: (Source code: src/Lab01/ChoosingOption.java)

6.2 Write a program for input/output from keyboard

Kết quả: (Source code: src/Lab01/InputFromKeyboard.java)

```
1 package Lab01;
2 import java.util.Scanner;
3 public class InputFromKeyboard {
4 public static void main(String[] args) {
                Scanner keyboard = new Scanner(System.in);
               System.out.println("What's yours 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();
                 System.out.println("Mrs/Ms." + strName + ", " + iAge + " years old. " + "Your heigh

    Problems  
    □ Javadoc  
    □ Declaration  
    □ Console ×

<terminated> InputFromKeyboard [Java Application] C:\Program Files\Java\jdk-22\bin\javaw.exe (22:01:39 30 thg 9, 2024 – 22:01:48) [pid: 33964]
What's yours name?
Do Dinh Trung
How old are you?
How tall are you (m)?
1,8
Mrs/Ms.Do Dinh Trung, 20 years old. Your height is 1.8.
```

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

Kêt quả: (Source code: src/Lab01/Triangle.java)

```
1 package Lab01;
 3 import java.util.Scanner;
     public static void main(String[] args) {
          Scanner scanner = new Scanner(System.in);
          // Nhập chiều cao của tam giác
System.out.print("Trung-Nhap chieu cao tam giac: ");
          int n = scanner.nextInt();
          System.out.print(" ");
               for (int k = 1; k <= 2 * i - 1; k++) {
                   System.out.print("*");
               // Xuống dòng sau khi in xong một dòng sao
System.out.println();
           // Đóng scanner để giải phóng tài nguyên
           scanner.close();
🔐 Problems 🏿 Javadoc 🚇 Declaration 💂 Console 🗵
Trung-Nhap chieu cao tam giac: 5
  ***
 ****
*****
******
```

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.

Kết quả : (Source code :src/Lab01/DaysInMonth.java)

```
1 package Lab01;
       3 import java.util.Scanner;
      5 public class DaysInMonth {
                           public static void main(String[] args) {
                                          Scanner scanner = new Scanner(System.in);
                                           String monthInput;
                                           int year;
                                           // Mảng chứa các tháng đầy đủ và viết tắt
                                           String[] fullMonths = {"January", "February", "March", "April", "May", "June", "Jule", "String[] shortMonths = {"Jan.", "Feb.", "Mar.", "Apr.", "May", "Jun.", "Jul.", "Augering[] threeLetterMonths = {"Jan", "Feb", "Mar", "Apr", "May", "Jun", "Jul", "Augering[] threeLetterMonths = {"Jan", "Feb", "Mar", "Apr", "May", "Jun", "Jul", "Augering[] threeLetterMonths = {"Jan", "Feb", "Mar", "Apr", "May", "Jun", "Jul", "Augering[] threeLetterMonths = {"Jan", "Feb", "Mar", "Apr", "May", "Jun", "Jul", "Augering[] threeLetterMonths = {"Jan", "Feb", "Mar", "Apr", "May", "Jun", "Jun", "Augering[] threeLetterMonths = {"Jan", "Feb", "Mar", "Apr", "May", "Jun", "Jun", "Augering[] threeLetterMonths = {"Jan", "Feb", "Mar", "Apr", "May", "Jun", "Jun", "Augering[] threeLetterMonths = {"Jan", "Feb", "Mar", "Apr", "May", "Jun", "Jun", "Augering[] threeLetterMonths = {"Jan", "Feb", "Mar", "Apr", "May", "Jun", "Jun", "Augering[] threeLetterMonths = {"Jan", "Feb", "Mar", "Apr", "May", "Jun", "Jun", "Augering[] threeLetterMonths = {"Jan", "Feb", "Mar", "Apr", "May", "Jun", "Jun", "Augering[] threeLetterMonths = {"Jan", "Feb", "Mar", "Apr", "May", "Jun", "Jun", "Augering[] threeLetterMonths = {"Jan", "Feb", "Mar", "Apr", "May", "Jun", "Jun", "Augering[] threeLetterMonths = {"Jan", "Feb", "May", "Jun", "Ju
                                           // Nhập năm cho đến khi hợp lệ while (true) {
                                                          System.out.print("Nhap nam: ");
                                                          String yearInput = scanner.nextLine().trim(); // Đọc vào dạng chuỗi
                                                          if (!yearInput.matches("\\d+")) { // Kiểm tra xem đầu vào có phải là số không
    System.out.println("Nam khong hop le. Vui long nhap lai.");
                                                                          continue; // Lặp lại nếu đầu vào không hợp lệ
                                                           }
 🔐 Problems 🏿 a Javadoc 🔼 Declaration 🗏 Console 🗵
<terminated> DaysInMonth [Java Application] C:\Program Files\Java\jdk-22\bin\javaw.exe (22:43:57 30 thg 9, 2024 – 22:44:05) [pid: 2340]
Nhap nam: 2024
Nhap thang (ten thang, viet tat, hoac so): Oct
Thang 10, Nam 2024 co 31 ngay.
```

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

Kêt quả: (Source code: src/Lab01/SortArray.java)

```
1 package Lab01;
  20import java.util.Arrays;
  3 import java.util.Scanner;
  4 public class SortArray {
         public static void main(String[] args) {
             Scanner sc = new Scanner(System.in);
<u>6</u>
             System.out.print("Nhap so phan tu cua mang: ");
             int n = sc.nextInt();
             double sum = 0;
             double average;
             System.out.print("Nhap mang: ");
 11
              int[] a = new int[n];
              for(int i = 0; i < n; i++) {
                  a[i] = sc.nextInt();
                   sum += a[i];
              Arrays.sort(a);
              average = sum/a.length;
              System.out.println("Mang da duoc sap xep la: " + Arrays.toString(a))
              System.out.println("Tong cac gia tri trong mang la: " + sum);
System.out.println("Trung binh cong cac gia tri trong mang la:

    Problems  
    □ Javadoc  
    □ Declaration  
    □ Console ×

terminated> SortArray [Java Application] C:\Program Files\Java\jdk-22\bin\javaw.exe (08:27:24 1 thg 10, 2024 – 08:27:31) [pid: 28580
Nhap so phan tu cua mang: 5
Nhap mang: 1 5 2 6 7
Mang da duoc sap xep la: [1, 2, 5, 6, 7]
Tong cac gia tri trong mang la: 21.0
Trung binh cong cac gia tri trong mang la: 4.2
```

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

Kêt quả: (Source code: src/Lab01/SumMatrix)

```
1 package Lab01;
 3 import java.util.Scanner;
 5 public class SumMatrix {
       public static void main(String[] args) {
 60
Scanner sc = new Scanner(System.in);
            System.out.print("Nhap so hang cua ma tran: ");
            int n = sc.nextInt();
            System.out.print("Nhap so cot cua ma tran: ");
 10
 11
            int m = sc.nextInt();
 12
            int[][] a = new int[n][m];
 13
            int[][] b = new int[n][m];
 14
            int[][] c = new int[n][m];
<terminated> SumMatrix [Java Application] C:\Program Files\Java\jdk-22\bin\javaw.exe (08:46:54 1 thg 10, 2024 – 08:47:14) [pid: 1476
Nhap so hang cua ma tran: 3
Nhap so cot cua ma tran: 3
Nhap ma tran thu nhat:
1 2 3
4 5 6
7 8 9
Nhap ma tran thu hai:
1 4 7
2 5 8
3 6 9
Ma tran tong cua hai ma tran la:
2 6 10
6 10 14
10 14 18
```