

Họ và tên : Hoàng Văn Kiên

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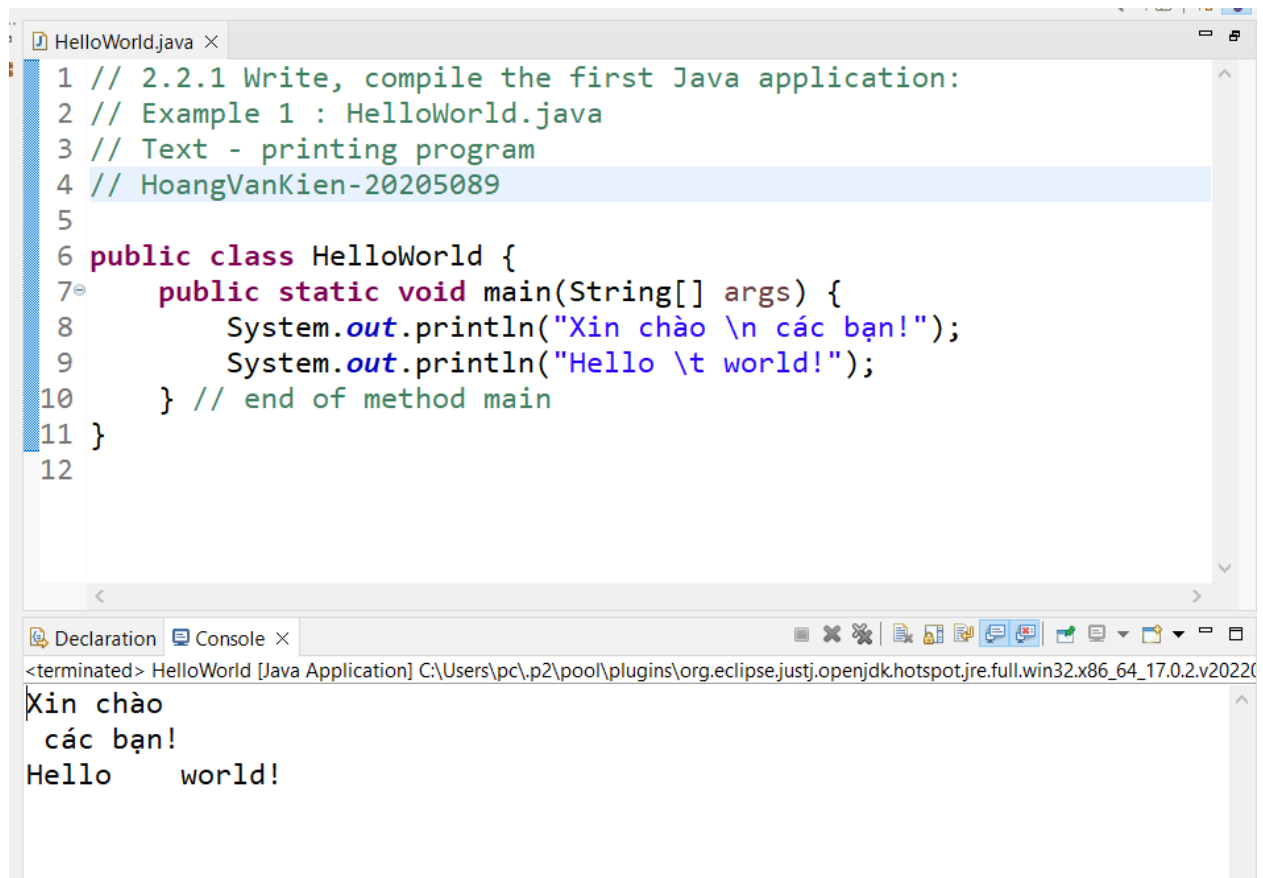
BÁO CÁO THỰC HÀNH LAB 1
LẬP TRÌNH HƯỚNG ĐỐI TƯỢNG

The Very First Java Programs

2.2.1 Write, compile the first Java application:

```
1 // 2.2.1 Write, compile the first Java application:
2 // Example 1 : HelloWorld.java
3 // Text - printing program
4 // HoangVanKien-20205089|
5
6 public class HelloWorld {
7     public static void main(String[] args) {
8         System.out.println("Xin chào \n các bạn!");
9         System.out.println("Hello \t world!");
10    } // end of method main
11 }
12
```

Kết quả




The screenshot shows the Eclipse IDE with a Java project. The editor displays a file named `HelloWorld.java` with the following code:

```
1 // 2.2.1 Write, compile the first Java application:
2 // Example 1 : HelloWorld.java
3 // Text - printing program
4 // HoangVanKien-20205089
5
6 public class HelloWorld {
7     public static void main(String[] args) {
8         System.out.println("Xin chào \n các bạn!");
9         System.out.println("Hello \t world!");
10    } // end of method main
11 }
12
```

Below the editor, the `Console` tab is active, showing the output of the program:

```
<terminated> HelloWorld [Java Application] C:\Users\pc\p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.2.v20220
Xin chào
các bạn!
Hello    world!
```

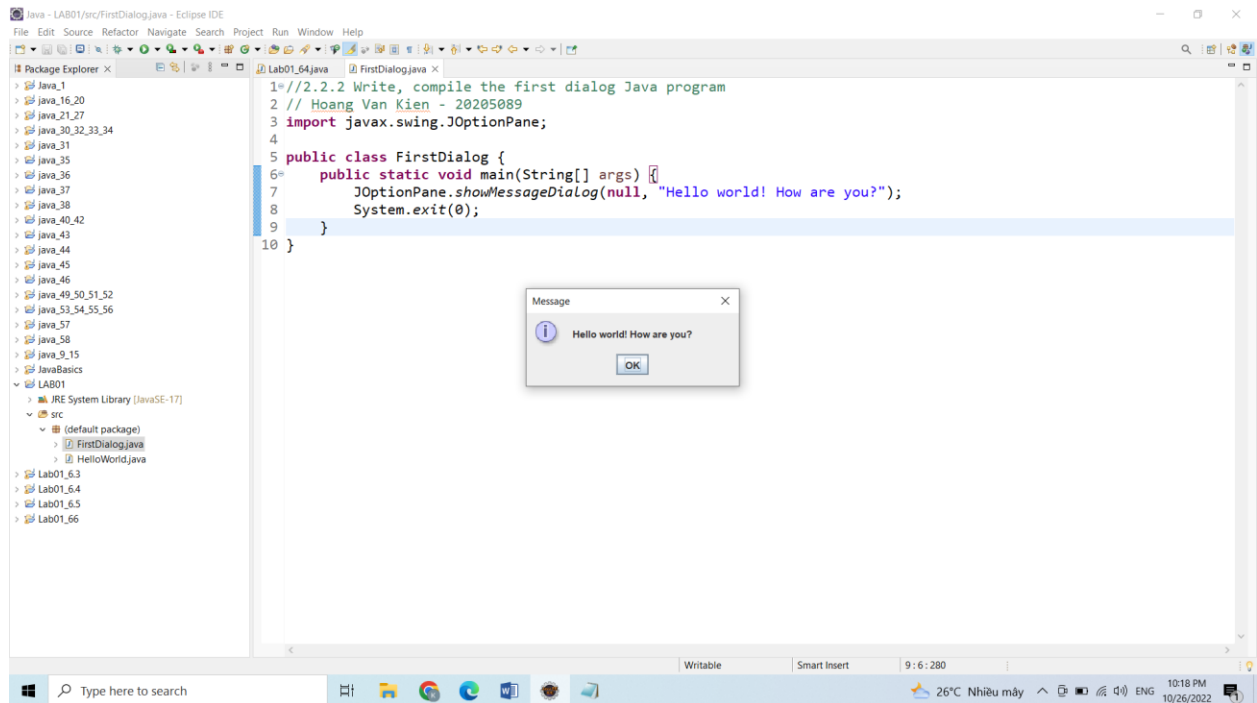
2.2.2 Write, compile the first dialog Java program



The screenshot shows the Eclipse IDE with two files open: `Lab01_64.java` and `FirstDialog.java`. The `FirstDialog.java` file contains the following code:

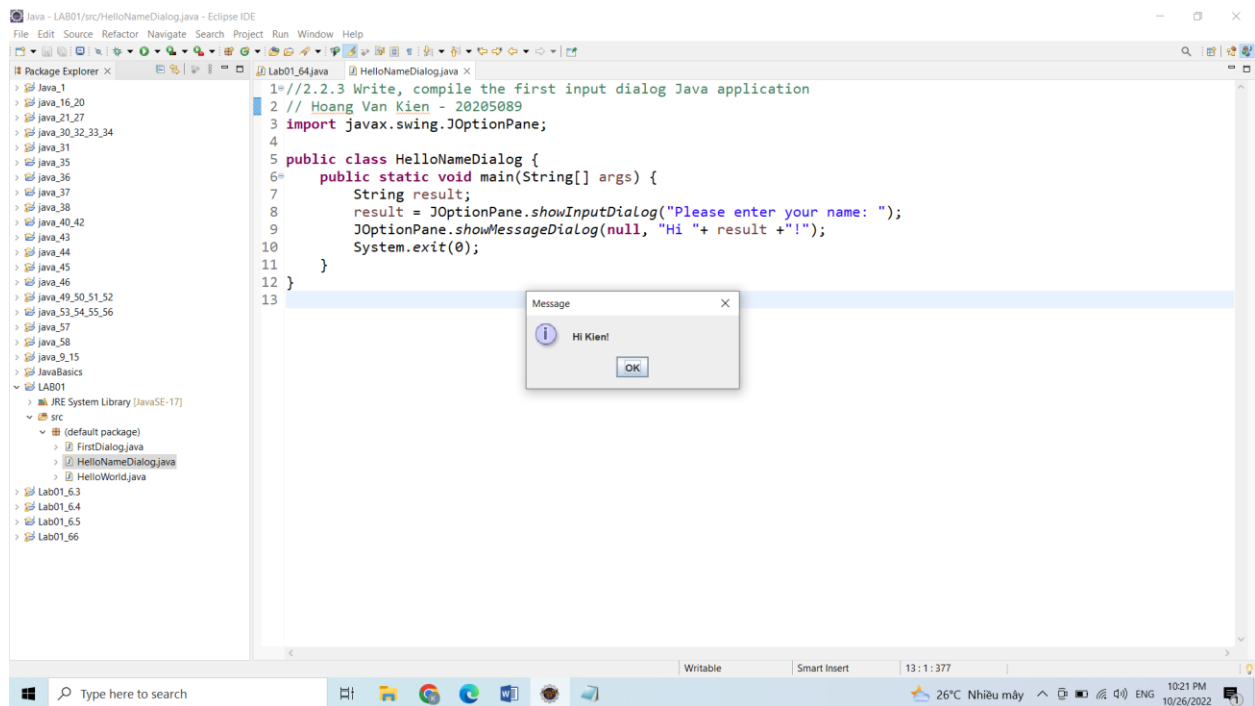
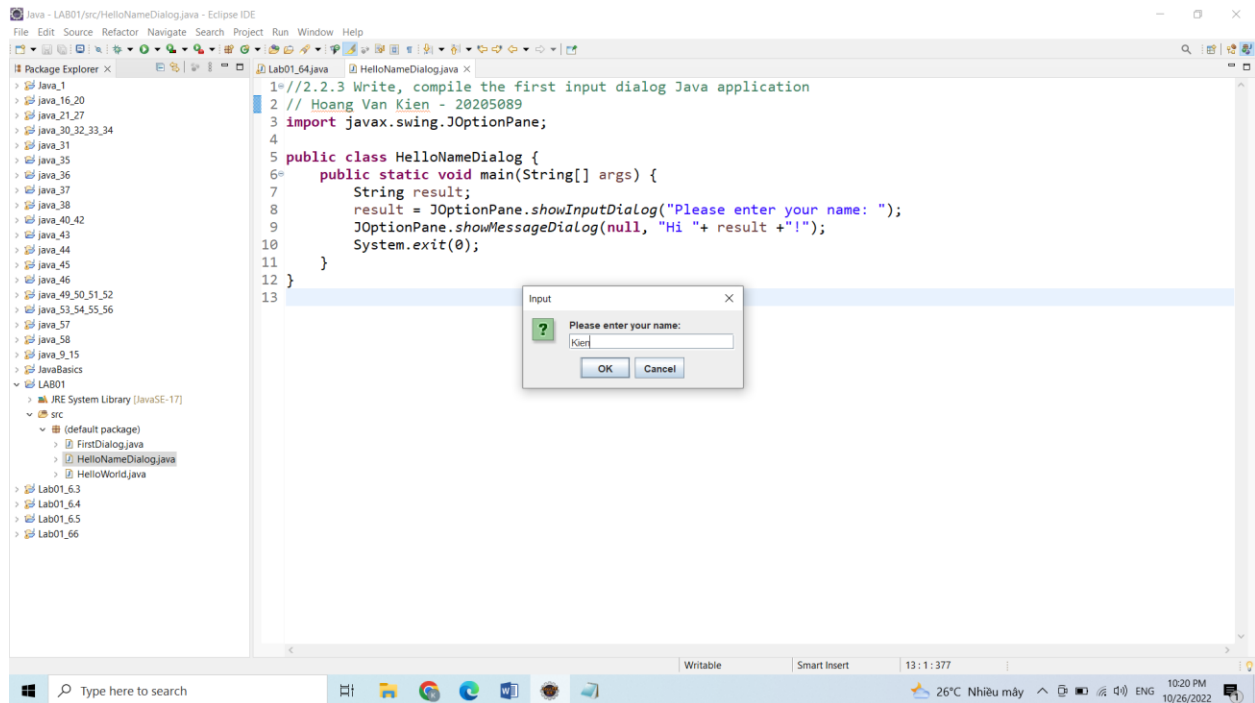
```
1 //2.2.2 Write, compile the first dialog Java program
2 // Hoang Van Kien - 20205089
3 import javax.swing.JOptionPane;
4
5 public class FirstDialog {
6     public static void main(String[] args) {
7         JOptionPane.showMessageDialog(null, "Hello world! How are you?");
8         System.exit(0);
9     }
10 }
```

Ket qua



2.2.3 Write, compile the first input dialog Java application

```
1 //2.2.3 Write, compile the first input dialog Java application
2 // Hoang Van Kien - 20205089
3 import javax.swing.JOptionPane;
4
5 public class HelloNameDialog {
6     public static void main(String[] args) {
7         String result;
8         result = JOptionPane.showInputDialog("Please enter your name: ");
9         JOptionPane.showMessageDialog(null, "Hi " + result + "!");
10        System.exit(0);
11    }
12 }
13 |
```

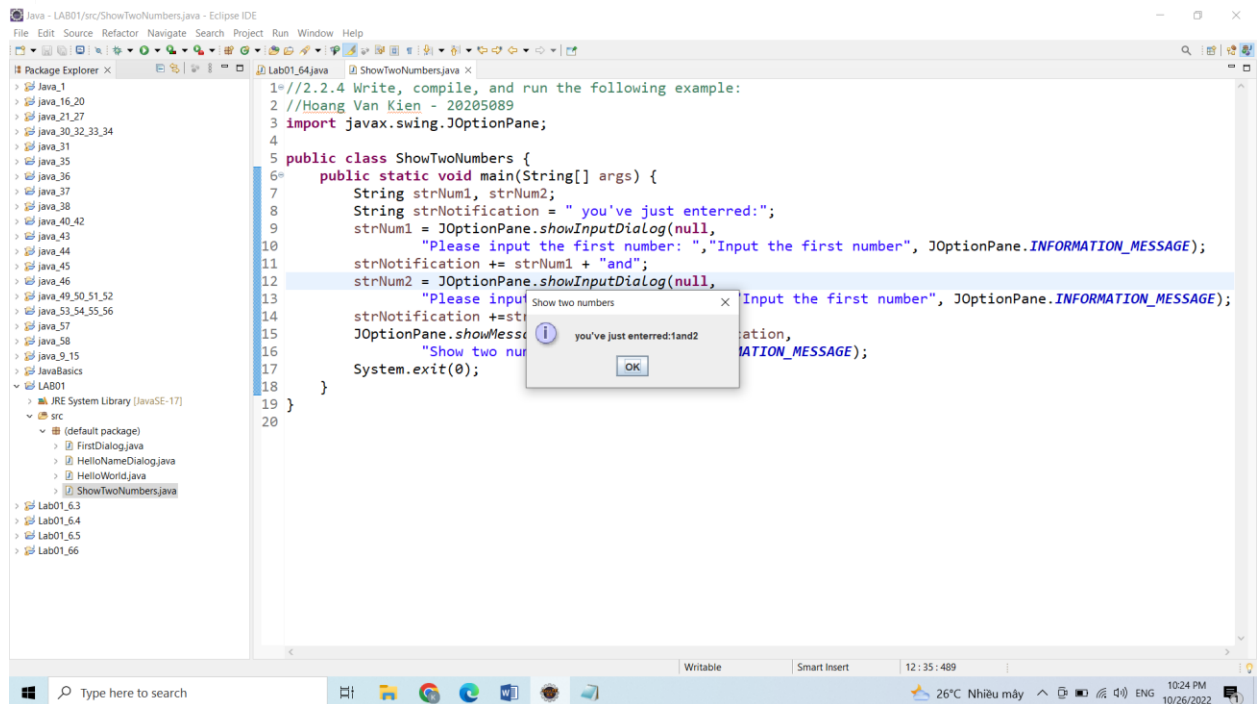


2.2.4 Write, compile, and run the following example:

```

1 //2.2.4 Write, compile, and run the following example:
2 //Hoang Van Kien - 20205089
3 import javax.swing.JOptionPane;
4
5 public class ShowTwoNumbers {
6     public static void main(String[] args) {
7         String strNum1, strNum2;
8         String strNotification = " you've just entered:";
9         strNum1 = JOptionPane.showInputDialog(null,
10             "Please input the first number: ", "Input the first number", JOptionPane.INFORMATION_MESSAGE);
11         strNotification += strNum1 + "and";
12         strNum2 = JOptionPane.showInputDialog(null,
13             "Please input the second number: ", "Input the first number", JOptionPane.INFORMATION_MESSAGE);
14         strNotification += strNum2;
15         JOptionPane.showMessageDialog(null, strNotification,
16             "Show two numbers", JOptionPane.INFORMATION_MESSAGE);
17         System.exit(0);
18     }
19 }
20

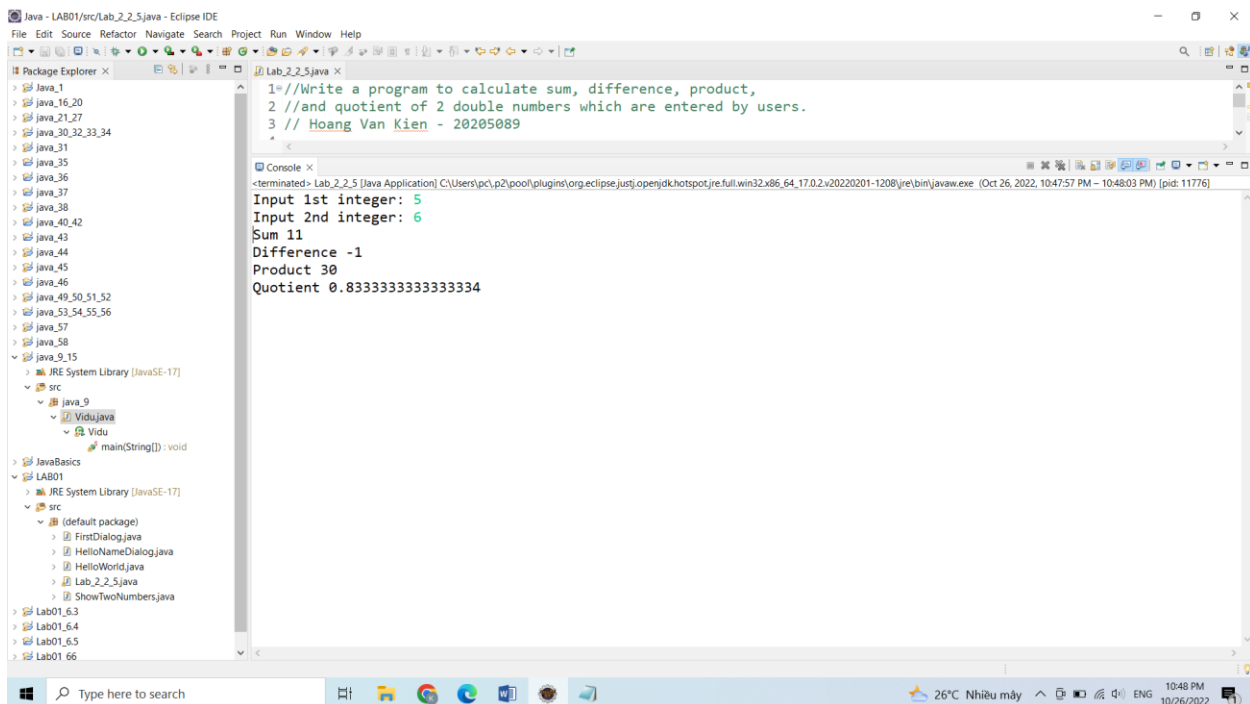
```



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

```
1 //Write a program to calculate sum, difference, product,
2 //and quotient of 2 double numbers which are entered by users.
3 // Hoang Van Kien - 20205089
4
5 import java.util.Scanner;
6 public class Lab_2_2_5 {
7     public static void main(String[] args)
8     {
9         Scanner in = new Scanner(System.in);
10        System.out.print("Input 1st integer: ");
11        int firstInt = in.nextInt();
12        System.out.print("Input 2nd integer: ");
13        int secondInt = in.nextInt();
14
15        System.out.println("Sum " + (firstInt + secondInt) );
16        System.out.println("Difference " + (firstInt - secondInt) );
17        System.out.println("Product " + (firstInt * secondInt) );
18        System.out.println("Quotient " + ((double)firstInt/secondInt) );
19    }
20 }
```

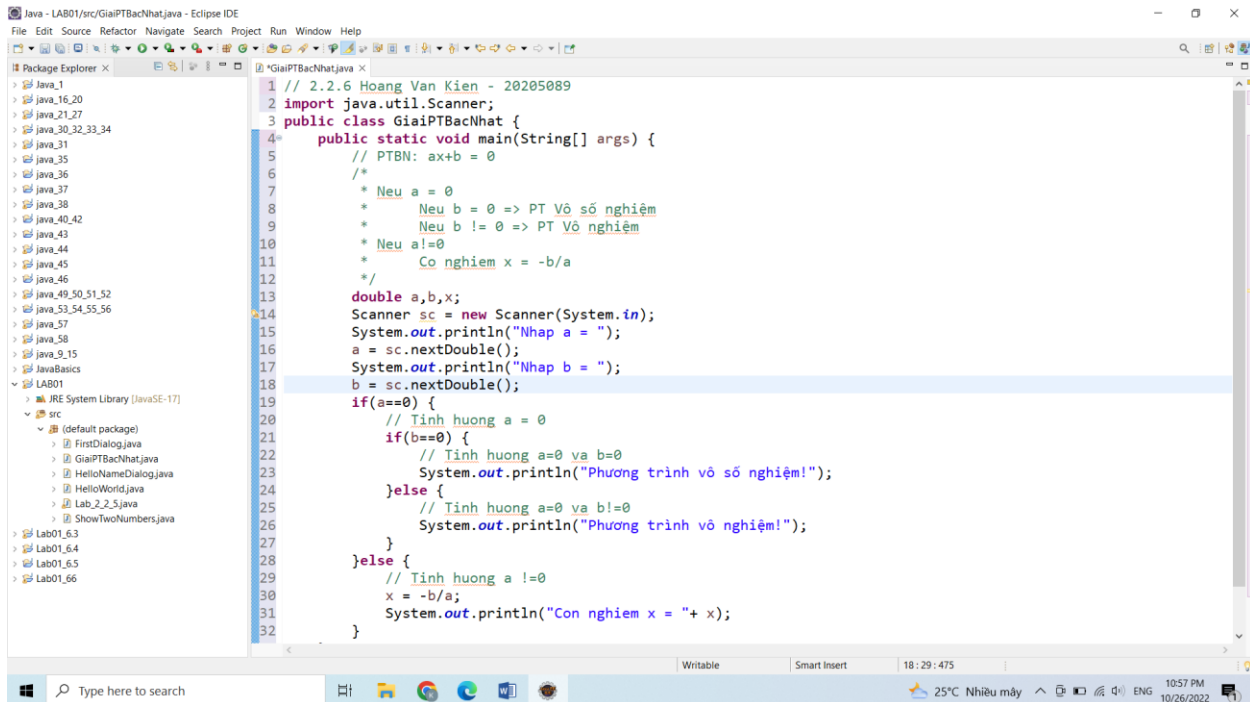
Ket qua



The screenshot shows the Eclipse IDE interface. The Package Explorer on the left lists the project structure, including the source file Lab_2_2_5.java. The main editor displays the Java code. The Console window at the bottom shows the execution output:

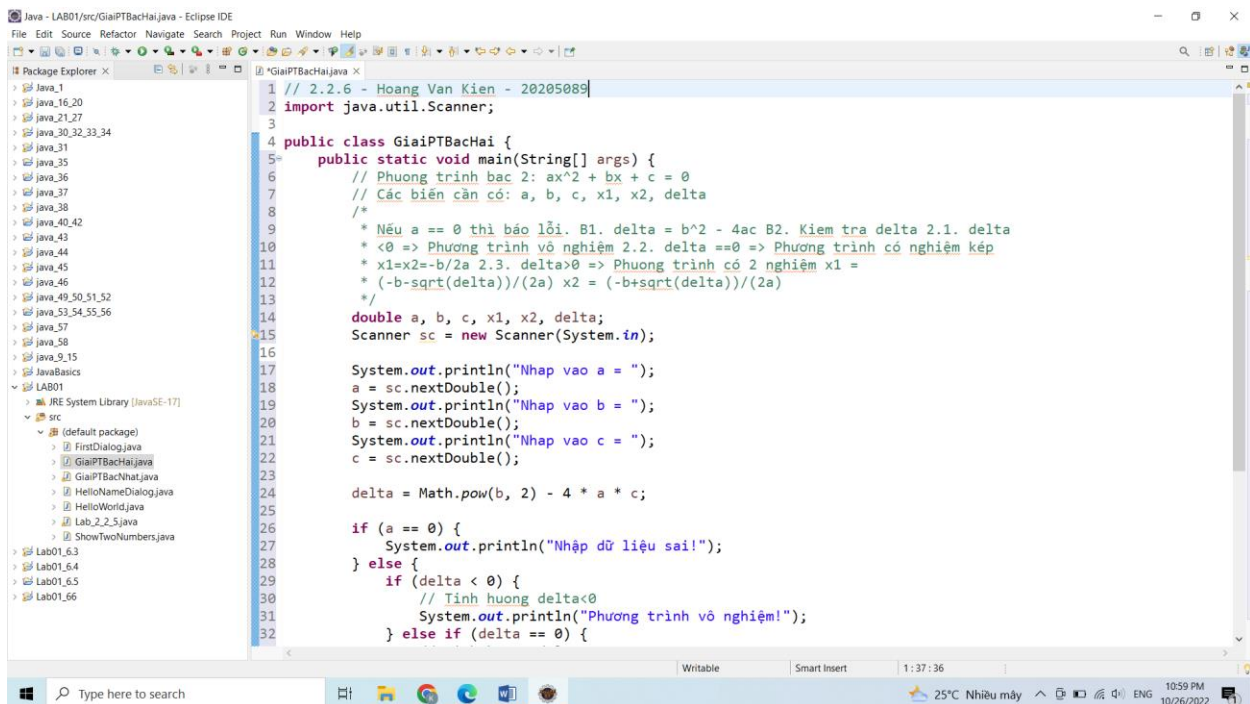
```
<terminated> Lab_2_2_5 [Java Application] C:\Users\pc\p2\pool\plugins\org.eclipse.justi.openjdk hotspot\re.full.win32.x86_64_17.0.2.v20220201-1208\jre\bin\javaw.exe (Oct 26, 2022, 10:47:57 PM - 10:48:03 PM) [pid: 11776]
Input 1st integer: 5
Input 2nd integer: 6
Sum 11
Difference -1
Product 30
Quotient 0.8333333333333334
```

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



```
1 // 2.2.6 Hoang Van Kien - 20205089
2 import java.util.Scanner;
3 public class GiaiPTBacNhat {
4     public static void main(String[] args) {
5         // PTBN: ax+b = 0
6         /*
7          * Neu a = 0
8          * Neu b = 0 => PT Vô số nghiệm
9          * Neu b != 0 => PT Vô nghiệm
10         * Neu a!=0
11         * Co nghiệm x = -b/a
12         */
13         double a,b,x;
14         Scanner sc = new Scanner(System.in);
15         System.out.println("Nhập a = ");
16         a = sc.nextDouble();
17         System.out.println("Nhập b = ");
18         b = sc.nextDouble();
19         if(a==0) {
20             // Tính huống a = 0
21             if(b==0) {
22                 // Tính huống a=0 và b=0
23                 System.out.println("Phương trình vô số nghiệm!");
24             } else {
25                 // Tính huống a=0 và b!=0
26                 System.out.println("Phương trình vô nghiệm!");
27             }
28         } else {
29             // Tính huống a !=0
30             x = -b/a;
31             System.out.println("Con nghiệm x = "+ x);
32         }
33     }
34 }
```

Giai Phương trình bậc 2



```
1 // 2.2.6 - Hoang Van Kien - 20205089
2 import java.util.Scanner;
3
4 public class GiaiPTBacHai {
5     public static void main(String[] args) {
6         // Phương trình bậc 2: ax^2 + bx + c = 0
7         // Các biến cần có: a, b, c, x1, x2, delta
8         /*
9          * Nếu a == 0 thì báo lỗi. B1. delta = b^2 - 4ac B2. Kiểm tra delta 2.1. delta
10          * <0 => Phương trình vô nghiệm 2.2. delta ==0 => Phương trình có nghiệm kép
11          * x1=x2=-b/2a 2.3. delta>0 => Phương trình có 2 nghiệm x1 =
12          * (-b-sqrt(delta))/(2a) x2 = (-b+sqrt(delta))/(2a)
13          */
14         double a, b, c, x1, x2, delta;
15         Scanner sc = new Scanner(System.in);
16
17         System.out.println("Nhập vào a = ");
18         a = sc.nextDouble();
19         System.out.println("Nhập vào b = ");
20         b = sc.nextDouble();
21         System.out.println("Nhập vào c = ");
22         c = sc.nextDouble();
23
24         delta = Math.pow(b, 2) - 4 * a * c;
25
26         if (a == 0) {
27             System.out.println("Nhập dữ liệu sai!");
28         } else {
29             if (delta < 0) {
30                 // Tính huống delta<0
31                 System.out.println("Phương trình vô nghiệm!");
32             } else if (delta == 0) {
33                 // Tính huống delta==0
34                 x1 = x2 = -b / (2 * a);
35                 System.out.println("Phương trình có nghiệm kép x1 = x2 = " + x1);
36             } else {
37                 // Tính huống delta>0
38                 x1 = (-b - Math.sqrt(delta)) / (2 * a);
39                 x2 = (-b + Math.sqrt(delta)) / (2 * a);
40                 System.out.println("Phương trình có 2 nghiệm x1 = " + x1 + " x2 = " + x2);
41             }
42         }
43     }
44 }
```

```
15 Scanner sc = new Scanner(System.in);
16
17 System.out.println("Nhap vao a = ");
18 a = sc.nextDouble();
19 System.out.println("Nhap vao b = ");
20 b = sc.nextDouble();
21 System.out.println("Nhap vao c = ");
22 c = sc.nextDouble();
23
24 delta = Math.pow(b, 2) - 4 * a * c;
25
26 if (a == 0) {
27     System.out.println("Nhập dữ liệu sai!");
28 } else {
29     if (delta < 0) {
30         // Tính huống delta < 0
31         System.out.println("Phương trình vô nghiệm!");
32     } else if (delta == 0) {
33         // Tính huống delta == 0
34         x1 = -b / (2 * a);
35         System.out.println("Phương trình có nghiệm kép x1=x2=" + x1);
36     } else {
37         // Tính huống delta > 0
38         x1 = (-b - Math.sqrt(delta)) / (2 * a);
39         x2 = (-b + Math.sqrt(delta)) / (2 * a);
40         System.out.println("Phương trình có nghiệm");
41         System.out.println("x1=" + x1);
42         System.out.println("x2=" + x2);
43     }
44 }
45 }
46 }
```

Giai hệ Phương trình

```
1 // 2.2.6 - Hoang Van Kien - 20205089
2 import java.util.Scanner;
3 public class GiaiHePhuongTrinh {
4     public static void main(String[] args) {
5         Scanner sc = new Scanner(System.in);
6         double a1,a2,b1,b2,c1,c2;
7         // Nhập phương trình
8         System.out.println("Nhap he so a1x + b1y = c1, a2x + b2y = c2");
9         System.out.println("Nhap a1 = ");
10        a1 = sc.nextDouble();
11        System.out.print("Nhap b1 = ");
12        b1 = sc.nextDouble();
13        System.out.print("Nhap c1 = ");
14        c1=sc.nextDouble();
15        System.out.print("Nhap a2 = ");
16        a2=sc.nextDouble();
17        System.out.print("Nhap b2 = ");
18        b2=sc.nextDouble();
19        System.out.print("Nhap c2 = ");
20        c2=sc.nextDouble();
21        //Giải hệ phương trình bằng định thức
22        double D = a1*b2-a2*b1;
23        double Dx = c1*b2-c2*b1;
24        double Dy = a1*c2-a2*c1;
25        if(D==0 && Dx == 0 && Dy == 0)
26            System.out.println("He phương trình co vo so nghiem\n");
27        else if((D==0 && Dx!= 0) || (D==0 && Dy!= 0))
28            System.out.println("He phương trình vô nghiệm");
29        else System.out.println("x: " + Math.ceil((Dx/D) * 1000)/1000 + " y: "
30            + Math.ceil((Dy/D) * 1000)/1000 + "\n");
31    }
32 }
```

6.Exercies

6.1 Write, compile and run the ChoosingOption program:


```

ChoosingOption.java ×
JavaBasics/src/ChoosingOption.java
1 compile and run the ChoosingOption program:
2 //Hoang Van Kien - 20205089
3
4 import javax.swing.JOptionPane;
5
6 public class ChoosingOption {
7     public static void main(String[] args) {
8         int option = JOptionPane.showConfirmDialog(null, "Do you want to change to the first class ticket?");
9
10        JOptionPane.showMessageDialog(null, "You've chosen: " +
11        (option == JOptionPane.YES_OPTION?"Yes":"No"));
12        System.exit(0);
13    }
14 }
15

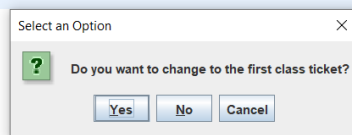
```

Ket qua:

```

ChoosingOption.java ×
1 //6.1 Write, compile and run the ChoosingOption program:
2 //Hoang Van Kien - 20205089
3
4 import javax.swing.JOptionPane;
5
6 public class ChoosingOption {
7     public static void main(String[] args) {
8         int option = JOptionPane.showConfirmDialog(null, "Do you want to change to the first class ticket?");
9
10        JOptionPane.showMessageDialog(null, "You've chosen: " +
11        (option == JOptionPane.YES_OPTION?"Yes":"No"));
12        System.exit(0);
13    }
14 }
15

```



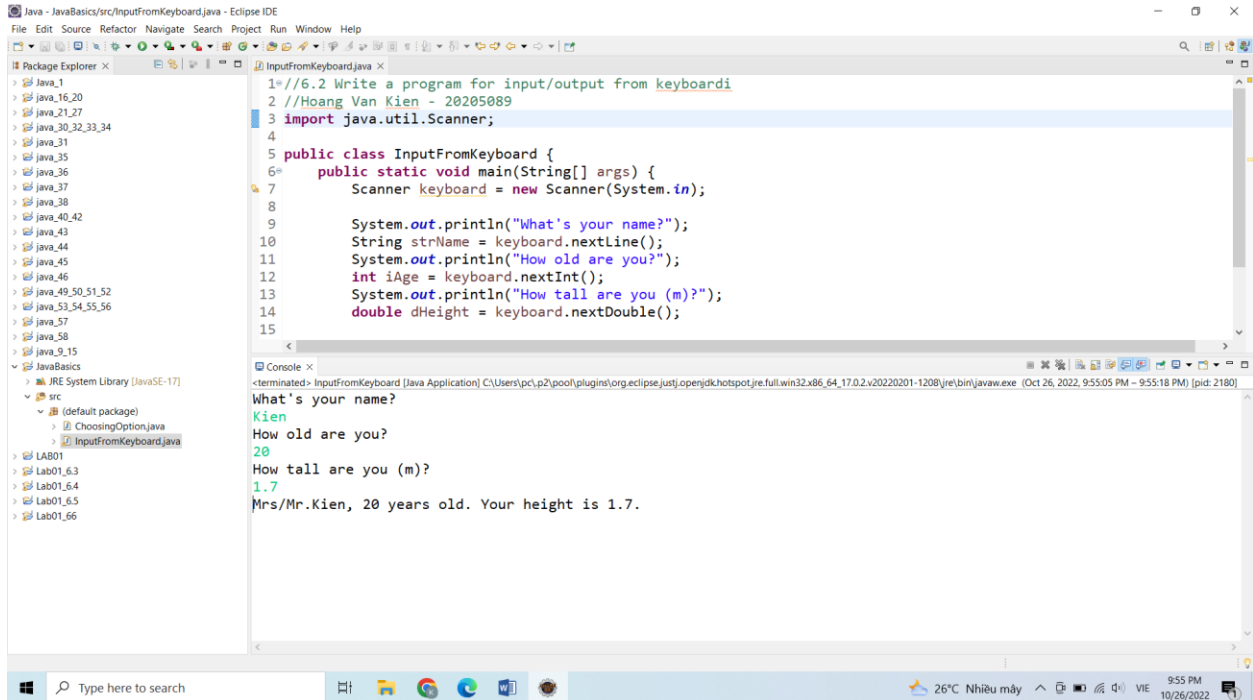
6.2 Write a program for input/output from keyboard

```

1 //6.2 Write a program for input/output from keyboard
2 //Hoang Van Kien - 20205089
3 import java.util.Scanner;
4
5 public class InputFromKeyboard {
6     public static void main(String[] args) {
7         Scanner keyboard = new Scanner(System.in);
8
9         System.out.println("What's your name?");
10        String strName = keyboard.nextLine();
11        System.out.println("How old are you?");
12        int iAge = keyboard.nextInt();
13        System.out.println("How tall are you (m)?");
14        double dHeight = keyboard.nextDouble();
15
16        System.out.println("Mrs/Mr." + strName + ", " + iAge + " years old. " +
17        "Your height is " + dHeight + ".");
18    }
19 }
20 }
21

```

Ket qua:



6.3 Write a program to display a triangle with a height of n stars (*), n is entered by users.
E.g. $n=5$:

*

Page 15 of 17

```

1 //6.3 Write a program to display a triangle with a height of n stars (*),
2 //n is entered by users.
3 // Hoang Van Kien - 20205089
4 import java.util.Scanner;
5 public class Lab01_6 {
6     public static void printTriangle(int n)
7     {
8         // Vòng lặp in
9         for (int i=0; i<n; i++)
10        {
11            for (int j=n-i; j>1; j--)
12            {
13                // In khoảng trắng
14                System.out.print(" ");
15            }
16            for (int j=0; j<=i; j++ )
17            {
18                // In dấu *
19                System.out.print("* ");
20            }
21
22            System.out.println();
23        }
24    }
25
26    public static void main(String args[])
27    {
28        Scanner sc = new Scanner(System.in);
29        int n = sc.nextInt();
30        printTriangle(n);
31    }
32 }

```

Kết quả:

The screenshot shows the Eclipse IDE with the Java code from the previous block. The Package Explorer on the left shows the project structure. The Console window at the bottom shows the output of the program. The user has entered '5' for 'Nhap n:', and the output is a triangle of stars:

```

Nhap n:
5
 *
 * *
 * * *
 * * * *
 * * * * *

```

6.4 Write a program to display the number of days of a month

```

1 import java.util.Scanner;
2
3 //6.4 Write a program to display the number of days of a month, which is entered by users (both month and year)
4 //If it is an invalid month/year, ask the user to enter again.
5 // HoangVanKien-20205089
6 public class Lab01_64 {
7     public static void main(String[] args) {
8
9         Scanner sc = new Scanner(System.in);
10        // Khai báo tháng năm
11        int year ;
12        String month ;
13
14        // Khai báo mặc định số ngày trong tháng;
15        int numberOfDaysOfAMonth = 0 ;
16
17        // Nhập năm và tháng
18        System.out.println("Nhập tháng: ");
19        month = sc.nextLine();
20        System.out.println("Nhập năm: ");
21        year = sc.nextInt();
22
23
24        // Kiểm tra số ngày trong tháng
25        switch (month) {
26            // Tháng 1
27            case "1":
28            case "January":
29            case "Jan.":
30            case "Jan" :
31            // Tháng 3
32            case "3":

```

```

        case "March":
        case "Mar.":
        case "Mar" :
        // Tháng 5
        case "5":
        case "May":
        // Tháng 7
        case "7":
        case "July":
        case "Jul":
        // Tháng 8
        case "8":
        case "August":
        case "Aug.":
        case "Aug":
        // Tháng 10
        case "10":
        case "October":
        case "Oct.":
        case "Oct":
        // Tháng 12
        case "12":
        case "December":
        case "Dec.":
        case "Dec":
            numberOfDaysOfAMonth = 31 ;
            break;
        // Tháng 4
        case "4":
        case "April":
        case "Apr.":

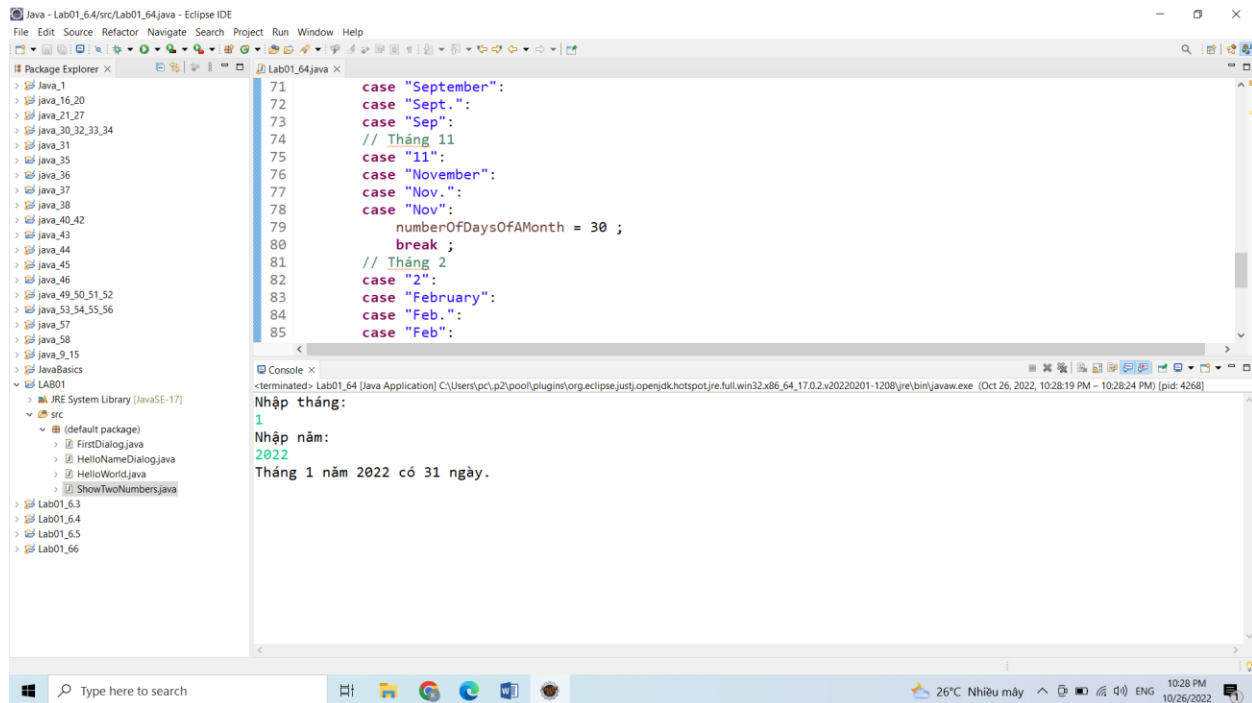
```

```

65         // Tháng 6
66         case "6":
67         case "June":
68         case "Jun":
69         // Tháng 9
70         case "9":
71         case "September":
72         case "Sept.":
73         case "Sep":
74         // Tháng 11
75         case "11":
76         case "November":
77         case "Nov.":
78         case "Nov":
79             numberOfDaysOfAMonth = 30 ;
80             break ;
81         // Tháng 2
82         case "2":
83         case "February":
84         case "Feb.":
85         case "Feb":
86             if ((year % 400 == 0) || ((year % 4 == 0) && (year % 100 != 0))) {
87                 numberOfDaysOfAMonth = 29;
88             } else {
89                 numberOfDaysOfAMonth = 28 ;
90             }
91             break;
92
93         default:
94             System.out.println("Nhập sai rồi bạn ơi!");
95             break;
96
97     case 11 :
98     case "November":
99     case "Nov.":
100    case "Nov":
101        numberOfDaysOfAMonth = 30 ;
102        break ;
103    // Tháng 2
104    case "2":
105    case "February":
106    case "Feb.":
107    case "Feb":
108        if ((year % 400 == 0) || ((year % 4 == 0) && (year % 100 != 0))) {
109            numberOfDaysOfAMonth = 29;
110        } else {
111            numberOfDaysOfAMonth = 28 ;
112        }
113        break;
114
115    default:
116        System.out.println("Nhập sai rồi bạn ơi!");
117        break;
118 }
119 // In
120 System.out.println("Tháng " + month + " năm " + year + " có " + numberOfDaysOfAMonth + " ngày." );
121 }

```

Ket qua:



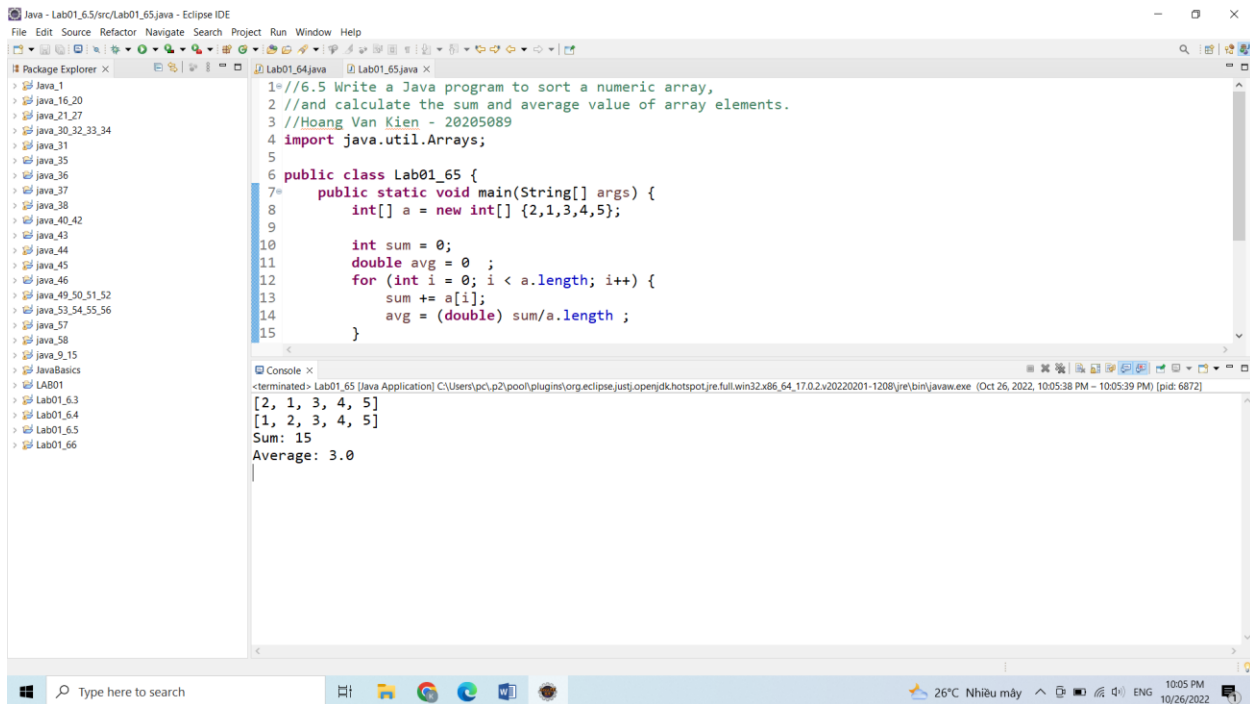
6.5 Write a Java program to sort a numeric array, and calculate the sum and average value of array elements.

```

1 //6.5 Write a Java program to sort a numeric array,
2 //and calculate the sum and average value of array elements.
3 //Hoang Van Kien - 20205089
4 import java.util.Arrays;
5
6 public class Lab01_65 {
7     public static void main(String[] args) {
8         int[] a = new int[] {2,1,3,4,5};
9
10        int sum = 0;
11        double avg = 0 ;
12        for (int i = 0; i < a.length; i++) {
13            sum += a[i];
14            avg = (double) sum/a.length ;
15        }
16
17        System.out.println(Arrays.toString(a));
18        Arrays.sort(a);
19        System.out.println(Arrays.toString(a));
20        System.out.println("Sum: " + sum);
21        System.out.println("Average: " + avg);
22    }
23 }

```

Ket qua:



The screenshot shows the Eclipse IDE interface. The Package Explorer on the left lists several Java files, including Lab01_65.java. The main editor window displays the source code for Lab01_65.java. The code is a Java program that calculates the sum and average of an array. The console window at the bottom shows the output of the program.

```
1//6.5 Write a Java program to sort a numeric array,  
2//and calculate the sum and average value of array elements.  
3//Hoang Van Kien - 20205089  
4import java.util.Arrays;  
5  
6public class Lab01_65 {  
7    public static void main(String[] args) {  
8        int[] a = new int[] {2,1,3,4,5};  
9  
10       int sum = 0;  
11       double avg = 0 ;  
12       for (int i = 0; i < a.length; i++) {  
13           sum += a[i];  
14           avg = (double) sum/a.length ;  
15       }  
16   }  
17 }
```

Console Output:

```
<terminated> Lab01_65 [Java Application] C:\Users\pc\p2\pool\plugins\org.eclipse.justi.openjdk.hotspot.jre.full.win32.x86_64_17.0.2.v20220201-1208\jre\bin\javaw.exe (Oct 26, 2022, 10:05:38 PM - 10:05:39 PM) [pid: 6872]  
[2, 1, 3, 4, 5]  
[1, 2, 3, 4, 5]  
Sum: 15  
Average: 3.0
```

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

```
1 import java.util.Scanner;
2
3 // 6.6 Write a Java program to add two matrices of the same size.
4 // HoangVanKien-20205089
5 public class Lab01_66 {
6     public static void main(String[] args) {
7
8         Scanner sc = new Scanner(System.in);
9         int m ; // Khai báo hàng
10        int n ; // Khai báo cột
11
12        // Nhập số hàng , số cột
13        System.out.println("Nhập hàng:");
14        m = sc.nextInt();
15        System.out.println("Nhập cột:");
16        n = sc.nextInt();
17
18        // Khai báo hai ma trận cùng kích thước
19        int array1[][] = new int[m][n];
20        int array2[][] = new int[m][n];
21        int sum[][] = new int[m][n];
22
23        // Nhập giá trị cho 2 ma trận
24        for (int i = 0; i < m; i++) {
25            for (int j = 0; j < n; j++) {
26                array1[i][j] = sc.nextInt();
27            }
28        }
29
30        for (int i = 0; i < m; i++) {
31            for (int j = 0; j < n; j++) {
32                array2[i][j] = sc.nextInt();
```



```

}

// In ma tran
System.out.println("Array1: ");
for (int i = 0; i < m; i++) {
    for (int j = 0; j < n; j++) {
        System.out.print(array1[i][j]+"\\t");
    }
    System.out.println();
}

System.out.println("Array2: ");
for (int i = 0; i < m; i++) {
    for (int j = 0; j < n; j++) {
        System.out.print(array2[i][j]+"\\t");
    }
    System.out.println();
}

// Tinh tong 2 ma tran
for ( int i = 0 ; i < m ; i++ ) {
    for ( int j = 0 ; j < n ; j++ )
        sum[i][j] = array1[i][j] + array2[i][j];
}

System.out.println("Sum:");

for ( int i = 0 ; i < m ; i++ )
{
    for ( int j = 0 ; j < n ; j++ )
        System.out.print(sum[i][j]+"\\t");
}

```

Ket qua:

