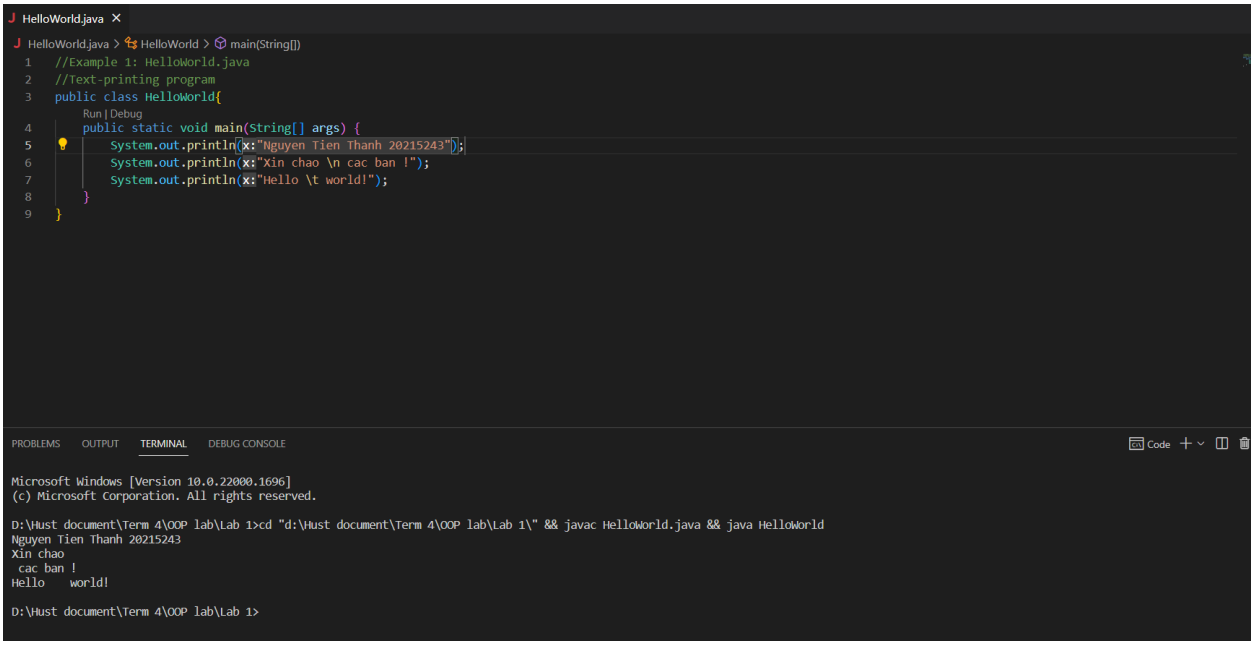
BÁO CÁO THỰC HÀNH LAB 1
LẬP TRÌNH HƯỚNG ĐỐI TƯỢNG

The Very First Java Programs

2.2.1 Write, compile the first Java application:

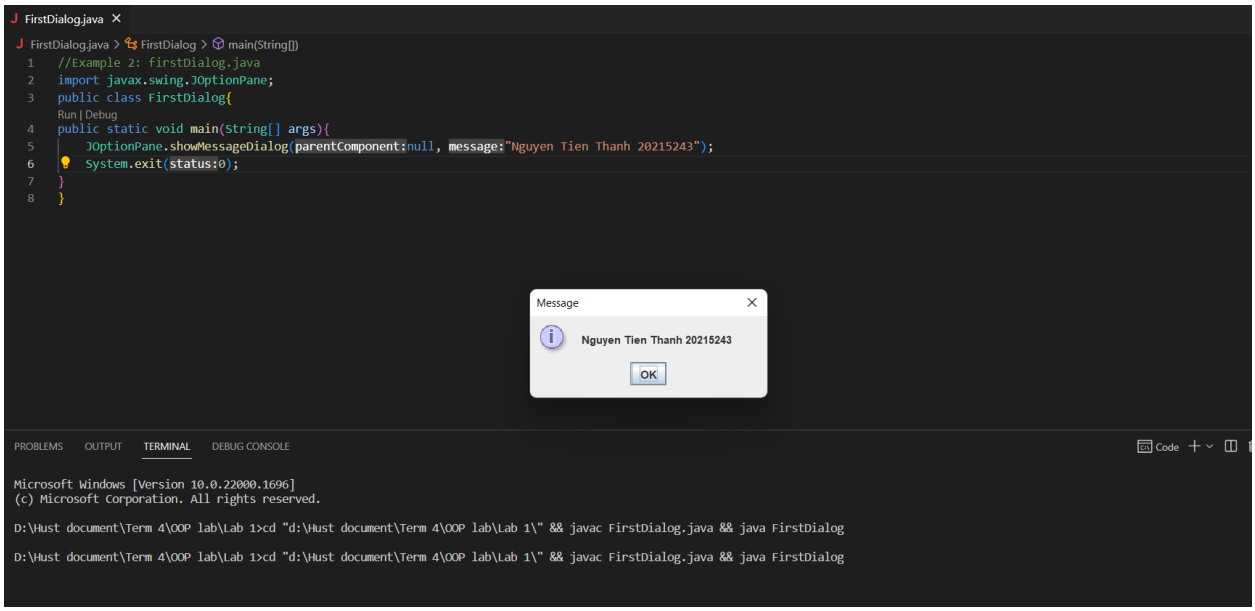
```java
//Example 1: HelloWorld.java
//Text-printing program
public class HelloWorld {

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

   } // end of method main
}
```

Kết quả



2.2.2 Write, compile the first dialog Java program

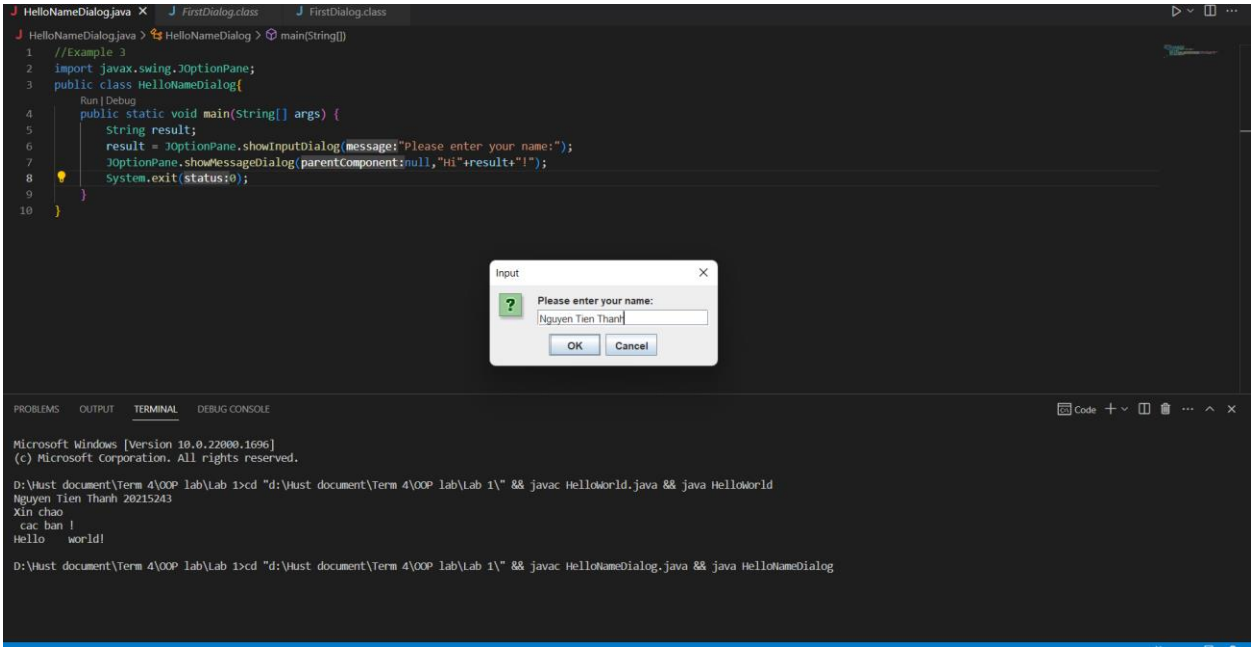
```java
// Example 2: FirstDialog.java
import javax.swing.JOptionPane;
public class FirstDialog{
    public static void main(String[] args){
        JOptionPane.showMessageDialog(null,"Hello world! How are you?");
        System.exit(0);
    }
}
```

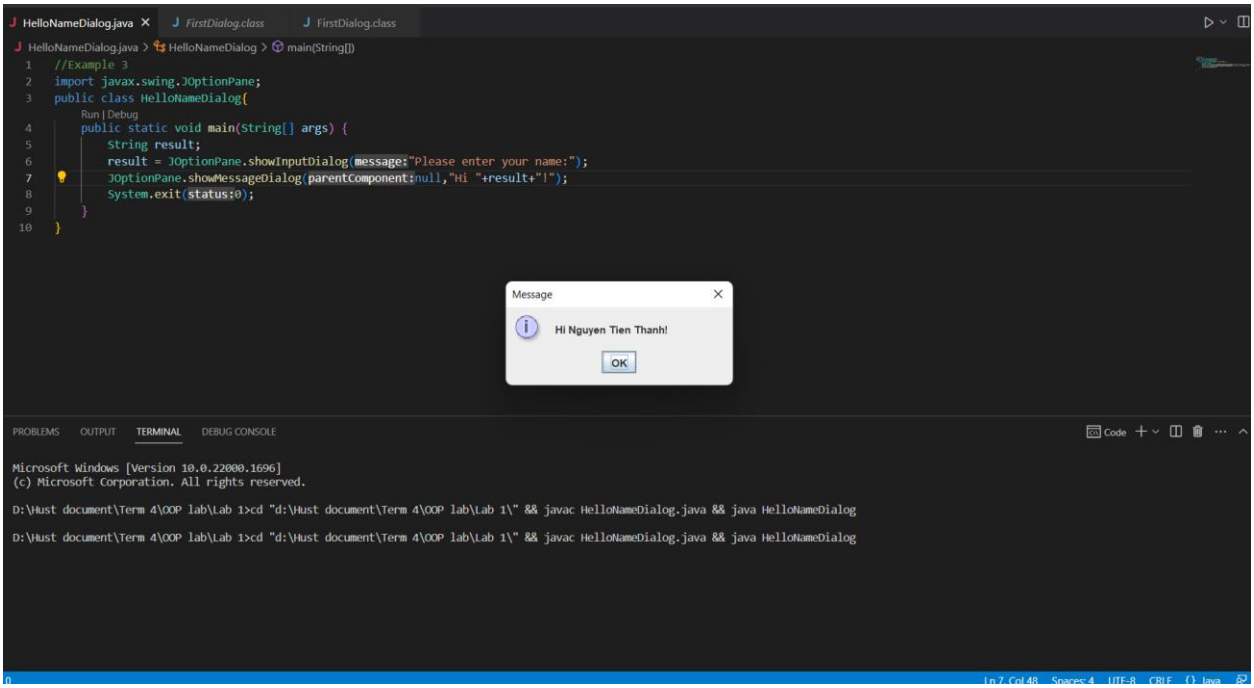


2.2.3 Write, compile the first input dialog Java application

```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);
  }
}
```

Kết quả:

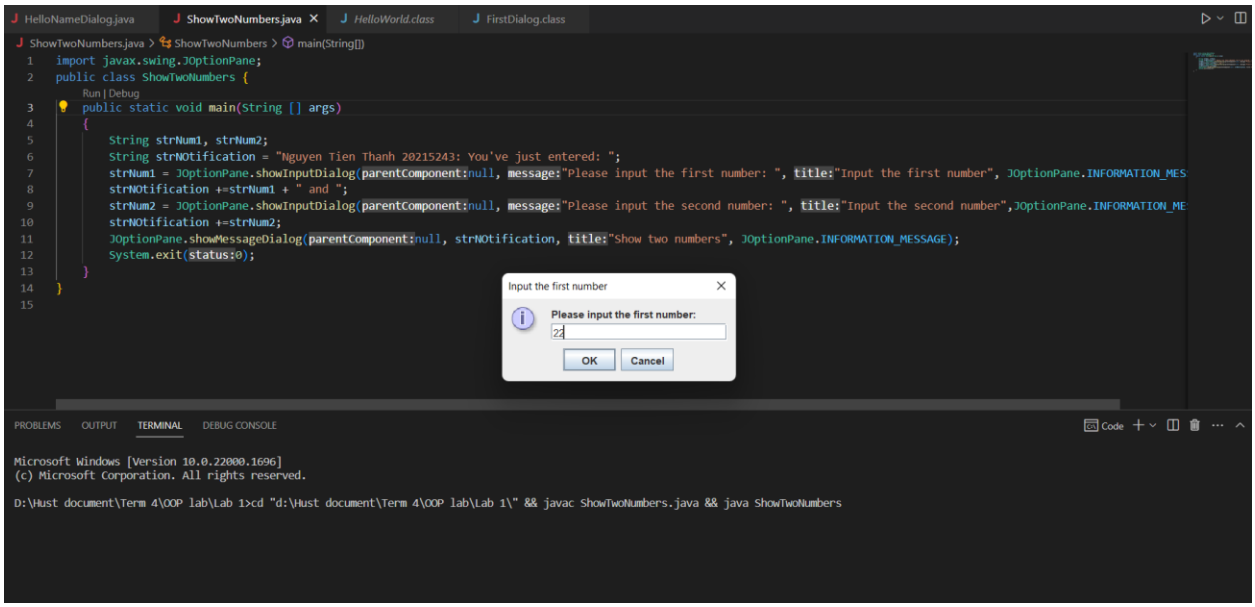

HelloNameDialog.java
FirstDialog.class
FirstDialog.class
HelloNameDialog.java > HelloNameDialog > main(String[])
//Example 3
import javax.swing.JOptionPane;
public class HelloNameDialog{
Run | Debug
public static void main(String[] args) {
String result;
result = JOptionPane.showInputDialog(message:"Please enter your name:");
JOptionPane.showMessageDialog(parentComponent:null,"Hi"+result+"!");
System.exit(status:0);
}
}
Input
Please enter your name:
Nguyen Tien Thanh
OK
Cancel
PROBLEMS
OUTPUT
TERMINAL
DEBUG CONSOLE
Code
Microsoft Windows [Version 10.0.22000.1696]
(c) Microsoft Corporation. All rights reserved.
D:\Hust document\Term 4\OOP lab\Lab 1>cd "d:\Hust document\Term 4\OOP lab\Lab 1\" && javac HelloWorld.java && java HelloWorld
Nguyen Tien Thanh 20215243
Xin chao
cac ban !
Hello world!
D:\Hust document\Term 4\OOP lab\Lab 1>cd "d:\Hust document\Term 4\OOP lab\Lab 1\" && javac HelloNameDialog.java && java HelloNameDialog

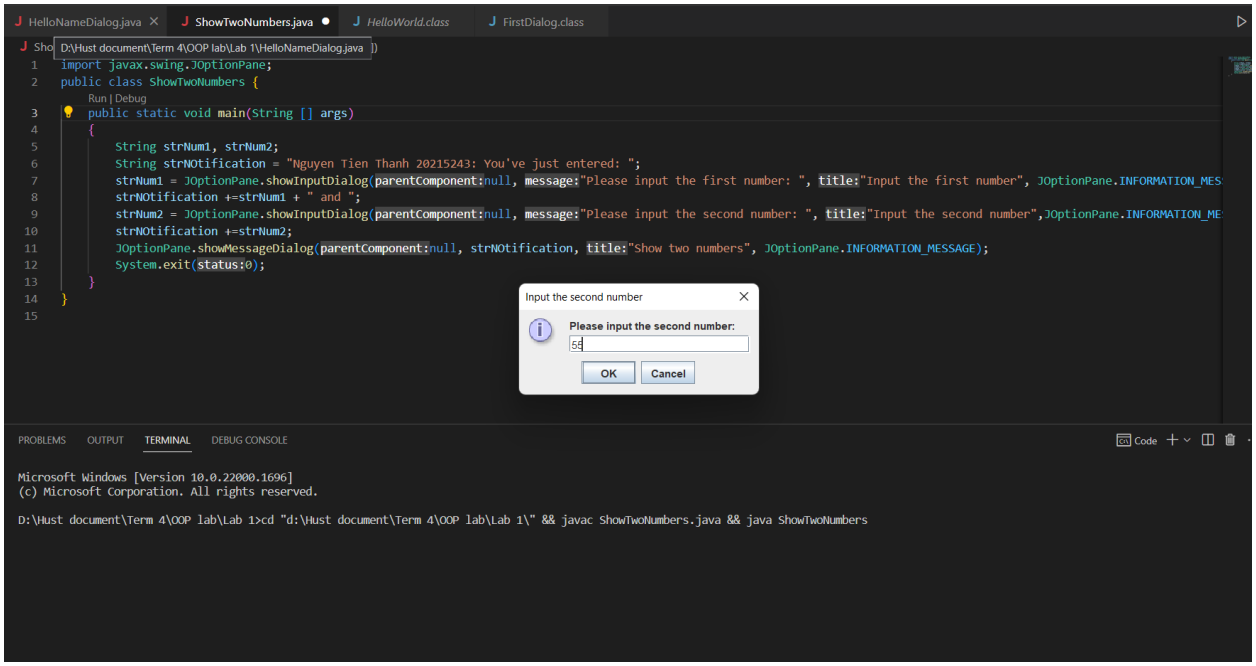

HelloNameDialog.java
FirstDialog.class
FirstDialog.class
HelloNameDialog.java > HelloNameDialog > main(String[])
//Example 3
import javax.swing.JOptionPane;
public class HelloNameDialog{
Run | Debug
public static void main(String[] args) {
String result;
result = JOptionPane.showInputDialog(message:"Please enter your name:");
JOptionPane.showMessageDialog(parentComponent:null,"Hi "+result+"!");
System.exit(status:0);
}
}
Message
Hi Nguyen Tien Thanh!
OK
PROBLEMS
OUTPUT
TERMINAL
DEBUG CONSOLE
Code
Microsoft Windows [Version 10.0.22000.1696]
(c) Microsoft Corporation. All rights reserved.
D:\Hust document\Term 4\OOP lab\Lab 1>cd "d:\Hust document\Term 4\OOP lab\Lab 1\" && javac HelloNameDialog.java && java HelloNameDialog
D:\Hust document\Term 4\OOP lab\Lab 1>cd "d:\Hust document\Term 4\OOP lab\Lab 1\" && javac HelloNameDialog.java && java HelloNameDialog

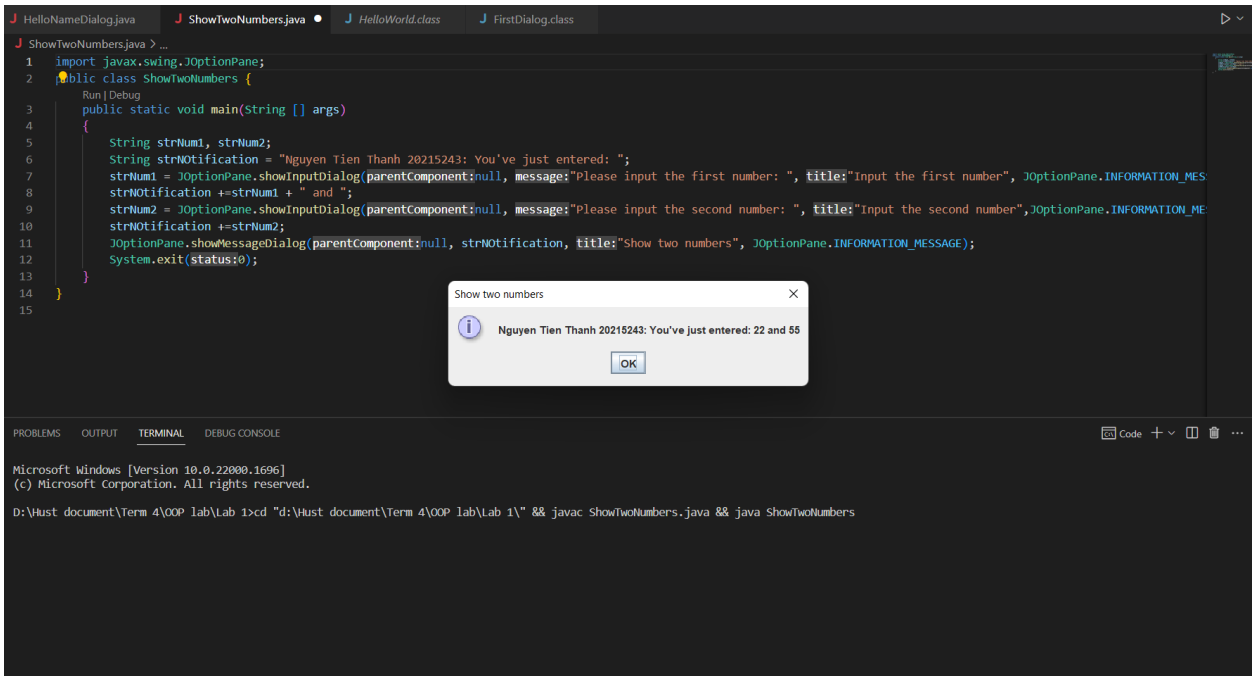
2.2.4 Write, compile, and run the following example:

```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);
  }
}
```

Kết quả:







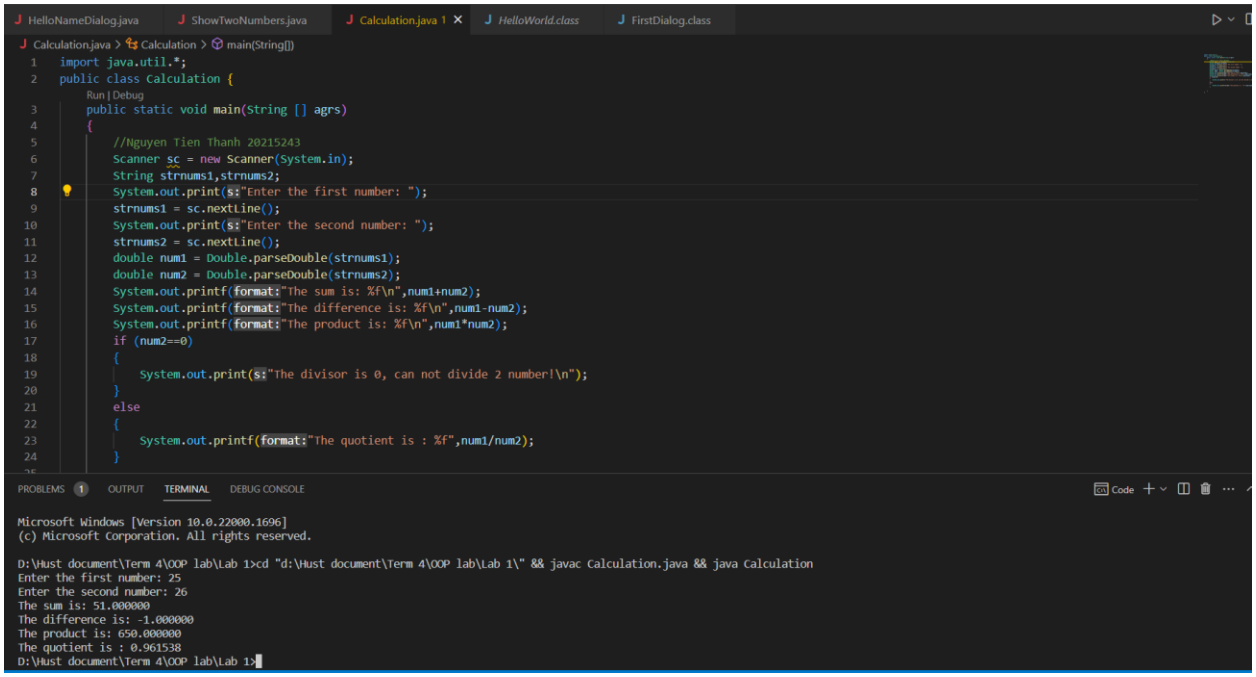
2.2.5 Write a program to calculate sum, difference, product, and quotient of 2 double numbers which are entered by users.

Notes

- To convert from String to double, you can use

```
double num1 = Double.parseDouble(strNum1)
```

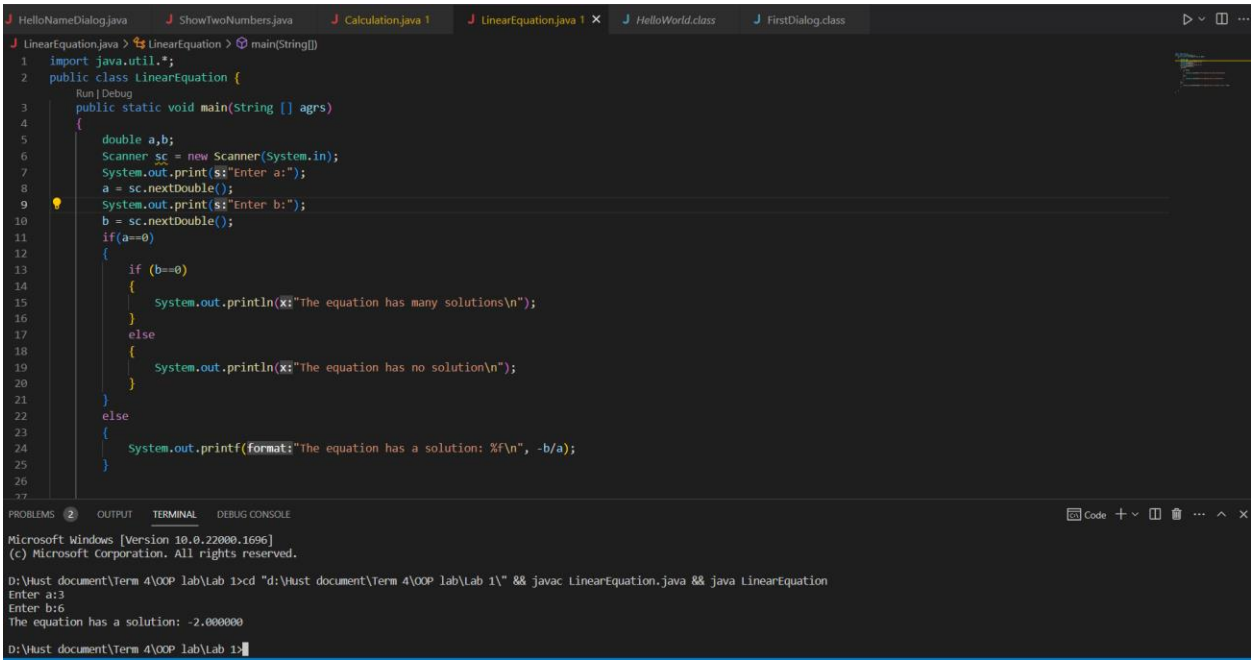
- Check the divisor of the division



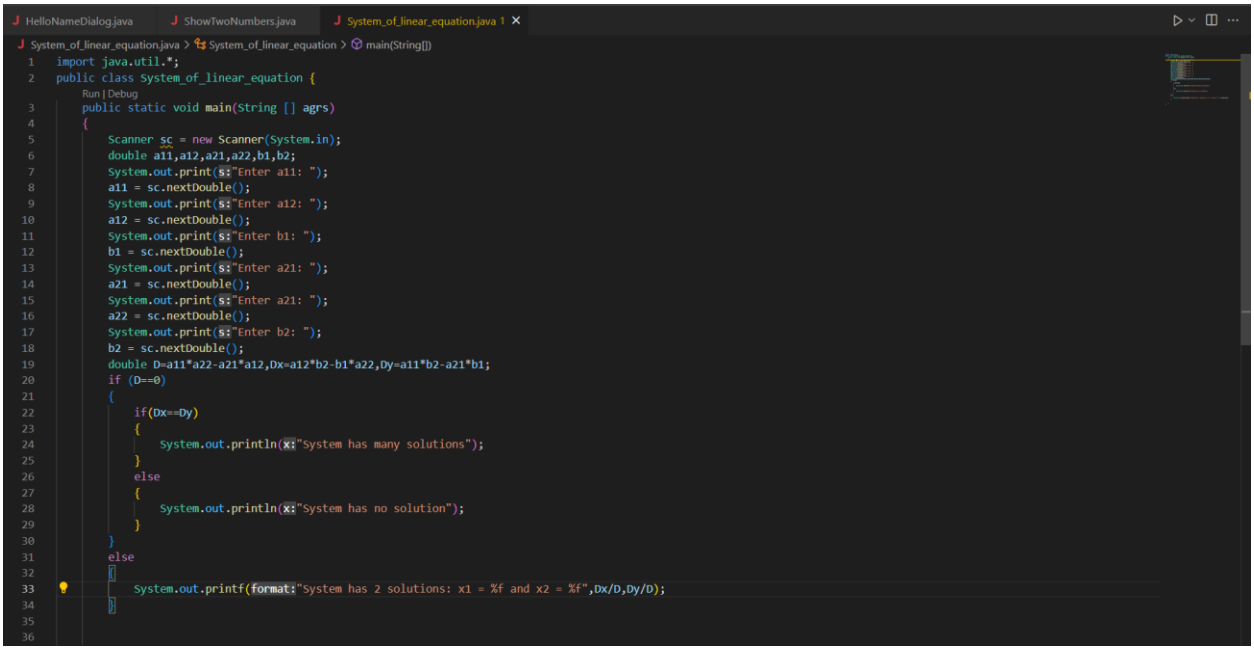
2.2.5 Write a program to solve:

Kết quả:

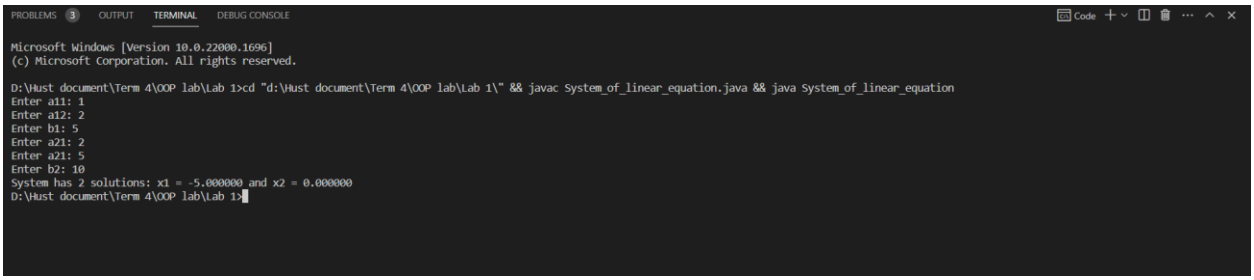
- The first-degree equation:



- The system of first-degree equations:



```java
import java.util.*;
public class System_of_linear_equation {
    Run | Debug
    public static void main(String [] agrs)
    {
        Scanner sc = new Scanner(System.in);
        double a11,a12,a21,a22,b1,b2;
        System.out.print(s:"Enter a11: ");
        a11 = sc.nextDouble();
        System.out.print(s:"Enter a12: ");
        a12 = sc.nextDouble();
        System.out.print(s:"Enter b1: ");
        b1 = sc.nextDouble();
        System.out.print(s:"Enter a21: ");
        a21 = sc.nextDouble();
        System.out.print(s:"Enter a21: ");
        a22 = sc.nextDouble();
        System.out.print(s:"Enter b2: ");
        b2 = sc.nextDouble();
        double D=a11*a22-a21*a12,Dx=a12*b2-b1*a22,Dy=a11*b2-a21*b1;
        if (D==0)
        {
            if(Dx==Dy)
            {
                System.out.println(x:"System has many solutions");
            }
            else
            {
                System.out.println(x:"System has no solution");
            }
        }
        else
        {
            System.out.printf(format:"System has 2 solutions: x1 = %f and x2 = %f",Dx/D,Dy/D);
        }
```



```
Microsoft Windows [Version 10.0.22000.1696]
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D:\Hust document\Term 4\OOP lab\Lab 1>cd "d:\Hust document\Term 4\OOP lab\Lab 1\" && javac System_of_linear_equation.java && java System_of_linear_equation
Enter a11: 1
Enter a12: 2
Enter b1: 5
Enter a21: 2
Enter a21: 5
Enter b2: 10
System has 2 solutions: x1 = -5.000000 and x2 = 0.000000
D:\Hust document\Term 4\OOP lab\Lab 1>
```

- The second-degree equation with one variable:

HelloNameDialog.java | ShowTwoNumbers.java | System_of_linear_equation.java 1 | Secon_degree_equation.java 1

Secon_degree_equation.java > Secon_degree_equation > main(String[])

```java
import java.util.*;
public class Secon_degree_equation {
    Run | Debug
    public static void main(String [] agrs)
    {
        Scanner sc = new Scanner(System.in);
        double a,b,c,delta;
        System.out.print(s:"Enter a:");
        a=  sc.nextDouble();
        System.out.print(s:"Enter b:");
        b=  sc.nextDouble();
        System.out.print(s:"Enter c:");
        c=  sc.nextDouble();
        delta = b*b-4*a*c;
        if(a==0)
        {
            if(b==0)
            {
                if(c==0)
                {
                    System.out.println(x:"The equation has many soluiton");
                }
                else
                {
                    System.out.println(x:"The equation has no solution");
                }
            }
            else
            {
                System.out.printf(format:"The equation has 1 solution: x = %f",-c/b);
            }
        }
        else
        {
            if(delta<0)
            {
                System.out.println(x:"The equation has no solution");
            }
            else if(delta==0)
            {
                System.out.printf(format:"The equation has 1 solution: x = %f",-b/(2*a));
            }
            else
            {
                System.out.printf(format:"The equation has 2 solution: x1 = %f and x2 = %f",(-b+Math.sqrt(delta))/(2*a),(-b-Math.sqrt(
            }
        }
    }
}
```

```
Microsoft Windows [Version 10.0.22000.1696]
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D:\Hust document\Term 4\OOP lab\Lab 1>cd "d:\Hust document\Term 4\OOP lab\Lab 1\" && javac Secon_degree_equation.java && java Secon_degree_equation
Enter a:1
Enter b:1
Enter c:-6
The equation has 2 solution: x1 = 2.000000 and x2 = -3.000000
D:\Hust document\Term 4\OOP lab\Lab 1>
```

6.1 Write, compile and run the ChoosingOption program:

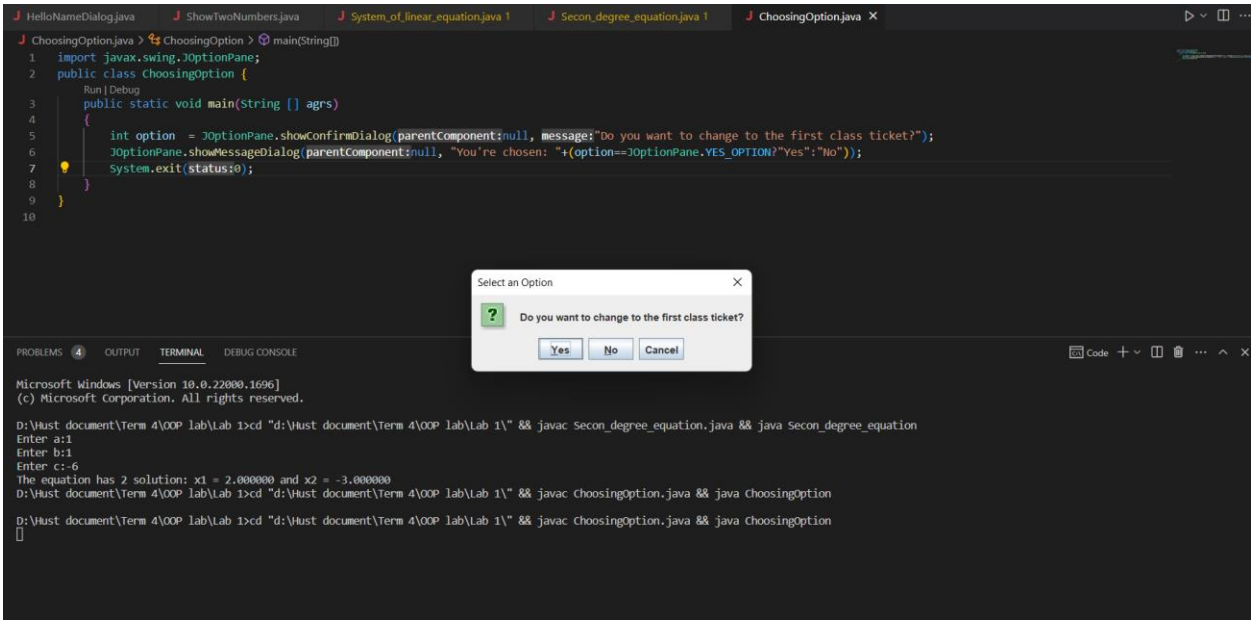
```
1  import javax.swing.JOptionPane;
2  public class ChoosingOption{
3    public static void main(String[] args){
4      int option = JOptionPane.showConfirmDialog(null,
5                   "Do you want to change to the first class ticket?");
6
7      JOptionPane.showMessageDialog(null,"You've chosen: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

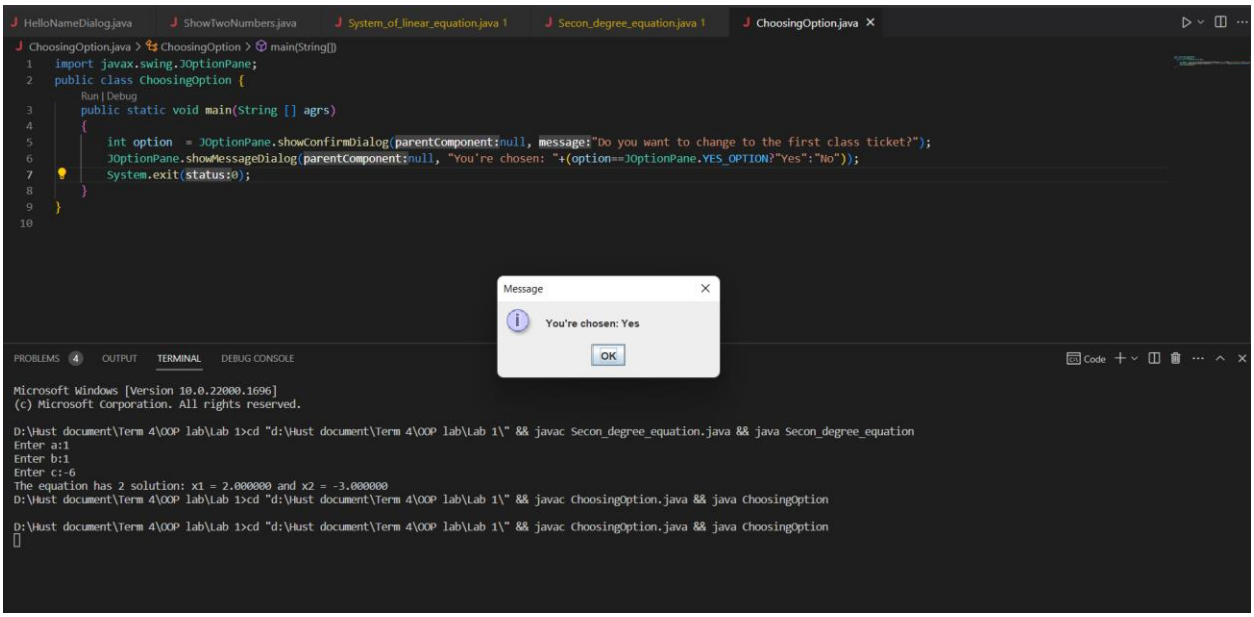
Figure 23: Save and Launch

Questions:

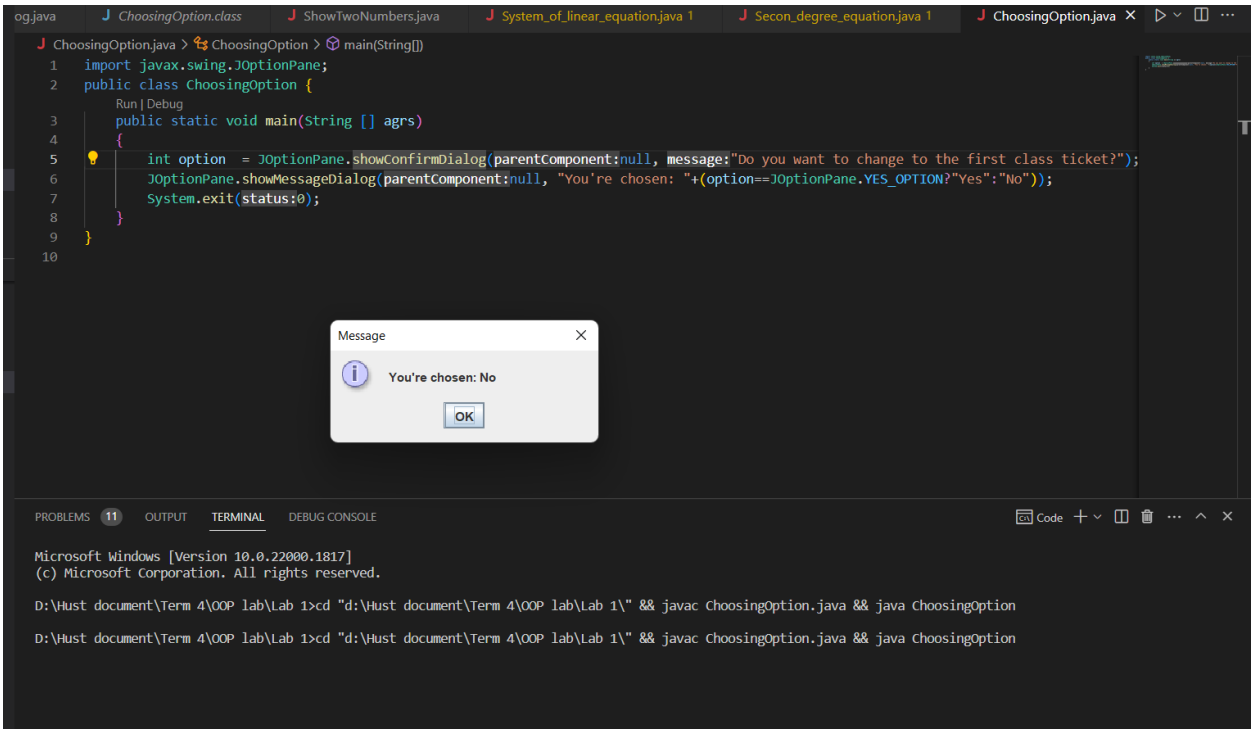
- What happens if users choose “Cancel”?
- How to customize the options to users, e.g. only two options: “Yes” and “No”, OR “I do” and “I don’t” (Suggestion: Use Javadocs or using Eclipse/Netbean IDE help).

Kết quả:





- If we choose “Cancel”, we will see the message: You’re chosen “No”.



Fix it to only display 2 choices:

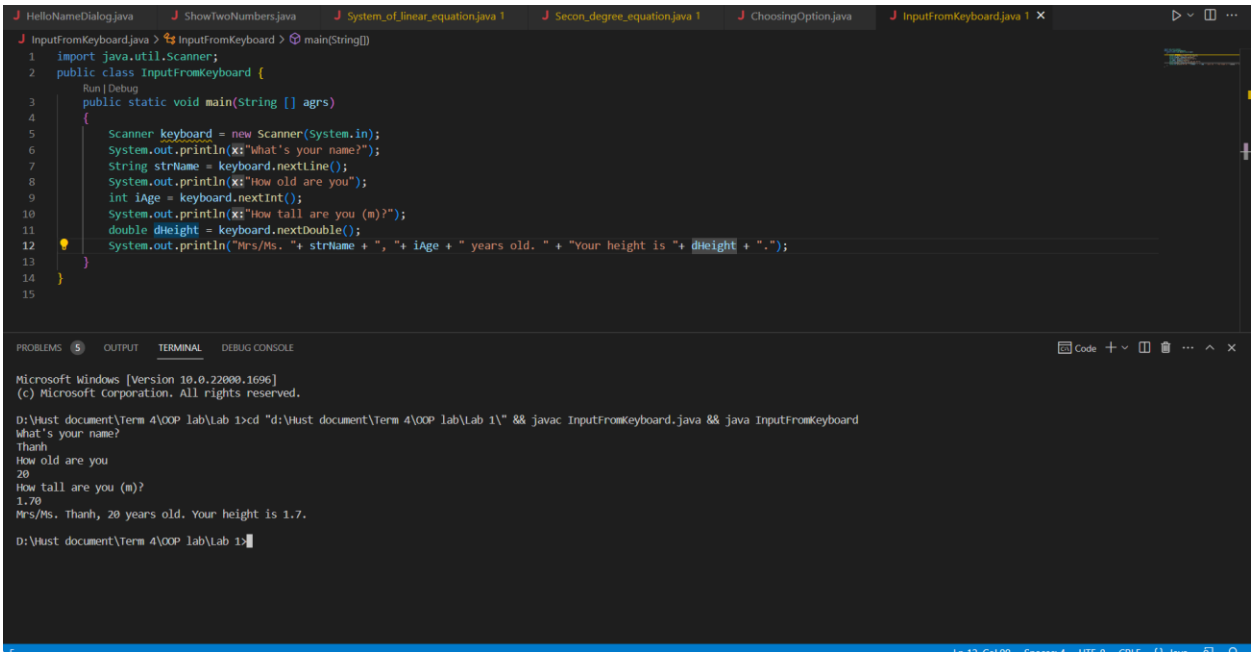
6.2 Write a program for input/output from keyboard:

Figure 24. Run Application (2)

```
1  import java.util.Scanner;
2  public class InputFromKeyboard{
3      public static void main(String args[]){
4          Scanner keyboard = new Scanner(System.in);
5
6          System.out.println("What's your name?");
7          String strName = keyboard.nextLine();
8          System.out.println("How old are you?");
9          int iAge = keyboard.nextInt();
10         System.out.println("How tall are you (m)?");
11         double dHeight = keyboard.nextDouble();
12
13         //similar to other data types
14         //nextByte(), nextShort(), nextLong()
15         //nextFloat(), nextBoolean()
16
17         System.out.println("Mrs/Ms. " + strName + ", " + iAge + " years old. "
18                            + "Your height is " + dHeight + ".");
19
20     }
21 }
```

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

Kết quả:



```
import java.util.Scanner;
public class InputFromKeyboard {
    Run | Debug
    public static void main(String [] agrs)
    {
        Scanner keyboard = new Scanner(System.in);
        System.out.println(x:"What's your name?");
        String strName = keyboard.nextLine();
        System.out.println(x:"How old are you");
        int iAge = keyboard.nextInt();
        System.out.println(x:"How tall are you (m)?");
        double dHeight = keyboard.nextDouble();
        System.out.println("Mrs/Ms. "+ strName + ", "+ iAge + " years old. " + "Your height is "+ dHeight + ".");
    }
}
```

```
Microsoft Windows [Version 10.0.22000.1696]
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D:\Hust document\Term 4\OOP lab\Lab 1>cd "d:\Hust document\Term 4\OOP lab\Lab 1\" && javac InputFromKeyboard.java && java InputFromKeyboard
What's your name?
Thanh
How old are you
20
How tall are you (m)?
1.70
Mrs/Ms. Thanh, 20 years old. Your height is 1.7.

D:\Hust document\Term 4\OOP lab\Lab 1>
```
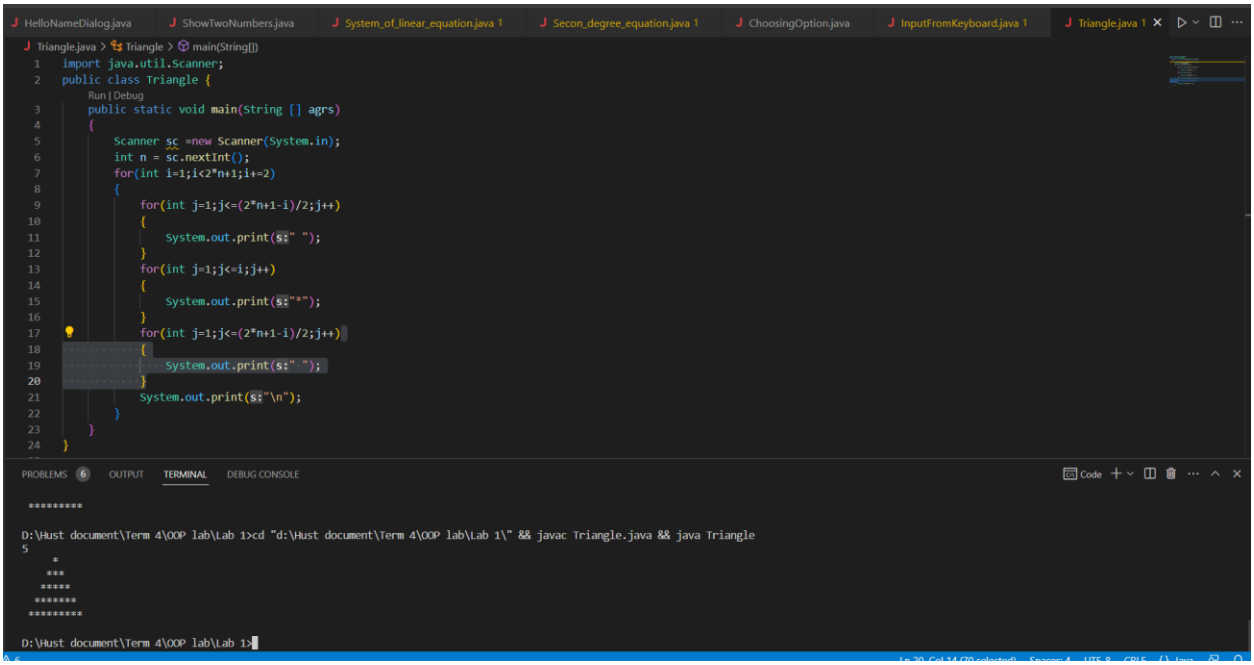

6.3 Write a program to display a triangle with a height of n stars (*), n is entered by users.

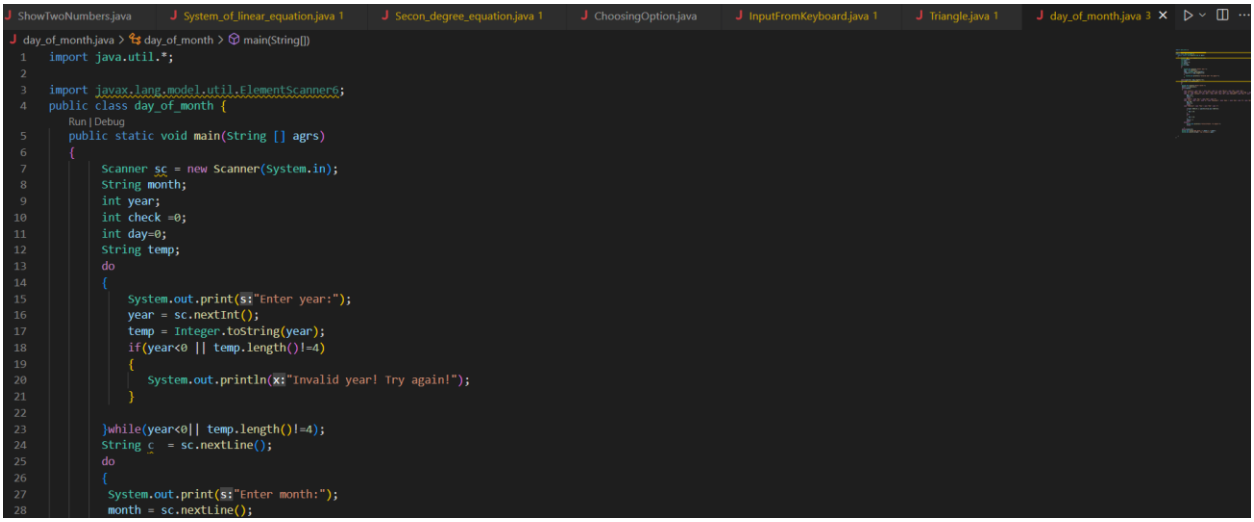
Kết quả:



```
import java.util.Scanner;
public class Triangle {
    Run | Debug
    public static void main(String [] agrs)
    {
        Scanner sc =new Scanner(System.in);
        int n = sc.nextInt();
        for(int i=1;i<2*n+1;i+=2)
        {
            for(int j=1;j<=(2*n+1-i)/2;j++)
            {
                System.out.print(s:" ");
            }
            for(int j=1;j<=i;j++)
            {
                System.out.print(s:"*");
            }
            for(int j=1;j<=(2*n+1-i)/2;j++)
            {
                System.out.print(s:" ");
            }
            System.out.print(s:"\n");
        }
    }
}
```

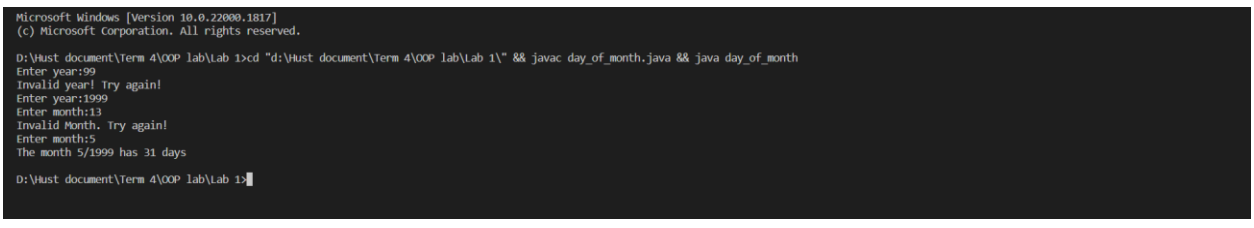
```
 *********

D:\Hust document\Term 4\OOP lab\Lab 1>cd "d:\Hust document\Term 4\OOP lab\Lab 1\" && javac Triangle.java && java Triangle
5
    *
   ***
  *****
 *******
*********

D:\Hust document\Term 4\OOP lab\Lab 1>
```

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.



```java
import java.util.*;

import javax.lang.model.util.ElementScanner6;
public class day_of_month {
    Run | Debug
    public static void main(String [] agrs)
    {
        Scanner sc = new Scanner(System.in);
        String month;
        int year;
        int check =0;
        int day=0;
        String temp;
        do
        {
            System.out.print("Enter year:");
            year = sc.nextInt();
            temp = Integer.toString(year);
            if(year<0 || temp.length()!=4)
            {
               System.out.println("Invalid year! Try again!");
            }

        }while(year<0|| temp.length()!=4);
        String c  = sc.nextLine();
        do
        {
         System.out.print("Enter month:");
         month = sc.nextLine();
```

```java
        switch(month)
        {
           case "January": case "Jan.": case "Jan": case "1": case "March": case "Mar.":case "Mar":
           case "3": case "May": case "5": case "July": case "Jul": case "7": case "August": case "Aug.": case "Aug":
           case "8": case "October": case "Oct.": case "Oct": case "10": case "December": case "Dec.": case "Dec": case "12":
                day = 31;
                check = 1;
                break;
           case "April": case "Apr.": case "Apr": case "4":
           case "June": case "Jun": case "6": case "September": case "Sept.": case "Sep": case "9": case "November": case "Nov.": case "Nov": case "11":
                day =30;
                check =1;
                break;
           case "February": case "Feb.": case "Feb": case "2":

                if(year %400==0 || (year%4==0 && year %100!=0))
                {
                   day = 29;
                }
                else
                {
                   day = 28;
                }
                check = 1;
                break;
           default:
                System.out.println("Invalid Month. Try again!");
                break;

           }
        }while(check==0);
        System.out.print("The month " + month + "/"+year);
        System.out.printf(" has %d days\n",day);


    }
```



```
Microsoft Windows [Version 10.0.22000.1817]
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D:\Hust document\Term 4\OOP lab\Lab 1>cd "d:\Hust document\Term 4\OOP lab\Lab 1\" && javac day_of_month.java && java day_of_month
Enter year:99
Invalid year! Try again!
Enter year:1999
Enter month:13
Invalid Month. Try again!
Enter month:5
The month 5/1999 has 31 days

D:\Hust document\Term 4\OOP lab\Lab 1>
```

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

```java
import java.util.*;
public class array {
    Run | Debug
    public static void main(String [] agrs) {
        Scanner sc = new Scanner(System.in);
        int n;
        System.out.print(s:"Enter size of array:");
        n  =sc.nextInt();
        int arr [] = new int[n];
        System.out.print(s:"Enter each element of the array:");
        for(int i=0;i<n;i++)
        {
            arr[i] = sc.nextInt();
        }
        Arrays.sort(arr);
        int sum = 0;
        for(int i=0;i<n;i++)
        {
            sum+=arr[i];
        }
        double aver = (double) sum/n;
        System.out.println("The sorted array is: " + Arrays.toString(arr));
        System.out.println("The sum of the array elements is: " + sum);
        System.out.println("The average of the array elements is: " + aver);
        System.exit(status:0);

    }
}
```

```
D:\Hust document\Term 4\OOP lab\Lab 1>cd "d:\Hust document\Term 4\OOP lab\Lab 1\" && javac array.java && java array
Enter size of array:5
Enter each element of the array:5 4 2 3 1
The sorted array is: [1, 2, 3, 4, 5]
The sum of the array elements is: 15
The average of the array elements is: 3.0

D:\Hust document\Term 4\OOP lab\Lab 1>
```

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

```java
import java.util.*;
public class add_two_matrix {
    Run | Debug
    public static void main(String [] agrs)
    {
        int m,n;
        Scanner sc= new Scanner(System.in);
        System.out.print(s:"Enter number of row of each matrix: ");
        m = sc.nextInt();
        System.out.print(s:"Enter number of column of each matrix: ");
        n = sc.nextInt();
        int arr1 [][] = new int[m][n];
        int arr2 [][] = new int[m][n];
        System.out.println(x:"Enter elements of matrix 1: ");
        for(int i=0;i<m;i++)
        {
            for(int j=0;j<n;j++)
            {
                arr1[i][j] = sc.nextInt();
            }
        }
        System.out.println(x:"Enter elements of matrix 2: ");
        for(int i=0;i<m;i++)
        {
            for(int j=0;j<n;j++)
            {
                arr2[i][j] = sc.nextInt();
            }
        }
        for(int i=0;i<m;i++)
        {
            for(int j=0;j<n;j++)
            {
                arr1[i][j] = arr1[i][j] + arr2[i][j];
            }
        }
```

```java
        }
        System.out.println(x:"The sum of two matrix: ");
        for(int i=0;i<m;i++)
        {
            for(int j=0;j<n;j++)
            {
                System.out.printf(format:"%d ",arr1[i][j]);
            }
            System.out.print(s:"\n");
        }

    }
}
```

```
PROBLEMS 11  OUTPUT  TERMINAL  DEBUG CONSOLE

Microsoft Windows [Version 10.0.22000.1817]
(c) Microsoft Corporation. All rights reserved.

D:\Hust document\Term 4\OOP lab\Lab 1>cd "d:\Hust document\Term 4\OOP lab\Lab 1\" && javac add_two_matrix.java && java add_two_matrix
Enter number of row of each matrix: 2
Enter number of column of each matrix: 2
Enter elements of matrix 1:
1
2
3
4
Enter elements of matrix 2:
5
6
7
8
The sum of two matrix:
6 8
10 12

D:\Hust document\Term 4\OOP lab\Lab 1>
```