

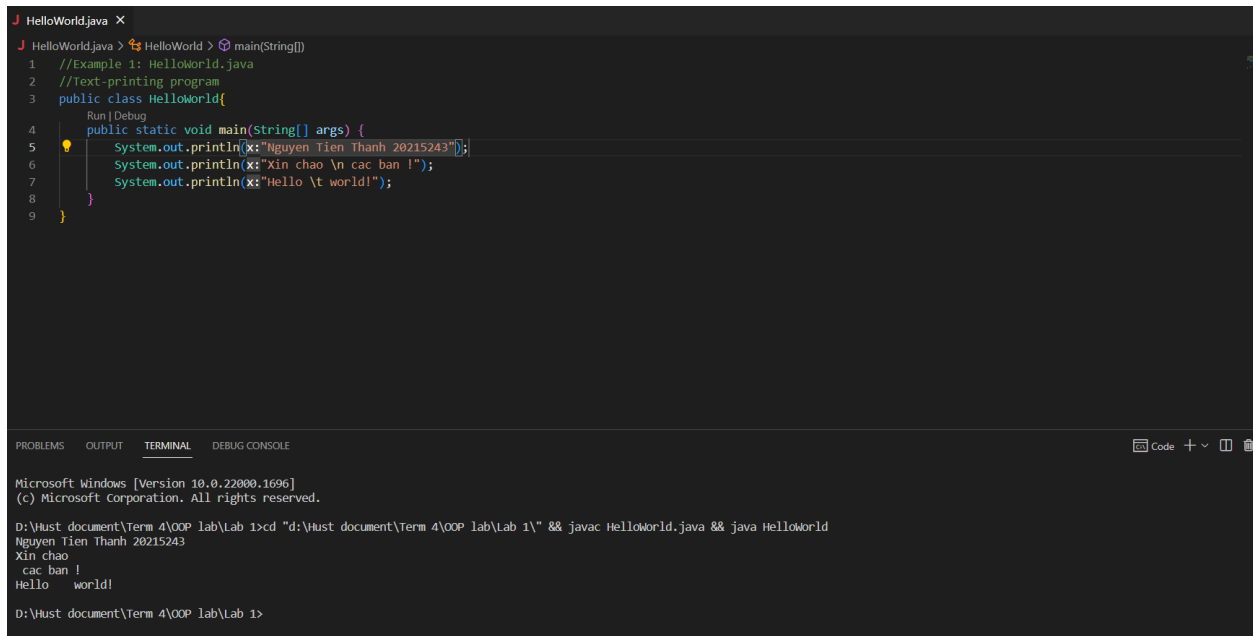
BÁO CÁO THỰC HÀNH LAB 1 LẬP TRÌNH HƯỚNG ĐỐI TƯỢNG

The Very First Java Programs

2.2.1 Write, compile the first Java application:

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

Kết quả



The screenshot shows an IDE window titled 'HelloWorld.java'. The code editor displays the Java code from the previous block. Below the code editor, the 'TERMINAL' tab is active, showing the command prompt output. The command executed is 'javac HelloWorld.java && java HelloWorld'. The output of the program is displayed as follows:

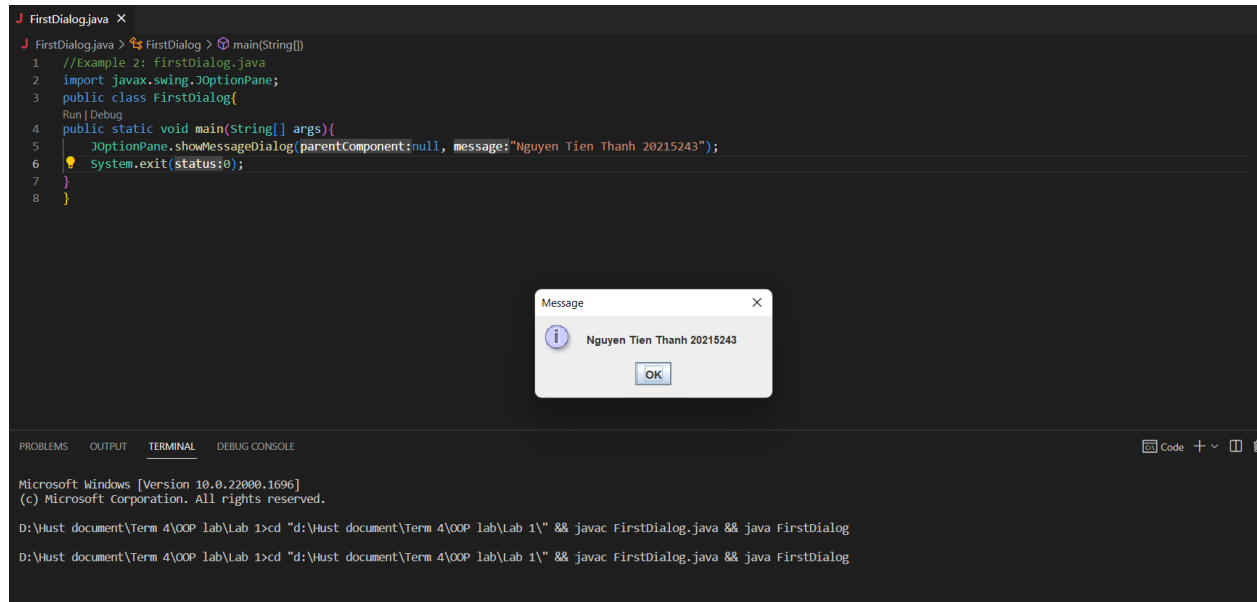
```
Microsoft Windows [Version 10.0.22000.1696]
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D:\Hust document\Term 4\OOP lab\Lab 1>cd "d:\Hust document\Term 4\OOP lab\Lab 1\" && javac HelloWorld.java && java HelloWorld
Xin chao
cac ban !
Hello world!

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

2.2.2 Write, compile the first dialog Java program

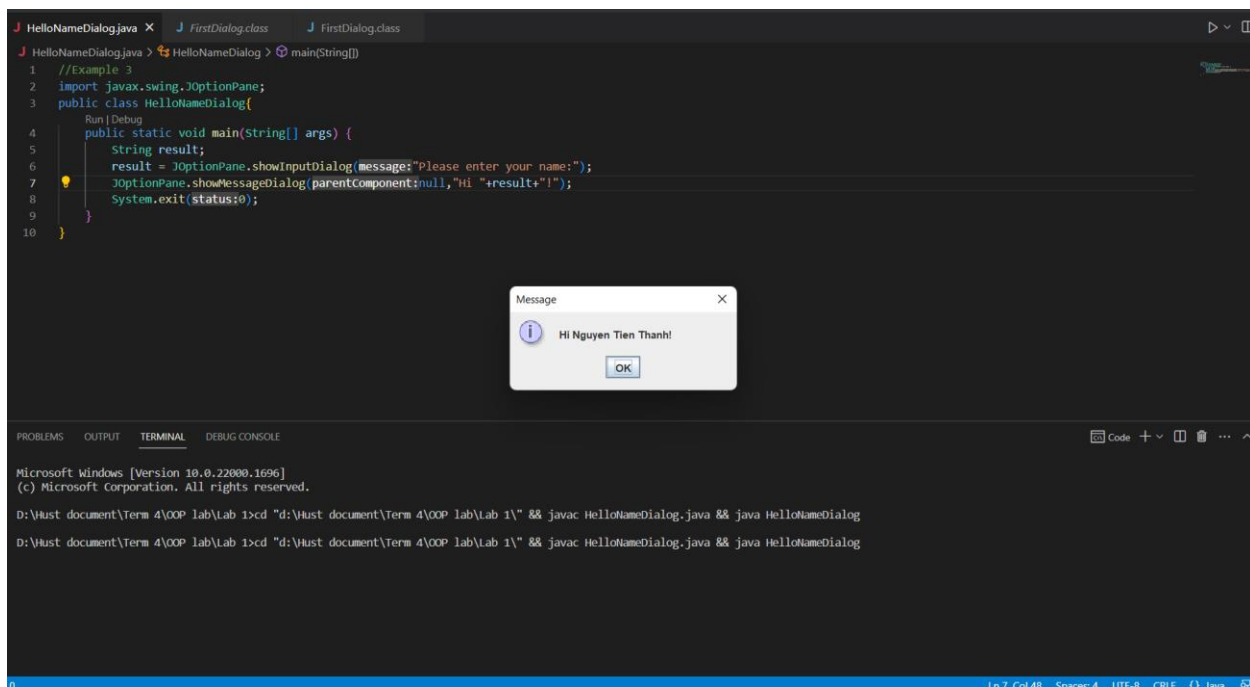
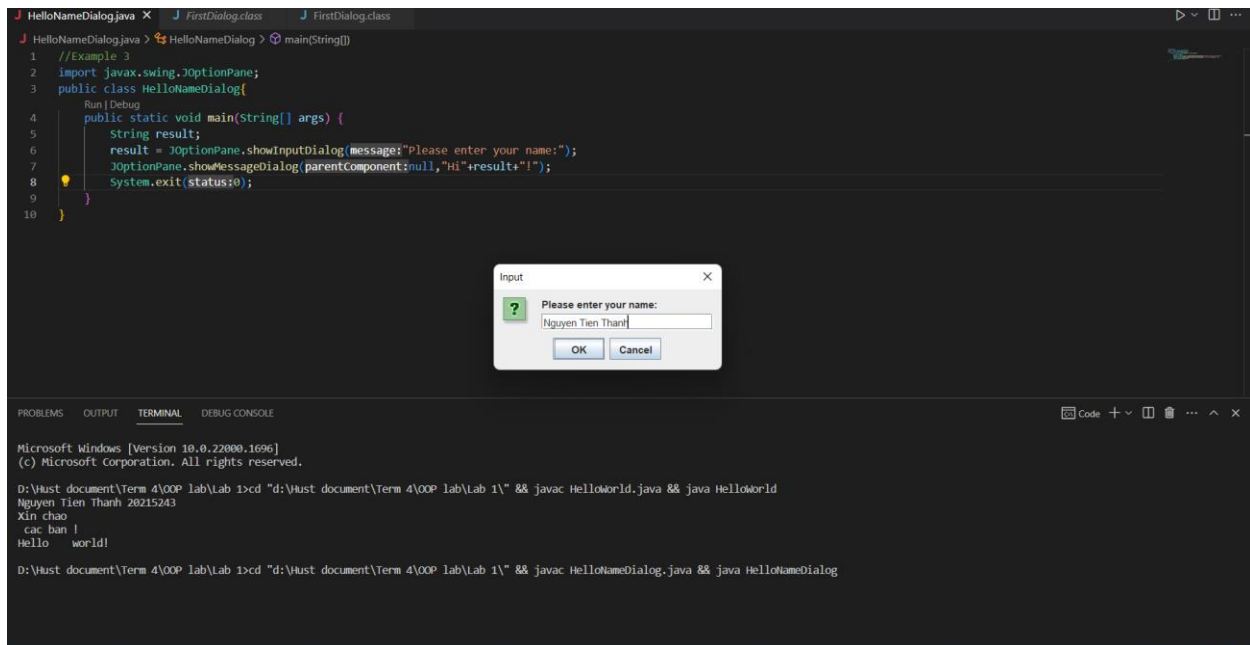
```
1 // Example 2: FirstDialog.java
2 import javax.swing.JOptionPane;
3 public class FirstDialog{
4     public static void main(String[] args){
5         JOptionPane.showMessageDialog(null,"Hello world! How are you?");
6         System.exit(0);
7     }
8 }
```



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:



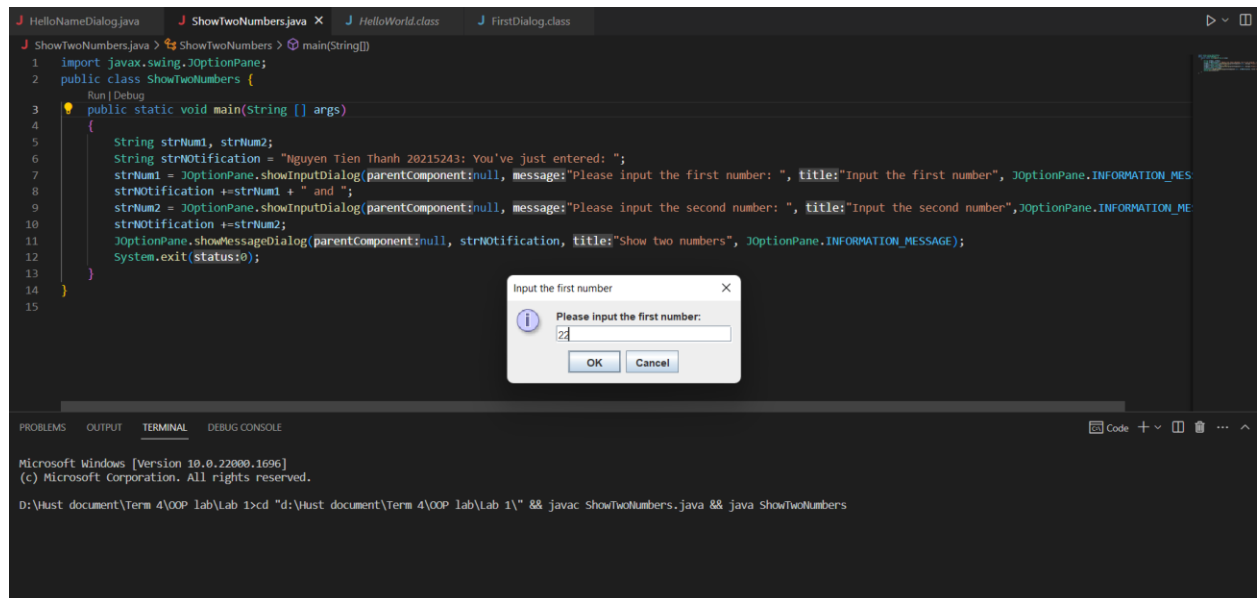
2.2.4 Write, compile, and run the following example:

```

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

```

Kết quả:



```

J HelloNameDialog.java X J ShowTwoNumbers.java • J HelloWorld.class J FirstDialog.class
J ShowTwoNumbers.java
1 import javax.swing.JOptionPane;
2 public class ShowTwoNumbers {
3     public static void main(String [] args)
4     {
5         String strNum1, strNum2;
6         String strNotification = "Nguyen Tien Thanh 20215243: You've just entered: ";
7         strNum1 = JOptionPane.showInputDialog(parentComponent:null, message:"Please input the first number: ", title:"Input the first number", JOptionPane.INFORMATION_MESSAGE);
8         strNotification += strNum1 + " and ";
9         strNum2 = JOptionPane.showInputDialog(parentComponent:null, message:"Please input the second number: ", title:"Input the second number", JOptionPane.INFORMATION_MESSAGE);
10        strNotification += strNum2;
11        JOptionPane.showMessageDialog(parentComponent:null, strNotification, title:"Show two numbers", JOptionPane.INFORMATION_MESSAGE);
12        System.exit(status:0);
13    }
14 }
15

```

Input the second number

Please input the second number:

55

OK Cancel

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

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 ShowTwoNumbers.java && java ShowTwoNumbers

```

J HelloNameDialog.java J ShowTwoNumbers.java • J HelloWorld.class J FirstDialog.class
J ShowTwoNumbers.java > ...
1 import javax.swing.JOptionPane;
2 public class ShowTwoNumbers {
3     public static void main(String [] args)
4     {
5         String strNum1, strNum2;
6         String strNotification = "Nguyen Tien Thanh 20215243: You've just entered: ";
7         strNum1 = JOptionPane.showInputDialog(parentComponent:null, message:"Please input the first number: ", title:"Input the first number", JOptionPane.INFORMATION_MESSAGE);
8         strNotification += strNum1 + " and ";
9         strNum2 = JOptionPane.showInputDialog(parentComponent:null, message:"Please input the second number: ", title:"Input the second number", JOptionPane.INFORMATION_MESSAGE);
10        strNotification += strNum2;
11        JOptionPane.showMessageDialog(parentComponent:null, strNotification, title:"Show two numbers", JOptionPane.INFORMATION_MESSAGE);
12        System.exit(status:0);
13    }
14 }
15

```

Show two numbers

Nguyen Tien Thanh 20215243: You've just entered: 22 and 55

OK

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

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 ShowTwoNumbers.java && java ShowTwoNumbers

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

```

J HelloNameDialog.java J ShowTwoNumbers.java J Calculation.java 1 X J HelloWorld.class J FirstDialog.class
J Calculation.java > Calculation > main(String[])
1 import java.util.*;
2 public class Calculation {
3     public static void main(String [] args)
4     {
5         //Nguyen Tien Thanh 20215243
6         Scanner sc = new Scanner(System.in);
7         String strnums1, strnums2;
8         System.out.print("$Enter the first number: ");
9         strnums1 = sc.nextLine();
10        System.out.print("$Enter the second number: ");
11        strnums2 = sc.nextLine();
12        double num1 = Double.parseDouble(strnums1);
13        double num2 = Double.parseDouble(strnums2);
14        System.out.printf(format:"The sum is: %f\n", num1+num2);
15        System.out.printf(format:"The difference is: %f\n", num1-num2);
16        System.out.printf(format:"The product is: %f\n", num1*num2);
17        if (num2==0)
18        {
19            System.out.print("$The divisor is 0, can not divide 2 number!\n");
20        }
21        else
22        {
23            System.out.printf(format:"The quotient is : %f", num1/num2);
24        }
25    }
26 }
27

PROBLEMS 1 OUTPUT TERMINAL DEBUG CONSOLE
Microsoft Windows [Version 10.0.22000.1696]
(c) Microsoft Corporation. All rights reserved.

D:\Vust document\Term 4\OOP lab\Lab 1>cd "d:\Vust document\Term 4\OOP lab\Lab 1" && javac Calculation.java && java Calculation
Enter the first number: 25
Enter the second number: 26
The sum is: 51.000000
The difference is: -1.000000
The product is: 650.000000
The quotient is : 0.961538
D:\Vust document\Term 4\OOP lab\Lab 1>

```

2.2.5 Write a program to solve:

Kết quả:

- The first-degree equation:

```

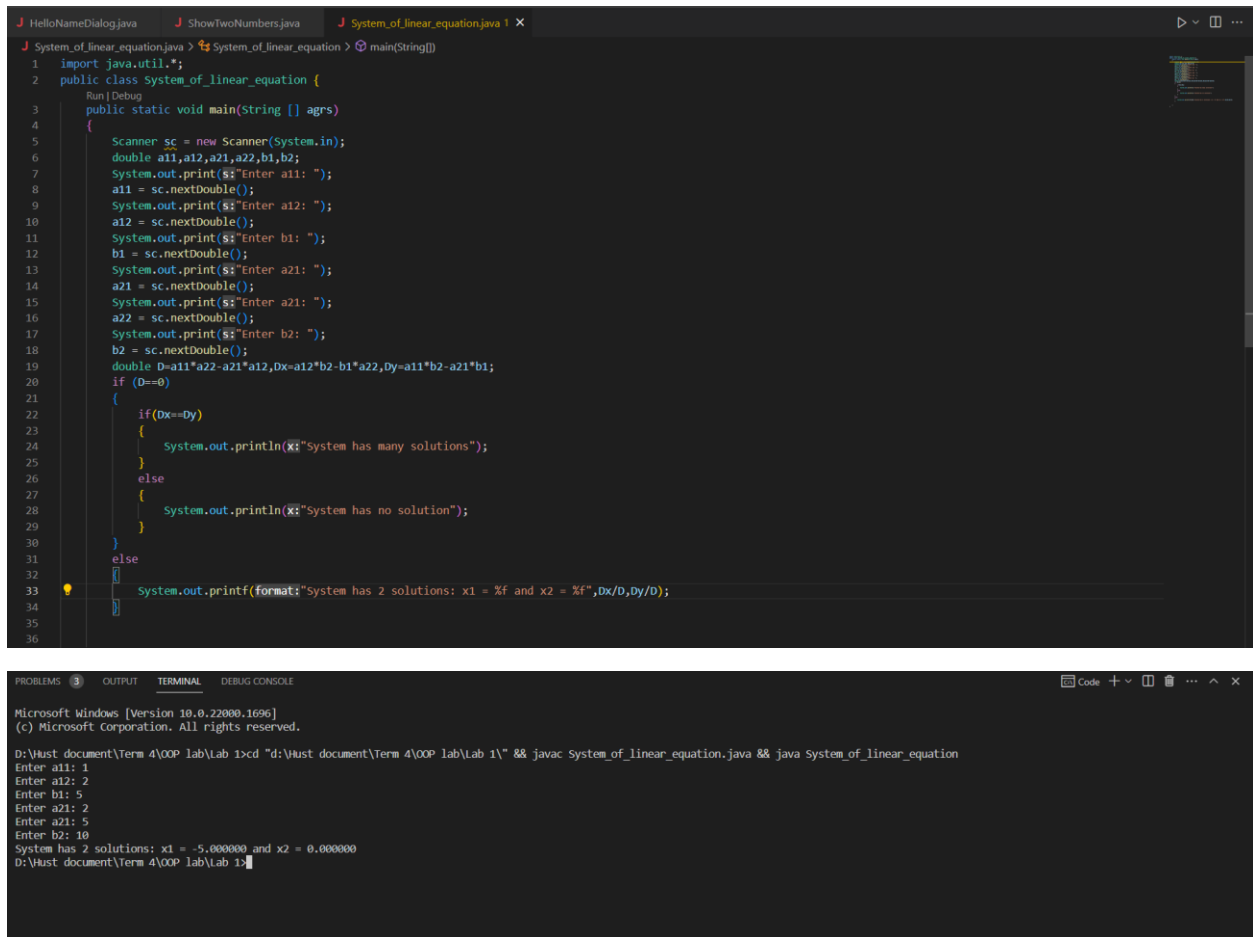
J HelloNameDialog.java J ShowTwoNumbers.java J Calculation.java 1 J LinearEquation.java 1 X J HelloWorld.class J FirstDialog.class
J LinearEquation.java > LinearEquation > main(String[])
1 import java.util.*;
2 public class LinearEquation {
3     public static void main(String [] args)
4     {
5         double a,b;
6         Scanner sc = new Scanner(System.in);
7         System.out.print("$Enter a:");
8         a = sc.nextDouble();
9         System.out.print("$Enter b:");
10        b = sc.nextDouble();
11        if(a==0)
12        {
13            if (b==0)
14            {
15                System.out.println("$The equation has many solutions\n");
16            }
17            else
18            {
19                System.out.println("$The equation has no solution\n");
20            }
21        }
22        else
23        {
24            System.out.printf(format:"The equation has a solution: %f\n", -b/a);
25        }
26    }
27 }
28

PROBLEMS 2 OUTPUT TERMINAL DEBUG CONSOLE
Microsoft Windows [Version 10.0.22000.1696]
(c) Microsoft Corporation. All rights reserved.

D:\Vust document\Term 4\OOP lab\Lab 1>cd "d:\Vust document\Term 4\OOP lab\Lab 1" && javac LinearEquation.java && java LinearEquation
Enter a:3
Enter b:6
The equation has a solution: -2.000000
D:\Vust document\Term 4\OOP lab\Lab 1>

```

- The system of first-degree equations:



```
J System_of_linear_equation.java > System_of_linear_equation > main(String[])
1 import java.util.*;
2 public class System_of_linear_equation {
3     public static void main(String [] args)
4     {
5         Scanner sc = new Scanner(System.in);
6         double a11,a12,a21,a22,b1,b2;
7         System.out.print("Enter a11: ");
8         a11 = sc.nextDouble();
9         System.out.print("Enter a12: ");
10        a12 = sc.nextDouble();
11        System.out.print("Enter b1: ");
12        b1 = sc.nextDouble();
13        System.out.print("Enter a21: ");
14        a21 = sc.nextDouble();
15        System.out.print("Enter a22: ");
16        a22 = sc.nextDouble();
17        System.out.print("Enter b2: ");
18        b2 = sc.nextDouble();
19        double D=a11*a22-a21*a12,Dx=a12*b2-b1*a22,Dy=a11*b2-a21*b1;
20        if (D==0)
21        {
22            if(Dx==Dy)
23            {
24                System.out.println("System has many solutions");
25            }
26            else
27            {
28                System.out.println("System has no solution");
29            }
30        }
31        else
32        {
33            System.out.printf("System has 2 solutions: x1 = %f and x2 = %f",Dx/D,Dy/D);
34        }
35    }
36 }
```

PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE

Microsoft Windows [Version 10.0.22000.1655]
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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 a22: 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:

```

J HelloNameDialog.java J ShowTwoNumbers.java J System_of_linear_equation.java 1 J Secon_degree_equation.java 1 X
J Secon_degree_equation.java > Secon_degree_equation > main(String[])
1 import java.util.*;
2 public class Secon_degree_equation {
3     Run | Debug
4     public static void main(String [] agrs)
5     {
6         Scanner sc = new Scanner(System.in);
7         double a,b,c,delta;
8         System.out.print(S:"Enter a:");
9         a= sc.nextDouble();
10        System.out.print(S:"Enter b:");
11        b= sc.nextDouble();
12        System.out.print(S:"Enter c:");
13        c= sc.nextDouble();
14        delta = b*b-4*a*c;
15        if(a==0)
16        {
17            if(b==0)
18            {
19                if(c==0)
20                {
21                    System.out.println(X:"The equation has many soluiton");
22                }
23                else
24                {
25                    System.out.println(X:"The equation has no solution");
26                }
27            }
28            else
29            {
30                System.out.printf(format:"The equation has 1 solution: x = %f",-c/b);
31            }
32        }
33        {

```

```

34        {
35            if(delta<0)
36            {
37                System.out.println(X:"The equation has no solution");
38            }
39            else if(delta==0)
40            {
41                System.out.printf(format:"The equation has 1 solution: x = %f",-b/(2*a));
42            }
43            else
44            {
45                System.out.printf(format:"The equation has 2 solution: x1 = %f and x2 = %f",(-b+Math.sqrt(delta))/(2*a),(-b-Math.sqrt(delta))/(2*a));
46            }
47        }
48    }
49

```

```

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:

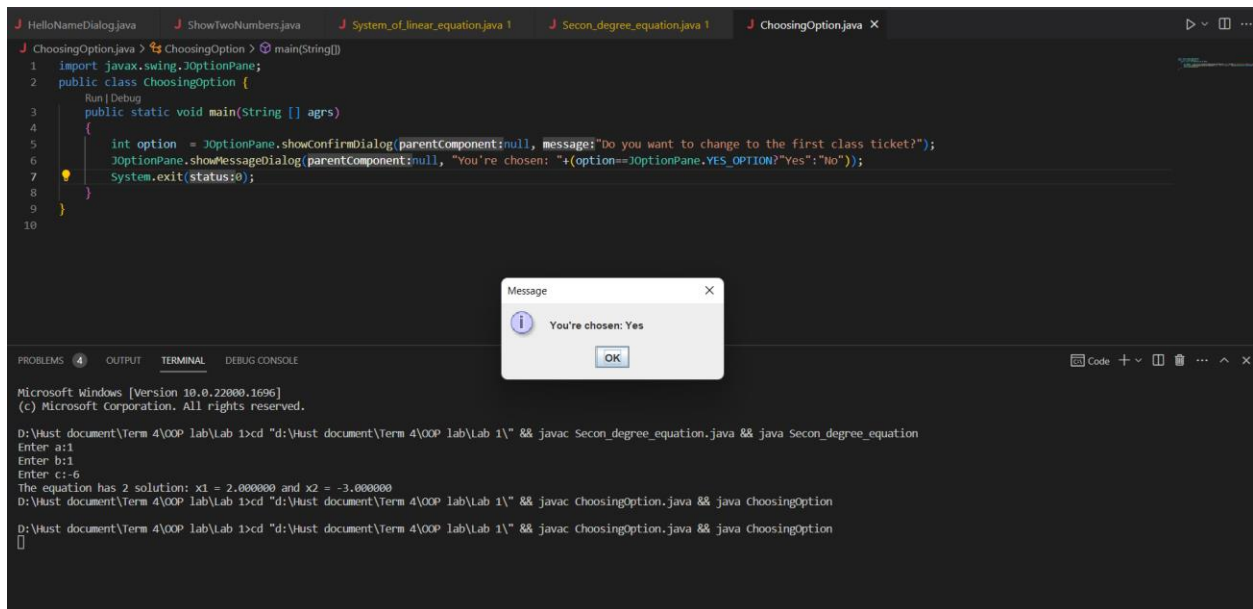
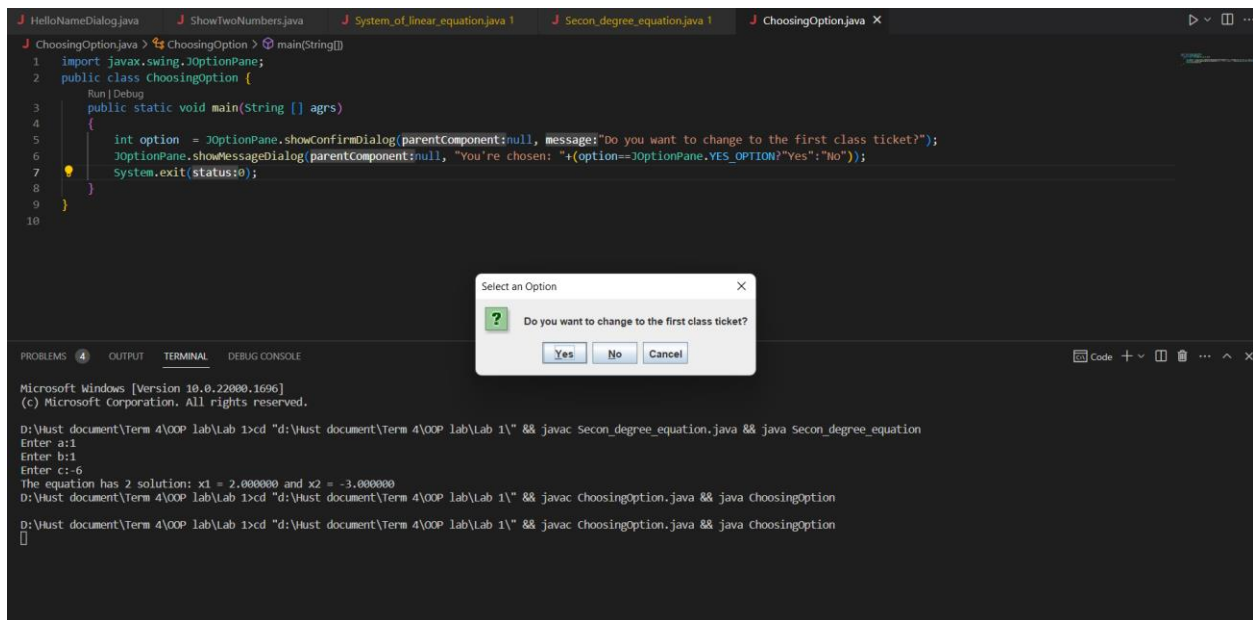
```
1 import javax.swing.JOptionPane;
2 public class ChoosingOption{
3     public static void main(String[] args){
4         int option = JOptionPane.showConfirmDialog(null,
5             "Do you want to change to the first class ticket?");
6
7         JOptionPane.showMessageDialog(null,"You've chosen: "
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”.

```

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

```

Message

You're chosen: No

OK

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 ChoosingOption.java && java ChoosingOption

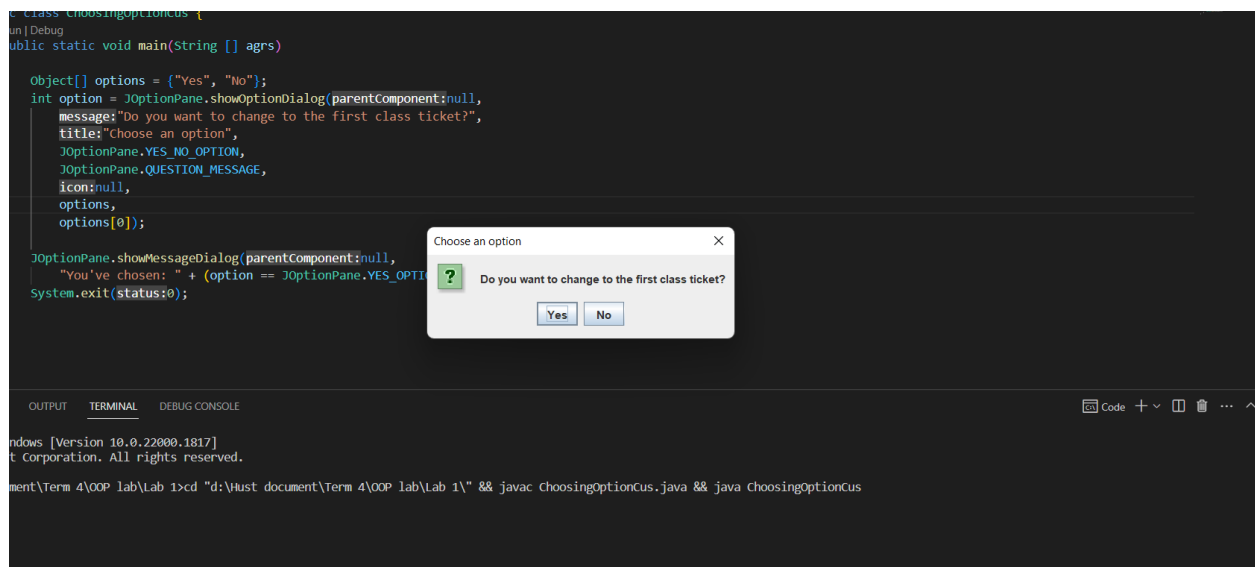
D:\Hust document\Term 4\OOP lab\Lab 1>cd "d:\Hust document\Term 4\OOP lab\Lab 1" && javac ChoosingOption.java && java ChoosingOption

Fix it to only display 2 choices:

```

1  import javax.swing.JOptionPane;
2  public class ChoosingOptionCus {
3      public static void main(String [] args)
4      {
5          Object[] options = {"Yes", "No"};
6          int option = JOptionPane.showOptionDialog(parentComponent:null,
7              message:"Do you want to change to the first class ticket?",
8              title:"Choose an option",
9              JOptionPane.YES_NO_OPTION,
10             JOptionPane.QUESTION_MESSAGE,
11             icon:null,
12             options,
13             options[0]);
14
15             JOptionPane.showMessageDialog(parentComponent:null,
16                 "You've chosen: " + (option == JOptionPane.YES_OPTION ? "Yes" : "No"));
17             System.exit(status:0);
18         }
19     }
20

```



6.2 Write a program for input/output from keyboard:

Figure 24. Run Application (2)



Kết quả:

```

J InputFromKeyboard.java > InputFromKeyboard > main(String[])
1 import java.util.Scanner;
2 public class InputFromKeyboard {
3     public static void main(String [] args)
4     {
5         Scanner keyboard = new Scanner(System.in);
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        System.out.println("Mrs/Ms. " + strName + ", " + iAge + " years old. " + "Your height is " + dHeight + ".");
13    }
14 }
15
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE
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:

```

J Triangle.java > Triangle > main(String[])
1 import java.util.Scanner;
2 public class Triangle {
3     public static void main(String [] args)
4     {
5         Scanner sc = new Scanner(System.in);
6         int n = sc.nextInt();
7         for(int i=1; i<=n; i++)
8         {
9             for(int j=1; j<=(2*n-i-1)/2; j++)
10            {
11                System.out.print("$ ");
12            }
13            for(int j=1; j<=i; j++)
14            {
15                System.out.print("$*");
16            }
17            for(int j=1; j<=(2*n-i-1)/2; j++)
18            {
19                System.out.print("$ ");
20            }
21            System.out.print("$\n");
22        }
23    }
24 }
25
PROBLEMS OUTPUT TERMINAL DEBUG CONSOLE
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.

```

J ShowTwoNumbers.java J System_of_linear_equation.java 1 J Secon_degree_equation.java 1 J ChoosingOption.java J InputFromKeyboard.java 1 J Triangle.java 1 J day_of_month.java 1 x
J day_of_month.java > day_of_month > main(String[])
1 import java.util.*;
2
3 import javax.swing.JOptionPane;
4 public class day_of_month {
5     public static void main(String [] args)
6     {
7         Scanner sc = new Scanner(System.in);
8         String month;
9         int year;
10        int check =0;
11        int day=0;
12        String temp;
13        do
14        {
15            System.out.print("$:Enter year:");
16            year = sc.nextInt();
17            temp = Integer.toString(year);
18            if(year<0 || temp.length()!=4)
19            {
20                System.out.println("$:Invalid year! Try again!");
21            }
22        }while(year<0 || temp.length()!=4);
23        String c = sc.nextLine();
24        do
25        {
26            System.out.print("$:Enter month:");
27            month = sc.nextLine();
28

```

```

                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(format:" 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:199
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.

```

J array.java > array > main(String[])
1 import java.util.*;
2 public class array {
3     public static void main(String [] args) {
4         Scanner sc = new Scanner(System.in);
5         int n;
6         System.out.print("${Enter size of array:");
7         n = sc.nextInt();
8         int arr [] = new int[n];
9         System.out.print("${Enter each element of the array:");
10        for(int i=0;i<n;i++)
11        {
12            arr[i] = sc.nextInt();
13        }
14        Arrays.sort(arr);
15        int sum = 0;
16        for(int i=0;i<n;i++)
17        {
18            sum+=arr[i];
19        }
20        double aver = (double) sum/n;
21        System.out.println("The sorted array is: " + Arrays.toString(arr));
22        System.out.println("The sum of the array elements is: " + sum);
23        System.out.println("The average of the array elements is: " + aver);
24        System.exit(status0);
25    }
26 }
27
28

```

```

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.

```

J add_two_matrix.java > add_two_matrix > main(String[])
1 import java.util.*;
2 public class add_two_matrix {
3     public static void main(String [] args)
4     {
5         int m,n;
6         Scanner sc= new Scanner(System.in);
7         System.out.print("${Enter number of row of each matrix: ");
8         m = sc.nextInt();
9         System.out.print("${Enter number of column of each matrix: ");
10        n = sc.nextInt();
11        int arr1 [][] = new int[m][n];
12        int arr2 [][] = new int[m][n];
13        System.out.println("${Enter elements of matrix 1: ");
14        for(int i=0;i<m;i++)
15        {
16            for(int j=0;j<n;j++)
17            {
18                arr1[i][j] = sc.nextInt();
19            }
20        }
21        System.out.println("${Enter elements of matrix 2: ");
22        for(int i=0;i<m;i++)
23        {
24            for(int j=0;j<n;j++)
25            {
26                arr2[i][j] = sc.nextInt();
27            }
28        }
29        for(int i=0;i<m;i++)
30        {
31            for(int j=0;j<n;j++)
32            {
33                arr1[i][j] = arr1[i][j] + arr2[i][j];
34            }
35        }

```

```
}
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");
}
}
```

```
14
for(int i=0;i<m;i++)
PROBLEMS 11 OUTPUT TERMINAL DEBUG CONSOLE
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 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>
```