

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

**BÁO CÁO THỰC HÀNH**  
**IT1130-744529-2024.1**  
**BÀI THỰC HÀNH 1**

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# BÁO CÁO THỰC HÀNH LAP 1

## I. The Very First Java Programs

### 2.2.1 Write, compile the first Java application:

```
>HelloWorld.java > HelloWorld > main(String[])
1 // Nguyen Thanh Vinh 20225779
2 // Example 1 : HelloWorld.java
3 // Text-printing program
4 public class HelloWorld {
5     Run | Debug
6     public static void main(String args[]) {
7         System.out.println(x:"Nguyen Thanh Vinh - 20225779 - Xin chao \n cac ban!");
8         System.err.println(x:"Hello \t world!");
9     } // end of method main
10 }
```

Kết quả

```
HelloWorld.java > HelloWorld
1 // Nguyen Thanh Vinh 20225779
2 // Example 1 : HelloWorld.java
3 // Text-printing program
4 public class HelloWorld {
5     Run | Debug
6     public static void main(String args[]) {
7         System.out.println(x:"Nguyen Thanh Vinh - 20225779 - Xin chao \n cac ban!");
8         System.err.println(x:"Hello \t world!");
9     } // end of method main
10 }
```

PROBLEMS 9 OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
PS C:\Users\vinh1\Desktop\OOP> & 'C:\Program Files\Amazon Corretto\jdk11.0.24_8\bin\java.exe' '-cp'
_ws\OOP_2e28c053\bin' 'HelloWorld'
Nguyen Thanh Vinh - 20225779 - Xin chao
cac ban!
Hello world!
PS C:\Users\vinh1\Desktop\OOP> 
```

### 2.2.2 Write, compile the first dialog Java program

```
J FirstDialog.java > ...
1
2 import javax.swing.JOptionPane;
3
4 public class FirstDialog {
5     Run main | Debug main | Run | Debug
6     public static void main(String[] args){
7         JOptionPane.showMessageDialog(parentComponent:null,message:"Hello world! How are you?");
8         System.exit(status:0);
9     }
10 }
```

Kết quả

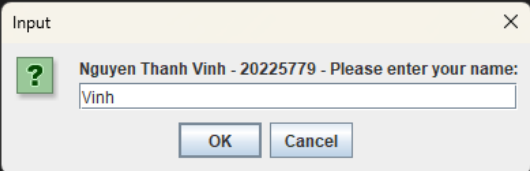
```
J FirstDialog.java > ...
1
2 import javax.swing.JOptionPane;
3
4 public class FirstDialog {
5     Run main | Debug main | Run | Debug
6     public static void main(String[] args){
7         JOptionPane.showMessageDialog(parentComponent:null,message:"Hello world! How are you?");
8         System.exit(status:0);
9     }
10 }
```

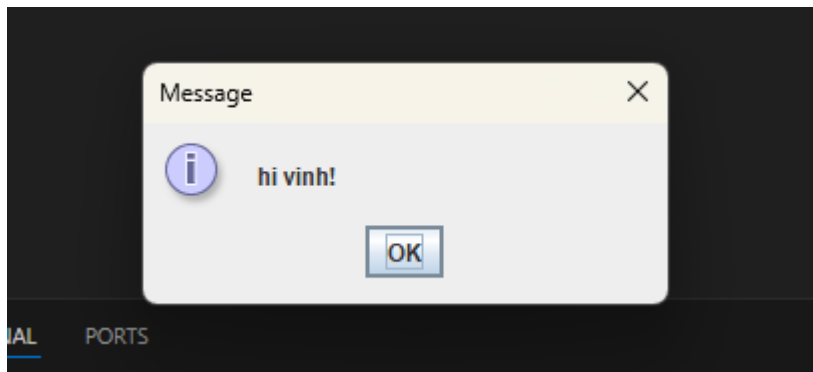


### 2.2.3 Write, compile the first input dialog Java application

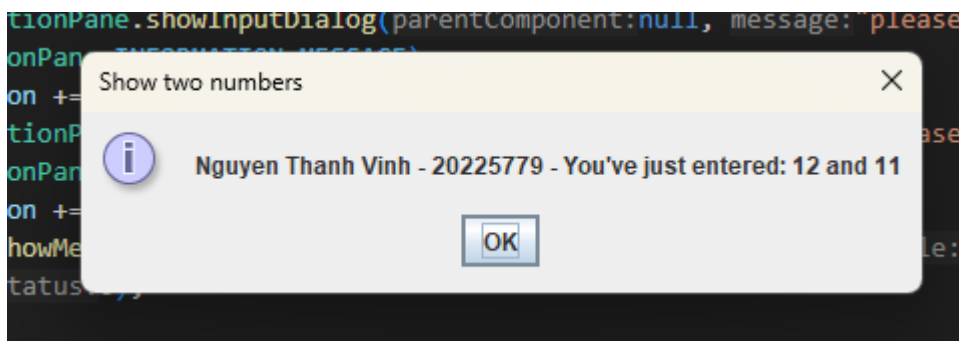
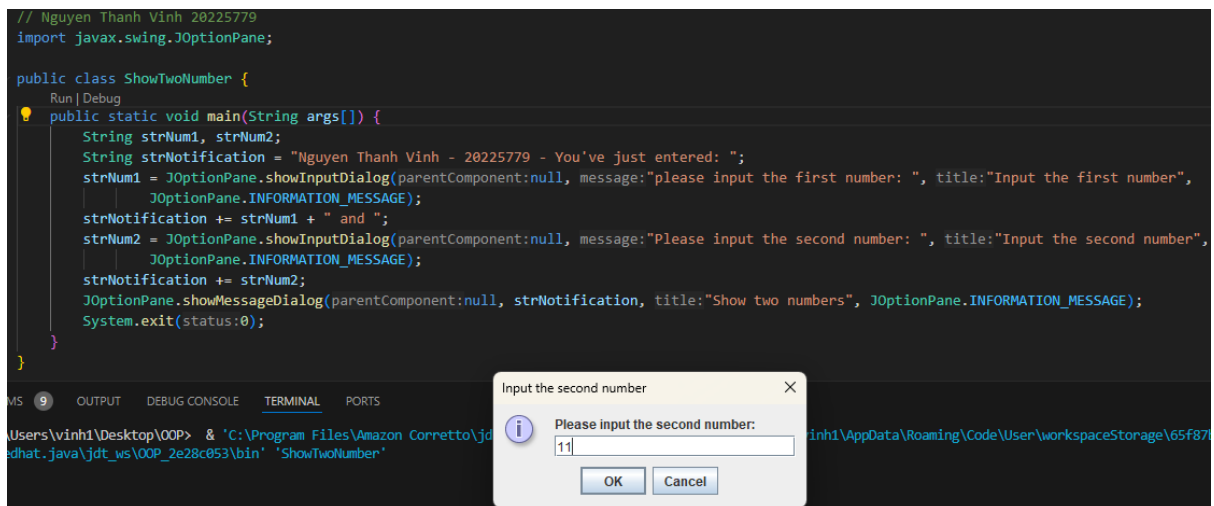
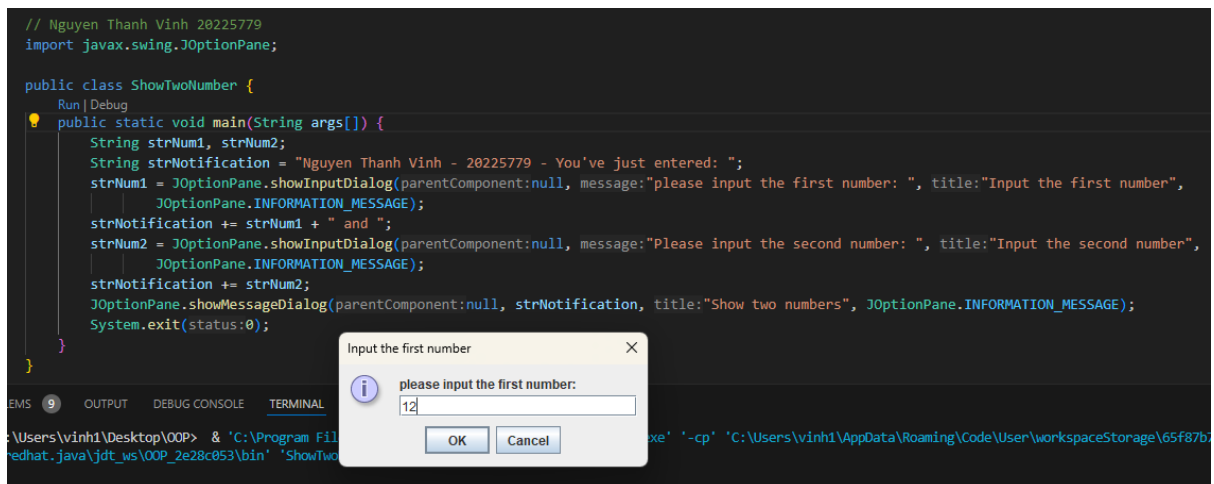
```
// Nguyen Thanh Vinh 20225779
import javax.swing.JOptionPane;

public class HelloNameDialog {
    Run | Debug
    static public void main(String args[]) {
        String name;
        name = JOptionPane.showInputDialog(message:"Nguyen Thanh Vinh - 20225779 - Please enter your name:");
        JOptionPane.showMessageDialog(parentComponent:null, "hi " + name + "!");
        System.exit(status:0);
    }
}
```



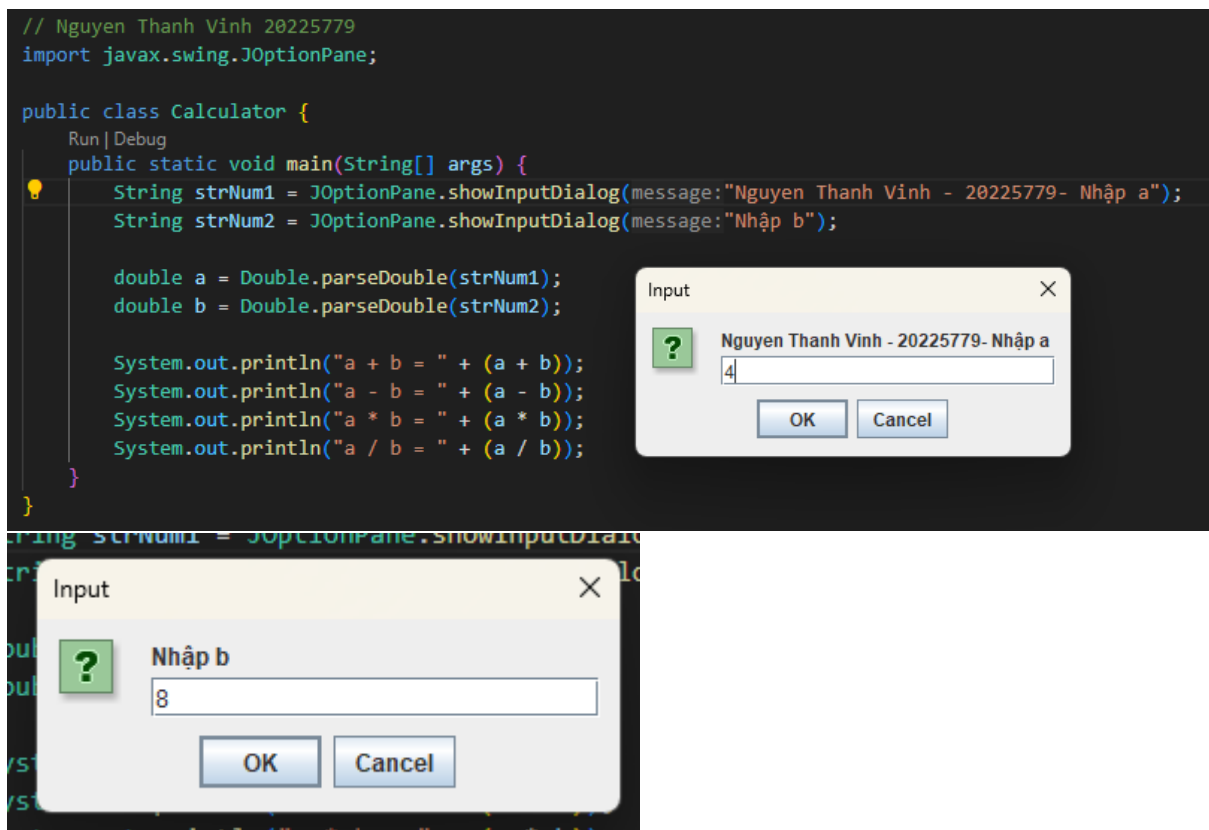


2.2.4 Write, compile, and run the following example:



## BÀI TẬP

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



The screenshot shows a Java IDE with the following code in the `Calculator` class:

```
// Nguyen Thanh Vinh 20225779
import javax.swing.JOptionPane;

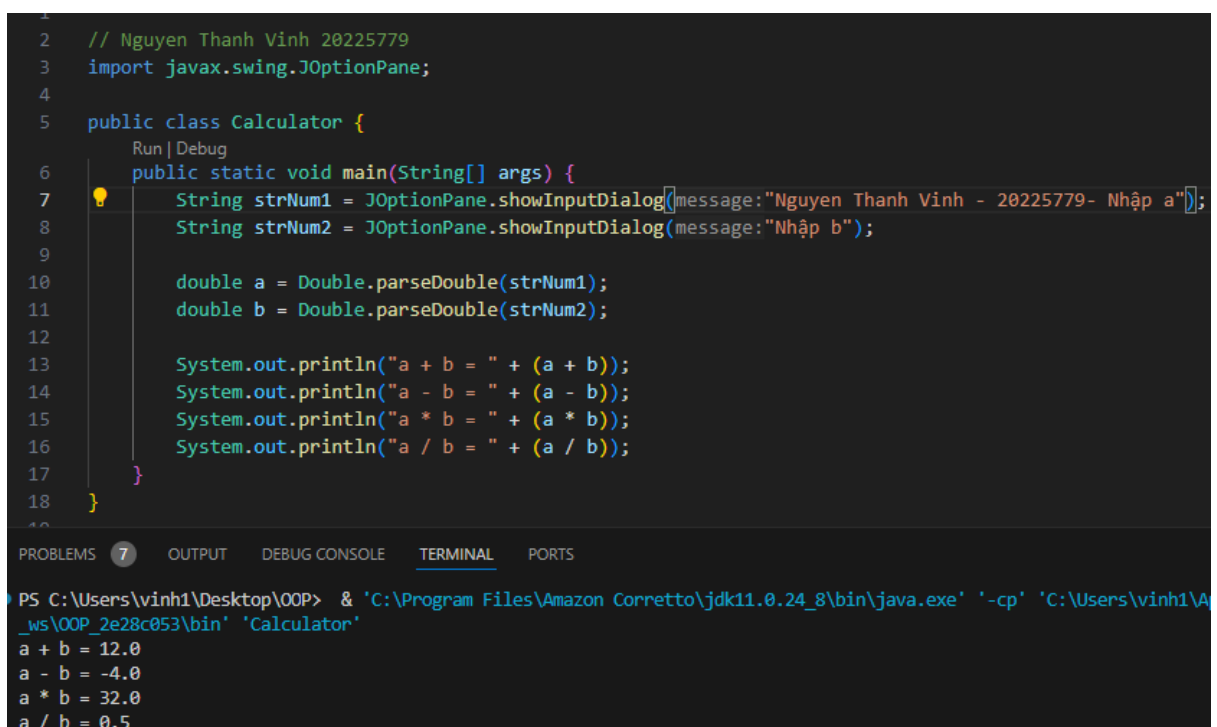
public class Calculator {
    public static void main(String[] args) {
        String strNum1 = JOptionPane.showInputDialog(message:"Nguyen Thanh Vinh - 20225779- Nhập a");
        String strNum2 = JOptionPane.showInputDialog(message:"Nhập b");

        double a = Double.parseDouble(strNum1);
        double b = Double.parseDouble(strNum2);

        System.out.println("a + b = " + (a + b));
        System.out.println("a - b = " + (a - b));
        System.out.println("a * b = " + (a * b));
        System.out.println("a / b = " + (a / b));
    }
}
```

Two input dialog boxes are shown. The first dialog box, titled "Input", has a message "Nguyen Thanh Vinh - 20225779- Nhập a" and the user has entered "4". The second dialog box, also titled "Input", has a message "Nhập b" and the user has entered "8".

## Kết quả



The screenshot shows the same Java IDE with the `Calculator` class code. The terminal output at the bottom shows the results of the program execution:

```
PS C:\Users\vinh1\Desktop\OOP> & 'C:\Program Files\Amazon Corretto\jdk11.0.24_8\bin\java.exe' '-cp' 'C:\Users\vinh1\A_ws\OOP_2e28c053\bin' 'Calculator'
a + b = 12.0
a - b = -4.0
a * b = 32.0
a / b = 0.5
```

## 2.2.6 Write a program to solve:

### a. linearequation

```
linearequation.java > linearequation > main(String[])
1  import java.util.Scanner;
2
3  public class linearequation {
4      Run | Debug
5      {
6          Scanner sc = new Scanner(System.in);
7          System.out.println(x:"nhap a: ");
8          int a = sc.nextInt();
9          System.out.println(x:"nhap b: ");
10         int b = sc.nextInt();
11         if (a == 0) {
12             if (b == 0) {
13                 System.out.println(x:"phuong trinh vo so nghiem");
14             } else
15                 System.out.println(x:"phuong trinh vo nghiem");
16         } else
17             System.out.println("phuong trinh co nghiem x=" + (-b / a));
18         }
19     }
20 }
21
```

### Kết quả

```
Nguyen Thanh Vinh - 20225779 - nhap a:
3
nhap b:
6
phuong trinh co nghiem x=-2
```

```
Nguyen Thanh Vinh - 20225779 - nhap a:
0
nhap b:
0
phuong trinh vo so nghiem
```

```
Nguyen Thanh Vinh - 20225779 - nhap a:
0
nhap b:
12
phuong trinh vo nghiem
```

## b. linear system

```
// Nguyen Thanh Vinh 20225779
import java.util.Scanner;

public class LinearSystem {
    Run | Debug
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print(s:"Nguyen Thanh Vinh - 20225779 - nhap a11: ");
        double a11 = sc.nextDouble();
        System.out.print(s:"nhap a12: ");
        double a12 = sc.nextDouble();
        System.out.print(s:"nhap b1: ");
        double b1 = sc.nextDouble();
        System.out.print(s:"nhap a21: ");
        double a21 = sc.nextDouble();
        System.out.print(s:"nhap a22: ");
        double a22 = sc.nextDouble();
        System.out.print(s:"nhap b2: ");
        double b2 = sc.nextDouble();
        double det = a11 * a22 - a12 * a21;
        double det1 = b1 * a22 - b2 * a12;
        double det2 = a11 * b2 - a21 * b1;
        if (det == 0) {
            if ((a11 / a21) == (b1 / b2)) {
                System.out.println(x:"he phuong trinh vo so nghiem");
            } else
                System.out.println(x:"he phuong trinh vo nghiem");
        } else {
            System.out.println("x1 = " + (det1 / det) + "\nx2 = " + (det2 / det));
        }
    }
}
```

## Kết quả

```
Nguyen Thanh Vinh - 20225779 - nhap a11: 1
nhap a12: 2
nhap b1: 3
nhap a21: 2
nhap a22: 4
nhap b2: 6
he phuong trinh vo so nghiem
```

```
Nguyen Thanh Vinh - 20225779 - nhap a11: 1
nhap a12: 2
nhap b1: 3
nhap a21: 2
nhap a22: 4
nhap b2: 7
he phuong trinh vo nghiem
```



```
Nguyen Thanh Vinh - 20225779 - nhap a11: 1
nhap a12: 2
nhap b1: 6
nhap a21: 1
nhap a22: 3
nhap b2: 7
x1 = 4.0
x2 = 1.0
```

### c. SecondDegreeEquation

```
// Nguyen Thanh Vinh 20225779
import java.util.Scanner;

public class SecondDegreeEquation {
    Run | Debug
    public static void main(String args[]) {
        System.out.println(x:"Nguyen Thanh Vinh - 20225779 - nhap a, b, c: ");
        Scanner sc = new Scanner(System.in);
        double a = sc.nextDouble();
        double b = sc.nextDouble();
        double c = sc.nextDouble();
        double delta = b * b - 4 * a * c;
        double result;
        if (a == 0) {
            result = -c / b;
            System.out.println("phuong trinh co nghiem duy nhat la: " + result);
        }
        if (delta < 0) {
            System.out.println(x:"phuong trinh vo nghiem");
        } else if (delta == 0) {
            result = -b / (2 * a);
            System.out.println("phuong trinh co nghiem kep la: " + result);
        } else {
            double result1 = (-b + Math.pow(delta, 0.5)) / (2 * a);
            double result2 = (-b - Math.pow(delta, 0.5)) / (2 * a);
            System.out.println("phuong trinh co 2 nghiem la: " + result1 + " va " + result2);
        }
        System.exit(status:0);
    }
}
```

Kết quả :

```
Nguyen Thanh Vinh - 20225779 - nhap a, b, c:
0
3
4
phuong trinh co nghiem duy nhat la: -1.3333333333333333
```

```
Nguyen Thanh Vinh - 20225779 - nhap a, b, c:
1
2
3
phuong trinh vo nghiem
```

```
Nguyen Thanh Vinh - 20225779 - nhap a, b, c:  
1  
2  
1  
phuong trinh co nghiem kep la: -1.0
```

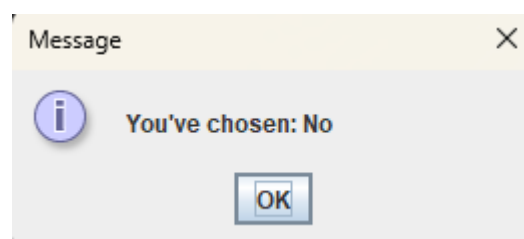
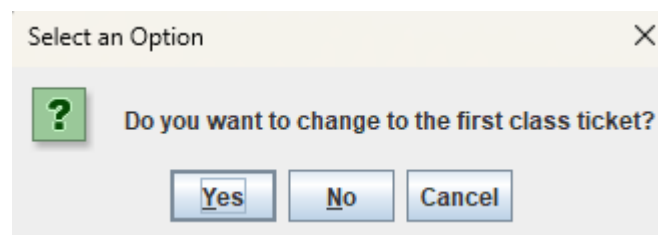
```
Nguyen Thanh Vinh - 20225779 - nhap a, b, c:  
1  
2  
0  
phuong trinh co 2 nghiem la: 0.0 va -2.0
```

## II. Exercises

### 6.1 Write, compile and run the ChoosingOption program :

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

Kết quả :



Trả lời :

- Nếu chọn cancel thì sẽ ra Message là No ( vì option khác yes\_option)
- Để tùy chọn chỉ có 2 nút ta tạo mảng chỉ có nút yes và no và tạo 1 dialog với các nút trong mảng đã tạo :

```

import javax.swing.JOptionPane;

public class ChoosingOption {
    Run | Debug
    public static void main(String[] args) {
        // tạo nút
        Object[] options = { "Yes", "No" };

        int option = JOptionPane.showOptionDialog(
            parentComponent:null,
            message:"Do you want to change to the first class ticket?",
            title:"Choose option",
            JOptionPane.DEFAULT_OPTION,
            JOptionPane.INFORMATION_MESSAGE,
            icon:null,
            options,
            options[0]);

        JOptionPane.showMessageDialog(parentComponent:null, "You've chosen: " + (option == JOptionPane.YES_OPTION ? "Yes" : "No"));
        System.exit(status:0);
    }
}

```

## 6.2 Write a program for input/output from keyboard

```

// Nguyen Thanh Vinh 20225779
//6.2
import java.util.Scanner;

public class InputFromKeyboard {
    Run | Debug
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.println(x:"Nguyen Thanh Vinh - 20225779 - What's your name?");
        String strName = sc.nextLine();
        System.out.println(x:"How old are you?");
        int iAge = sc.nextInt();
        System.out.println(x:"How tall are you (m)?");
        double dHeight = sc.nextDouble();
        System.out.println("Mr/Mrs. " + strName + ", " + iAge + " year(s) old. Your height is " + dHeight + ".");
        System.exit(status:0);
    }
}

```

Kết quả :

```

Nguyen Thanh Vinh - 20225779 - What's your name?
vinh
How old are you?
19
How tall are you (m)?
1.72
Mr/Mrs. vinh, 19 year(s) old. Your height is 1.72.

```

## 6.3 Write a program to display a triangle with a height of n stars , n entered by users

```

import java.util.Scanner;

public class Triangle {
    Run | Debug
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.println(x:"Nguyen Thanh Vinh - 20225779: nhap chieu cao");
        int n = sc.nextInt();
        for (int i = 1; i <= n; i++) {
            for (int j = i; j < n; j++) {
                System.out.print(s:" ");
            }
            for (int j = 0; j < (i * 2) - 1; j++) {
                System.out.print(s:"*");
            }
            System.out.println();
        }
    }
}

```

Kết quả :

```

Nguyen Thanh Vinh - 20225779: nhap chieu cao
5
  *
 ***
*****
*****
*****

```

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

```
//Nguyen Thanh Vinh 20225779

import java.util.Scanner;

public class NumbersDay {
    Run | Debug
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.println(x:"Nguyen Thanh Vinh - 20225779 - Enter a month (E.g: January, Jan., Jan, or 1); ");
        String imonth = sc.next();
        int month;
        switch (imonth) {
            case "January":
            case "Jan.":
            case "Jan":
            case "1":
                month = 1;
                break;
            case "February":
            case "Feb.":
            case "Feb":
            case "2":
                month = 2;
                break;
            case "March":
            case "Mar.":
            case "Mar":
            case "3":
                month = 3;
                break;
            case "April":
            case "Apr.":
            case "Apr":
            case "4":
                month = 4;
                break;
            case "May":
            case "5":
                month = 5;
                break;
            case "June":
            case "Jun":
            case "6":
                month = 6;
                break;
            case "July":
            case "Jul":

```

```
        case "Jul":
        case "7":
            month = 7;
            break;
        case "August":
        case "Aug.":
        case "Aug":
        case "8":
            month = 8;
            break;
        case "September":
        case "Sept.":
        case "Sep":
        case "9":
            month = 9;
            break;
        case "October":
        case "Oct.":
        case "Oct":
        case "10":
            month = 10;
            break;
        case "November":
        case "Nov.":
        case "Nov":
        case "11":
            month = 11;
            break;
        case "December":
        case "Dec.":
        case "Dec":
        case "12":
            month = 12;
            break;
        default:
            System.out.println(x:"Invalid month!");
            return;
    }
    System.out.println(x:"Enter a year (E.g: 1999): ");
    int year = sc.nextInt();
    if (year <= 0) {
        System.out.println(x:"Invalid year!");
        return;
    }
}
```

```

    }
    if (year % 4 == 0 && month == 2) {
        System.out.println(x: "29 days");
        return;
    } else if (month == 2) {
        System.out.println(x: "28 days");
        return;
    }
    switch (month) {
        case 4:
        case 6:
        case 9:
        case 11:
            System.out.println(x: "30 days");
            return;
        default:
            System.out.println(x: "31 days");
            return;
    }
}
}

```

Kết quả :

```

Nguyen Thanh Vinh - 20225779 - Enter a month (E.g: January, Jan., Jan, or 1);
1
Enter a year (E.g: 1999):
2024
31 days

```

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

```
// Nguyen Thanh Vinh 20225779
import java.util.Arrays;
import java.util.Scanner;

public class Array {
    Run | Debug
    public static void main(String args[]) {
        System.out.print(s:"Nguyen Thanh Vinh - 20225779 - Nhap do dai mang ");
        Scanner input = new Scanner(System.in);
        int n = input.nextInt();
        int sum = 0;
        int[] arr = new int[n];
        for (int i = 0; i < n; i++) {
            System.out.print("arr[" + i + "]=");
            arr[i] = input.nextInt();
            sum += arr[i];
        }
        double avarage = (double) sum / n;
        Arrays.sort(arr);
        System.out.print(s:"mang sau khi sap xep:");
        for (int i = 0; i < n; i++) {
            System.out.print(arr[i] + ", ");
        }

        System.out.println("\ntong cac phan tu trong mang: " + sum);
        System.out.println("trung binh cong cac ptu trong mang: " + avarage);
    }
}
```

Kết quả :

```
Nguyen Thanh Vinh - 20225779 - Nhap do dai mang 3
arr[0]=5
arr[1]=2
arr[2]=7
mang sau khi sap xep:2, 5, 7,
tong cac phan tu trong mang: 14
trung binh cong cac ptu trong mang: 4.666666666666667
```



6.6 write a java program to add two matrices of the same size

```
// Nguyen Thanh Vinh 20225779
import java.util.Scanner;

public class AddMatrices {
    Run | Debug
    public static void main(String args[]) {
        Scanner sc = new Scanner(System.in);
        System.out.print(s:"Nguyen Thanh Vinh - 20225779 - nhap so dong cua ma tran ");
        int a = sc.nextInt();
        System.out.print(s:"Nguyen Thanh Vinh - 20225779 - nhap so cot cua ma tran ");
        int b = sc.nextInt();
        double[][] arr1 = new double[a][b];
        double[][] arr2 = new double[a][b];
        double[][] sum = new double[a][b];
        System.out.println(x:"nhap ma tran 1");
        for (int i = 0; i < a; i++) {
            for (int j = 0; j < b; j++) {
                arr1[i][j] = sc.nextDouble();
            }
        }
        System.out.println(x:"nhap ma tran 2");
        for (int i = 0; i < a; i++) {
            for (int j = 0; j < b; j++) {
                arr2[i][j] = sc.nextDouble();
                sum[i][j] = arr1[i][j] + arr2[i][j];
            }
        }
        System.out.println(x:"tong 2 ma tran");
        for (int i = 0; i < a; i++) {
            for (int j = 0; j < b; j++) {
                System.out.print(sum[i][j] + " ");
            }
            System.out.println();
        }
    }
}
```

Kết quả :

```
Nguyen Thanh Vinh - 20225779 - nhap so dong cua ma tran 2
Nguyen Thanh Vinh - 20225779 - nhap so cot cua ma tran 2
nhap ma tran 1
1
2
3
4
nhap ma tran 2
5
6
7
8
tong 2 ma tran
6.0 8.0
10.0 12.0
```