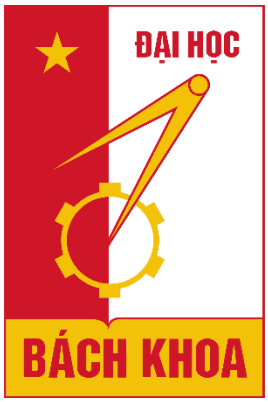
ĐẠI HỌC BÁCH KHOA HÀ NỘI

TRƯỜNG CÔNG NGHỆ THÔNG TIN VÀ TRUYỀN THÔNG

****



BÁO CÁO THỰC HÀNH

IT3103-744529-2024.1

BÀI THỰC HÀNH 1

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Hà Nội 9/2024

Contents

BÁO CÁO THỰC HÀNH LAP 1

The Very First Java Programs

2.2.1 Write, compile the first Java application:

```
//Example 1: helloword.java
//Text-printing program
public class helloword {
    public static void main(String args[]) {
        System.out.println("Doan Thanh Tung - 5946\n" + "xin chao cac ban\n" + "hello \t world");
    }//end of method main
}
```

Kết quả:

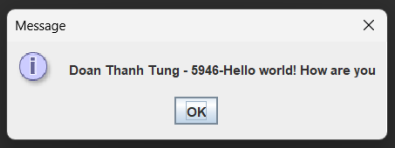
```
package hello.java;

//Example 1: helloword.java
//Text-printing program
public class helloword {
    public static void main(String args[]) {
        System.out.println("Doan Thanh Tung - 5946\n" + "xin chao cac ban\n" + "hello \t world");
    }//end of method main
}

```

```
Console ×
<terminated> helloword (1) [Java Application] D:\cac loai files\sts-4.21.0.RELEASE\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.9.v20231028-0858\jre\bin\javaw.exe (Sep 23, 2024, 1:57:05 PM
Doan Thanh Tung - 5946
xin chao cac ban
hello    world
```

2.2.2 Write, compile the first dialog Java program

```java
package hello.java;

import javax.swing.JOptionPane;
//Example 2: FirstDialog.java
public class FirstDialog {
    public static void main(String args[]) {
        JOptionPane.showMessageDialog(null, "Doan Thanh Tung - 5946-Hello world! How are you");
        System.exit(0);
    }
}
```

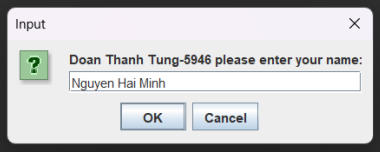
```java
package hello.java;

import javax.swing.JOptionPane;

//Example 2: FirstDialog.java
public class FirstDialog {
    public static void main(String args[]) {
        JOptionPane.showMessageDialog(null, "Doan Thanh Tung - 5946-Hello world! How are you");
        System.exit(0);
    }
}
```



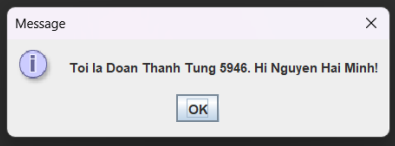
2.2.3 Write, compile the first input dialog Java application

```java
package hello.java;

import javax.swing.JOptionPane;

//Example 3: HelloNameDialog.java
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);
    }
}
```

```java
package hello.java;

import javax.swing.JOptionPane;

//Example 3: HelloNameDialog.java
public class HelloNameDialog {
    public static void main(String args[]) {
        String result;
        result = JOptionPane.showInputDialog("Doan Thanh Tung-5946 please enter your name:");
        JOptionPane.showMessageDialog(null, "Toi la Doan Thanh Tung 5946. Hi " + result + "!");
        System.exit(0);
    }
}
```



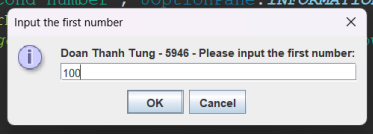

```java
package hello.java;

import javax.swing.JOptionPane;

//Example 3: HelloNameDialog.java
public class HelloNameDialog {
    public static void main(String args[]) {
        String result;
        result = JOptionPane.showInputDialog("Doan Thanh Tung-5946 please enter your name:");
        JOptionPane.showMessageDialog(null, "Toi la Doan Thanh Tung 5946. Hi " + result + "!");
        System.exit(0);
    }
}
```



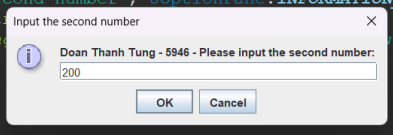
2.2.4 Write, compile, and run the following example:

```java
package hello.java;
import javax.swing.JOptionPane;
//Example 4: ShowTwoNumbers.java
public class ShowTwoNumbers {
    public static void main(String args[]) {
        String strNum1, strNum2;
        String strNotification = "Doan Thanh Tung - 5946 - You've just entered: ";
        strNum1 = JOptionPane.showInputDialog(null, "Doan Thanh Tung - 5946 - Please input the first number: ",
                "Input the first number",
                JOptionPane.INFORMATION_MESSAGE);
        strNotification += strNum1 + " and ";
        strNum2 = JOptionPane.showInputDialog(null, "Doan Thanh Tung - 5946 - 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);
    }
}
```

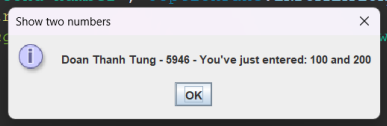
```java
1 package hello.java;
2
3 import javax.swing.JOptionPane;
4
5 //Example 4: ShowTwoNumbers.java
6 public class ShowTwoNumbers {
7     public static void main(String args[]) {
8         String strNum1, strNum2;
9         String strNotification = "Doan Thanh Tung - 5946 - You've just entered: ";
10        strNum1 = JOptionPane.showInputDialog(null, "Doan Thanh Tung - 5946 - Please input the first number: ",
11                "Input the first number", JOptionPane.INFORMATION_MESSAGE);
12        strNotification += strNum1 + " and ";
13        strNum2 = JOptionPane.showInputDialog(null, "Doan Thanh Tung - 5946 - Please input the second number: ",
14                "Input the second number", JOptionPane.INFORMATION_MESSAGE);
15        strNotification += str
16        JOptionPane.showMessag                                    w two numbers", JOptionPane.INFORMATION_MESSAGE);
17        System.exit(0);
18    }
19 }
20
```




```java
1 package hello.java;
2
3 import javax.swing.JOptionPane;
4
5 //Example 4: ShowTwoNumbers.java
6 public class ShowTwoNumbers {
7     public static void main(String args[]) {
8         String strNum1, strNum2;
9         String strNotification = "Doan Thanh Tung - 5946 - You've just entered: ";
10        strNum1 = JOptionPane.showInputDialog(null, "Doan Thanh Tung - 5946 - Please input the first number: ",
11                "Input the first number", JOptionPane.INFORMATION_MESSAGE);
12        strNotification += strNum1 + " and ";
13        strNum2 = JOptionPane.showInputDialog(null, "Doan Thanh Tung - 5946 - Please input the second number: ",
14                "Input the second number", JOptionPane.INFORMATION_MESSAGE);
15        strNotification += st
16        JOptionPane.showMessa                                     two numbers", JOptionPane.INFORMATION_MESSAGE);
17        System.exit(0);
18    }
19 }
20
```



```java
package hello.java;

import javax.swing.JOptionPane;

//Example 4: ShowTwoNumbers.java
public class ShowTwoNumbers {
    public static void main(String args[]) {
        String strNum1, strNum2;
        String strNotification = "Doan Thanh Tung - 5946 - You've just entered: ";
        strNum1 = JOptionPane.showInputDialog(null, "Doan Thanh Tung - 5946 - Please input the first number: ",
                "Input the first number", JOptionPane.INFORMATION_MESSAGE);
        strNotification += strNum1 + " and ";
        strNum2 = JOptionPane.showInputDialog(null, "Doan Thanh Tung - 5946 - Please input the second number: ",
                "Input the second number", JOptionPane.INFORMATION_MESSAGE);
        strNotification += str
        JOptionPane.showMessag                                    two numbers", JOptionPane.INFORMATION_MESSAGE);
        System.exit(0);
    }
}
```



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

```java
public class Calculator {
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        // get input from user
        System.out.print("Doan Thanh Tung - 5946 - Enter the first number: ");
        double a = input.nextDouble();
        System.out.print("Doan Thanh Tung - 5946 - Enter the second number: ");
        double b = input.nextDouble();
        input.close();
        // Sum of the numbers
        System.out.println("Sum of the numbers: " + (a + b));
        // Difference of the numbers
        System.out.println("Difference of the numbers: " + (a - b));
        // Product of the numbers
        System.out.println("Product of the numbers: " + (a * b));
        // Quotient of the numbers
        System.out.println("Quotient of the numbers: " + (a / b));
        System.exit(0);
    }
}
```

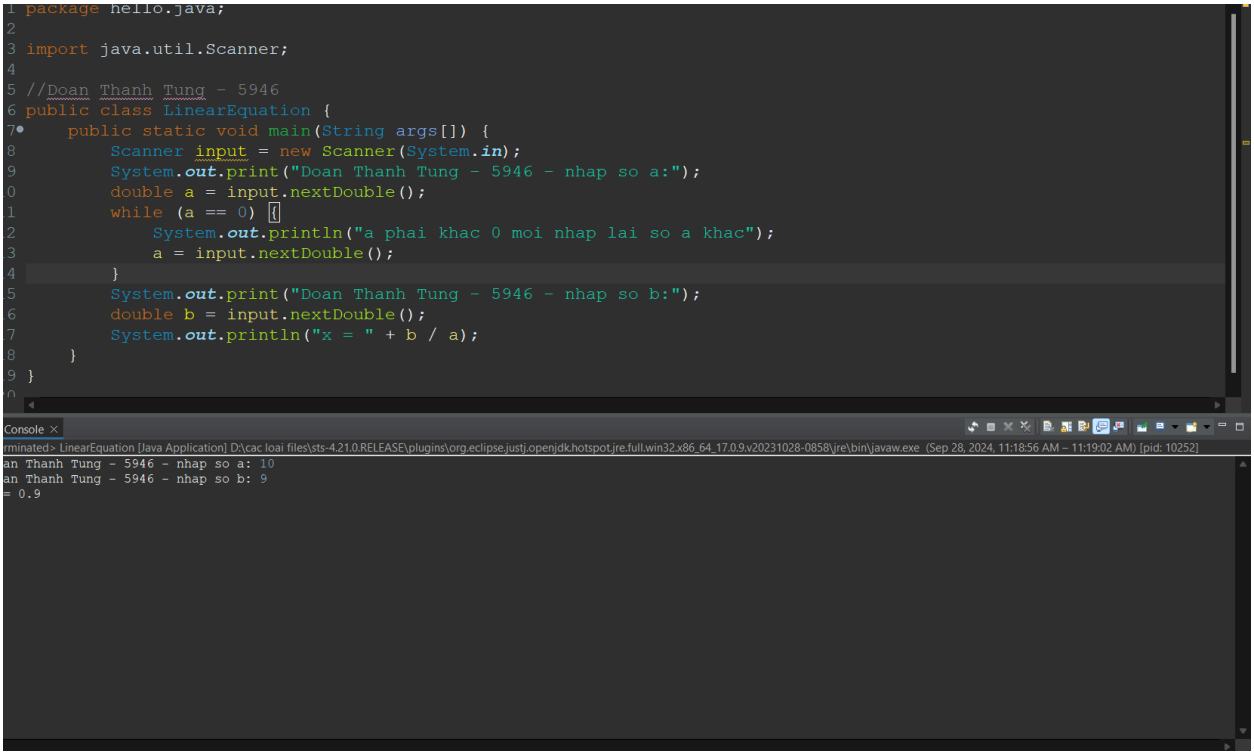
```java
public class Calculator {
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        // get input from user
        System.out.print("Doan Thanh Tung - 5946 - Enter the first number: ");
        double a = input.nextDouble();
        System.out.print("Doan Thanh Tung - 5946 - Enter the second number: ");
        double b = input.nextDouble();
        input.close();
        // Sum of the numbers
        System.out.println("Sum of the numbers: " + (a + b));
        // Difference of the numbers
        System.out.println("Difference of the numbers: " + (a - b));
        // Product of the numbers
        System.out.println("Product of the numbers: " + (a * b));
        // Quotient of the numbers
        System.out.println("Quotient of the numbers: " + (a / b));
        System.exit(0);
    }
}
```

```
Console ×
<terminated> Calculator [Java Application] D:\cac loai files\sts-4.21.0.RELEASE\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.9.v20231028-0858\jre\bin\javaw.exe (Sep 26, 2024, 9:15:40 PM – 9:15:46 PM) [pid: 12092]
Doan Thanh Tung - 5946 - Enter the first number: 10
Doan Thanh Tung - 5946 - Enter the second number: 9
Sum of the numbers: 19.0
Difference of the numbers: 1.0
Product of the numbers: 90.0
Quotient of the numbers: 1.1111111111111112
```

2.2.6: Write a program to solve:

1. The first-degree equation (linear equation) with one variable

```java
package hello.java;

import java.util.Scanner;

//Doan Thanh Tung - 5946
public class LinearEquation {
    public static void main(String args[]) {
        Scanner input = new Scanner(System.in);
        System.out.print("Doan Thanh Tung - 5946 - nhap so a:");
        double a = input.nextDouble();
            while (a == 0) {
                System.out.println("a phai khac 0 moi nhap lai so a khac");
                a = input.nextDouble();
            }
        System.out.print("Doan Thanh Tung - 5946 - nhap so b:");
        double b = input.nextDouble();
        System.out.println("x = " + b / a);
    }
}
```



```java
package hello.java;

import java.util.Scanner;

//Doan Thanh Tung - 5946
public class LinearEquation {
    public static void main(String args[]) {
        Scanner input = new Scanner(System.in);
        System.out.print("Doan Thanh Tung - 5946 - nhap so a:");
        double a = input.nextDouble();
        while (a == 0) {
            System.out.println("a phai khac 0 moi nhap lai so a khac");
            a = input.nextDouble();
        }
        System.out.print("Doan Thanh Tung - 5946 - nhap so b:");
        double b = input.nextDouble();
        System.out.println("x = " + b / a);
    }
}
```

```
Console ×
rminated> LinearEquation [Java Application] D:\cac loai files\sts-4.21.0.RELEASE\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.9.v20231028-0858\jre\bin\javaw.exe (Sep 28, 2024, 11:18:56 AM – 11:19:02 AM) [pid: 10252]
an Thanh Tung - 5946 - nhap so a: 10
an Thanh Tung - 5946 - nhap so b: 9
= 0.9
```

- Trường hợp a = 0:

```java
package hello.java;

import java.util.Scanner;

//Doan Thanh Tung - 5946
public class LinearEquation {
    public static void main(String args[]) {
        Scanner input = new Scanner(System.in);
        System.out.print("Doan Thanh Tung - 5946 - nhap so a:");
        double a = input.nextDouble();
        while (a == 0) {
            System.out.println("a phai khac 0 moi nhap lai so a khac");
            a = input.nextDouble();
        }
        System.out.print("Doan Thanh Tung - 5946 - nhap so b:");
        double b = input.nextDouble();
        System.out.println("x = " + b / a);
    }
}
```

```
Console ×
<terminated> LinearEquation [Java Application] D:\cac loai files\sts-4.21.0.RELEASE\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.9.v20231028-0858\jre\bin\javaw.exe (Sep 28, 2024, 11:19:30 AM – 11:19:46 AM) [pid: 14296]
Doan Thanh Tung - 5946 - nhap so a: 0
a phai khac 0 moi nhap lai so a khac
0
a phai khac 0 moi nhap lai so a khac
0
a phai khac 0 moi nhap lai so a khac
10
Doan Thanh Tung - 5946 - nhap so b: 8
x = 0.8
```

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

```java
package hello.java;
import java.util.Scanner;
//Doan Thanh Tung - 5946
public class LinearSystem {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.println("Doan Thanh Tung - 5946 - nhap cac so a11, a12 va b1:");
        double a11 = scanner.nextDouble();
        double a12 = scanner.nextDouble();
        double b1 = scanner.nextDouble();
        System.out.println("Doan Thanh Tung - 5946 - nhap cac so a21, a22 va b2:");
        double a21 = scanner.nextDouble();
        double a22 = scanner.nextDouble();
        double b2 = scanner.nextDouble();
        scanner.close();
        double det = a11 * a22 - a21 * a12; // calculate the determinant
        double d1 = (a22 * b1 - a12 * b2);
        double d2 = (a11 * b2 - a21 * b1);
        if (det == 0) {
            if (d1 != d2)
                System.out.println("he phuong trinh vo so nghiem!");
            else
                System.out.println("he phuong trinh vo nghiem");
        } else {
            double x1 = d1 / det;
            double x2 = d2 / det;
            System.out.println("x1 = " + x1 + ", x2 = " + x2);
        }
        System.exit(0);
    }
}
```

```java
package hello.java;
import java.util.Scanner;
//Doan Thanh Tung - 5946
public class LinearSystem {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.println("Doan Thanh Tung - 5946 - nhap cac so a11, a12 va b1:");
        double a11 = scanner.nextDouble();
        double a12 = scanner.nextDouble();
        double b1 = scanner.nextDouble();
        System.out.println("Doan Thanh Tung - 5946 - nhap cac so a21, a22 va b2:");
        double a21 = scanner.nextDouble();
        double a22 = scanner.nextDouble();
        double b2 = scanner.nextDouble();
        scanner.close();
        double det = a11 * a22 - a21 * a12; // calculate the determinant
        double d1 = (a22 * b1 - a12 * b2);
        double d2 = (a11 * b2 - a21 * b1);
        if (det == 0) {
            if (d1 != d2)
```

```
Console ×
<terminated> LinearSystem [Java Application] D:\cac loai files\sts-4.21.0.RELEASE\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.9.v20231028-0858\jre\bin\javaw.exe (Sep 28, 2024, 11:27:09 AM – 11:27:19 AM) [pid: 21260]
Doan Thanh Tung - 5946 - nhap cac so a11, a12 va b1:
 1 2 3
Doan Thanh Tung - 5946 - nhap cac so a21, a22 va b2:
 3 4 5
x1 = -1.0, x2 = 2.0
```

3. The second-degree equation with one variable

```java
package hello.java;

import java.util.Scanner;

//Doan Thanh Tung - 5946
public class SecondDegreeEquation {
    public static void main(String args[]) {
        System.out.println("Doan Thanh Tung - 5946 - moi nhap cac so a, b, c: ");
        Scanner input = new Scanner(System.in);
        double a = input.nextDouble();
        double b = input.nextDouble();
        double c = input.nextDouble();
        double delta = b * b - 4 * a * c;
        double result = 0;
        if (a == 0) {
            result = -c / b;
            System.out.println("phuong trinh co nghiem duy nhat la: " + result);
        }
        if (delta < 0) {
            System.out.println("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(0);
    }
}
```

- Phương trình vô nghiệm:

```java
package hello.java;

import java.util.Scanner;

//Doan Thanh Tung - 5946
public class SecondDegreeEquation {
    public static void main(String args[]) {
        System.out.println("Doan Thanh Tung - 5946 - moi nhap cac so a, b, c: ");
        Scanner input = new Scanner(System.in);
        double a = input.nextDouble();
        double b = input.nextDouble();
        double c = input.nextDouble();
        double delta = b * b - 4 * a * c;
        double result = 0;
        if (a == 0) {
            result = -c / b;
            System.out.println("phuong trinh co nghiem duy nhat la: " + result);
        }
```

```
Console ×
<terminated> SecondDegreeEquation [Java Application] D:\cac loai files\sts-4.21.0.RELEASE\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.9.v20231028-0858\jre\bin\javaw.exe (Sep 28, 2024, 11:43:39 AM – 11:44:08 AM) [pid: 9136]
Doan Thanh Tung - 5946 - moi nhap cac so a, b, c:
1 2 5
phuong trinh vo nghiem
```

- Phương trình có nghiệm kép:

```java
package hello.java;

import java.util.Scanner;

//Doan Thanh Tung - 5946
public class SecondDegreeEquation {
    public static void main(String args[]) {
        System.out.println("Doan Thanh Tung - 5946 - moi nhap cac so a, b, c: ");
        Scanner input = new Scanner(System.in);
        double a = input.nextDouble();
        double b = input.nextDouble();
        double c = input.nextDouble();
        double delta = b * b - 4 * a * c;
        double result = 0;
        if (a == 0) {
            result = -c / b;
            System.out.println("phuong trinh co nghiem duy nhat la: " + result);
        }
```

```
Console ×
<terminated> SecondDegreeEquation [Java Application] D:\cac loai files\sts-4.21.0.RELEASE\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.9.v20231028-0858\jre\bin\javaw.exe (Sep 28, 2024, 11:44:37 AM – 11:44:40 AM) [pid: 2184]
Doan Thanh Tung - 5946 - moi nhap cac so a, b, c:
1 -4 4
phuong trinh co nghiem kep la: 2.0
```

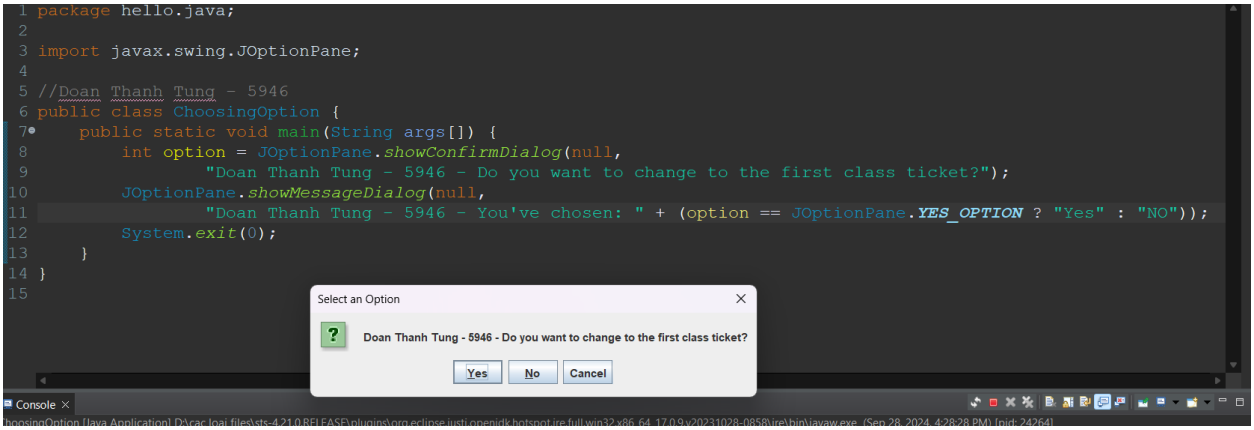
- Phương trình có 2 nghiệm phân biệt:

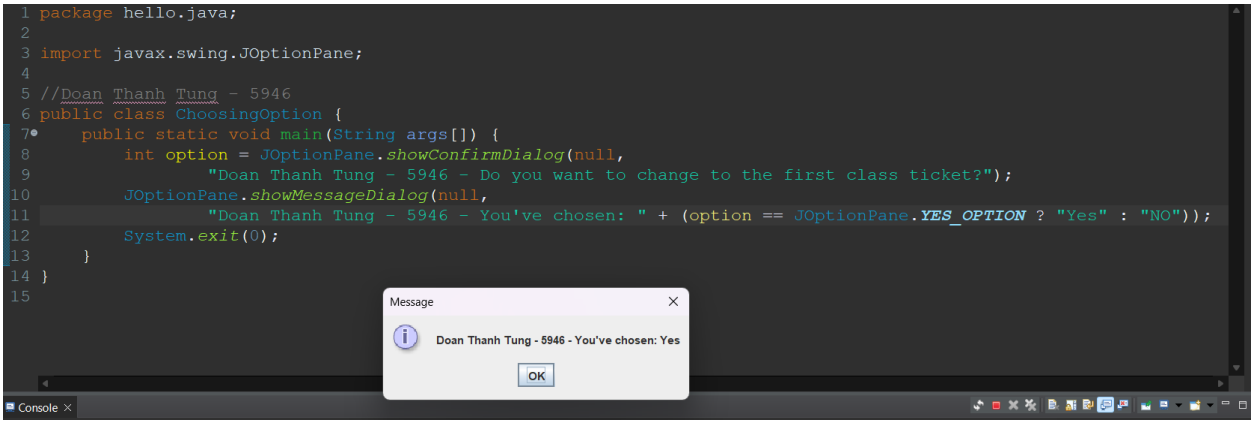
```java
package hello.java;

import java.util.Scanner;

//Doan Thanh Tung - 5946
public class SecondDegreeEquation {
    public static void main(String args[]) {
        System.out.println("Doan Thanh Tung - 5946 - moi nhap cac so a, b, c: ");
        Scanner input = new Scanner(System.in);
        double a = input.nextDouble();
        double b = input.nextDouble();
        double c = input.nextDouble();
        double delta = b * b - 4 * a * c;
        double result = 0;
        if (a == 0) {
            result = -c / b;
            System.out.println("phuong trinh co nghiem duy nhat la: " + result);
        }
```

```
Console ×
<terminated> SecondDegreeEquation [Java Application] D:\cac loai files\sts-4.21.0.RELEASE\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.9.v20231028-0858\jre\bin\javaw.exe (Sep 28, 2024, 11:45:28 AM – 11:45:31 AM) [pid: 22272]
Doan Thanh Tung - 5946 - moi nhap cac so a, b, c:
1 -5 6
phuong trinh co 2 nghiem la: 3.0 va 2.0
```

6.1: Write, compile and run the Choosing-Option program:

```java
package hello.java;

import javax.swing.JOptionPane;

//Doan Thanh Tung - 5946
public class ChoosingOption {
    public static void main(String args[]) {
        int option = JOptionPane.showConfirmDialog(null,
                "Doan Thanh Tung - 5946 - Do you want to change to the first class ticket?");
        JOptionPane.showMessageDialog(null,
                "Doan Thanh Tung - 5946 - You've chosen: " + (option == JOptionPane.YES_OPTION ? "Yes" : "NO"));
        System.exit(0);
    }
}
```





6.2: Write a program for input/output from keyboard

```java
package hello.java;
import java.util.Scanner;
// Doan Thanh Tung -5946
public class InputFromKeyboard {
    public static void main(String[] args) {
        Scanner keyboard = new Scanner(System.in);
        System.out.println("I am Doan Thanh Tung - 5946 - What's your 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("Mr/Mrs. "+strName+", "+iAge+" year(s) old. Your height is "+dHeight+"m.");
        System.exit(0);
    }
}
```

```java
package hello.java;

import java.util.Scanner;

// Doan Thanh Tung -5946
public class InputFromKeyboard {
    public static void main(String[] args) {
        Scanner keyboard = new Scanner(System.in);
        System.out.println("I am Doan Thanh Tung - 5946 - What's your 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("Mr/Mrs. " + strName + ", " + iAge + " year(s) old. Your height is " + dHeight + "m.");
        System.exit(0);
    }
}
```

```
Console
<terminated> InputFromKeyboard [Java Application] D:\cac loai files\sts-4.21.0.RELEASE\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.9.v20231028-0858\jre\bin\javaw.exe (Sep 28, 2024, 4:36:03 PM – 4:36:15 PM) [pid: 26456]
I am Doan Thanh Tung - 5946 - What's your name?
Doan Thanh Tung
How old are you?
20
How tall are you (m)?
1.73
Mr/Mrs. Doan Thanh Tung, 20 year(s) old. Your height is 1.73m.
```

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

```java
package hello.java;
import java.util.Scanner;
//Doan Thanh Tung - 5946
public class Triangle {
    public static void main(String args[]) {
        System.out.print("Doan Thanh Tung - 5946 - Please enter the height of a triangle that you want: ");
        Scanner input = new Scanner(System.in);
        int n = input.nextInt();
        for (int i = 0; i < n; i++) {
            for (int j = 0; j < 2 * n - 1; j++) {
                if (j < n - i - 1 || j >= n + i) {
                    System.out.print(" ");
                } else {
                    System.out.print("*");
                }
            }
            System.out.println("");
        }
    }
}
```

```java
package hello.java;
import java.util.Scanner;
//Doan Thanh Tung - 59469
public class Triangle {
    public static void main(String args[]) {
        System.out.print("Doan Thanh Tung - 5946 - Please enter the height of a triangle that you want: ");
        Scanner input = new Scanner(System.in);
        int n = input.nextInt();
        for (int i = 0; i < n; i++) {
            for (int j = 0; j < 2 * n - 1; j++) {
                if (j < n - i - 1 || j >= n + i) {
                    System.out.print(" ");
                } else {
                    System.out.print("*");
                }
            }
            System.out.println("");
        }
    }
}
```

```
Console ×
<terminated> Triangle [Java Application] D:\cac loai files\sts-4.21.0.RELEASE\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.9.v20231028-0858\jre\bin\javaw.exe (Sep 28, 2024, 4:52:55 PM – 4:52:58 PM) [pid: 26772]
Doan Thanh Tung - 5946 - Please enter the height of a triangle that you want: 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.

```java
package hello.java;
import java.util.Scanner;
//Doan Thanh Tung - 5946
public class DisplayDays {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int month;
        System.out.println("Doan Thanh Tung - 5946 - Enter a month (E.g: January, Jan., Jan, or 1); ");
        String inputMonth = scanner.next();
        switch (inputMonth) {
        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":
```

```java
        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 "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 "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("Invalid month!");
            scanner.close();
            return;
        }
        System.out.println("Enter a year");
        int year = scanner.nextInt();
        if (year <= 0) {
```

```
        }
        System.out.println("Enter a year");
        int year = scanner.nextInt();
        if (year <= 0) {
            System.out.println("Invalid year!");
            scanner.close();
            return;
        }
        scanner.close();
        boolean isLeapYear = false;
        if ((year % 4 == 0 && year % 100 != 0) || year % 400 == 0)
            isLeapYear = true;
        if (isLeapYear && month == 2) {
            System.out.println("29 days.");
            return;
        } else if (month == 2) {
            System.out.println("28 days.");
            return;
        }
        switch (month) { // April, June, September and November have 30 days.
        case 4:
        case 6:
        case 9:
        case 11:
            System.out.println("30 days.");
            return;
        default: // Otherwise 31 days.
            System.out.println("31 days.");
            return;
        }
    }
}
```

```java
package hello.java;

import java.util.Scanner;

//Doan Thanh Tung - 5946
public class DisplayDays {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int month;
        System.out.println("Doan Thanh Tung - 5946 - Enter a month (E.g: January, Jan., Jan, or 1); ");
        String inputMonth = scanner.next();
        switch (inputMonth) { // convert month to int type
        case "January":
        case "Jan.":
        case "Jan":
        case "1":
            month = 1;
            break;
```

```
Console ×
<terminated> DisplayDays [Java Application] D:\cac loai files\sts-4.21.0.RELEASE\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.9.v20231028-0858\jre\bin\javaw.exe (Sep 29, 2024, 11:10:43 AM – 11:10:54 AM) [pid: 12792]
Doan Thanh Tung - 5946 - Enter a month (E.g: January, Jan., Jan, or 1);
April
Enter a year (E.g: 1999):
2025
30 days.
```

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

```java
package hello.java;
import java.util.Arrays;
import java.util.Scanner;
// Doan Thanh Tung - 5946
public class SortArray {
    public static void main(String args[]) {
        System.out.print("Doan Thanh Tung - 5946 - Enter the length of array that you want: ");
        Scanner input = new Scanner(System.in);
        int n = input.nextInt();
        int sum = 0;
        System.out.println("Doan Thanh Tung - 5946 - Please enter the array");
        int[] arr = new int[n];
        for (int i = 0; i < n; i++) {
            arr[i] = input.nextInt();
            sum += arr[i];
        }
        double avarage = (double) sum / n;
        System.out.println("Array before sorting:" + Arrays.toString(arr));
        Arrays.sort(arr);
        System.out.println("Array after sorting:" + Arrays.toString(arr));
        System.out.println("the sum of the array is: " + sum);
        System.out.println("the avarage of the array is: " + avarage);
    }
}
```

```java
package hello.java;
import java.util.Arrays;
import java.util.Scanner;
// Doan Thanh Tung - 5946
public class SortArray {
    public static void main(String args[]) {
        System.out.print("Doan Thanh Tung - 5946 - Enter the length of array that you want: ");
        Scanner input = new Scanner(System.in);
        int n = input.nextInt();
        int sum = 0;
        System.out.println("Doan Thanh Tung - 5946 - Please enter the array");
        int[] arr = new int[n];
        for (int i = 0; i < n; i++) {
            arr[i] = input.nextInt();
            sum += arr[i];
        }
```

Console

```
<terminated> SortArray [Java Application] D:\cac loai files\sts-4.21.0.RELEASE\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.9.v20231028-0858\jre\bin\javaw.exe (Sep 29, 2024, 11:23:14 AM – 11:23:20 AM) [pid: 22844]
Enter the length of array that you want:  5
Please enter the array
5 4 3 2 1
Array before sorting:[5, 4, 3, 2, 1]
Array after sorting:[1, 2, 3, 4, 5]
the sum of the array is: 15
the avarage of the array is: 3.0
```

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

```java
package hello.java;
import java.util.Scanner;
// Doan Thanh Tung - 5946
public class AddMatrices {
    public static void main(String args[]) {
        System.out.print("Doan Thanh Tung - 5946 - Enter the size of matrices: ");
        Scanner input = new Scanner(System.in);
        int size = input.nextInt();
        double[][] matrix1 = new double[size][size];
        double[][] matrix2 = new double[size][size];
        double[][] Summatrix = new double[size][size];
        System.out.println("Doan Thanh Tung - 5946 - Please enter the first matrix");
        for (int i = 0; i < size; i++) {
            for (int j = 0; j < size; j++) {
                matrix1[i][j] = input.nextDouble();
            }
        }
        System.out.println("Doan Thanh Tung - 5946 - Please enter the second matrix");
        for (int i = 0; i < size; i++) {
            for (int j = 0; j < size; j++) {
                matrix2[i][j] = input.nextDouble();
                Summatrix[i][j] = matrix1[i][j] + matrix2[i][j];
            }
        }
        System.out.println("the sum of two matrices is: ");
        for (int i = 0; i < size; i++) {
            for (int j = 0; j < size; j++) {
                System.out.print(Summatrix[i][j] + " ");
            }
            System.out.println();
        }
    }
}
```

```java
package hello.java;

import java.util.Scanner;

// Doan Thanh Tung - 5946
public class AddMatrices {
    public static void main(String args[]) {
        System.out.print("Doan Thanh Tung - 5946 - Enter the size of matrices: ");
        Scanner input = new Scanner(System.in);
        int size = input.nextInt();
        double[][] matrix1 = new double[size][size];
        double[][] matrix2 = new double[size][size];
        double[][] Summatrix = new double[size][size];
        System.out.println("Doan Thanh Tung - 5946 - Please enter the first matrix");
        for (int i = 0; i < size; i++) {
```

Console

<terminated> AddMatrices [Java Application] D:\cac loai files\sts-4.21.0.RELEASE\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.9.v20231028-0858\jre\bin\javaw.exe (Sep 29, 2024, 4:03:40 PM – 4:04:19 PM) [pid: 10384]

```
Doan Thanh Tung - 5946 - Enter the size of matrices: 3
Doan Thanh Tung - 5946 - Please enter the first matrix
1 2 3
4 5 6
7 8 9
Doan Thanh Tung - 5946 - Please enter the second matrix
10 11 12
13 14 15
16 17 18
the sum of two matrices is:
11.0 13.0 15.0
17.0 19.0 21.0
23.0 25.0 27.0
```