

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

BÁO CÁO THỰC HÀNH
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BÀI THỰC HÀNH -LAB01

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BÁO CÁO THỰC HÀNH LAP 1

The Very First Java Programs

2.2.1 Write, compile the first Java application:

```
1 package week1;
2 //Nguyen Trinh Hoang Nguyen 20225656
3 public class bai1 {
4     public static void main(String args[]) {
5         System.out.println("Nguyen Trinh Hoang Nguyen 20225656");
6         System.out.println("Xin chao \n cac ban!");
7         System.out.println("Hello \t world!");
8     }
9 }
```

Figure 1 Code 2.2.1

Kết quả

```
1 package week1;
2 //Nguyen Trinh Hoang Nguyen 20225656
3 public class bai1 {
4     public static void main(String args[]) {
5         System.out.println("Nguyen Trinh Hoang Nguyen 20225656");
6         System.out.println("Xin chao \n cac ban!");
7         System.out.println("Hello \t world!");
8     }
9 }
10 |
```

Problems Javadoc Declaration Console ×

<terminated> bai1 [Java Application] C:\Program Files\Java\jdk-23\bin\javaw.exe (Oct 2, 2024, 9:19:47 PM – 9:19:48 PM) [pid: 13460]

Nguyen Trinh Hoang Nguyen 20225656
Xin chao
cac ban!
Hello world!

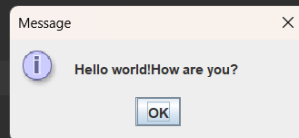
2.2.2 Write, compile the first dialog Java program

```
1 package week1;
2 import javax.swing.JOptionPane;
3 //Nguyễn Trinh Hoàng Nguyễn 20225656
4 public class bai2 {
5     public static void main(String args[]) {
6         System.out.println("Nguyễn Trinh Hoàng Nguyễn 20225656");
7         JOptionPane.showMessageDialog(null,"Hello world!How are you?");
8         System.exit(0);
9     }
10 }
11 }
```

Figure 2 Code 2.2.2

Kết quả

```
1 package week1;
2 import javax.swing.JOptionPane;
3 //Nguyễn Trinh Hoàng Nguyễn 20225656
4 public class bai2 {
5     public static void main(String args[]) {
6         System.out.println("Nguyễn Trinh Hoàng Nguyễn 20225656");
7         JOptionPane.showMessageDialog(null,"Hello world!How are you?");
8         System.exit(0);
9     }
10 }
11 }
```



Problems Javadoc Declaration Console x
bai2 [Java Application] C:\Program Files\Java\jdk-23\bin\javaw.exe (Oct 2, 2024, 9:20:25 PM) [pid: 12236]

Nguyễn Trinh Hoàng Nguyễn 20225656

2.2.3 Write, compile the first input dialog Java application

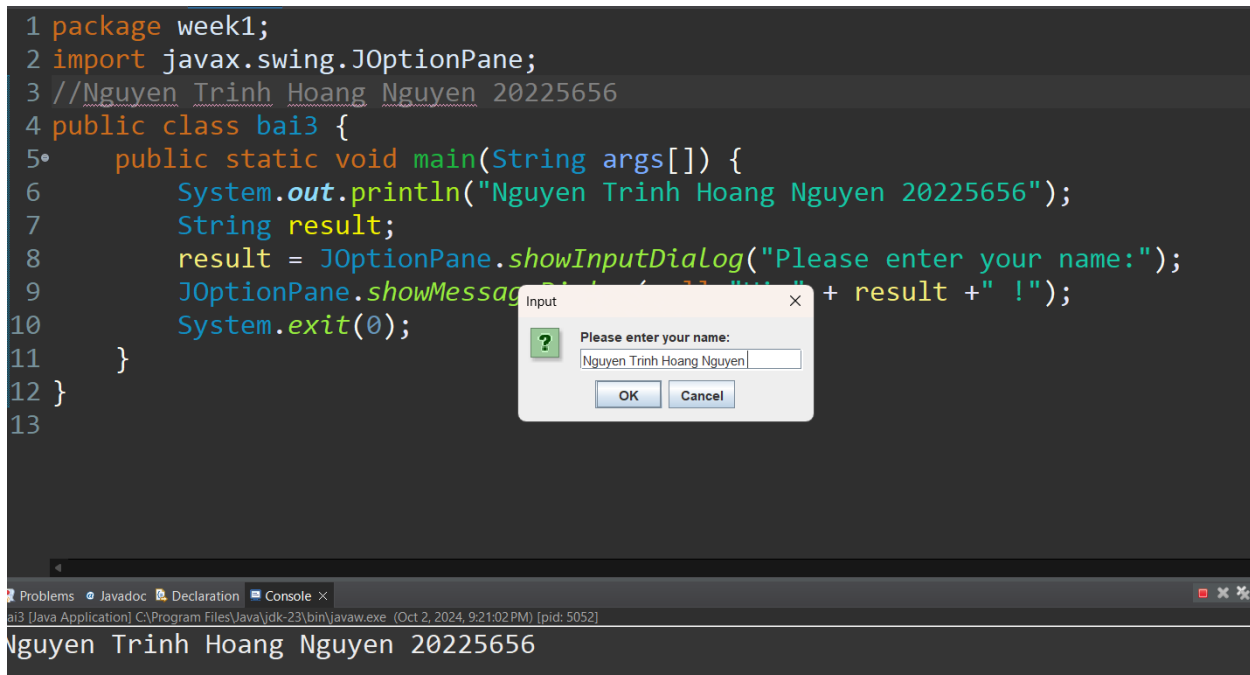
```

1 package week1;
2 import javax.swing.JOptionPane;
3 //Nguyễn Trinh Hoàng Nguyễn 20225656
4 public class bai3 {
5     public static void main(String args[]) {
6         System.out.println("Nguyễn Trinh Hoàng Nguyễn 20225656");
7         String result;
8         result = JOptionPane.showInputDialog("Please enter your name:");
9         JOptionPane.showMessageDialog(null, "Hi " + result + " !");
10        System.exit(0);
11    }
12 }
13

```

Figure 3 Code 2.2.3

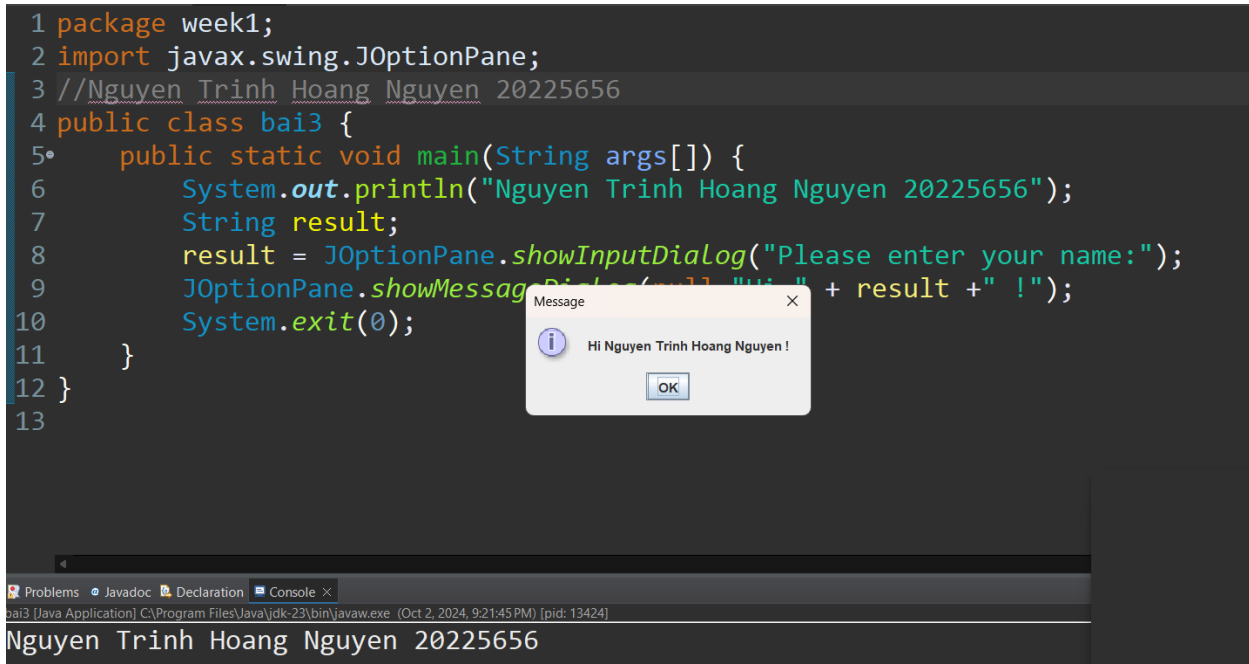
Kết quả



```

1 package week1;
2 import javax.swing.JOptionPane;
3 //Nguyễn Trinh Hoàng Nguyễn 20225656
4 public class bai3 {
5     public static void main(String args[]) {
6         System.out.println("Nguyễn Trinh Hoàng Nguyễn 20225656");
7         String result;
8         result = JOptionPane.showInputDialog("Please enter your name:");
9         JOptionPane.showMessageDialog(null, "Hi " + result + " !");
10        System.exit(0);
11    }
12 }
13

```



2.2.4 Write, compile, and run the following example:

```

1 package week1;
2
3 import javax.swing.JOptionPane;
4 //Nguyễn Trinh Hoàng Nguyễn 20225656
5 public class bai4 {
6     public static void main(String args[]) {
7         System.out.println("Nguyễn Trinh Hoàng Nguyễn 20225656");
8         String strNum1, strNum2;
9         String strNotification = "You've just entered: ";
10
11        strNum1 = JOptionPane.showInputDialog(null,
12        "Please input the first number: ", "Input the first number",
13        JOptionPane.INFORMATION_MESSAGE);
14        strNotification += strNum1 + " add ";
15
16        strNum2 = JOptionPane.showInputDialog(null,
17        "Please input the second number: ", "Input the second number",
18        JOptionPane.INFORMATION_MESSAGE);
19        strNotification += strNum2;
20
21        JOptionPane.showConfirmDialog(null, strNotification,
22        "Show two numbers", JOptionPane.INFORMATION_MESSAGE);
23        System.exit(0);
24    }
25 }
26

```

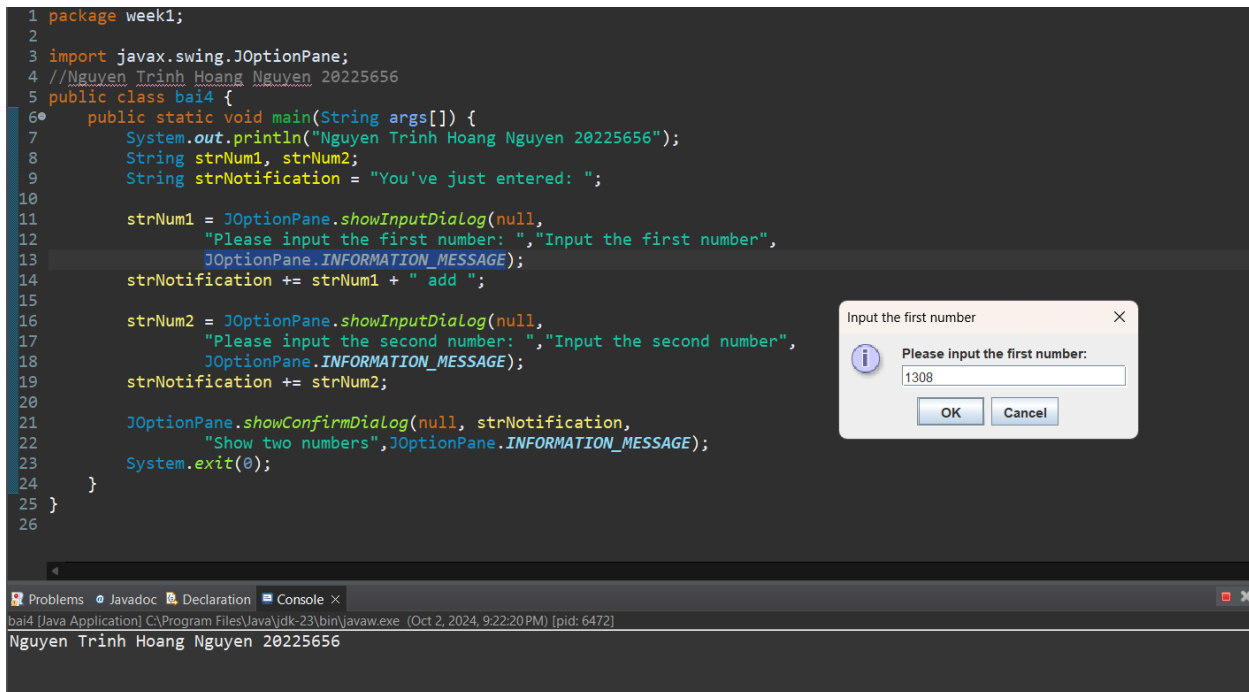
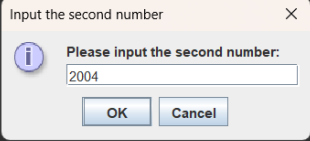


Figure 4 Code 2.2.4

```

1 package week1;
2
3 import javax.swing.JOptionPane;
4 //Nguyễn Trinh Hoàng Nguyễn 20225656
5 public class bai4 {
6     public static void main(String args[]) {
7         System.out.println("Nguyễn Trinh Hoàng Nguyễn 20225656");
8         String strNum1, strNum2;
9         String strNotification = "You've just entered: ";
10
11         strNum1 = JOptionPane.showInputDialog(null,
12             "Please input the first number: ", "Input the first number",
13             JOptionPane.INFORMATION_MESSAGE);
14         strNotification += strNum1 + " add ";
15
16         strNum2 = JOptionPane.showInputDialog(null,
17             "Please input the second number: ", "Input the second number",
18             JOptionPane.INFORMATION_MESSAGE);
19         strNotification += strNum2;
20
21         JOptionPane.showConfirmDialog(null, strNotification,
22             "Show two numbers", JOptionPane.INFORMATION_MESSAGE);
23         System.exit(0);
24     }
25 }
26

```



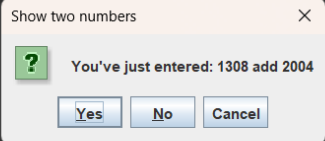
Problems Javadoc Declaration Console ×
 bai4 [Java Application] C:\Program Files\Java\jdk-23\bin\javaw.exe (Oct 2, 2024, 9:23:04 PM) [pid: 5456]
 Nguyễn Trinh Hoàng Nguyễn 20225656

Kết quả:

```

1 package week1;
2
3 import javax.swing.JOptionPane;
4 //Nguyễn Trinh Hoàng Nguyễn 20225656
5 public class bai4 {
6     public static void main(String args[]) {
7         System.out.println("Nguyễn Trinh Hoàng Nguyễn 20225656");
8         String strNum1, strNum2;
9         String strNotification = "You've just entered: ";
10
11         strNum1 = JOptionPane.showInputDialog(null,
12             "Please input the first number: ", "Input the first number",
13             JOptionPane.INFORMATION_MESSAGE);
14         strNotification += strNum1 + " add ";
15
16         strNum2 = JOptionPane.showInputDialog(null,
17             "Please input the second number: ", "Input the second number",
18             JOptionPane.INFORMATION_MESSAGE);
19         strNotification += strNum2;
20
21         JOptionPane.showConfirmDialog(null, strNotification,
22             "Show two numbers", JOptionPane.INFORMATION_MESSAGE);
23         System.exit(0);
24     }
25 }
26

```



Problems Javadoc Declaration Console ×
 bai4 [Java Application] C:\Program Files\Java\jdk-23\bin\javaw.exe (Oct 2, 2024, 9:23:50 PM) [pid: 12924]
 Nguyễn Trinh Hoàng Nguyễn 20225656

BÀI TẬP

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

```

1 package week1;
2 import java.util.Scanner;
3 //Nguyễn Trịnh Hoàng Nguyên 20225656
4 public class bai5 {
5     public static void main(String args[]) {
6         Scanner scanner = new Scanner(System.in);
7         double number1 = scanner.nextDouble();
8         double number2 = scanner.nextDouble();
9         scanner.close();
10        System.out.println("Tong 2 so :" + (number1+number2));
11        System.out.println("So thu 1 tru so thu 2 :" + (double)(number1-number2));
12        System.out.println("So thu 2 tru so thu 1 :" + (double)(number2-number1));
13        System.out.println("Tich 2 so :" + number1*number2);
14        System.out.println("So thu 1 chia so thu 2 :" + number1/number2);
15        System.out.println("So thu 1 chia so thu 2 :" + number2/number1);
16    }
17 }
18

```

Figure 5 Code 2.2.5

TH1: Nhập 2 số 1 và 2:

```

1
2
Tong 2 so :3.0
So thu 1 tru so thu 2 :-1.0
So thu 2 tru so thu 1 :1.0
Tich 2 so :2.0
So thu 1 chia so thu 2 :0.5
So thu 1 chia so thu 2 :2.0

```

TH2: Nhập 2 số 1000 và 9823:

```

1000
9823
Tong 2 so :10823.0
So thu 1 tru so thu 2 :-8823.0
So thu 2 tru so thu 1 :8823.0
Tich 2 so :9823000.0
So thu 1 chia so thu 2 :0.10180189351521939
So thu 1 chia so thu 2 :9.823

```

2.2.6 Write a program to solve the first-degree equation (linear equation) with one variable, the system of first-degree equations (linear system) with two variables, the second-degree equation with one variable.

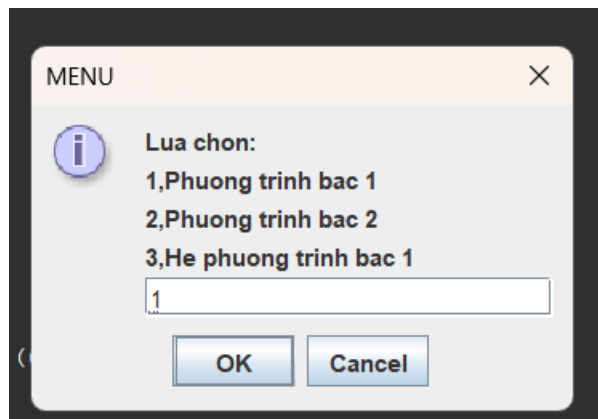
- Giải phương trình bậc nhất 1 ẩn

```

1 package week1;
2 //Nguyễn Trịnh Hoàng Nguyên 20225656
3 import java.util.Scanner;
4
5 public class bai6 {
6     public static void main(String args[])
7     {
8         String tmp = JOptionPane.showInputDialog(null,"Lua chon:\n"
9             + "1,Phuong trinh bac 1\n"
10            + "2,Phuong trinh bac 2\n"
11            + "3,He phuong trinh bac 1", "MENU",
12            JOptionPane.INFORMATION_MESSAGE);
13         int select = Integer.parseInt(tmp);
14         if(select == 1)
15         {
16             Scanner scanner1 = new Scanner(System.in);
17             System.out.println("Giai phuong trinh ax+b=0\n"
18                 + "Nhap a:");
19             double a = scanner1.nextDouble();
20             System.out.println("Nhap b");
21             double b = scanner1.nextDouble();
22             scanner1.close();
23             if(a == 0 )
24             {
25                 if (b == 0)
26                 {
27                     System.out.println("Phuong trinh co vo so nghiem");
28                 }else
29                 {
30                     System.out.println("Phuong trinh vo nghiem");
31                 }
32             }else
33             {
34                 System.out.println("Phuong trinh tren co nghiem duy nhat la : " + ((-b)/a));
35             }
36         }
37     }
38 }

```

Figure 6 Code 2.2.6



TH1: $a = 0$ $b = 1$;

```
<terminated> java Application C:\Program Files\Java\jdk-23\bin\j...
Giai phuong trinh ax+b=0
Nhap a:
0
Nhap b
1
Phuong trinh vo nghiem
```

TH2: $a = 0$, $b = 0$

```
Giai phuong trinh ax+b=0
Nhap a:
0
Nhap b
0
|Phuong trinh co vo so nghiem
```

TH3: a= 3, b =10:

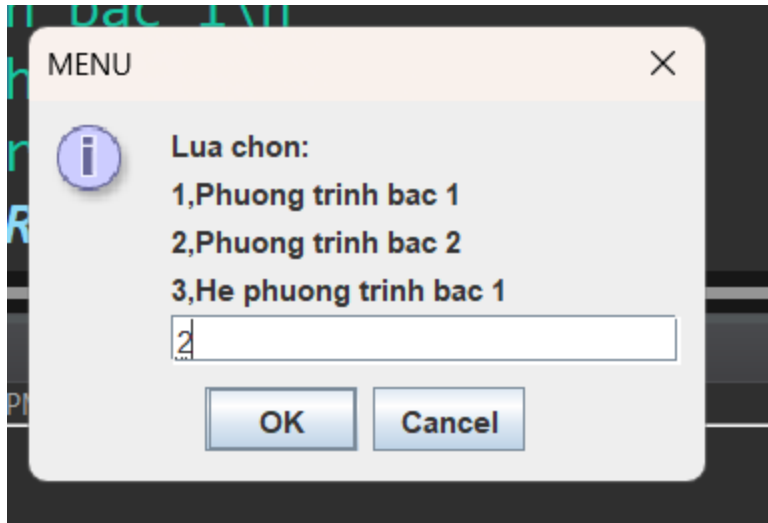
```
<terminated> baio-bai01\baio-bai01\bin\baio-bai01.exe (Oct 2, 2024, 3:49:50 PM) [pid: 4236]
Giai phuong trinh ax+b=0
Nhap a:
3
Nhap b
10
|Phuong trinh tren co nghiem duy nhat la :-3.3333333333333335
```

- Giải phương trình bậc hai 1 ẩn:

```

}else if(select == 2)
{
    Scanner scanner2 = new Scanner(System.in);
    System.out.println("Giai phuong trinh ax^2+bx+c=0\n"
        + "Nhap a:");
    double a = scanner2.nextDouble();
    System.out.println("Nhap b");
    double b = scanner2.nextDouble();
    System.out.println("Nhap c");
    double c = scanner2.nextDouble();
    scanner2.close();
    if(a==0)
    {
        if(b == 0)
        {
            if(c==0)
            {
                System.out.println("Phuong trinh co vo so nghiem");
            }else
            {
                System.out.println("Phuong trinh vo nghiem");
            }
        }else
        {
            System.out.println("Phuong trinh co 1 nghiem duy nhat:"+(-c/b));
        }
    }else
    {
        double delta = b*b-4*a*c;
        if(delta<0)
        {
            System.out.println("Phuong trinh vo nghiem");
        }else
        {
            if(delta == 0)
            {
                System.out.println("Phuong trinh co 1 nghiem kep :"+ (-b/(2*a)));
            }else if(delta > 0)
            {
                System.out.println("Phuong trinh co 2 nghiem phan biet \n x1:"+
                    (-b+Math.sqrt(delta))/(2*a)+
                    "\n x2:"+ (-b-Math.sqrt(delta))/(2*a));
            }
        }
    }
}
}

```



TH1: $a = 0$ (như phương trình bậc 1), $b = 0$, $c = 1$:

```
<terminated> baib [Java Application] C:\Program Files\Java\jdk-23\bin\javaw.exe (Oct 2, 2024,
Giai phuong trinh  $ax^2+bx+c=0$ 
Nhap a:
0
Nhap b
0
Nhap c
1
|Phuong trinh vo nghiem
```

TH2: $a = 1$, $b = 1$, $c = 1$:

```
Giai phuong trinh ax^2+bx+c=0
Nhap a:
1
Nhap b
1
Nhap c
1
Phuong trinh vo nghiem
```

TH3: a =1 , b = 2 ,c = 1:

```
<terminated> baio java Application; C:\Program Files\Java\jdk-23\bin\javaw.exe (Oct 2, 2024, 9:51:02 PM)
Giai phuong trinh ax^2+bx+c=0
Nhap a:
1
Nhap b
2
Nhap c
1
Phuong trinh co 1 nghiem kep :-1.0
```

TH4: a =1 , b = - 4 , c = 3

```

<terminated> java Application C:\Program Files\Java\jdk-23\bin\jav
Giai phuong trinh ax^2+bx+c=0
Nhap a:
1
Nhap b
-4
Nhap c
3
Phuong trinh co 2 nghiệm phân biệt
x1:3.0
x2:1.0

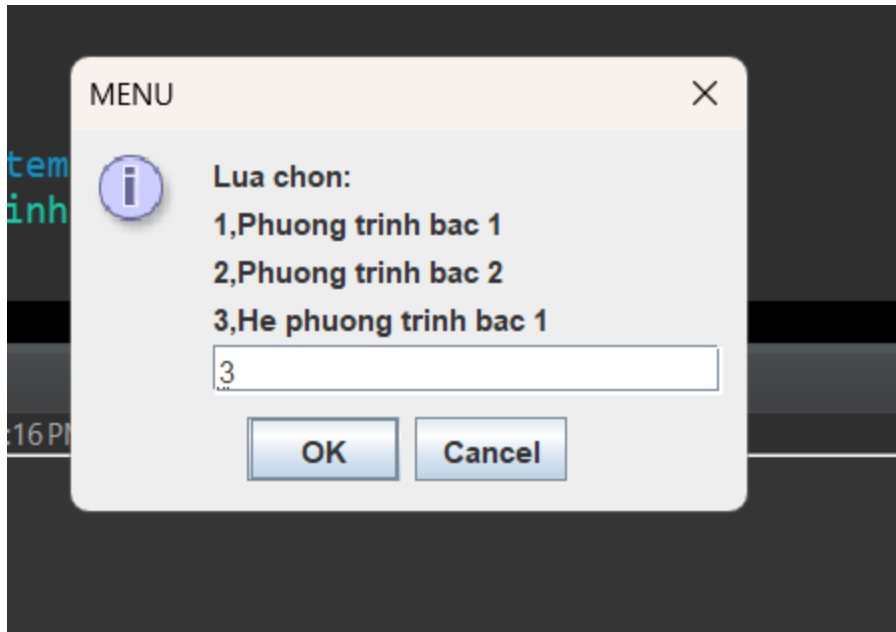
```

- Giải hệ phương trình bậc nhất 2 ẩn :

```

}
}else if (select == 3)
{
    Scanner scanner3 = new Scanner(System.in);
    System.out.println("Giai he phuong trinh \n a1x+b1y=c1\n a2x+b2y=c2\n"
        + "Nhap a1:");
    double a1 = scanner3.nextDouble();
    System.out.println("Nhap b1");
    double b1 = scanner3.nextDouble();
    System.out.println("Nhap c1");
    double c1 = scanner3.nextDouble();
    System.out.println("Nhap a2");
    double a2 = scanner3.nextDouble();
    System.out.println("Nhap b2");
    double b2 = scanner3.nextDouble();
    System.out.println("Nhap c2");
    double c2 = scanner3.nextDouble();
    scanner3.close();
    double D = a1*b2 - a2*b1;
    double Dx = c1*b2 - c2*b1;
    double Dy = a1*c2 - a2*c1;
    if(D != 0)
    {
        System.out.println("He phuong trinh co nghiem duy nhat x: " + (Dx/D)+ " y: "+(Dy/D));
    }else if(D == 0 &&(Dx != 0 || Dy != 0))
    {
        System.out.println("He phuong trinh vo nghiem");
    }else if(D == 0 && Dx == 0 && Dy == 0)
    {
        System.out.println("He phuong trinh vo so nghiem");
    }
}
}

```

TH1: $a_1 = 1, b_1 = 2, c_1 = 3$ $a_2 = 2, b_2 = 3, c_2 = 4$

```
a1x+b1y=c1
a2x+b2y=c2
Nhap a1:
1
Nhap b1
2
Nhap c1
3
Nhap a2
2
Nhap b2
3
Nhap c2
4
He phuong trinh co nghiem duy nhat x:-1.0 y:2.0
```

TH2: $a_1 = 1, b_1 = 1, c_1 = 2, a_2 = 2, b_2 = 2, c_2 = 3$

```
a1x+b1y=c1
a2x+b2y=c2
Nhap a1:
1
Nhap b1
1
Nhap c1
2
Nhap a2
2
Nhap b2
2
Nhap c2
3
He phuong trinh vo nghiem
```

TH3: a1 = 1 , b1 =1 c1 = 2, a2= 2,b2= 2,c2 =4

```
a1x+b1y=c1
a2x+b2y=c2
Nhap a1:
1
Nhap b1
1
Nhap c1
2
Nhap a2
2
Nhap b2
2
Nhap c2
4
He phuong trinh vo so nghiem
```

Exercises

6.1 Write, compile and run the ChoosingOption program

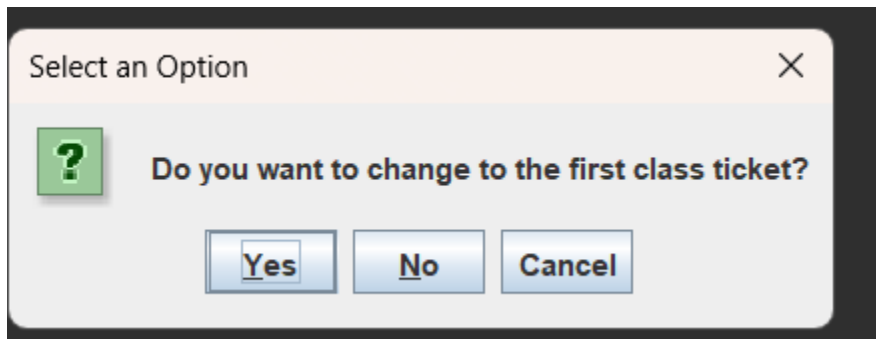
```

1 package week1;
2 import javax.swing.JOptionPane;
3 //Nguyễn Trịnh Hoàng Nguyên 20225656
4 public class ChoosingOption {
5
6     public static void main(String args[])
7     {
8         int option = JOptionPane.showConfirmDialog(null,
9             "Do you want to change to the first class ticket?");
10
11         JOptionPane.showMessageDialog(null, "You've chosen: "
12             + (option==JOptionPane.YES_OPTION?"YES":"NO"));
13         System.exit(0);
14     }
15 }
16

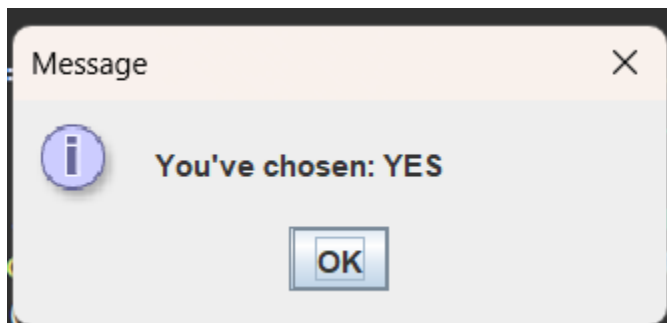
```

Figure 7 Code 6.1

Chạy :



Nếu người dùng chọn Yes:



Nếu người dùng chọn NO hoặc Cancel:

```

1 package week1;
2 import javax.swing.JOptionPane;
3 //Nguyễn Trinh Hoàng Nguyễn 20225656
4 public class ChossingOption {
5
6     public static void main(String args[])
7     {
8         int option = JOptionPane.showConfirmDialog(null,
9             "Do you want to change to the first class ticket?");
10
11         JOptionPane.showMessageDialog(null, "You've chosen: "
12             + (option==JOptionPane.YES_OPTION?"YES":"NO"));
13         System.exit(0);
14     }
15 }
16

```



6.2 Write a program for input/output from keyboard

```

1 package week1;
2 import java.util.Scanner;
3 //Nguyễn Trinh Hoàng Nguyễn 20225656
4 public class InputFromKeyboard {
5     public static void main(String args[])
6     {
7         java.util.Scanner keyboard = new Scanner(System.in);
8
9         System.out.println("What's your name?");
10        String strName = keyboard.nextLine();
11        System.out.println("How old are you?");
12        int iAge = keyboard.nextInt();
13        System.out.println("How tall are you (m)?");
14        double dHeight = keyboard.nextDouble();
15
16        System.out.println("Mrs/Ms. " + strName + ", "
17            + iAge + " years old." + "Your height is "
18            + dHeight + ".");
19        keyboard.close();
20    }
21 }
22

```

Figure 8 Code 6.2

Chạy:

```

What's your name?
Nguyen Trinh Hoang Nguyen
How old are you?
20
How tall are you (m)?
175
Mrs/Ms. Nguyen Trinh Hoang Nguyen, 20 years old.Your height is 175.0.

```

=> Chương trình hỏi tên, tuổi, chiều cao rồi in ra màn hình.

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

```

1 package week1;
2 import java.util.Scanner;
3 //Nguyen Trinh Hoang Nguyen 20225656|
4 public class bai6_3 {
5     public static void main(String args[])
6     {
7         java.util.Scanner keyboard = new Scanner(System.in);
8         System.out.println("Nhap so n:");
9         int n = keyboard.nextInt();
10        for(int i = 1;i<=n;i++)
11        {
12            for(int j = 1;j<= n-i;j++)
13            {
14                System.out.print(" ");
15            }
16            for(int j = 1;j<= 2*i-1;j++)
17            {
18                System.out.print("*");
19            }
20            System.out.print("\n");
21        }
22        keyboard.close();
23    }
24 }
25

```

Figure 9 Code 6.3

Chạy:

Nếu n = 4

```
<terminated> bai6_3 [Java Appli
Nhap so n:
4
    *
  ***
 *****
*****
```

Nếu n = 6

```
<terminated> bai6_3 [Java Appli
Nhap so n:
6
    *
  ***
 *****
*****
*****
*****
```

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

Định dạng các tháng mà người dùng có thể nhập:

```

package week1;
import java.util.Arrays;
//Nguyen Trinh Hoang Nguyen 20225656
public class bai6_4 {
    public static void main(String args[])
    {
        Scanner sc = new Scanner(System.in);
        String[] Jan = {"January", "Jan.", "Jan", "1"};
        String[] Fer = {"February", "Feb.", "Feb", "2"};
        String[] Mar = {"March", "Mar.", "Mar", "3"};
        String[] Apr = {"April", "Apr.", "Apr", "4"};
        String[] May = {"May", "5"};
        String[] Jun = {"June", "Jun", "6"};
        String[] Jul = {"July", "Jul", "7"};
        String[] Aug = {"August", "Aug.", "Aug", "8"};
        String[] Sep = {"September", "Sept.", "Sep", "9"};
        String[] Oct = {"October", "Oct.", "Oct", "10"};
        String[] Nov = {"November", "Nov.", "Nov", "11"};
        String[] Dec = {"December", "Dec.", "Dec", "12"};
        String strMonth;
        String strYear;
        int month = 0;
        int year;
        int days;
    }
}

```

Figure 10 Code 6.4

Nhập tháng và chỉnh giá trị month bằng tháng đã nhập vào:

```

while(month == 0)
{
    System.out.println("Nhap thang: ");
    strMonth = sc.nextLine();
    if(Arrays.asList(Jan).contains(strMonth)) month =1;
    else if(Arrays.asList(Fer).contains(strMonth)) month =2;
    else if(Arrays.asList(Mar).contains(strMonth)) month =3;
    else if(Arrays.asList(Apr).contains(strMonth)) month =4;
    else if(Arrays.asList(May).contains(strMonth)) month =5;
    else if(Arrays.asList(Jun).contains(strMonth)) month =6;
    else if(Arrays.asList(Jul).contains(strMonth)) month =7;
    else if(Arrays.asList(Aug).contains(strMonth)) month =8;
    else if(Arrays.asList(Sep).contains(strMonth)) month =9;
    else if(Arrays.asList(Oct).contains(strMonth)) month =10;
    else if(Arrays.asList(Nov).contains(strMonth)) month =11;
    else if(Arrays.asList(Dec).contains(strMonth)) month =12;
    else
    {
        System.out.println("Thang khong xac dinh. Vui long nhap lai:");
    }
}

```

Đọc năm và kiểm tra xem có hợp lệ (`!strYear.matches("\\d+")` để kiểm tra xem năm nhập vào có phải số hay không)

```
//Nhập năm và kiểm tra năm có hợp lệ
while(true)
{
    System.out.println("Nhập năm: ");
    strYear = sc.nextLine();

    if(!strYear.matches("\\d+"))
    {
        System.out.println("Năm không xác định. Vui lòng nhập lại:");
        continue;
    }
    year = Integer.parseInt(strYear);
    if(year < 0)
    {
        System.out.println("Năm không xác định. Vui lòng nhập lại:");
        continue;
    }else break;
}
```

Thực hiện tính ngày dựa trên tháng và năm rồi in ra màn hình:

```
}
if(month == 2)
{
    if((year % 4 == 0 && year % 100 != 0) || year % 400 == 0)
    {
        days = 29;
    }
    else
    {
        days = 28;
    }
}
else if(month == 1 || month == 3 || month == 5 || month == 7 || month == 8 || month == 10 || month == 12)
{
    days = 31;
}
else
{
    days = 30;
}
System.out.println("Thang " + month + " nam " + year + " co " + days + " ngay.");
sc.close();
}
```


Chạy :

Test 1: Nhập tháng Jan. ,nhập năm 2020

```
Nhap thang:  
Jan.  
Nhap nam:  
2020  
Thang 1 nam 2020 co 31 ngay.
```

Test 2: Nhập tháng 2 ,nhập năm 2000

```
Nhap thang:  
2  
Nhap nam:  
2000  
Thang 2 nam 2000 co 29 ngay.
```

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

Sử dụng thuật toán Bubble Sort để thực hiện sắp xếp các phần tử trong mảng

```

1 package week1;
2
3 import java.util.Scanner;
4 //Nguyễn Trinh Hoàng Nguyễn 20225656
5 public class bai6_5 {
6     public static void bubbleSort(int[] arr)
7     {
8         boolean swapped = false;
9         for(int i = 0; i < arr.length - 1; i++)
10         {
11             swapped = false;
12             for(int j = 0; j < arr.length - i - 1; j++)
13             {
14                 if(arr[j] > arr[j+1])
15                 {
16                     int temp = arr[j];
17                     arr[j] = arr[j+1];
18                     arr[j+1] = temp;
19                     swapped = true;
20                 }
21             }
22             if(!swapped)
23             {
24                 break;
25             }
26         }
27     }
28 }

```

Figure 11 Code 6.5

Hàm main để đọc các giá trị của mảng và in ra màn hình các kết quả yêu cầu :

```

1 public static void main(String args[])
2 {
3     Scanner sc = new Scanner(System.in);
4     int sum = 0;
5     float average = 0;
6     System.out.println("Nhap so luong phan tu: ");
7     int size = sc.nextInt();
8     int[] arr = new int[size];
9
10    System.out.println("Nhap lan luot cac phan tu cua mang: ");
11    for(int i = 0; i < size; i++)
12    {
13        arr[i] = sc.nextInt();
14        sum += arr[i];
15    }
16    sc.close();
17    average = (float)sum / (float)arr.length;
18    bubbleSort(arr);
19    System.out.println("Mang duoc sap xep la: " + Arrays.toString(arr));
20    System.out.println("Gia tri trung binh cua mang duoc sap xep la: " + average);
21    System.out.println("Tong cua cac phan tu trong mang: " + sum);
22 }
23 }
24

```

Chạy:

Test 1:

```
Nhap so luong phan tu:
4
Nhap lan luot cac phan tu cua mang:
10
20
50
1
Mang duoc sap xep la: [1, 10, 20, 50]
Gia tri trung binh cua mang duoc sap xep la: 20.25
Tong cua cac phan tu trong mang: 81
```

Test 2:

```
Nhap so luong phan tu:
5
Nhap lan luot cac phan tu cua mang:
-1
-2
10
30
-100
Mang duoc sap xep la: [-100, -2, -1, 10, 30]
Gia tri trung binh cua mang duoc sap xep la: -12.6
Tong cua cac phan tu trong mang: -63
```

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

```

1  package week1;
2
3  import java.util.Scanner;
4  //Nguyễn Trinh Hoàng Nguyễn 20225656
5  public class bai6_6 {
6      public static void main(String args[])
7      {
8          Scanner sc = new Scanner(System.in);
9
10         System.out.println("Nhap so hang: ");
11         int rows = sc.nextInt();
12         System.out.println("Nhap so cot: ");
13         int columns = sc.nextInt();
14
15         int [][] matrix1 = new int[rows][columns];
16         int [][] matrix2 = new int[rows][columns];
17         int [][] ansMatrix = new int[rows][columns];
18
19         System.out.println("Nhap cac phan tu cua ma tran thu nhat: ");
20         for(int i = 0 ; i<rows ; i++)
21         {
22             for(int j = 0; j<columns ; j++)
23             {
24                 matrix1[i][j] = sc.nextInt();
25             }
26         }
27         System.out.println("Nhap cac phan tu cua ma tran thu hai: ");
28         for(int i = 0 ; i<rows ; i++)
29         {
30             for(int j = 0; j<columns ; j++)
31             {
32                 matrix2[i][j] = sc.nextInt();
33                 ansMatrix[i][j] = matrix1[i][j] + matrix2[i][j];
34             }
35         }
36         System.out.println(" Tong cua 2 ma tran tren la: ");
37         for(int i = 0 ; i<rows ; i++)
38         {
39             for(int j = 0; j<columns ; j++)
40             {
41                 System.out.print(ansMatrix[i][j] + " ");
42             }
43             System.out.println();
44         }
45     }
46 }
47

```

Figure 12 Code 6.6

Chương trình đọc số hàng, số cột của 2 ma trận, lần lượt đọc các phần tử của 2 ma trận và in ra màn hình ma trận kết quả

Chạy :

Test 1:

```
<terminated> Baio_0 [Java Application] C:\Prog
Nhap so hang:
3
Nhap so cot:
3
Nhap cac phan tu cua ma tran thu nhat:
1
2
3
4
5
6
7
8
9
Nhap cac phan tu cua ma tran thu hai:
9
8
7
6
5
4
3
2
1
| Tong cua 2 ma tran tren la:
10 10 10
10 10 10
10 10 10
```

Test 2:

```
Nhap so hang:
2
Nhap so cot:
2
Nhap cac phan tu cua ma tran thu nhat:
1
2
3
4
Nhap cac phan tu cua ma tran thu hai:
-1
-2
-3
-3
Tong cua 2 ma tran tren la:
0 0
0 1
```