Lab 01: Environment Setup and Java Basics

2.2.1 Write, compile the first Java application:

Code:

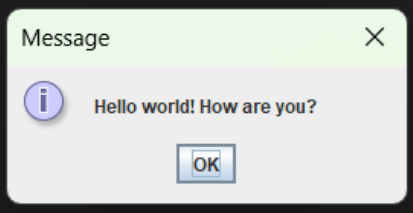
```java
public class HelloWorld{
    public static void main (String args[]){
        System.out.println("Xin chao \n cac ban");
        System.out.println("Hello \n World");
    }
}
```

Kết quả:

```
Received Output:                    Set  Copy
Xin chao
 cac ban
Hello
 World
```

2.2.2 Write, compile the first dialog Java program

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

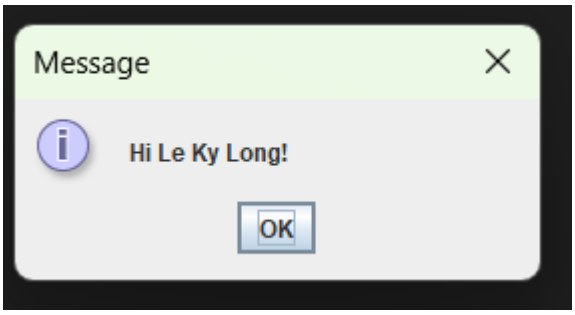


2.2.3 Write, compile the first input dialog Java application

Code:

```java
import javax.swing.JOptionPane;
public class HelloNameDialog{
    public static void main(String[] args){
        String result;
        result = JOptionPane.showInputDialog("Please enter your name:");
        JOptionPane.showMessageDialog(null,"Hi " + result + "!");
        System.exit(0);
    }
}
```

Kết quả:

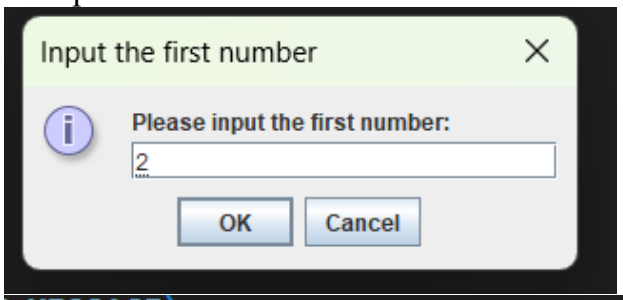


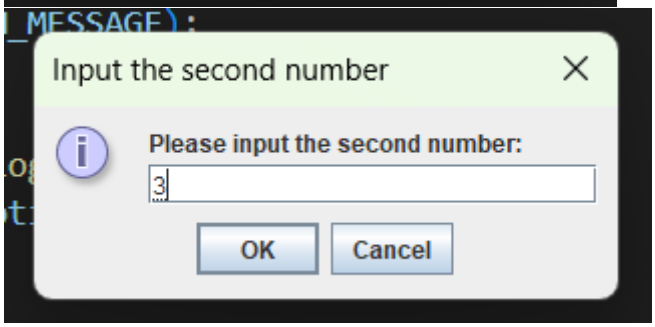
2.2.4 Write, compile, and run the following example:

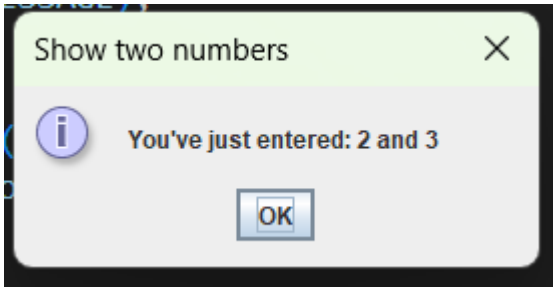
Code:

```
1   import javax.swing.JOptionPane;
2   public class ShowTwoNumbers {
3       public static void main(String[] args){
4           String strNum1, strNum2;
5           String strNotification = "You've just entered: ";
6
7           strNum1 = JOptionPane.showInputDialog(null,
8               "Please input the first number: ", "Input the first number",
9               JOptionPane.INFORMATION_MESSAGE);
10          strNotification += strNum1 + " and ";
11
12          strNum2 = JOptionPane.showInputDialog(null,
13              "Please input the second number: ", "Input the second number",
14              JOptionPane.INFORMATION_MESSAGE);
15          strNotification += strNum2;
16
17          JOptionPane.showMessageDialog(null, strNotification,
18              "Show two numbers", JOptionPane.INFORMATION_MESSAGE);
19
20          System.exit(0);
21      }
22  }
23
```

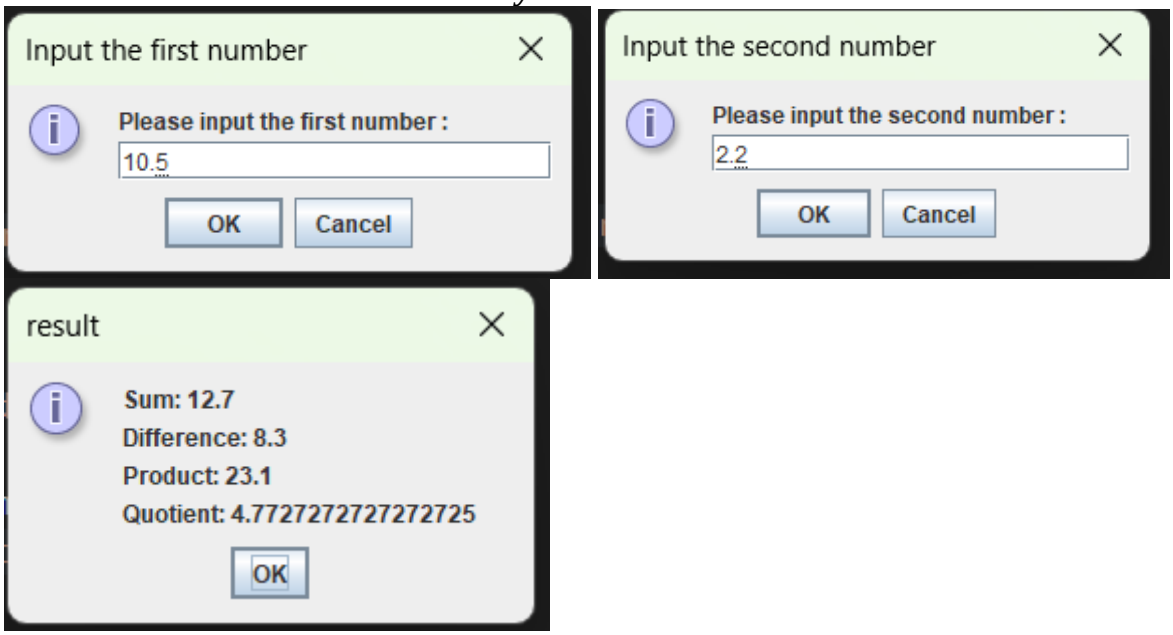
Kết quả:







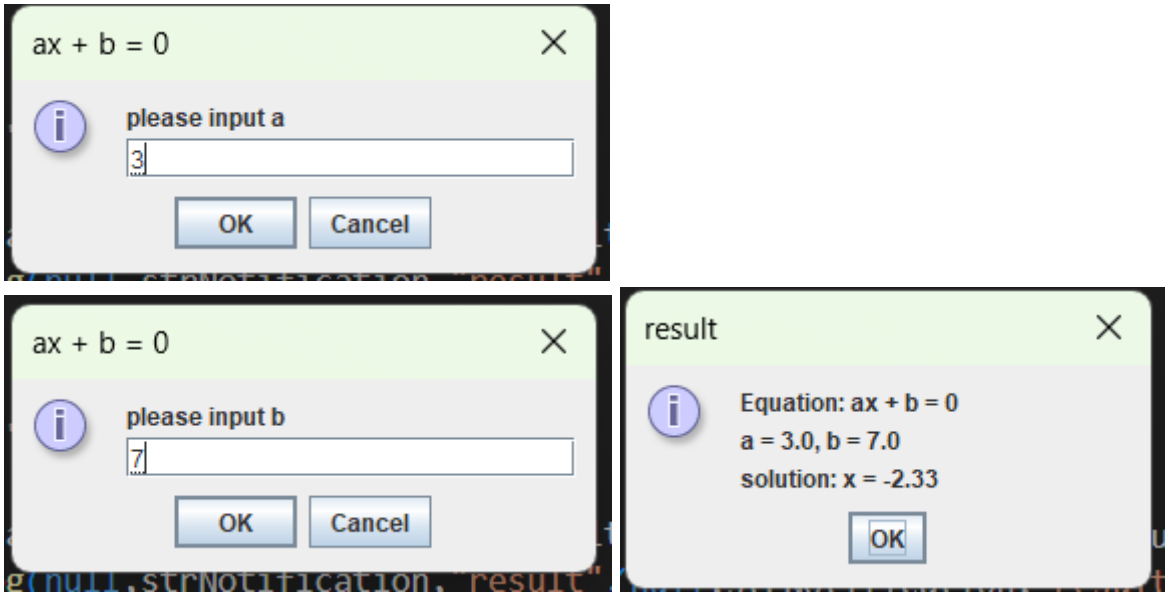
2.2.5 *Write a program to calculate sum, difference, product, and quotient of 2 double numbers which are entered by users.*



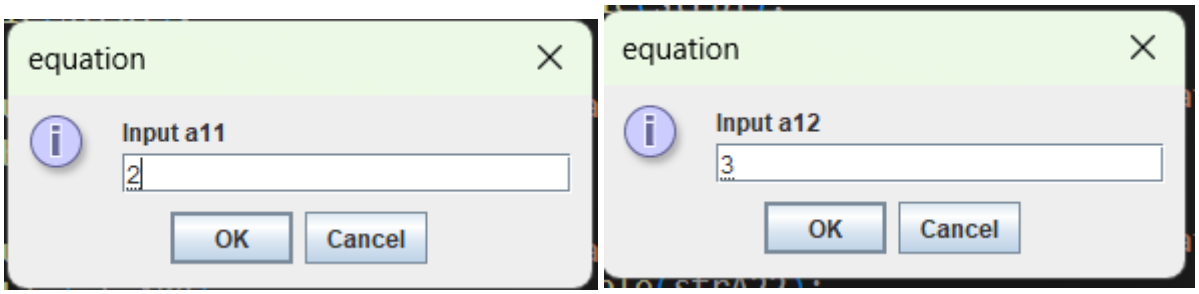
2.2.6 *Write a program to solve:*

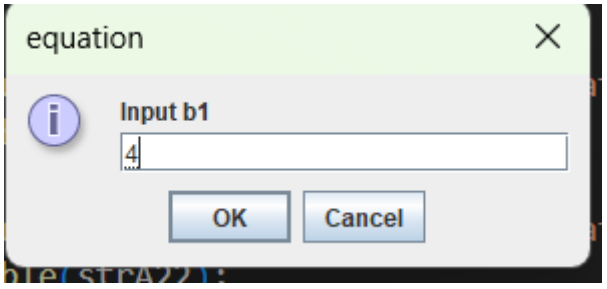
For simplicity, we only consider the real roots of the equations in this task.

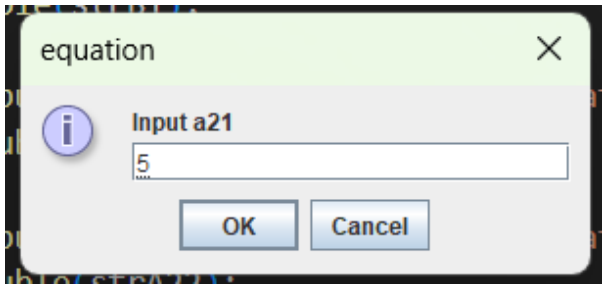
- **The first-degree equation (linear equation) with one variable**

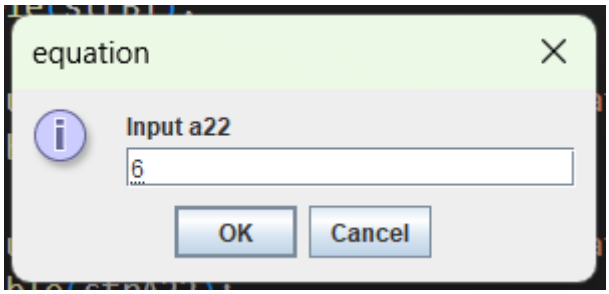


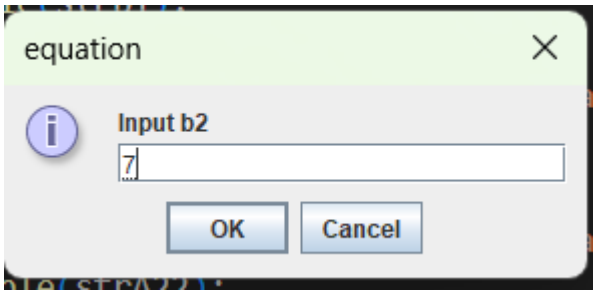
- **The system of first-degree equations (linear system) with two variables**

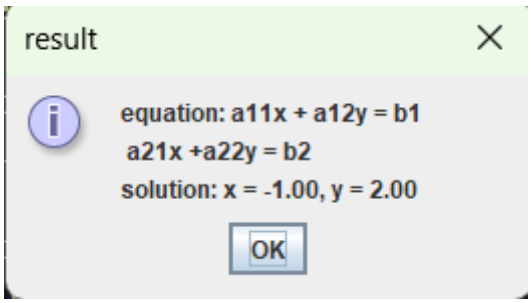




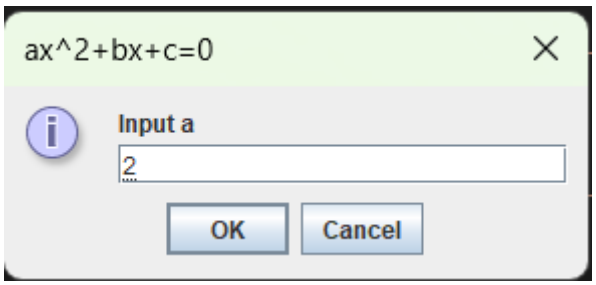


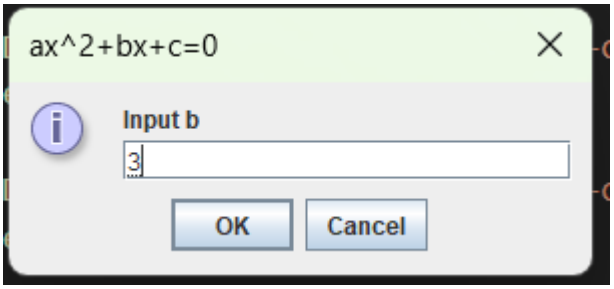


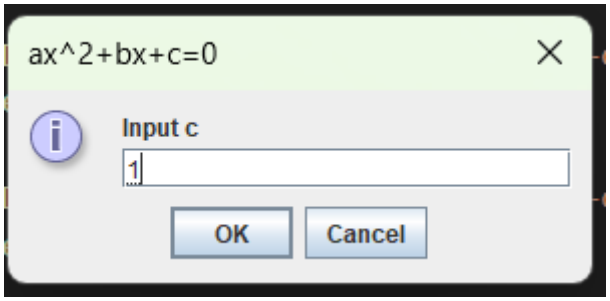


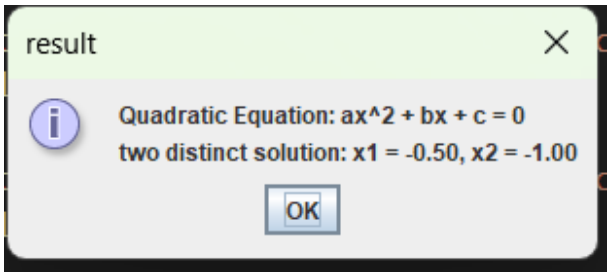


- **The second-degree equation with one variable**

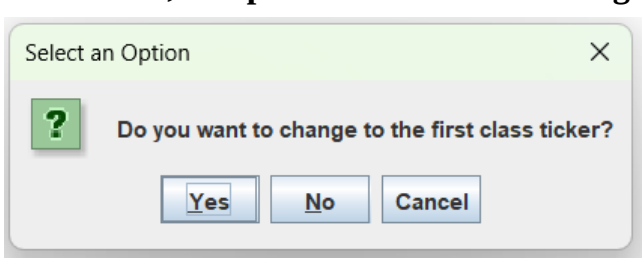


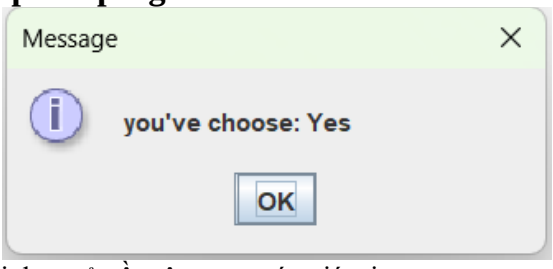






6.1 Write, compile and run the ChoosingOption program:





Trong Java, phương thức JOptionPane.showConfirmDialog trả về một trong các giá trị sau:

- JOptionPane.YES_OPTION (0) → Khi chọn **Yes**
- JOptionPane.NO_OPTION (1) → Khi chọn **No**
- JOptionPane.CANCEL_OPTION (2) → Khi chọn **Cancel** hoặc đóng hộp thoại

Code của bạn chỉ kiểm tra option == JOptionPane.YES_OPTION, tức là nếu không phải **Yes**, thì mặc định sẽ là **No**.
Tuy nhiên, nếu người dùng nhấn **Cancel**, giá trị option sẽ là JOptionPane.CANCEL_OPTION (2), nhưng vì bạn không kiểm tra trường hợp này, nó sẽ rơi vào mặc định "No".

Cách tùy chỉnh các tùy chọn (ví dụ: chỉ có "Yes" và "No")

Có thể sử dụng showOptionDialog và truyền một mảng các tùy chọn mong muốn.

```
import javax.swing.JOptionPane;

public class CustomOptionPane {
    public static void main(String[] args) {
        Object[] options = { "Yes", "No" };
        int choice = JOptionPane.showOptionDialog(
            null,
            "Do you want to proceed?",
            "Custom Options",
            JOptionPane.DEFAULT_OPTION,
            JOptionPane.QUESTION_MESSAGE,
            null,
            options,
            options[0]
        );

        JOptionPane.showMessageDialog(null, "You chose: " + options[choice]);
    }
}
```

6.2 Write a program for input/output from keyboard

```
what's your name?
Le Ky Long
How old are you?
19
How tall are you (m)?
1.73
Mrs/Ms. Le Ky Long, 19 years old. Your height is 1.73.
```

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

```
Enter the height of the triangle:
3
  *
 ***
*****
```

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.

```
Enter a year: 2025
Enter a month: 3
The number of days is: 31
```

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

```
Enter the number of elements in the array: 4
Enter 4 numbers:
2
7
6
4
Original array: [2, 7, 6, 4]
Sorted array: [2, 4, 6, 7]
Sum: 19
Average: 4.75
```

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

```
Enter the number of rows: 2
Enter the number of columns: 2
Enter elements of first matrix:
matrix1[0][0]: 1
matrix1[0][1]: 2
matrix1[1][0]: 3
matrix1[1][1]: 4
Enter elements of second matrix:
matrix2[0][0]: 5
matrix2[0][1]: 6
matrix2[1][0]: 7
matrix2[1][1]: 8
Result Matrix after addition:
6       8
10      12
```