Topic: Simple Graphic Format Input and Output.

OOP concepts involved: Classes, Objects, Static Methods, Polymorphism.

Programming generic concepts involved: Functions, Variables, Data Types, Arrays, Control Statements, Access Modifiers.

➢ Theoric introduction

JOptionPane Class

The JOptionPane class is used to provide standard dialog boxes such as message dialog box, confirm dialog box and input dialog box. These dialog boxes are used to display information or get input from the user. The JOptionPane class inherits JComponent class.

While the JOptionPane class may appear complex because of a large number of methods, almost all uses of this class are one-line calls to one of the static **showXxxDialog** methods shown below:

Method Name	Description
showConfirmDialog	Asks a confirming question, like yes/no/cancel.
showInputDialog	Prompt for some input.
showMessageDialog	Tell the user about something that has happened.
showOptionDialog	The Grand Unification of the above three.

All dialogs are modal. Each **showXxxDialog** method blocks the caller until the user's interaction is complete.

➢ Statement

Use the static methods ***showXxxDialog*** of the JOptionPane class for the implementation of a simple calculator that can perform addition, subtraction, multiplication, and division based on two operands (either integers or float numbers).

➢ Program Code

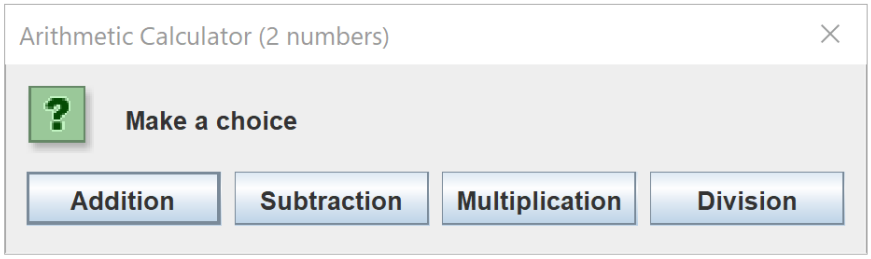
Calculator.java

```
import javax.swing.JOptionPane;

public class Calculator {

	public static void main(String[] args) {
		String[] options = { "Addition", "Subtraction", "Multiplication",
"Division" };

		int index = JOptionPane.showOptionDialog(null, "Make a choice",
"Arithmetic Calculator (2 numbers)",
				JOptionPane.DEFAULT_OPTION, JOptionPane.QUESTION_MESSAGE,
null, options, options[0]);

		float num1 = Float.parseFloat(JOptionPane.showInputDialog(null, "First
Number: "));
		float num2 = Float.parseFloat(JOptionPane.showInputDialog(null,
"Second Number: "));

		float result = calculator(index, num1, num2);

		JOptionPane.showMessageDialog(null, options[index] + " between " +
num1 + " and " + num2 + " = " + result,
				options[index], JOptionPane.INFORMATION_MESSAGE);

	}

	public static float calculator(int index, float op1, float op2) {

		switch (index) {
		case 0:
			return op1 + op2; // Addition
		case 1:
			return op1 - op2; // Subtraction
```

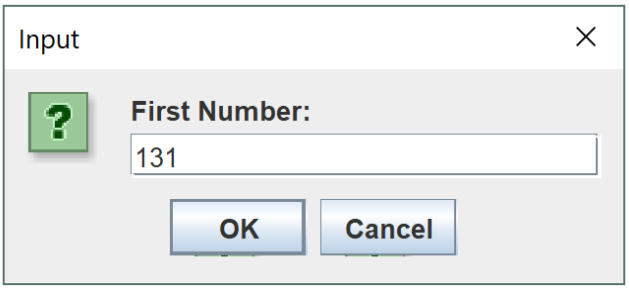
```
                case 2:
                        return op1 * op2; // Multiplication
                case 3:
                        return op1 / op2; // Division

                default:
                        return -1;
                }
        }
}
```

➢ **Program execution**

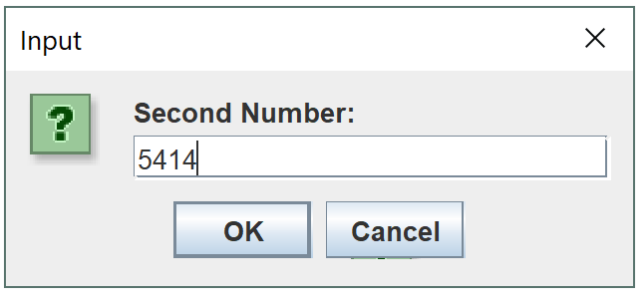
First, we choose to make an addition of 2 numbers.



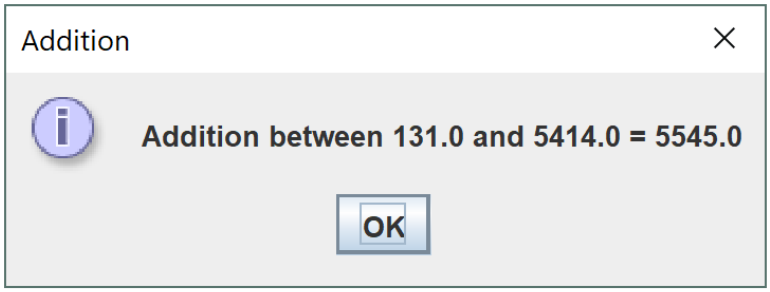
We place the first number for the addition.



We place the second operand for the addition.



Finally, there is shown a message where we can see the result of the operation that we chose (addition).



➢ Conclusions

The JOptionPane class is a great tool for any programmer who wants to show information graphically, as well as to capture information through dialog boxes.

With JOptionPane we have access to a large number of static methods that allow us to perform input and output operations without even creating an instance of the class.

Each method of the JOptionPane class is overloaded, so we can choose to use the one that best suits our needs.