



Elaborando Interfaces

Prof. André Aparecido da Silva

Disponível em: <http://www.oxnar.com.br/2017/3ati>

Aulas 16, 17, e 18

Pensando nesta tela

 **CALCULADORA SIMPLES** — □ ×

Valor 1:

Valor 2:

Resultado: **Aguardando digitação de valores**

+

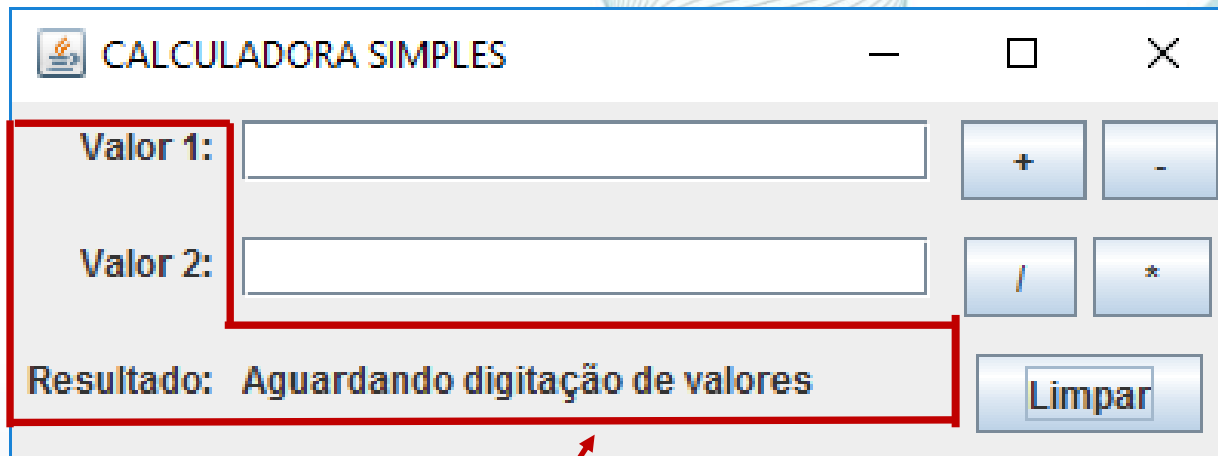
-

/

*

Limpar

As Etiquetas ou rótulos



CALCULADORA SIMPLES

Valor 1:

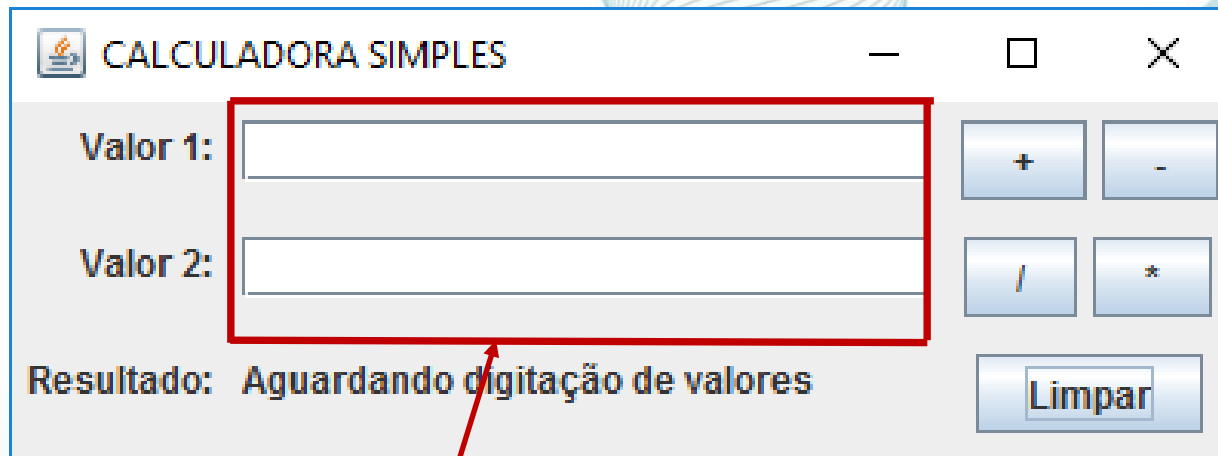
Valor 2:

Resultado: Aguardando digitação de valores

Limpar

JLabel

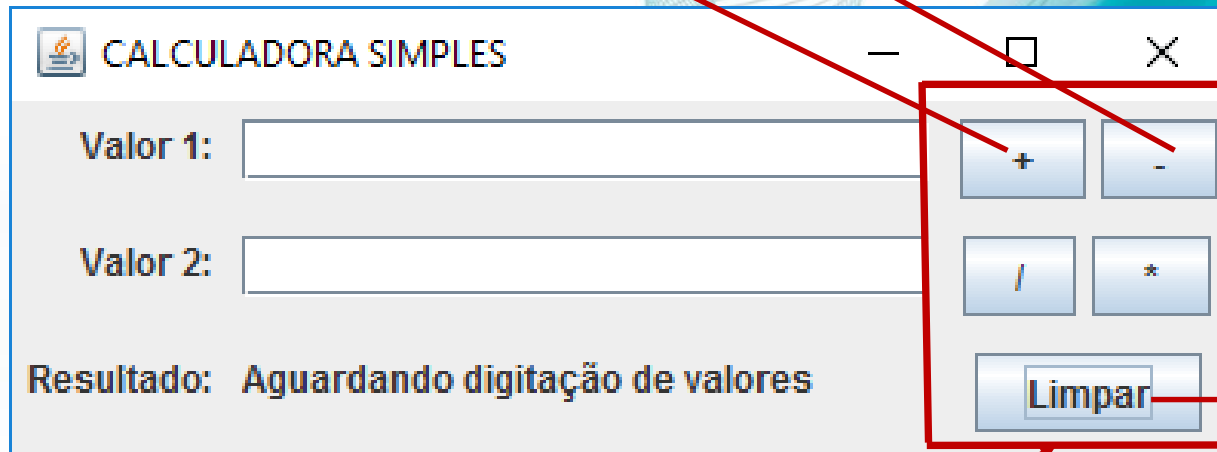
As caixas de textos



JTextField

Pensando nesta tela

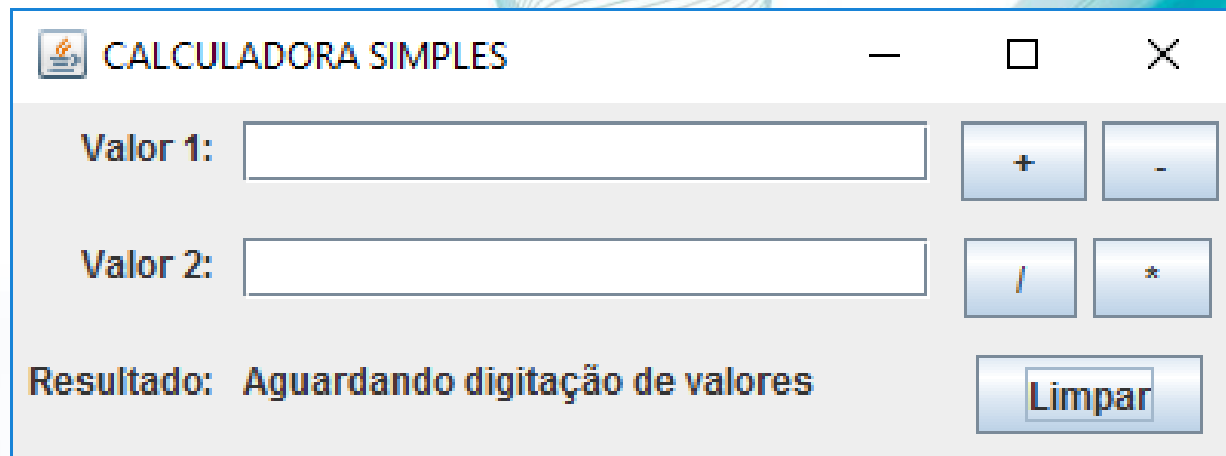
`JButton bt_Somar, bt_Diminuir, bt_Dividir, bt_Multiplicar, bt_Limpar;`



JButton

Pensando nesta tela

Mais a frente no código os botões serão adicionados aos painéis e instanciados.



```
Painel_Leste1.add(bt_Somar = new JButton("+"));
Painel_Leste1.add(bt_Diminuir = new JButton("-"));
Painel_Leste.add(Painel_Leste2 = new JPanel(new FlowLayout(FlowLayout.CENTER)));
Painel_Leste2.add(bt_Dividir = new JButton("/"));
Painel_Leste2.add(bt_Multiplicar = new JButton("*"));
Painel_Leste.add(Painel_Leste3 = new JPanel(new FlowLayout(FlowLayout.CENTER)));
Painel_Leste3.add(bt_Limpar = new JButton("Limpar"));
```

O código – os botões

```
import javax.swing.*;  
import javax.swing.event.*;  
import java.awt.*;  
import java.awt.event.*;
```

```
public class CalculadoraSimples extends JFrame implements ActionListener  
{
```

```
    JPanel Painel_Norte, Painel_Sul, Painel_Centro, Painel_Leste, Painel_Oeste;  
    JPanel Painel_Oeste1, Painel_Oeste2, Painel_Oeste3;  
    JPanel Painel_Leste1, Painel_Leste2, Painel_Leste3;  
    JPanel Painel_Centro1, Painel_Centro2, Painel_Centro3;
```

```
    JButton bt_Somar, bt_Diminuir, bt_Dividir, bt_Multiplicar, bt_Limpar;  
    JLabel lbl_Resultado;  
    JTextField txt_Valor1, txt_Valor2;
```

Note que...

Os objetos são criados aqui mas não são instanciados.

```
public class CalculadoraSimples extends JFrame implements ActionListener
{
    JPanel Painel_Norte, Painel_Sul, Painel_Centro, Painel_Leste, Painel_Oeste;
    JPanel Painel_Oeste1, Painel_Oeste2, Painel_Oeste3;
    JPanel Painel_Leste1, Painel_Leste2, Painel_Leste3;
    JPanel Painel_Centro1, Painel_Centro2, Painel_Centro3;
    JButton bt_Somar, bt_Diminuir, bt_Dividir, bt_Multiplicar, bt_Limpar;
    JLabel lbl_Resultado;
    JTextField txt_Valor1, txt_Valor2;
```

Por que foi feito assim?

O código

```
import javax.swing.event.*;  
import javax.swing.*;  
import java.awt.*;  
import java.awt.event.*;
```

```
public class CalculadoraSimples extends JFrame implements ActionListener  
{
```

```
    JPanel Painel_Norte, Painel_Sul, Painel_Centro, Painel_Leste, Painel_Oeste;  
    JPanel Painel_Oeste1, Painel_Oeste2, Painel_Oeste3;  
    JPanel Painel_Leste1, Painel_Leste2, Painel_Leste3;  
    JPanel Painel_Centro1, Painel_Centro2, Painel_Centro3;
```

```
    JButton bt_Somar, bt_Diminuir, bt_Dividir, bt_Multiplicar, bt_Limpar;  
    JLabel lbl_Resultado;  
    JTextField txt_Valor1, txt_Valor2;
```

O código

```
import javax.swing.event.*;  
import javax.swing.*;  
import java.awt.*;  
import java.awt.event.*;
```

```
public class CalculadoraSimples extends JFrame implements ActionListener  
{
```

```
    JPanel Painel_Norte, Painel_Sul, Painel_Centro, Painel_Leste, Painel_Oeste;  
    JPanel Painel_Oeste1, Painel_Oeste2, Painel_Oeste3;  
    JPanel Painel_Leste1, Painel_Leste2, Painel_Leste3;  
    JPanel Painel_Centro1, Painel_Centro2, Painel_Centro3;
```

```
    JButton bt_Somar, bt_Diminuir, bt_Dividir, bt_Multiplicar, bt_Limpar;  
    JLabel lbl_Resultado;  
    JTextField txt_Valor1, txt_Valor2;
```

O código

```
import javax.swing.*;  
import javax.swing.event.*;  
import java.awt.*;  
import java.awt.event.*;
```

```
public class CalculadoraSimples extends JFrame implements ActionListener  
{
```

```
    JPanel Painel_Norte, Painel_Sul, Painel_Centro, Painel_Leste, Painel_Oeste;  
    JPanel Painel_Oeste1, Painel_Oeste2, Painel_Oeste3;  
    JPanel Painel_Leste1, Painel_Leste2, Painel_Leste3;  
    JPanel Painel_Centro1, Painel_Centro2, Painel_Centro3;
```

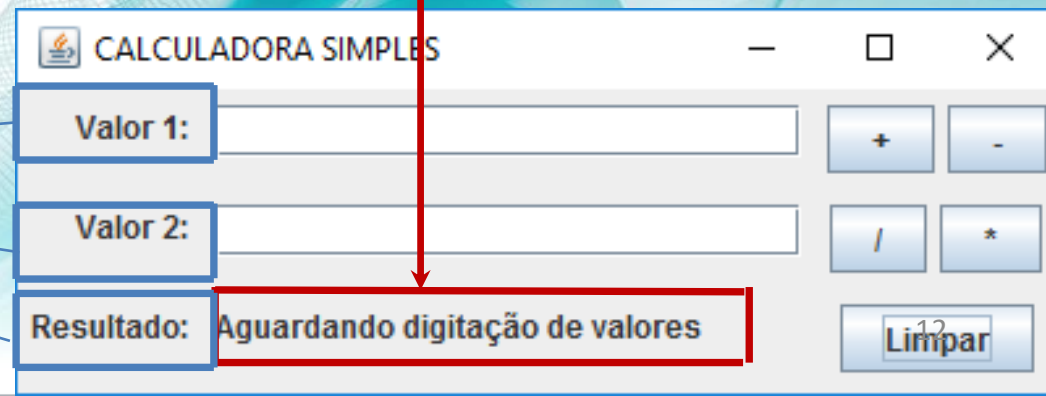
```
    JButton bt_Somar, bt_Diminuir, bt_Dividir, bt_Multiplicar, bt_Limpar;  
    JLabel lbl_Resultado;  
    JTextField txt_Valor1, txt_Valor2;
```

O código

```
public class CalculadoraSimples extends JFrame implements ActionListener
{
    JPanel Painel_Norte, Painel_Sul, Painel_Centro, Painel_Leste, Painel_Oeste;
    JPanel Painel_Oeste1, Painel_Oeste2, Painel_Oeste3;
    JPanel Painel_Leste1, Painel_Leste2, Painel_Leste3;
    JPanel Painel_Centro1, Painel_Centro2, Painel_Centro3;

    JButton bt_Somar, bt_Diminuir, bt_Dividir, bt_Multiplicar, bt_Limpar;
    JLabel lbl_Resultado;
    JTextField txt_Valor1, txt_Valor2;
```

Também são JLabel
mas não serão
declaradas neste
momento



O código

```
public class CalculadoraSimples extends JFrame implements ActionListener  
{
```

```
    JPanel Painel_Norte, Painel_Sul, Painel_Centro, Painel_Leste, Painel_Oeste;  
    JPanel Painel_Oeste1, Painel_Oeste2, Painel_Oeste3;  
    JPanel Painel_Leste1, Painel_Leste2, Painel_Leste3;  
    JPanel Painel_Centro1, Painel_Centro2, Painel_Centro3;
```

```
    JButton bt_Somar, bt_Diminuir, bt_Dividir, bt_Multiplicar, bt_Limpar;  
    JLabel lbl_Resultado;  
    JTextField txt_Valor1, txt_Valor2;
```

→ Por que tantos Paineis?

Aplicação dos Layout

```
public CalculadoraSimples()
```

```
{
```

```
    setLayout(new BorderLayout());
```

```
    getContentPane().add("East", Painel_Leste = new  
JPanel(new GridLayout(3,1)) );
```

```
        Painel_Leste.add(Painel_Leste1 = new JPanel(  
new FlowLayout(FlowLayout.CENTER));
```

```
            Painel_Leste1.add(bt_Somar = new JButton("+"));
```

```
            Painel_Leste1.add(bt_Diminuir = new JButton("-"));
```

```
        Painel_Leste.add(Painel_Leste2 = new JPanel(new  
FlowLayout(FlowLayout.CENTER));
```

```
            Painel_Leste2.add(bt_Dividir = new JButton("/"));
```

```
            Painel_Leste2.add(bt_Multiplicar = new JButton("*"));
```

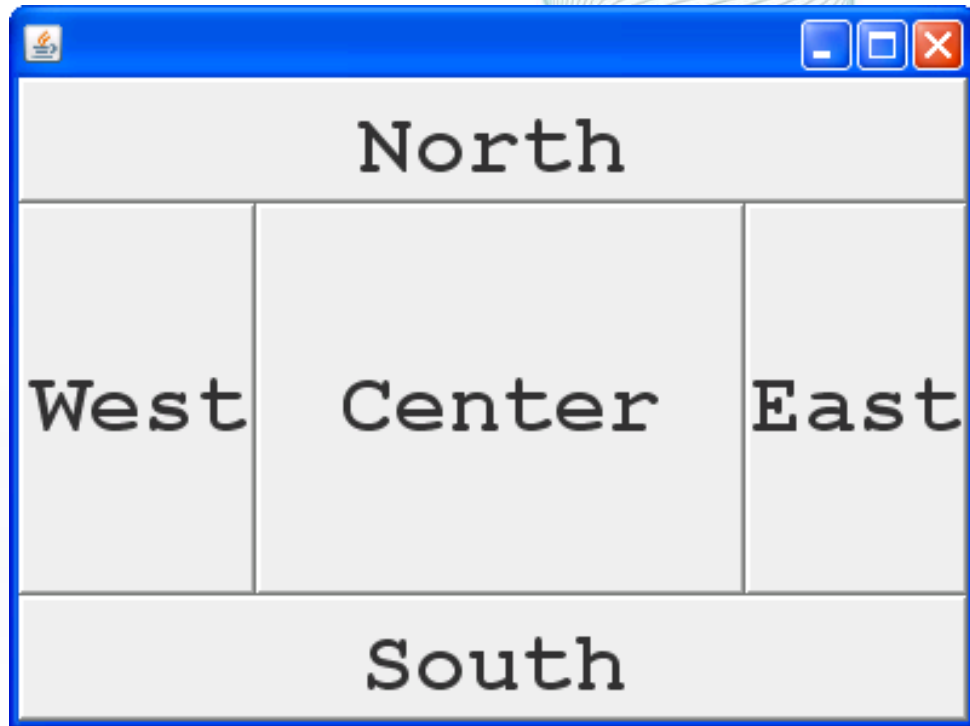
Layout dos Paineis
(JPanel)

Layout do programa
(JFrame)

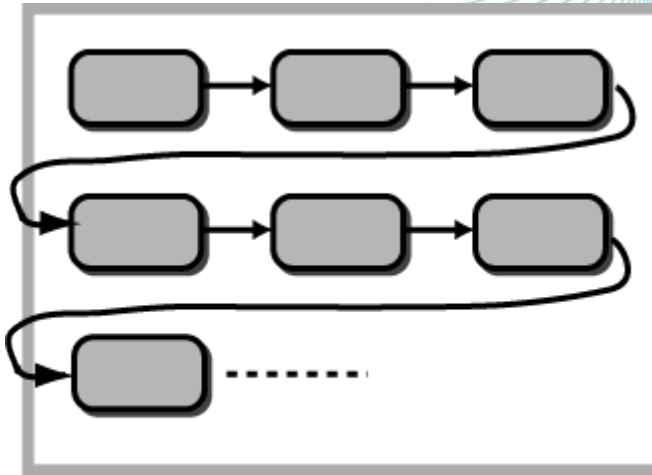
Layouts usados na linguagem Java

- BorderLayout()
- GridLayout(Linhas, Colunas)
- FlowLayout()

BorderLayout



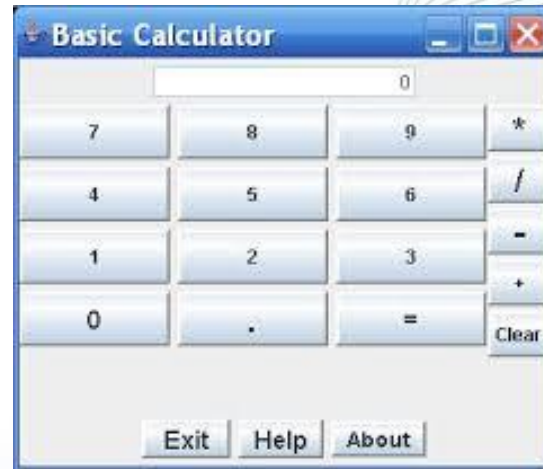
FlowLayout()



Components Added by FlowLayout

```
setLayout(new FlowLayout());  
setLayout(new FlowLayout(FlowLayout.CENTER));  
setLayout(new FlowLayout(FlowLayout.LEFT));  
setLayout(new FlowLayout(FlowLayout.RIGHT));
```

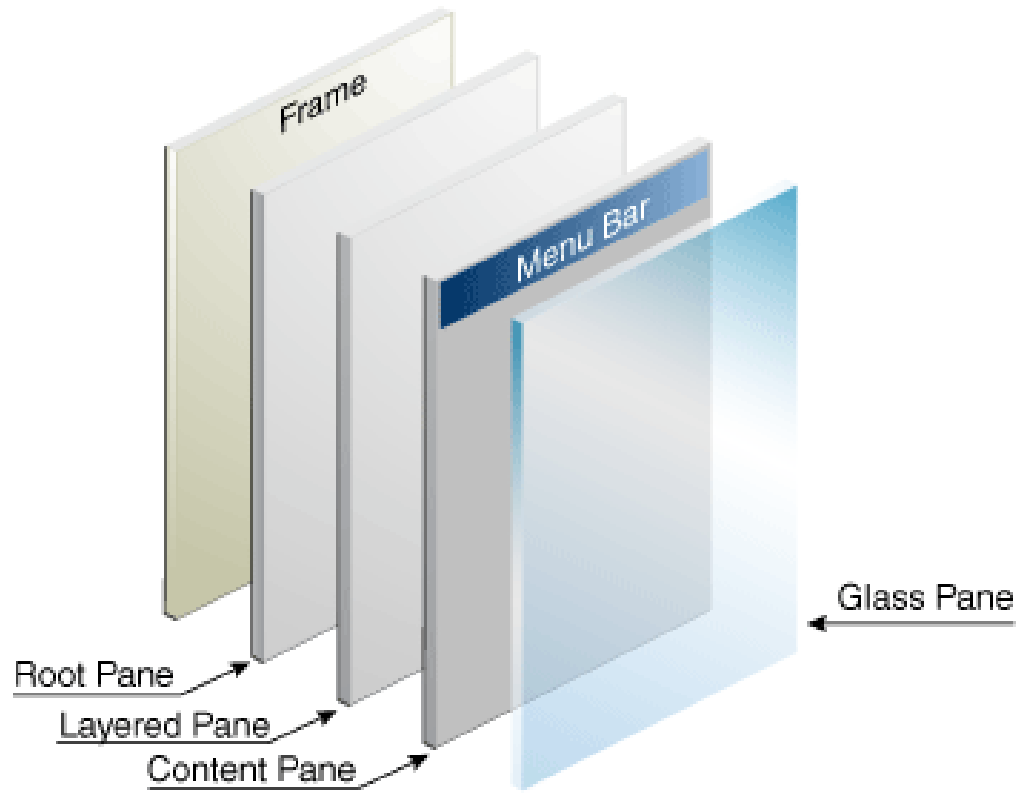
GridLayout(Linhas, Colunas)



Exemplo no nosso programa:

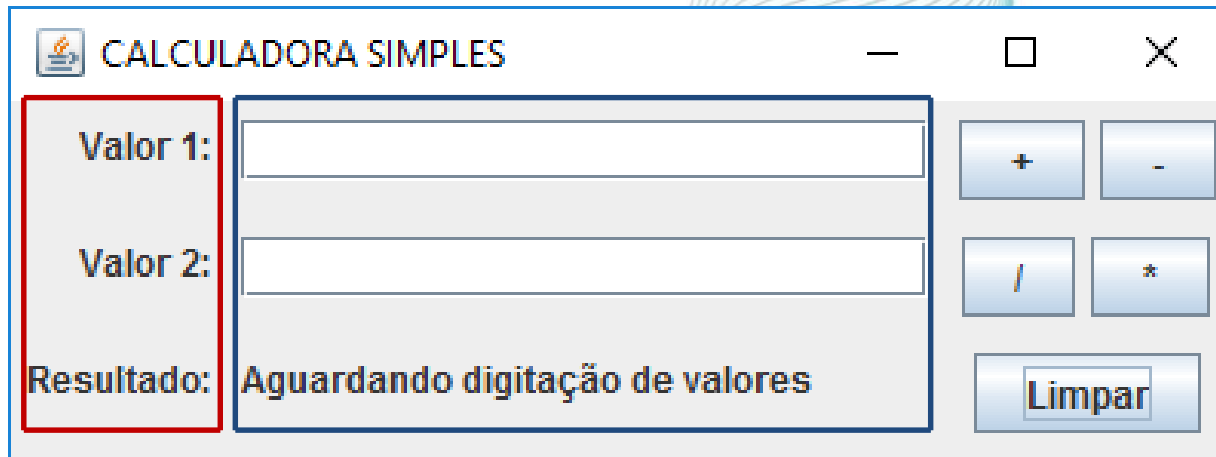
```
getContentPane().add("West", Painei_Oeste = new JPanel(new GridLayout(3, 1)));
```

Para que serve o método `getContentPane()` ?



O `getContentPane()` serve para retornar o painel principal da `JPanel`.

Aplicando o BorderLayout na nossa tela



```
getContentPane().add("West", Painel_Oeste = new JPanel(new GridLayout(3, 1)));  
Painel_Oeste.add(Painel_Oeste1 = new JPanel (new FlowLayout(FlowLayout.RIGHT)));  
Painel_Oeste1.add(new JLabel("Valor 1:"));  
Painel_Oeste.add(Painel_Oeste2 = new JPanel (new FlowLayout(FlowLayout.RIGHT)));  
Painel_Oeste2.add(new JLabel("Valor 2:"));  
Painel_Oeste.add(Painel_Oeste3 = new JPanel (new FlowLayout(FlowLayout.RIGHT)));  
Painel_Oeste3.add(new JLabel("Resultado:"));
```