
IPM 11/12 – P2

Introduction to AWT

Licenciatura em Ciência de Computadores

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Summary

- The Abstract Window Toolkit (AWT)
- Components
- Containers

What is AWT?

- Stands for 'Abstract Window Toolkit'.
- Appeared in Java's first release in 1995.
- Objective:
 - Provide a toolkit for building user-interfaces.
 - Easy creation of windows and graphics.
 - Platform-independence.
- Currently 'replaced' by Swing.
 - But still nice for learning these concepts...

Abstraction layer

- Abstraction of the user-interface.
 - Uses the native interface.
- Problem (or advantage?).
 - GUIs look different on different OSs.
 - Swing draws their own components so they look the same in all OSs.
 - ‘Heavier’ layer of abstraction.
 - Swing looks.... ugly! (at least to some people such as this lecturer).

Some AWT concepts

- **Components**
 - Graphical objects with implemented functionalities.
- **Containers**
 - Can hold other components.
- **Layout Managers**
 - Help containers draw their components.
- **Events**
 - Mechanisms for event processing.

Components

java.awt.Component

A *component* is an object having a graphical representation that can be displayed on the screen and that can interact with the user. Examples of components are the buttons, checkboxes, and scrollbars of a typical graphical user interface.



<http://java.sun.com/j2se/1.4.2/docs/api/java/awt/Component.html>

[Image adapted from Wikipedia]

Components: Label

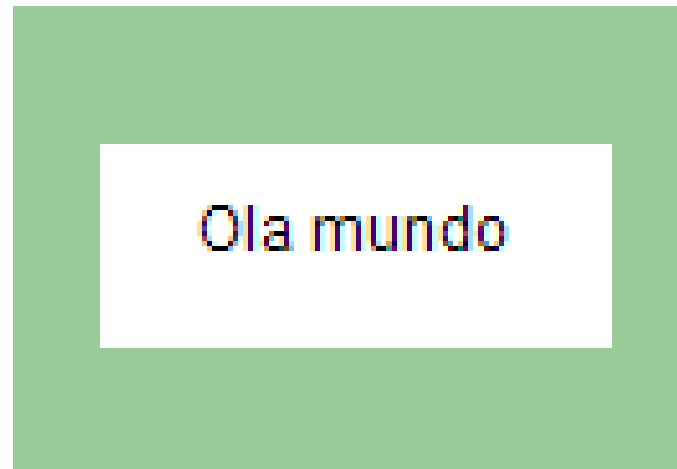
- Provides a way to show written text.

- Properties:

- Text
 - Alignment.

- Sample:

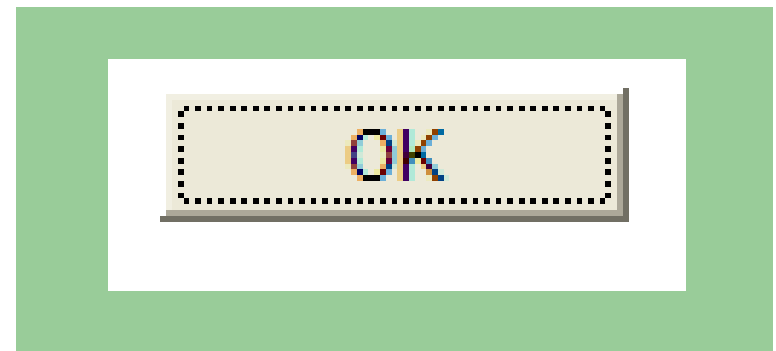
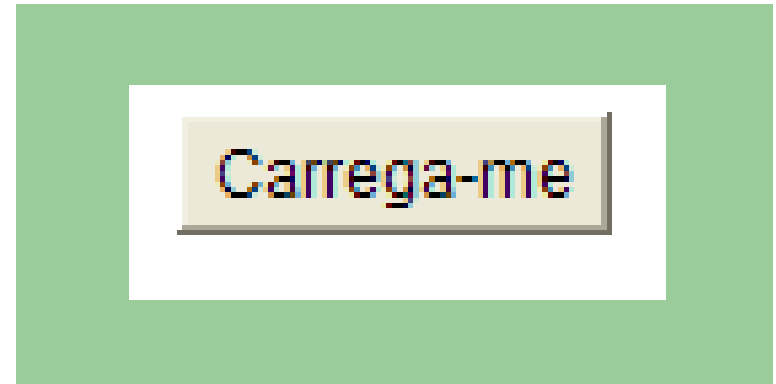
```
label = new Label();  
label.setText("Ola mundo");  
label.setAlignment(Label.CENTER);
```



Components: Button

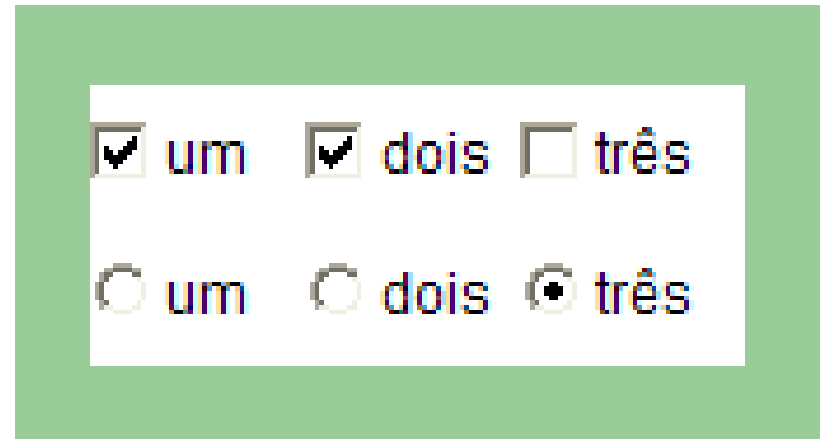
- Easy way to send 'action' commands (*events*)
- Properties:
 - Label
 - ActionCommand
- Sample:

```
button = new Button();  
button.setLabel("Carrega-me");
```



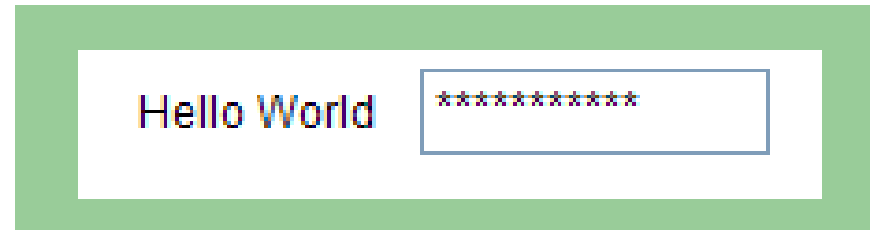
Component: CheckBox

- Implements a *Boolean* decision.
- Implements a choice amongst a group of options.
- Properties
 - Label
 - State
 - CheckboxGroup



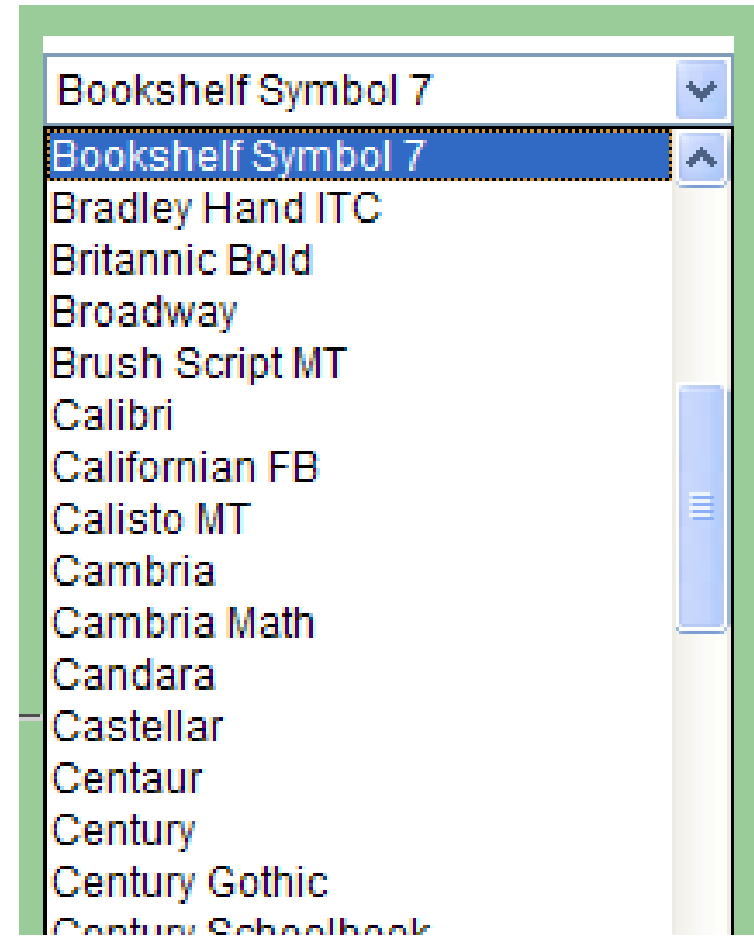
Components: TextComponent

- Allows text input.
- Two options:
 - TextField (one line)
 - TextArea (multi-line)
- Properties:
 - CaretPosition
 - Columns
 - Text
 - SelectionText



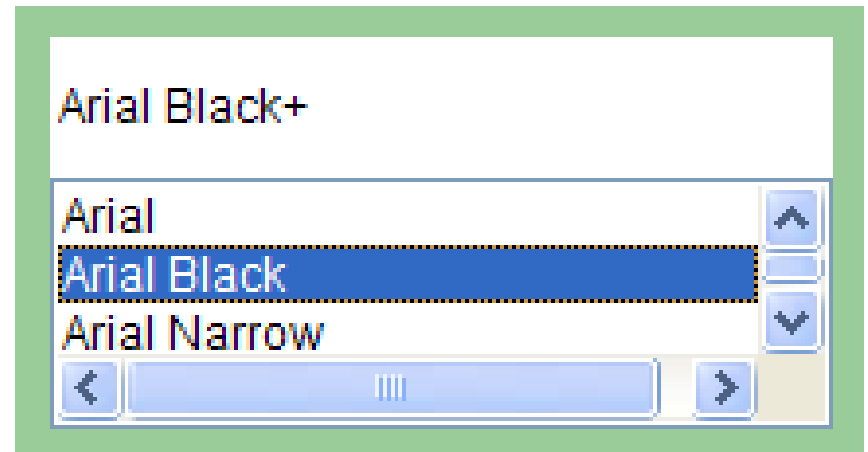
Components: Choice

- Allows the selection of one amongst several options (*combobox*).
- Methods
 - Add
 - Select
 - Remove



Components: List

- Allows single or multiple selection of options from a list.
- Properties
 - MultipleMode
- Methods
 - Add
 - Select
 - Remove
 - MakeVisible



Containers

- **java.awt.Container**

A generic Abstract Window Toolkit(AWT) container object is a **component** that can **contain other AWT components**.

- We can have containers inside containers.
- Helps us create adaptable interfaces.
- Uses LayoutManagers

Types of containers

- **Applet**
 - Top container for embedded graphical applications.
- **Panel**
 - Groups objects in an inner window.
- **Frame**
 - Groups objects in a top window.
- **Window**
 - Top borderless window.
- **Other**
 - ScrollPane
 - Dialog

Resources

1. Developer Resources for Java Technology

<http://java.sun.com/>

2. Essentials of the Java programming language

<http://java.sun.com/developer/onlineTraining/Programming/BasicJava1/>