IPM 13/14 – P2
Introduction to AWT

Licenciatura em Ciência de Computadores

Miguel Tavares Coimbra

U. PORTO FC

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.
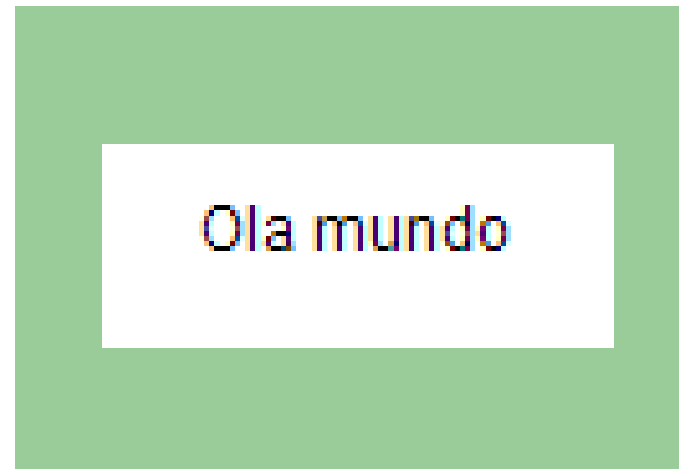

http://java.sun.com/j2se/1.4.2/docs/api/java/awt/Component.html

[Image adapted from Wikipedia]

Components: Label

- Provides a way to show written text.

- Properties:
  - Text
  - Alignment.

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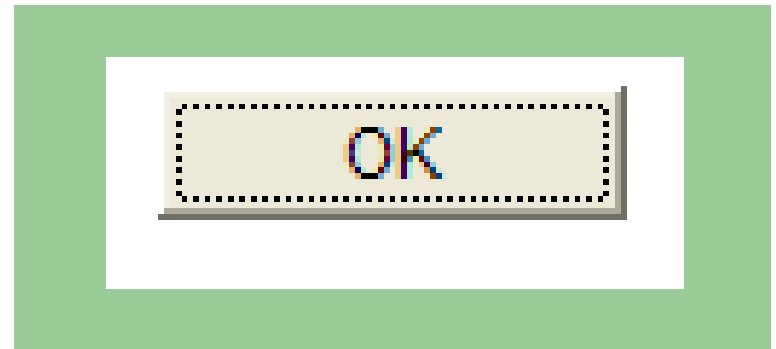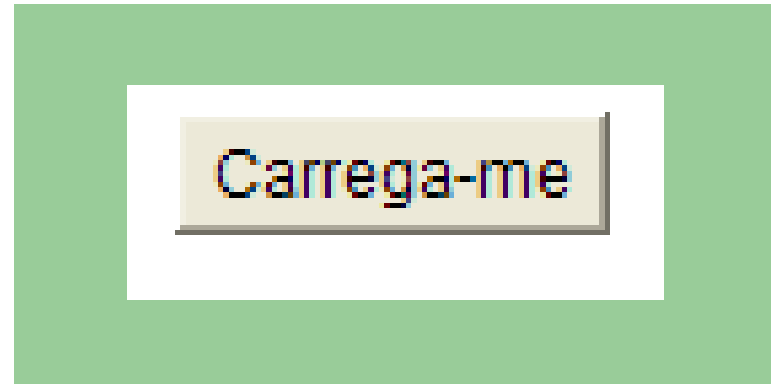
```
label = new Label();
label.setText("Ola mundo");
label.setAlignment(Label.CENTER);
```
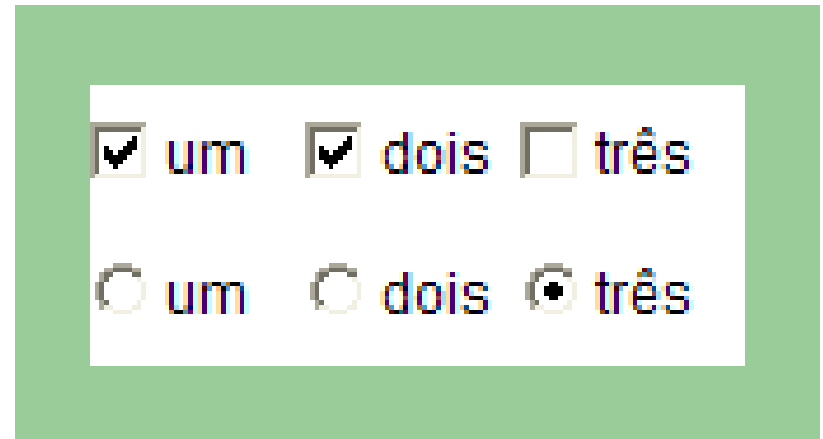

Ola mundo

Components: Button

- Easy way to send 'action' commands (*events*)

- Properties:
  - Label
  - ActionCommand

- Sample:

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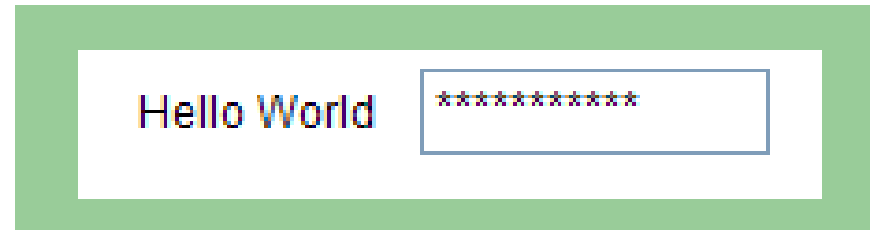 button.setLabel("Carrega-me");

Component: CheckBox

- Implements a *Boolean* decision.

- Implements a choice amongst a group of options.

- Properties
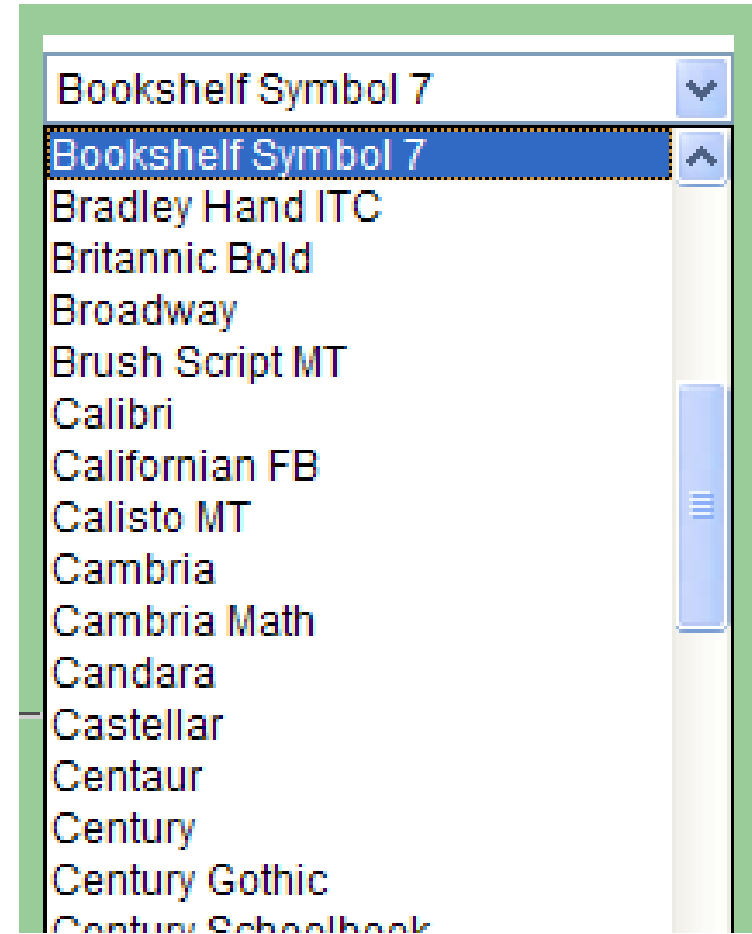 - Label
  - State
  - CheckboxGroup

Components: TextComponent

- Allows text input.

- Two options:
  - TextField (one line)
  - TextArea (multi-line)

- Properties:
  - CaretPosition
  - Columns
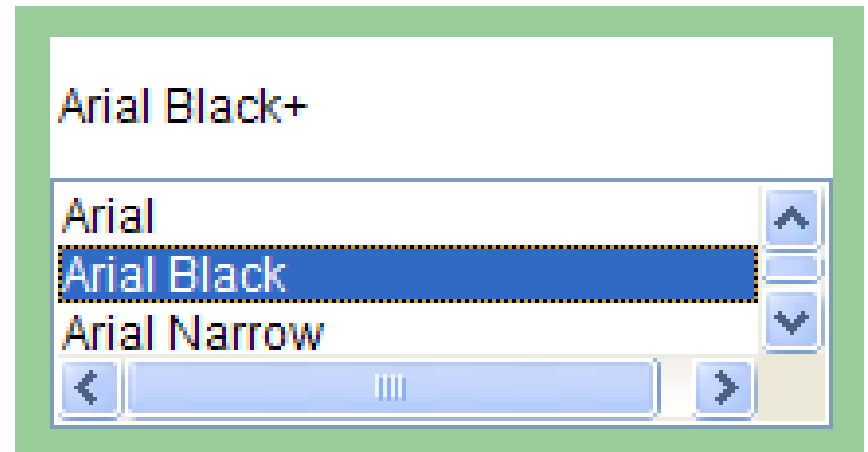 - Text
  - SelectionText

Hello World   **********

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/