



CS Workshop

in

**Domain-Specific Languages
and GUI Design**

Assignments

Learn One 4GL

1

Python
Scala
Haskell

Learn One GUI Toolkit

2

Qt
wxWidgets
Swing
Gtk2

**Implement
a UI Framework**

3

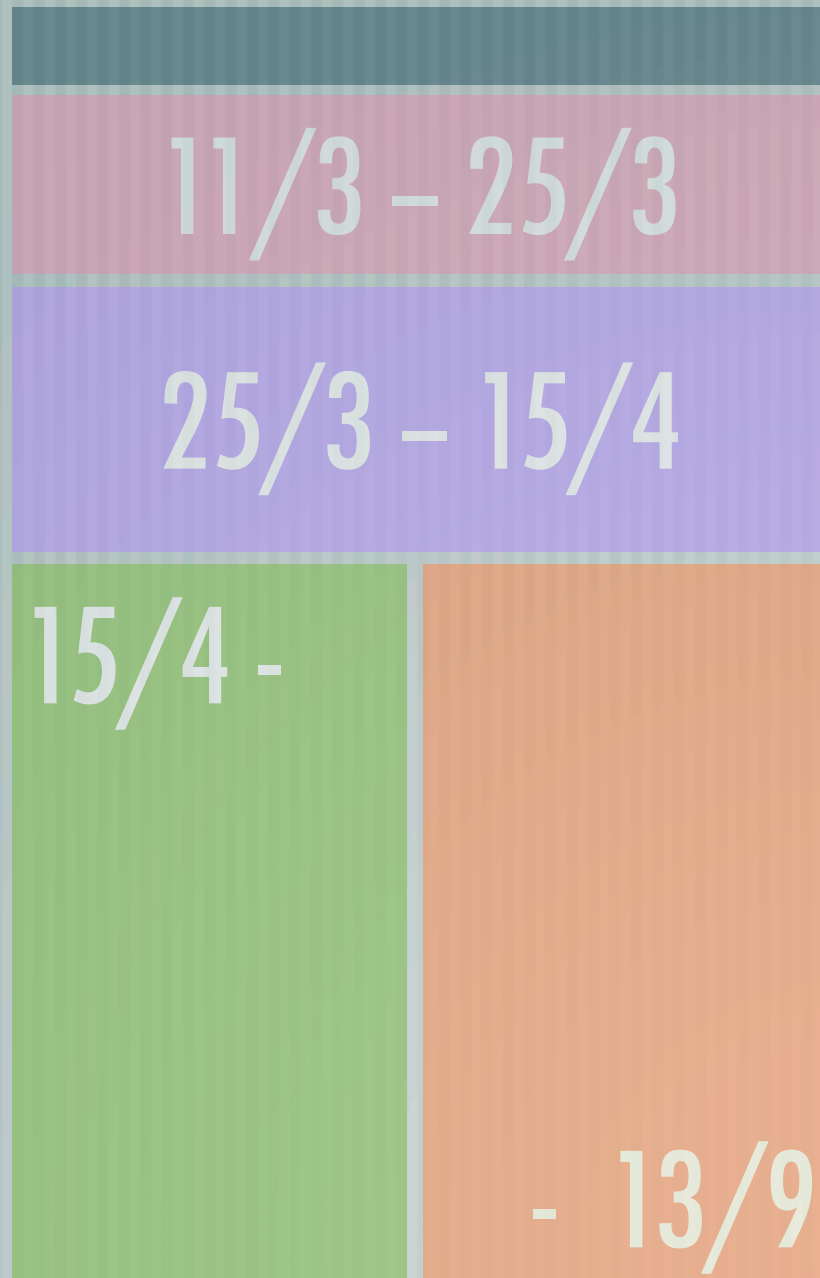
**Implement
One Application**

4

Word Processor
Spreadsheet
Calendar
Mail Client
Web Browser
Instant Messenger

Recommended Schedule

Week 1
Week 2
Week 4
Week 7



Learn One 4GL



Learn One GUI Toolkit



Implement a UI Framework



Implement One Application

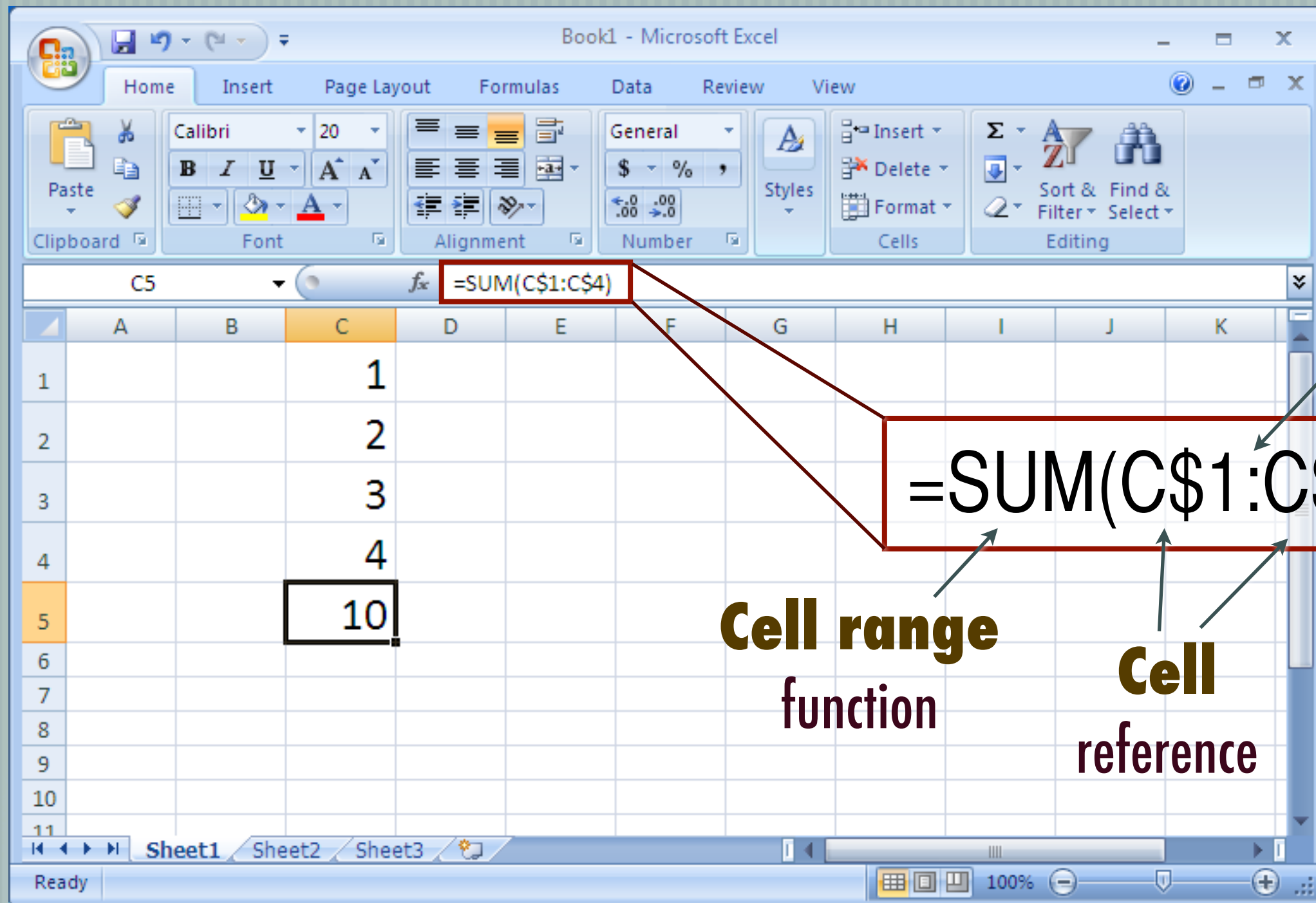


- Team Members
- Language
- Application

What is a DSL



One Very Widely Used DSL



**Range
operator**

**Cell range
function**

**Cell
reference**

**Positioning
modifier**

Our Domain

Graphical User Interface



First tab Second tab

Button Edit/text box

Dropdown/combo box

Check boxes
☒ Checked
☐ Unchecked

Radio buttons
☒ Selected
☐ Unselected

Number edit: 426

Progress bar

Slider

Name	Color	RGB
▼cell1	aqua	#00FFFF
cell2	black	#000000
cell3	blue	#0000FF
cell4	fuchsia	#FF00FF
	gray	#808080
	green	#008000
	lime	#00FF00
	maroon	#800000
	navy	#000080

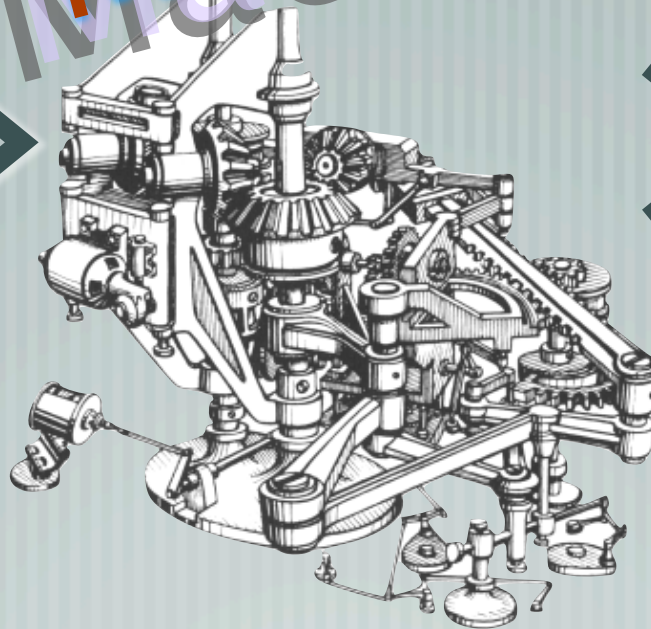
Our Domain

Sketchy
Description

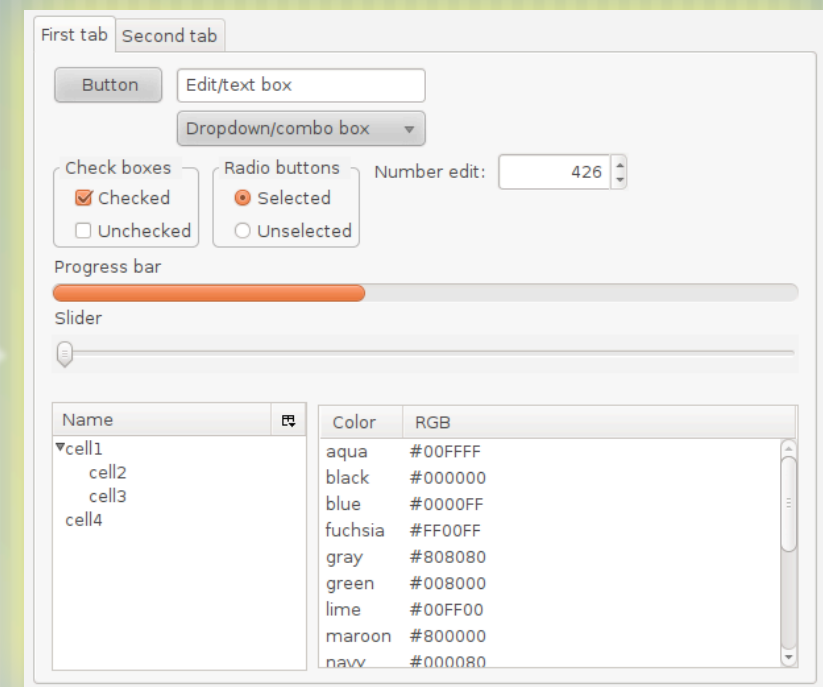


"There is a button at the top-left corner of the window, and next to the button there is a text box. Under the text box there is a multiple selection drop-down list..."

Your
GUI-Kicking
Machine!



Functioning
Program



GUI ANATOMY

Widgets



Ok

Buttons



It's not Ok

Images



Name:

|

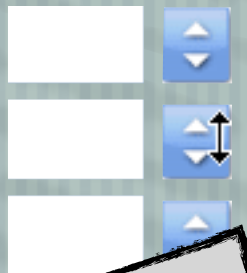
Text Boxes

Drawing Areas



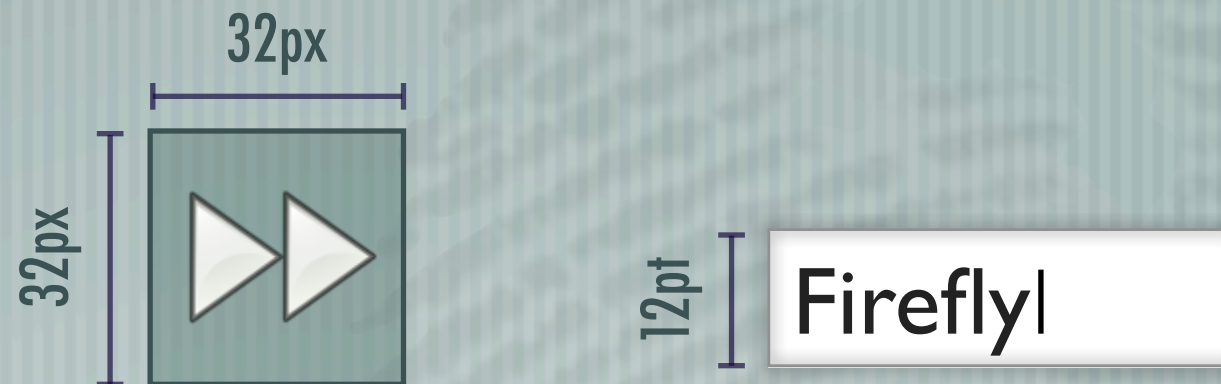
Captions

Scrollers

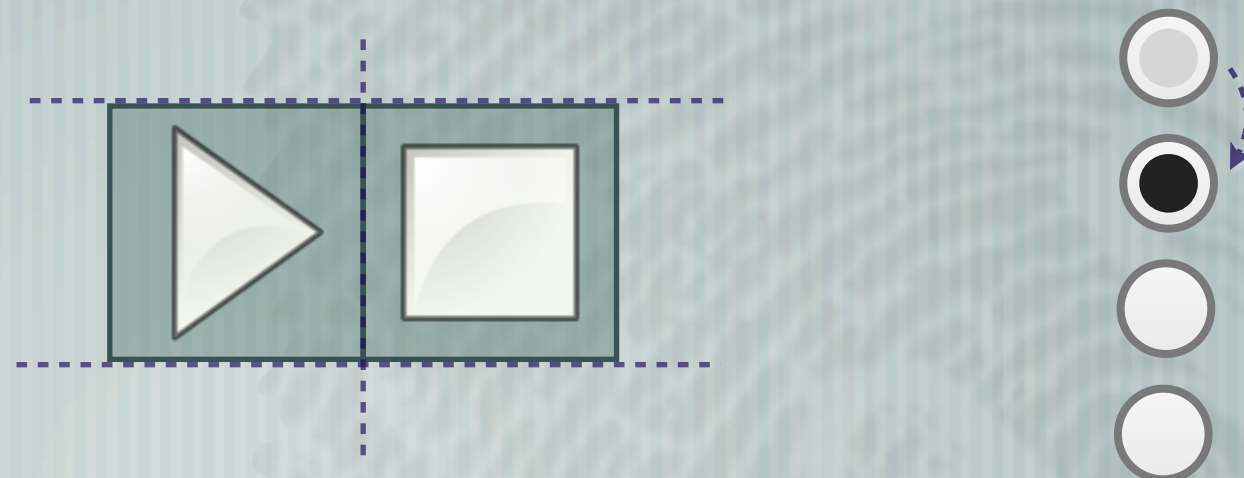


GUI ANATOMY

Geometry

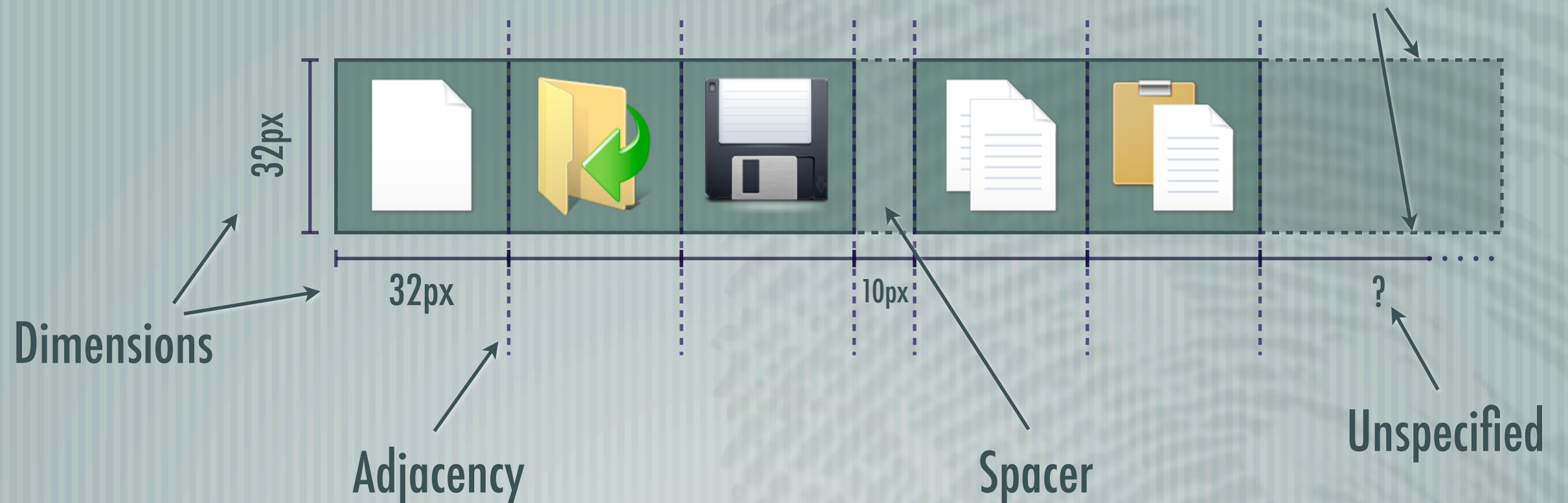


Relationships



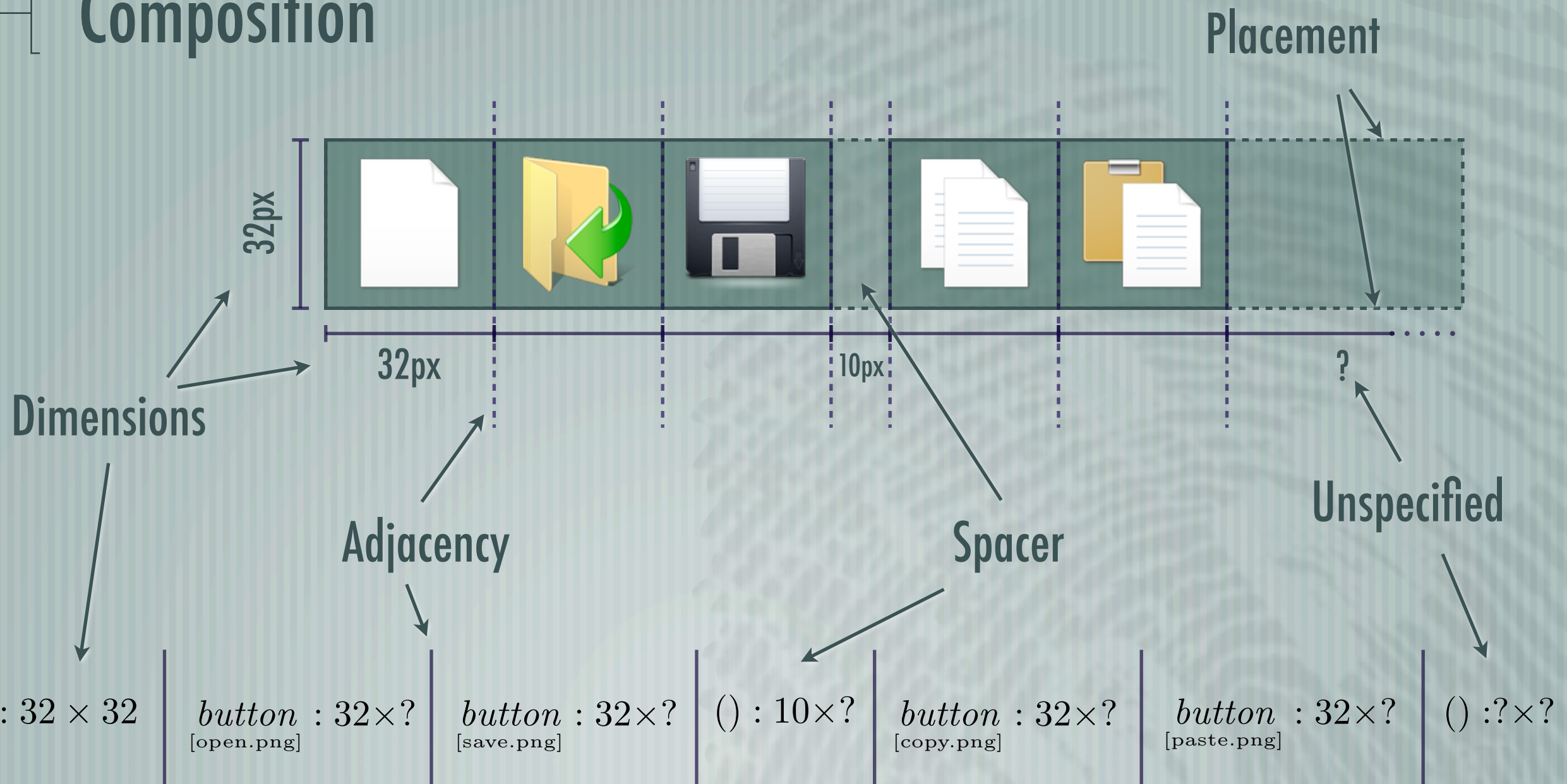
GUI ANATOMY

Composition



GUI ANATOMY

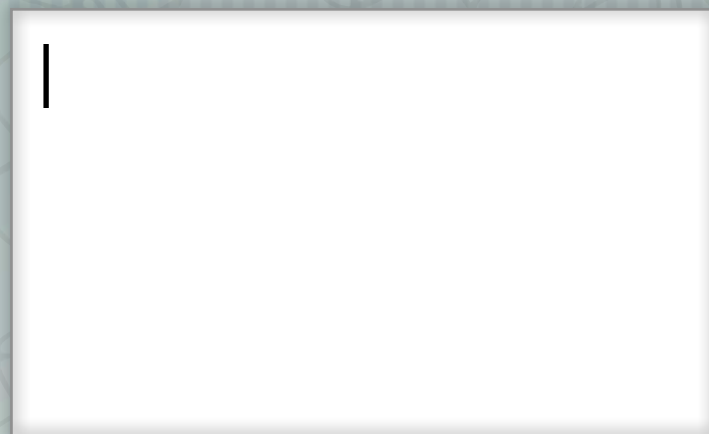
Composition



Toolbar



Text Box



textbox :? × ?



Status: ready

Help

Status Bar

label :? × 20 | *button : 40 × ?*
[Status: ready] [Help]

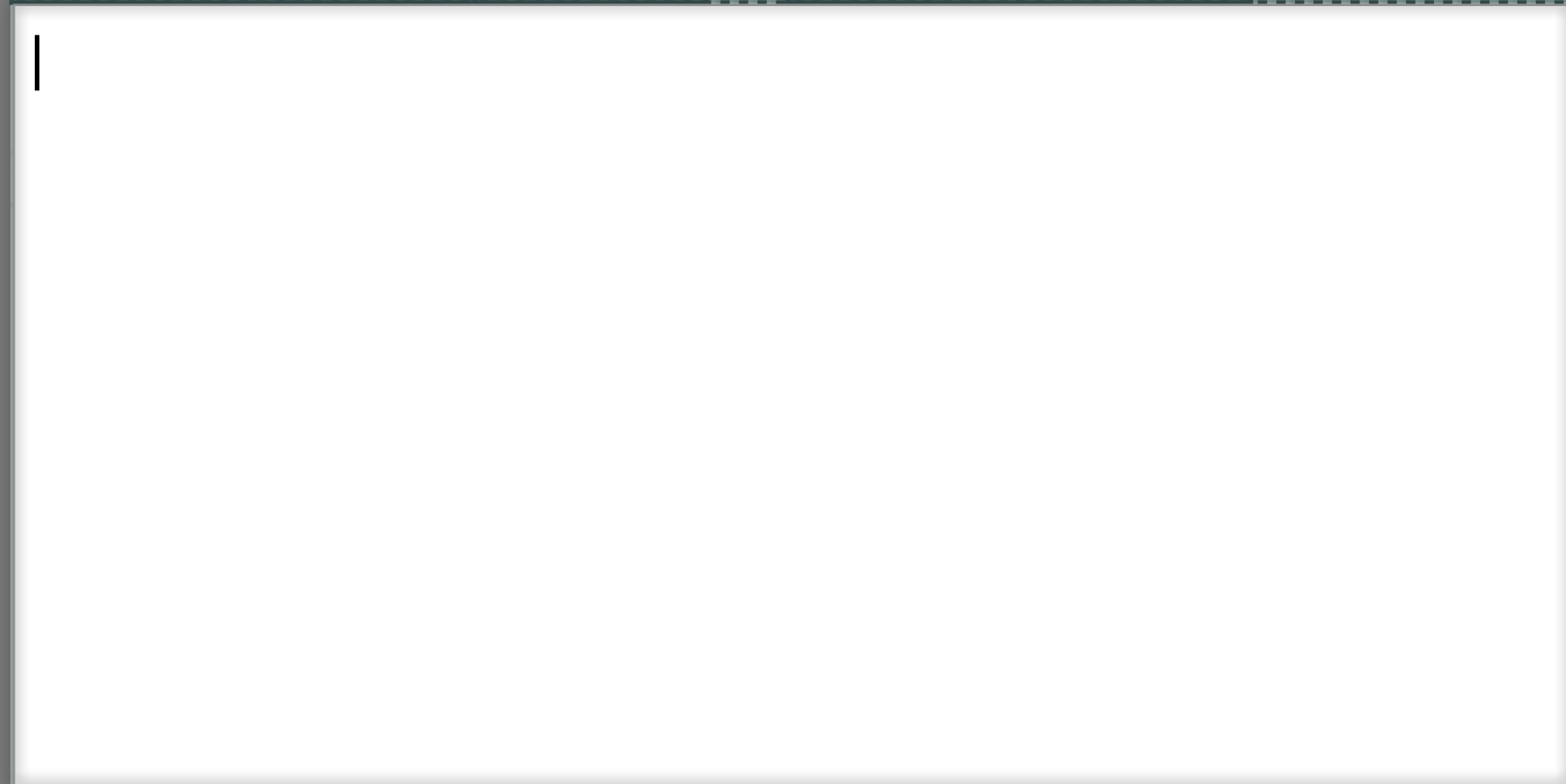
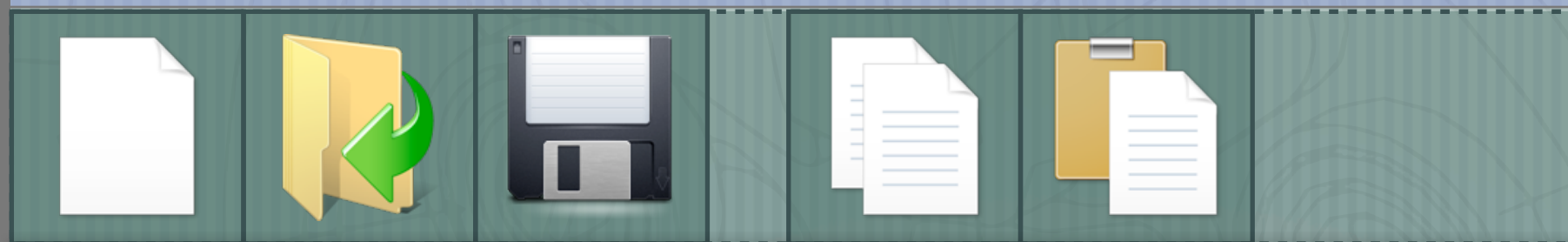
Toolbar

Text Box

Status Bar

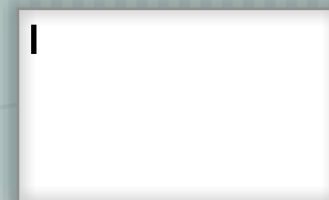


Window



Status: ready

Help



Status: ready

Help

Language Constructs

Iteration

Item #1

Item #2

Item #3

Item #4

Item #5

Item #6

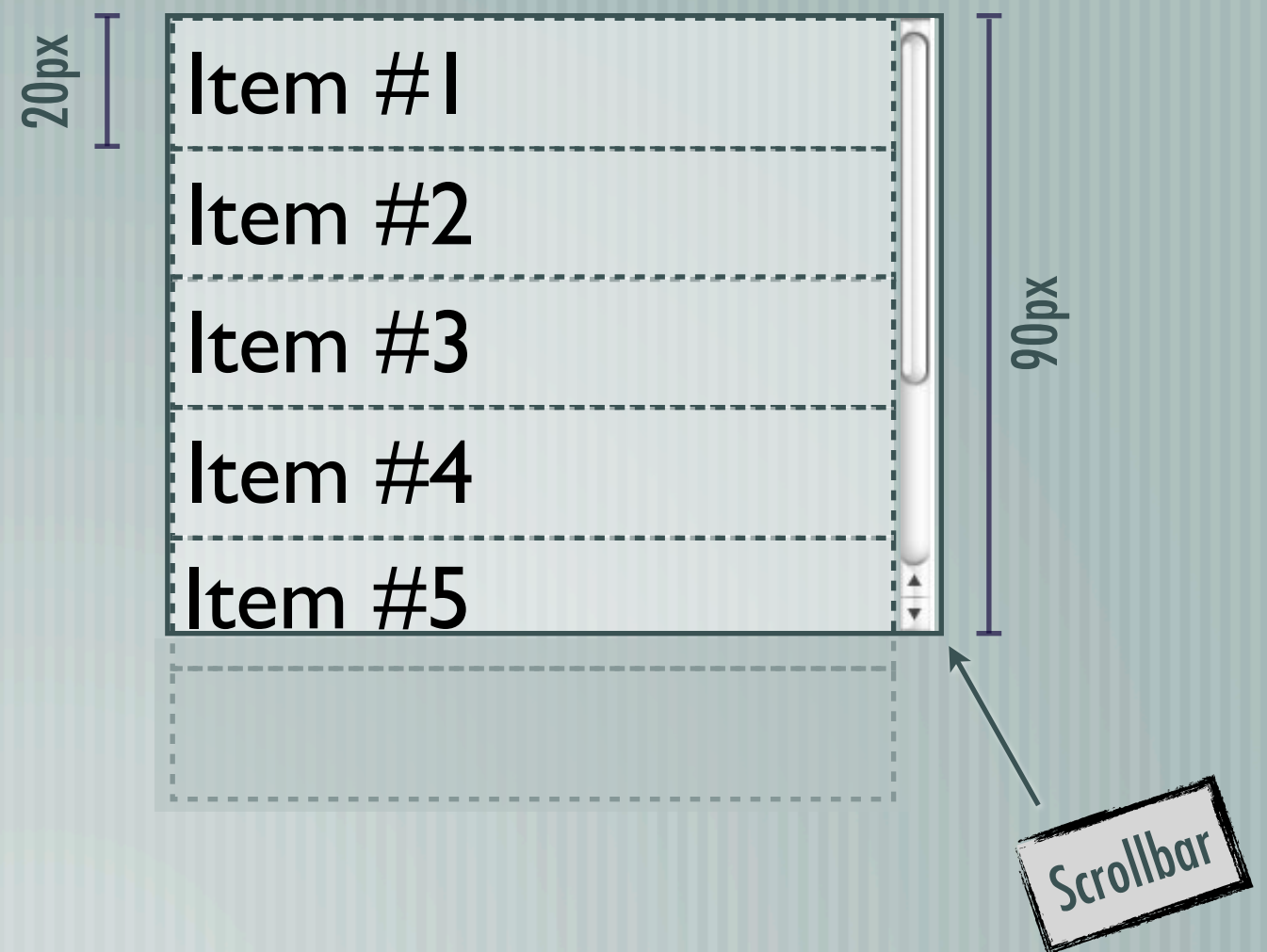
$i = 1..6$

Item # i

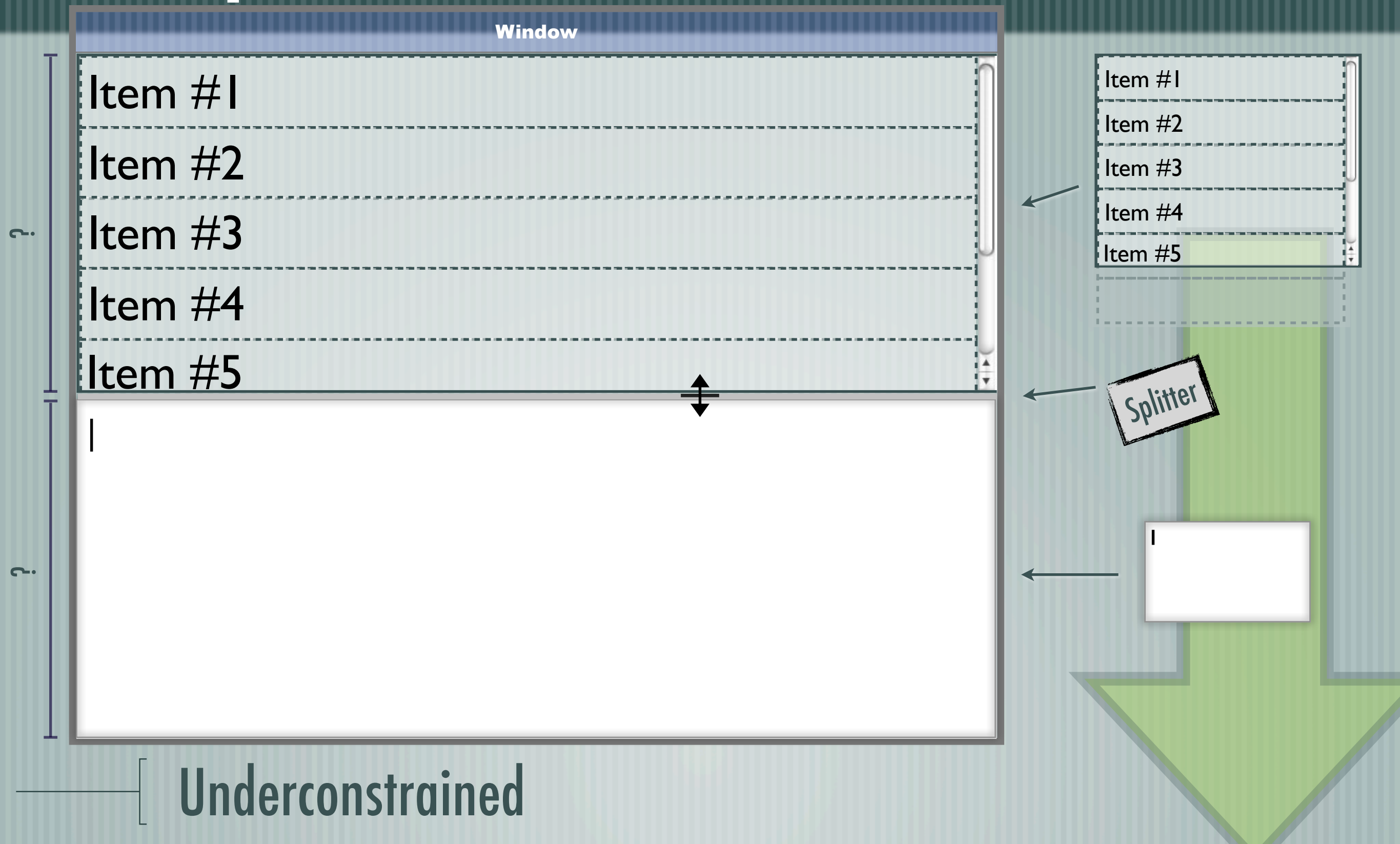


Special Situations to Mind

Overconstrained



Special Situations to Mind



Platforms



Python

- Byte-code Interpreter
- Object-Oriented
- Dynamically Typed
- Strongly Typed

Platforms



Scala

- Scripting Extension to Java
- Object-Oriented/Functional Hybrid
- Statically Typed
- Strongly Typed

Platforms



Haskell

- Compiler+Interpreter
- Functional
- Lazy Evaluation
- Statically Typed
- Extended Type System

Platforms



PyQt4



Swing
SWT



wxHaskell

**giggity
giggity
gui!**

