TkInter

Thomas Schwarz, SJ

GUI

- Graphical User Interface (GUI)
- Event-based programming
  - Users interact by clicking on element
  - Program responds by changing internal state
    - and the **view**

GUI

- Programming task
  - Create a set of widgets
  - Associate widgets to actions
    - Mouse clicks, Keyboard input, Microphone input
- Actions change internal state and the look and sound of application

TkInter

- TkInter is the complete Python GUI
  - IDLE is written with TkInter
- Documentation available via
  - https://wiki.python.org/moin/TkInter
- General tip:
  - Test after each new line as error messages are not existent or too cryptic

First Steps with TkInter

- Creating an app
  - Import `tkinter`
  - Create a root window
  - Call main-loop on it
    - This creates a basic application
    - You can already resize and stop application

First Steps with TkInter

- Two basic set-ups
  - Create an app as a class
  - Create an app calling functions

First Steps with TkInter

```
from tkinter import *

class My_first_App:
    def __init__(self):
        self.top = Tk()
        self.top.mainloop()

mf = My_first_App()
```

```
from tkinter import *

root_window = Tk()
root_window.mainloop()
```

App appears in the styl

First Steps with TkInter

- Populate with widgets
    - Creating the widget
    - Place widget
        - Three methods, which cannot be mixed
            - `pack( )`
                - simplest
            - `grid( )`
                - gives you some control
            - `place( )`
                - gives you a lot of control and work

First Steps with TkInter

- We create a label-widget
  - A field that is immutable
    - Can contain text, images
    - Warning: careful that images are not garbage collected and can no longer be displayed

First Steps with TkInter

```
import tkinter as tk

class My_first_application:
    def __init__(self):
        self.top = tk.Tk()
        self.top.title("My first graphics application")
        self.define_widgets()
        self.top.mainloop()

    def define_widgets(self):
        my_label1 = tk.Label( text='Python', font=('Arial',40))
        my_label1.pack(side='left')
        self.logo = tk.PhotoImage(file='240pxpythonlogo.png')
        my_label2 = tk.Label(image=self.logo)
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First Steps with TkInter

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Import tkinter

First Steps with TkInter

Define a class for the app

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First Steps with TkInter

Initializer

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First Steps with TkInter

Create a window

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Display and start the window

First Steps with TkInter

Write a top-line

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First Steps with TkInter

Traditionally, populate with widgets in its own method

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Create a first label

First Steps with TkInter

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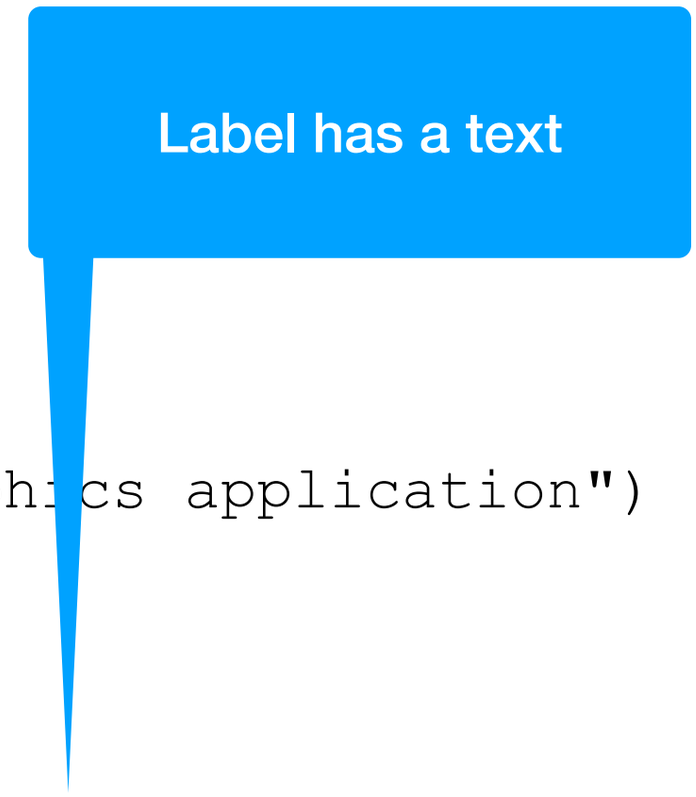

First Steps with TkInter

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Label has a font
Fonts are tuples

First Steps with TkInter

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Creating a widget is not enough, you need to place it

First Steps with TkInter

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The next label has an image

First Steps with TkInter

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We create it with PhotoImage

First Steps with TkInter

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We store the image as a class variable, so that it does not vanish

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Now we create a second label with an image

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And pack it

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And do not forget to