



Information Technology

Year 2020/2021

Introduction to Programming

Programming in Python

Objectives of this module

- Question: I'm not a software engineer! Why am I learning programming?
- Answers:
 1. Helps you train analytical thinking
 2. Software is the language of the world
"In the future, not knowing the language of computers will be as challenging as being illiterate or innumerate are today"
 3. Promotes Computational Thinking
"teaches you how to tackle large problems by breaking them down into a sequence of smaller, more manageable problems"

<https://www.theguardian.com/technology/2014/feb/07/year-of-code-dan-crow-songkick>

Objectives of this module (cont.)

- Q: Why Python?
- Answers:
 1. Easy to use programming language
 - Interpreted
 - High Level
 - Multi-paradigm
 2. Widely available
 - No licensing fees
 - Several different freeware environments (IDE's)
 - Fastest growing programming language

How to run Python Code

- There are several alternatives
- Online environments:
 - <https://www.python.org/shell/>
 - https://www.onlinegdb.com/online_python_interpreter
 - <https://notebooks.azure.com/>
 - <https://colab.research.google.com/>
- Interactive Development Environments (IDE)
 - PyCharm
 - Spyder
 - Thonny
 - Visual Studio Code + Python Extension
 - Wing IDE
 - Eclipse + PyDev
 - Stani's Python Editor

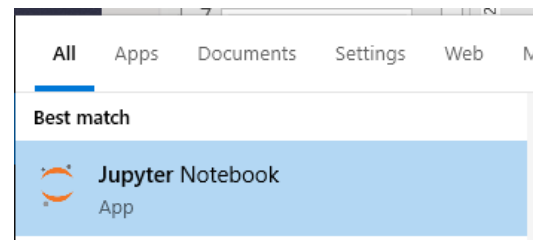
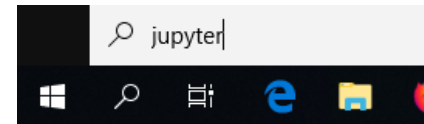
Anaconda

- Open Source Distribution (BSD licence)
- Easy installation and package management
- Easy way to develop for Python / R data science and machine learning on Linux, Windows, and Mac OS X.
- May include Jupyter, R-studio, Spyder, among other IDE's
 - <https://www.anaconda.com/>



What we will use in class

- Jupyter Notebook
 - part of the Anaconda Distribution
- How to launch:
 - On the search button...
 - Write Jupyter and choose the App



What we will use in class (cont)

jupyter

Quit Logout

Files Running Clusters

Select items to perform actions on them.



The screenshot shows the JupyterLab file browser interface. A dropdown menu is open under the 'New' button, with 'Python 3' selected and circled in red. A tooltip for 'Python 3' is visible, stating 'Create a new notebook with Python 3'. Other options in the menu include 'Text File', 'Folder', and 'Terminal'. The file list below shows several files with checkboxes, names, and sizes.

Item	Size	Created
..		
...		
...	4 B	
...	kB	
...	kB	
...	21.4 kB	2 months ago
...	119 B	4 hours ago

What we will use in class (cont)



The screenshot displays the Jupyter Slides interface. At the top left, the Jupyter logo is followed by the text "jupyter Slides (unsaved changes)". On the top right, there is a Python logo and a "Logout" button. Below this is a menu bar with options: File, Edit, View, Insert, Cell, Kernel, Widgets, and Help. To the right of the menu bar are "Trusted" and "Python 3" indicators. The main content area shows a code cell with the following text:

```
In [ ]: # This is where you write your code  
# Press "Control" + "Enter" to execute the code  
# The results will appear bellow
```


Contributors

- List of authors/contributors to these materials:
 - Jesualdo Fernandes (2019)
 - Paulo Simões (2020)

- Credits
 - Part of these slides were based on previous work from Prof. Carlos Costa (ISEG)