ADALTAS

1. Introduction to

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Before we start...

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Before we start...

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- Sessions are interactive
- 4 modules of 2x3h:
  - 9 & 11/03 - Introduction to Python
  - 16 & 18/03 - Introduction to Spark (PySpark)
  - 30/03 & 01/04 - Support session Python
  - 04 & 08/04 - Support session Spark

Let’s connect to Adaltas cluster

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1. Install OpenVPN
2. Open it and import .ovpn file
3. Open PuTTY (or another ssh tool)
4. When the connection is opened:
    - Type (copy) twice the password you received by mail
    - Type and confirm your new password
5. Open the browser and connect to the Zeppelin with your username and password

What is Python?

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- Created in 1991 (and named after Monty Python show)
- General-purpose programming language
- Interpreted (scripting) language

Why everybody is using it?

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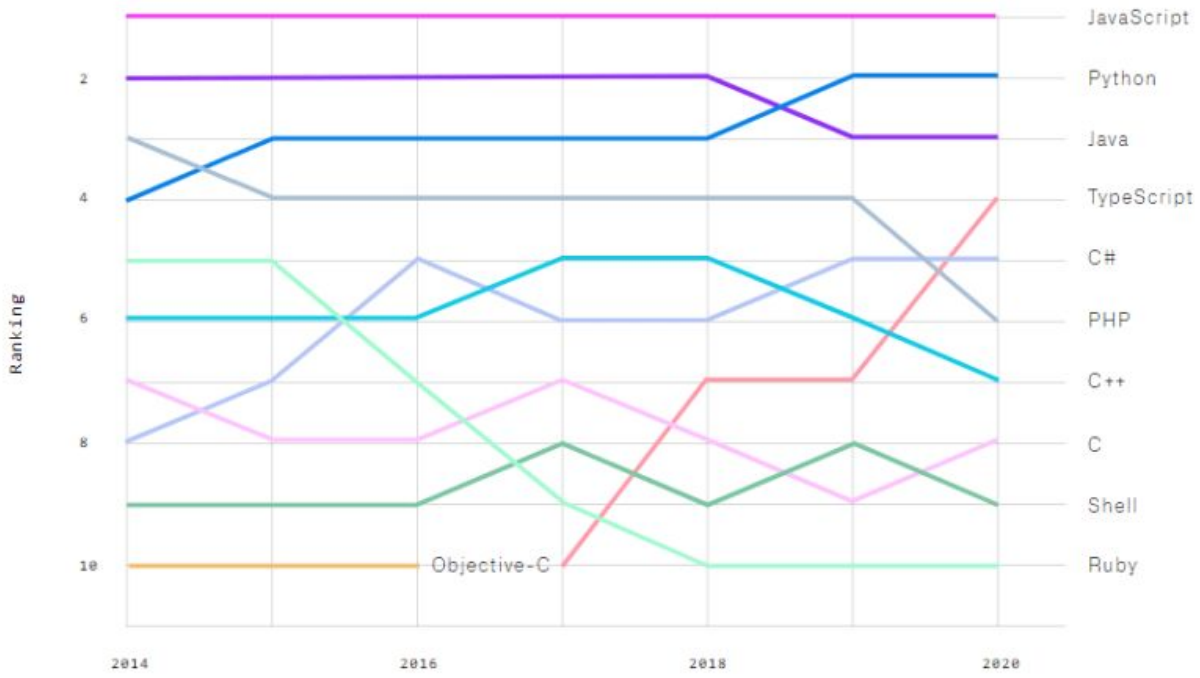
- Designed to be easy to learn -> teaching
  - readable code
- Open-source and free
- Easy to interact with
- Early adopters were Google, YouTube, NASA…
- Big community -> many libraries

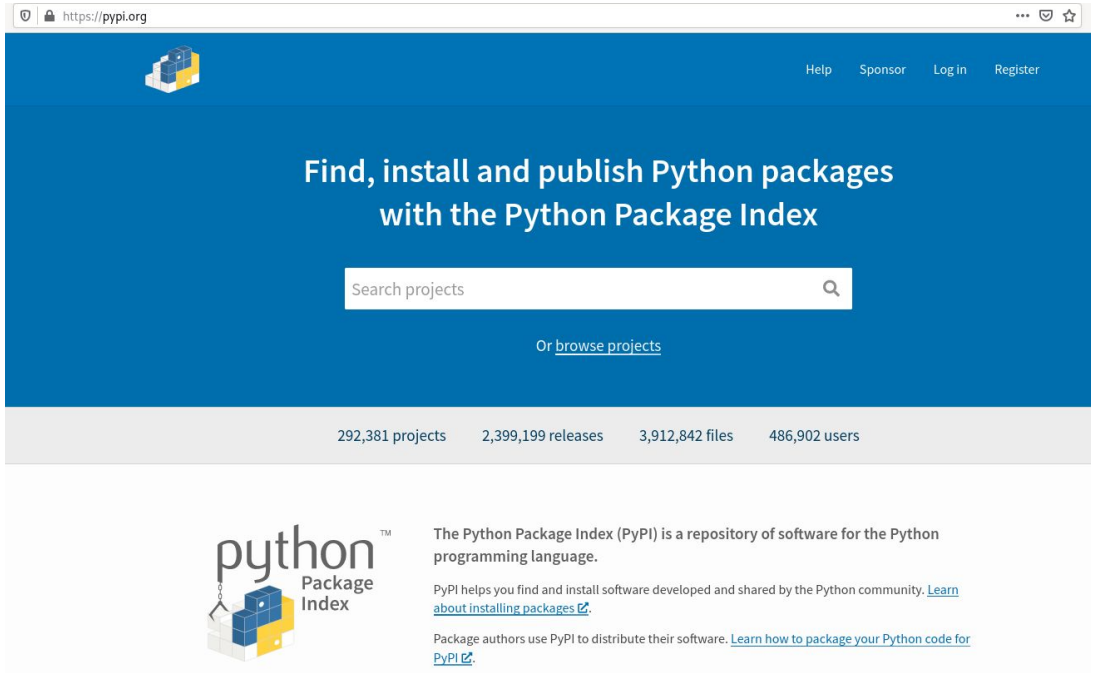
Why everybody is using it?



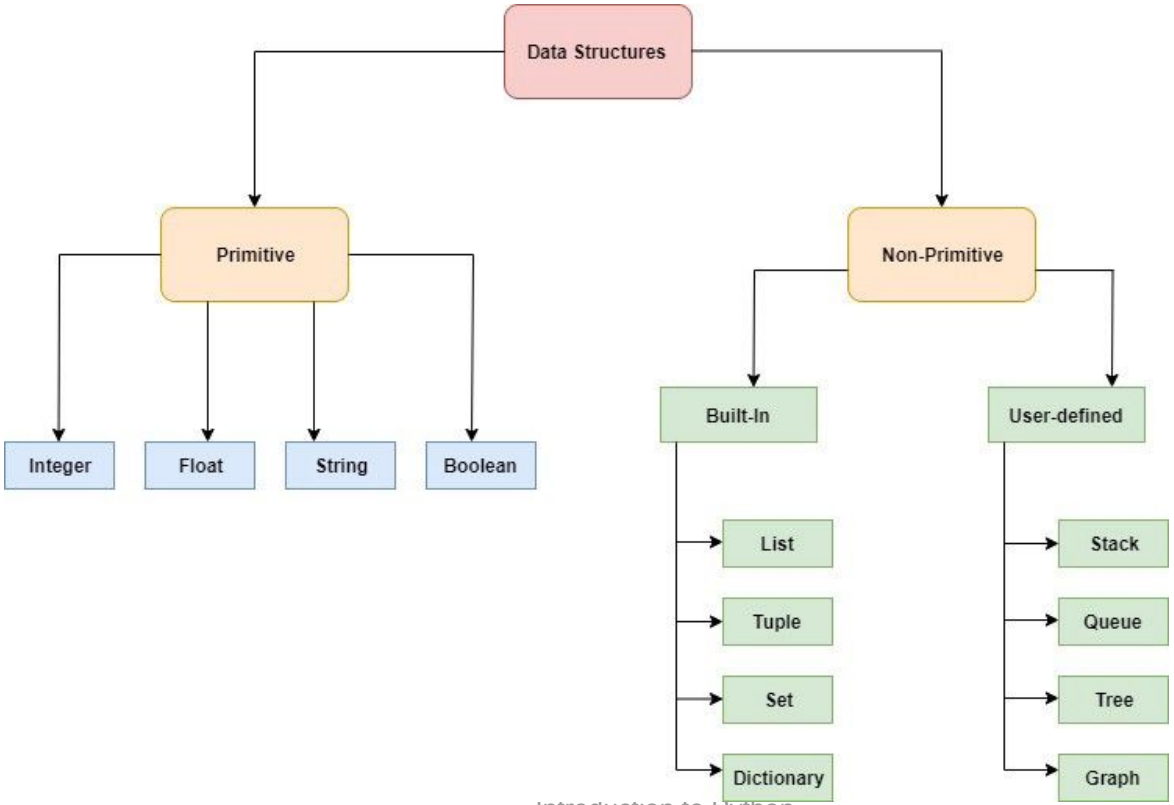
Packages (libraries)

- Collections of functionalities
- Cover a certain topic / domain
- Everybody can share a library
  - Many domains covered
  - Not verified and not always correct
- ~ 300,000 packages

Python packages



How does Python understand data?



Hands-on: First steps to Python

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Collections

- Lists -- mutable, ordered
  - my_list = [1, ‘test’, 5.8]
- Tuples -- immutable, ordered
  - my_tuple = (1, ‘test’, 5.8)
- Dictionaries -- key-value pairs, no order
  - my_dict = {‘petra’ : ’petra@adaltas.com’}
- Sets -- mutable, unordered, no repeats
  - my_set = {1, 3, 6, 9}

Hands-on: Collections

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If you want to learn more:

https://github.com/sowmya20/DataStructures_Intro

How can we manipulate data?

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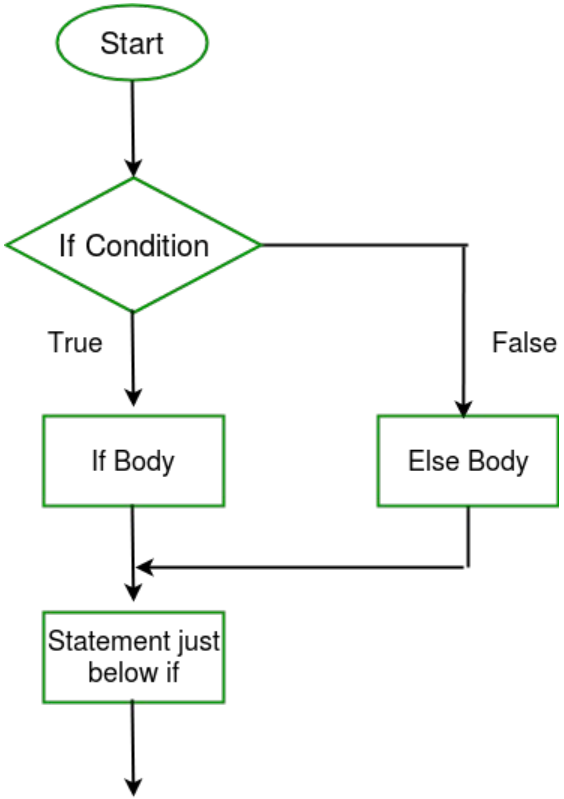
- Functions
- Code that solves a specific task
- Types:
  - Built-in: type(), print()
  - Imported from libraries: `from <module> import *`
  - Custom

Conditional statement

- Evaluates a condition and depending on the result, it executes different code

```
a = 5, b = 3
if a > b:
    b = b * 2
else:
    a = a * 2
```

- If … else
- If … elif … else



Loops

- `For`: repeat the same action n-times

```
for i in range(1, 10):
    print(i)
```

- `While`: repeat as long as condition is true

```
i = 0
while i < 10:
    print(i)
    i = i + 1
```

Boolean expressions

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- expressions that return a Boolean value as a result (`True, False`)
  - comparisons (>, <, =)
  - inclusions (is in)
- chaining conditions with Boolean operators: `AND, OR, NOT`

User-defined functions

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- When a function we need doesn't exist
- It always starts with **def**
- It can take none, one or more **arguments**
- It can **return** a value

```
def print_name(name):
    print(name)
```

```
def return_name(name):
    return(name)
```