3. Introduction to python™

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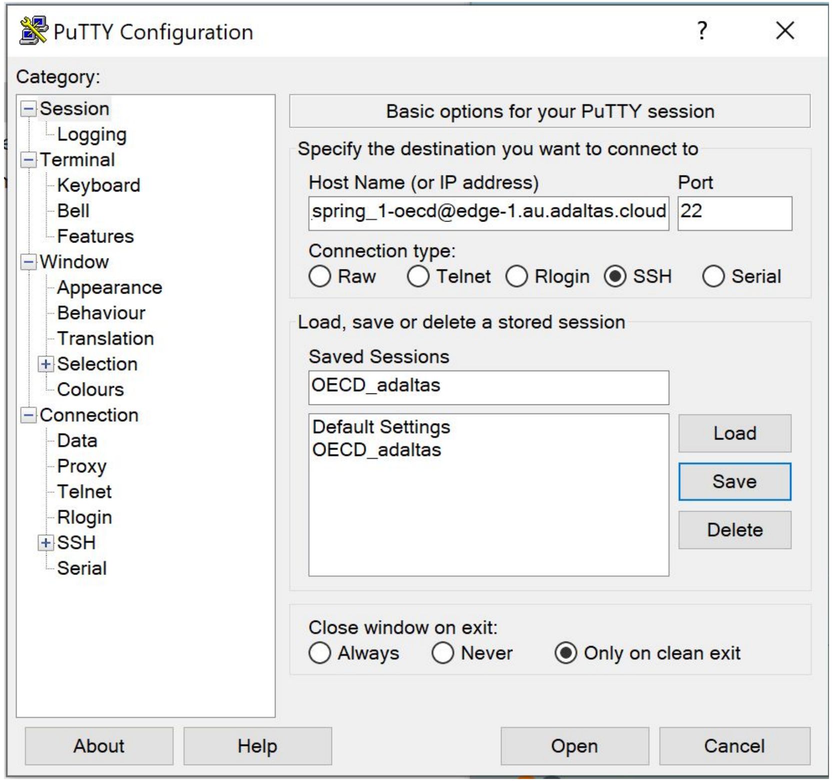
Let’s connect to Adaltas cluster

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



PuTTY Configuration

Basic options for your PuTTY session

Specify the destination you want to connect to

Host Name (or IP address): spring_1-oecd@edge-1.au.adaltas.cloud

Port: 22

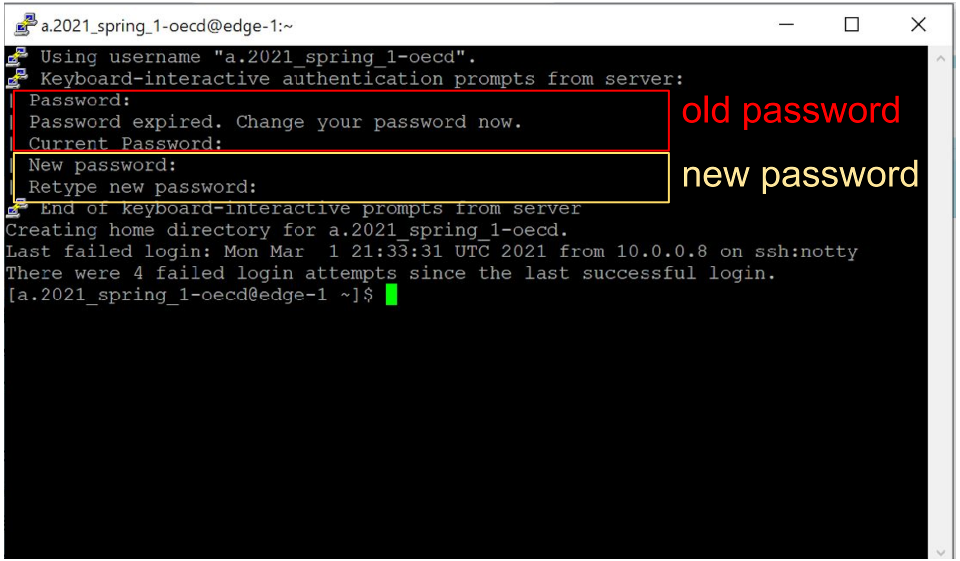
Connection type: ○ Raw ○ Telnet ○ Rlogin ● SSH ○ Serial

Load, save or delete a stored session

Saved Sessions: OECD_adaltas

Default Settings
OECD_adaltas

Close window on exit: ○ Always ○ Never ● Only on clean exit



a.2021_spring_1-oecd@edge-1:~

```
 Using username "a.2021_spring_1-oecd".
 Keyboard-interactive authentication prompts from server:
| Password:
| Password expired. Change your password now.
| Current Password:
| New password:
| Retype new password:
 End of keyboard-interactive prompts from server
Creating home directory for a.2021_spring_1-oecd.
Last failed login: Mon Mar  1 21:33:31 UTC 2021 from 10.0.0.8 on ssh:notty
There were 4 failed login attempts since the last successful login.
[a.2021_spring_1-oecd@edge-1 ~]$
```

old password

new password

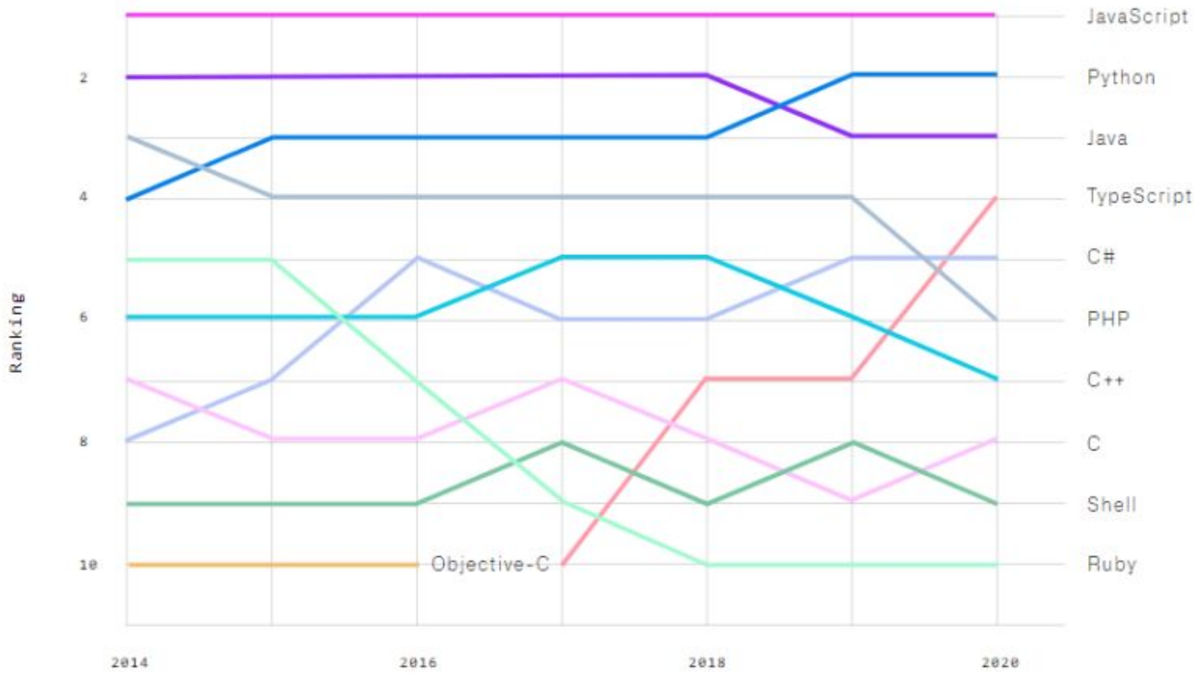
What is Python?

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

Why everybody is using it?

- 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

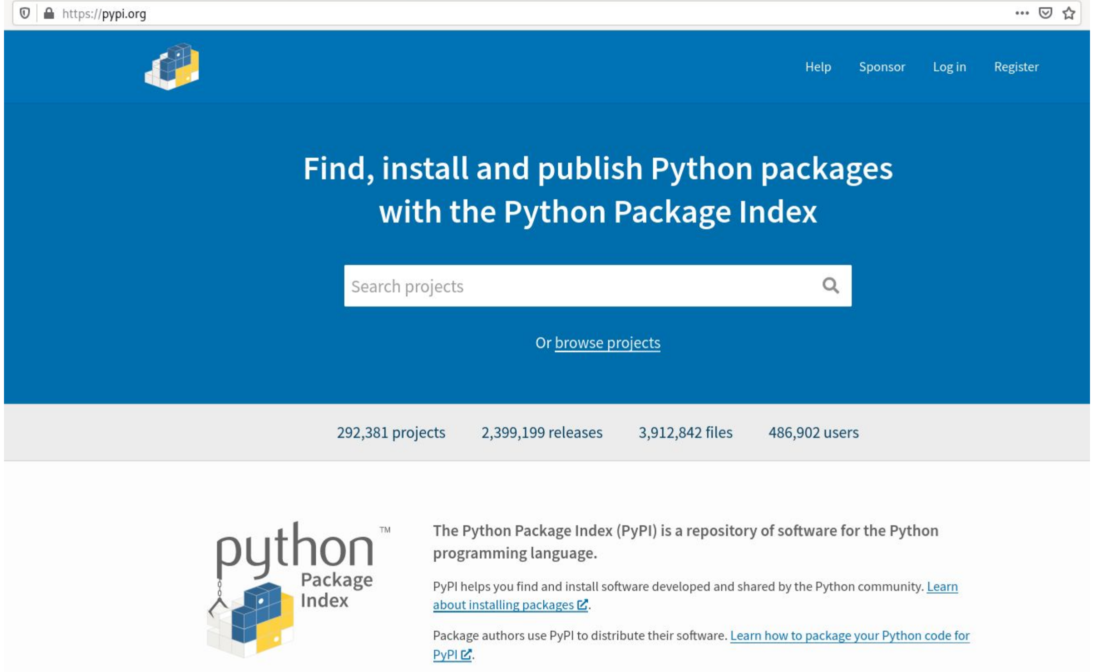
Why everybody is using it?



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



https://pypi.org

Find, install and publish Python packages with the Python Package Index

Or browse projects

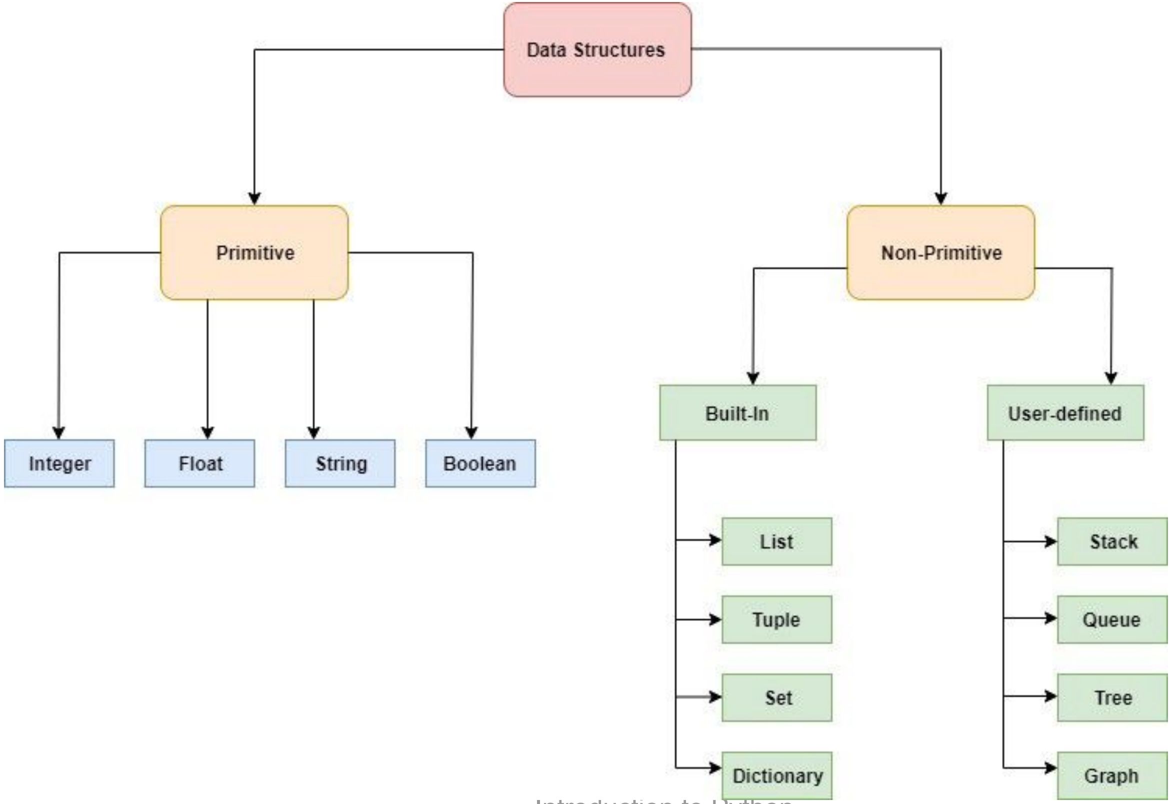
292,381 projects 2,399,199 releases 3,912,842 files 486,902 users

The Python Package Index (PyPI) is a repository of software for the Python programming language.

PyPI helps you find and install software developed and shared by the Python community. Learn about installing packages.

Package authors use PyPI to distribute their software. Learn how to package your Python code for PyPI.

How does Python understand data?



Hands-on: First steps to Python

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

If you want to learn more:

https://github.com/sowmya20/DataStructures_Intro

How can we manipulate data?

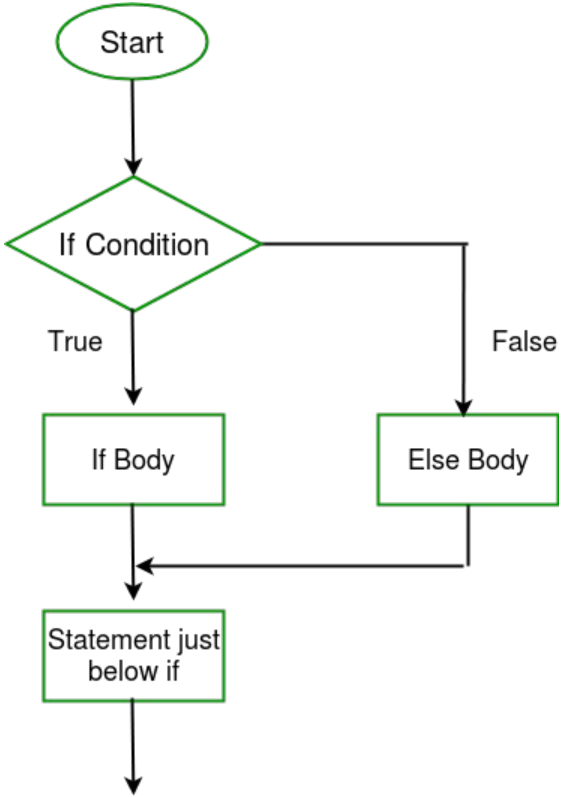
- Functions
- Code that solves a specific task
- Types:
  - Built-in: type(), print()
  - Imported from libraries: `from <module> import *`
  - Custom

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

- 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

- 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)
```