Python for DevOps

Module 1. Introduction to Python

Programming language types

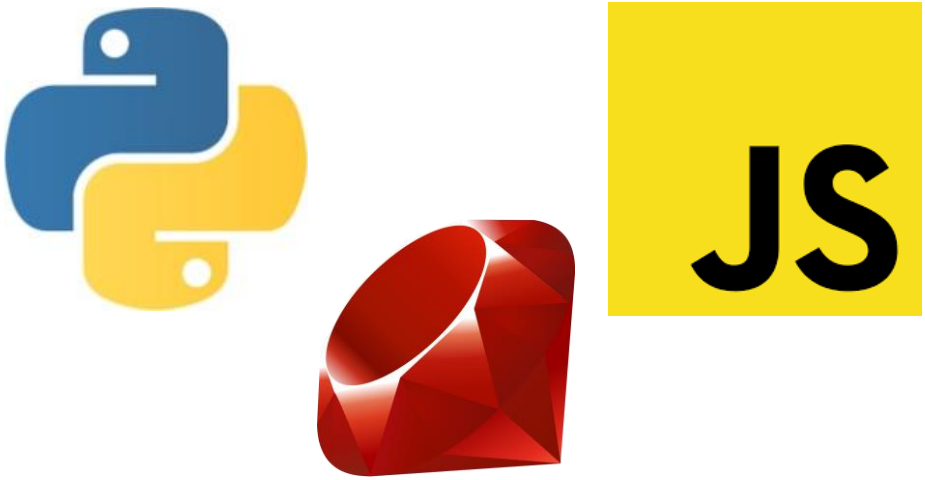
Interpreted vs Compiled Programming

Compiled Languages

We convert the code itself into machine understandable format
More memory or CPU usege management
Faster
Need to be build first
We depend on platform

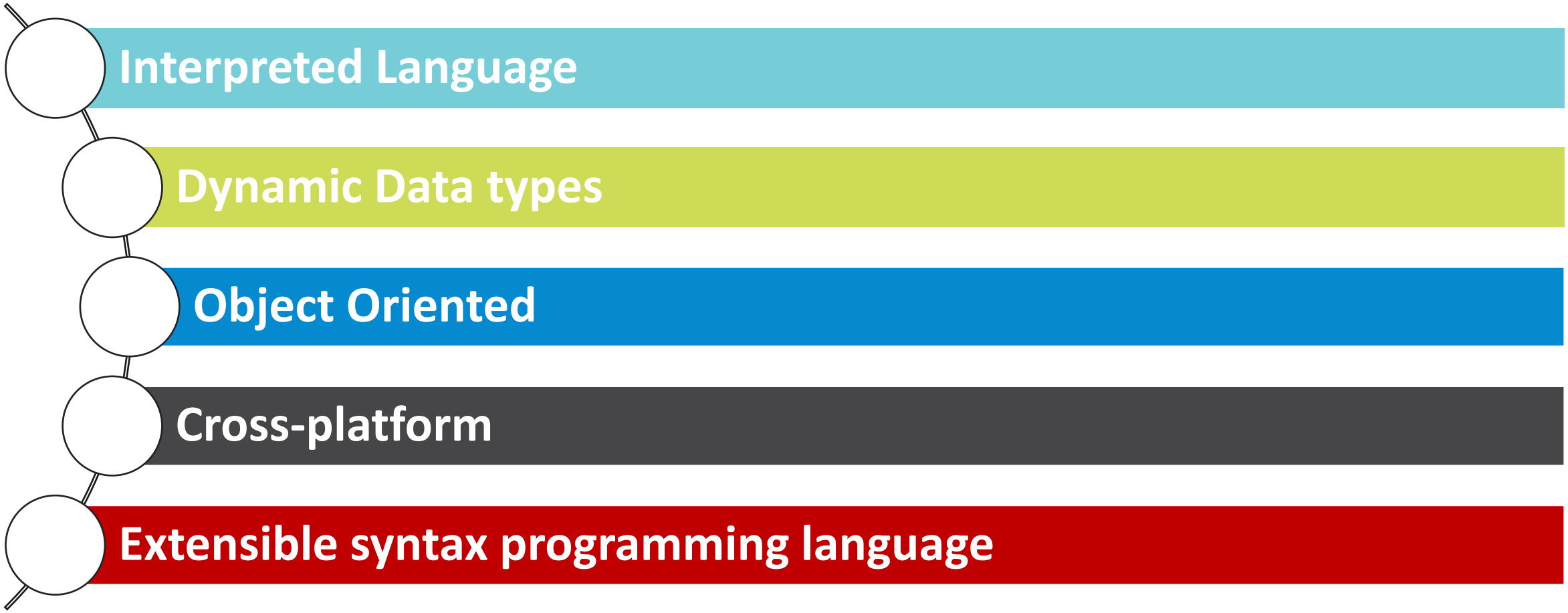
Interpreted Languages

Interpreters reads code line by line and executes each command
Slower (but we have JiT compilation so it’s not 100% true)
Smaller program size
Easier to work with
Good for proptotiping



WHAT IS PYTHON?

So, what's about Python?

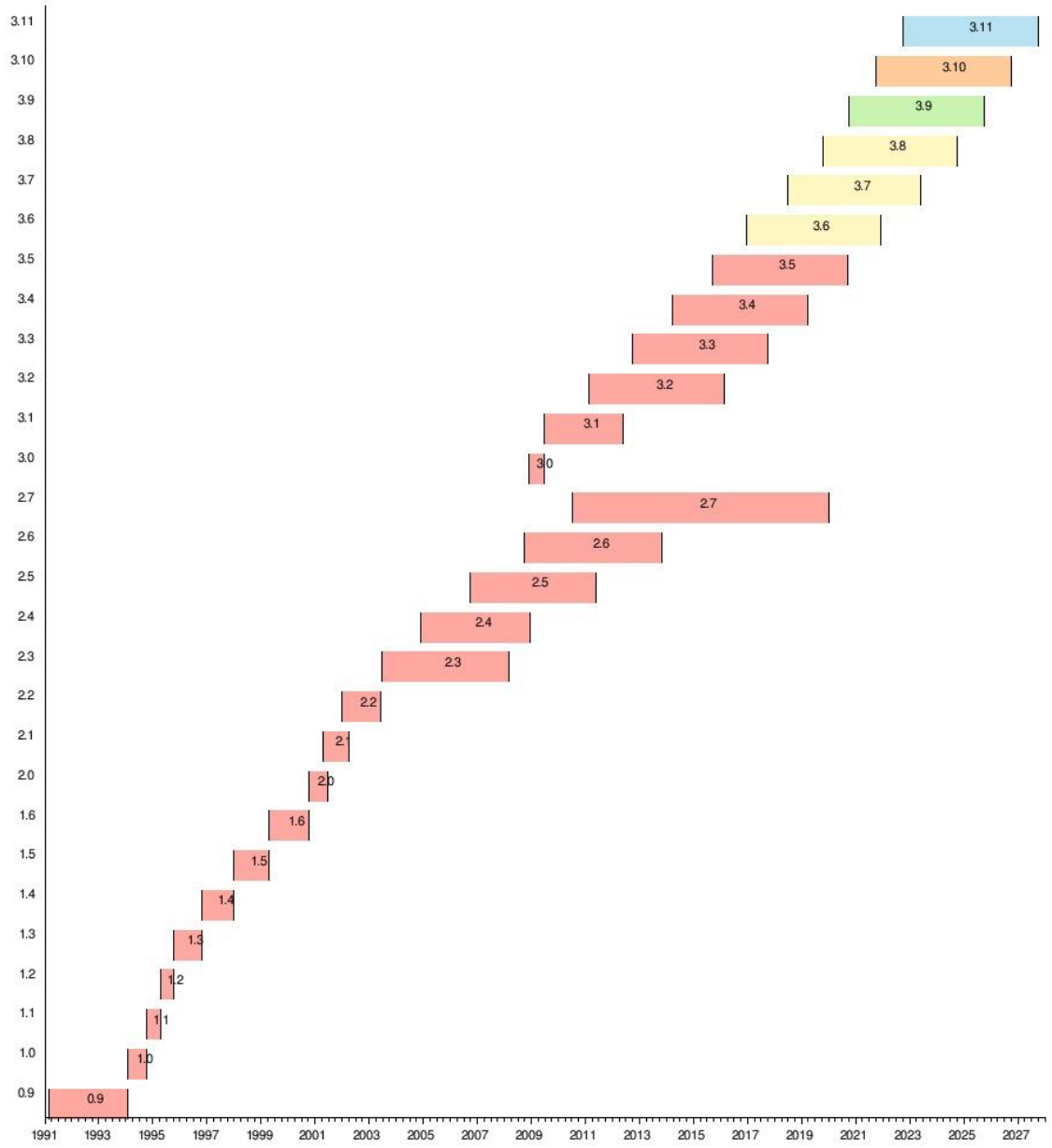


History

- Designed by: Guido van Rossum
- Developer: Python Software Foundation

Milestones:

0.9 vesrion – 1991 – 1993
1.0 version – 1994 – 1994
2.0 version – 2000 – 2001
2.7 version – 2010 – 2020
3.6 version – 2016 – 2021
3.9 version – 2020 – 2025
3.11 - version – 2024 – 2027



Let’s install

LINUX

From repository:

- Ubuntu:

```
$ sudo apt update
$ sudo apt install python3
```

- Centos

```
$ sudo yum update
$ yum install -y python3
```

From Source Code:

http://www.python.org/download/

```
$ ./configure
$ Make
$ make install
```

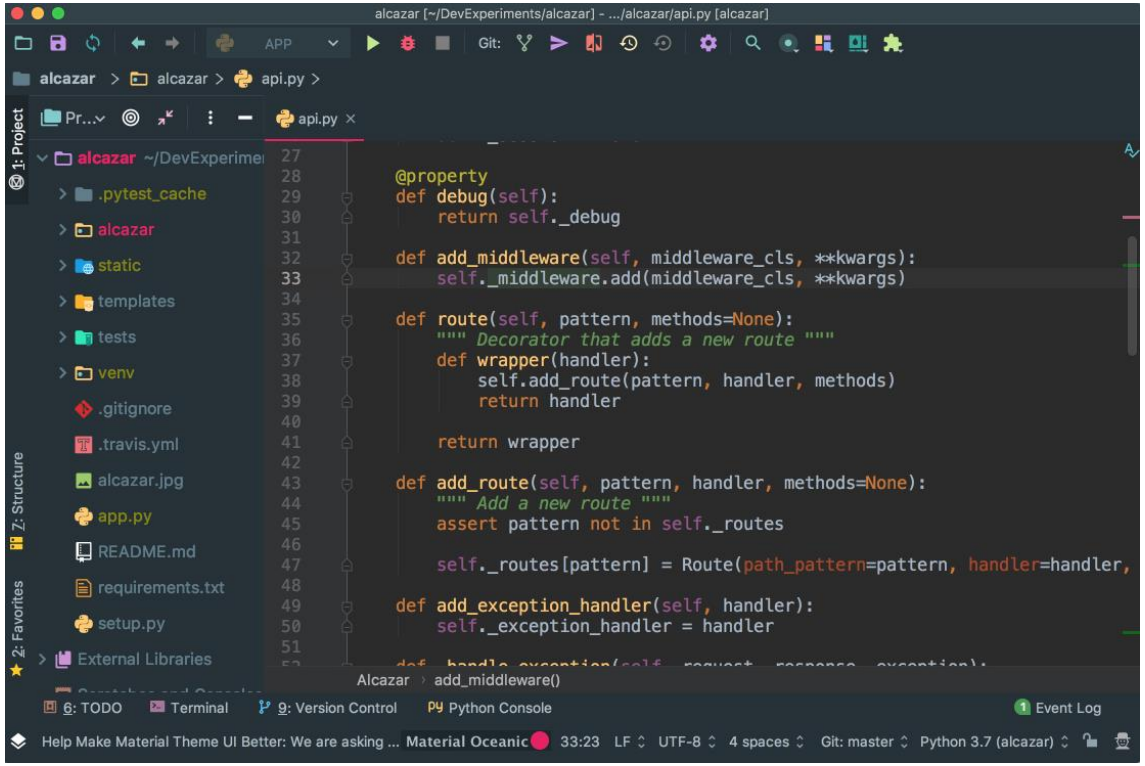
WINDOWS

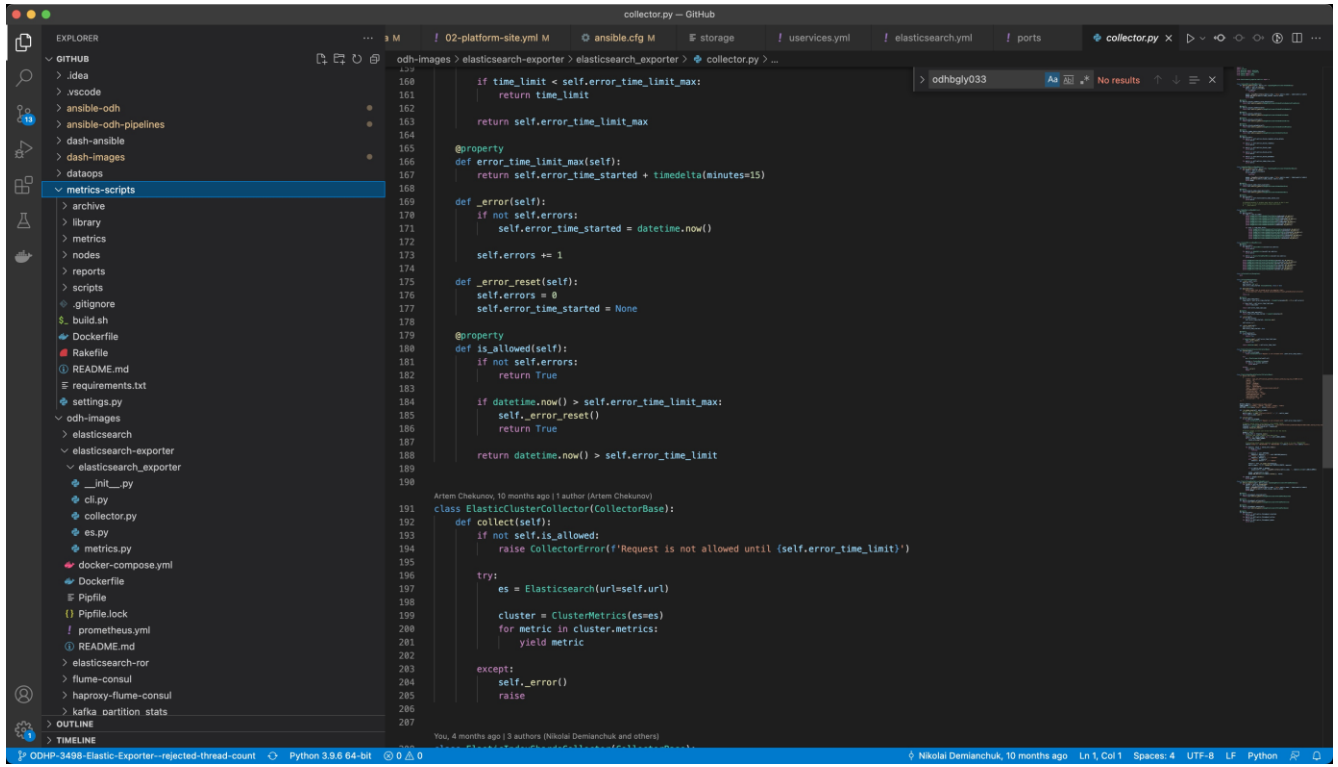
- https://www.python.org/downloads/release/python-397/
- python-XYZ.msi

MACOS

```
$ brew install python3
```

Integrated Development Environment (IDE)





Interpreter usage

```
python3
```

```
python3   myscript.py arg1 arg2
```

Add Interpreter to path

Linux:

```
export PATH="$PATH:/usr/local/bin/python“
```

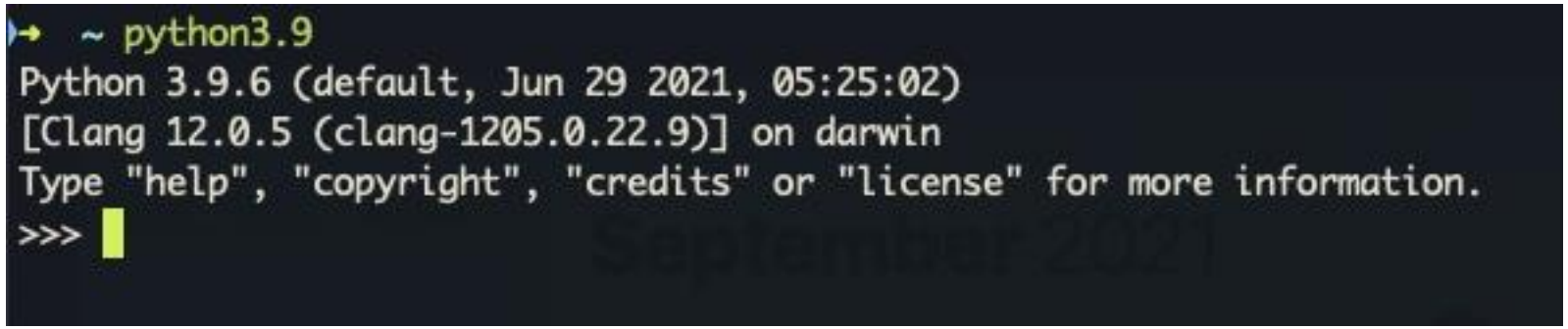
Windows:

```
set path=%path%;C:\python39;C:\python39\Scripts
```

Enviroment variables

PYTHONHOME	Location of the standard Python libraries
PYTHONPATH	The default search path for module files
PYTHONCASEOK	Python ignores case in import statements. This only works on Windows and OS X.
PYTHONSTARTUP	If this is the name of a readable file, the Python commands in that file are executed before the first prompt is displayed in interactive mode.

Interactive mode



What can we do here?

- Write actual code
- Run tests
- It’s a cool calculator

How can I run my sript??

Code:

```
#!/usr/bin/python

print(“Hello World!”)
```

Make it executable:

```
$ chmod +x test.py
```

Run it!!

```
$./test.py
```

Syntax

Identifiers and Variables

VARIABLE

The name “variable” based on idea that something is able to very.

Basically, it’s a memory cell that contains some data that we can read via our code.

IDENTIFIERS

“An identifier is a name given to an entity”

In other words:

Identifier is a user-defined name to represent the basic building blocks of Python

Assigning Values to Variables

Python variables do not need explicit declaration to reserve memory space. The declaration happens automatically when you assign a value to a variable.

```
>>> counter = 100          # An integer assignment
>>> miles   = 1000.0       # A floating point
>>> name    = "John"       # A string
>>>
>>> print(counter)
100
>>> print(miles)
1000.0
>>> print(name)
John
>>> print(f'{name} managed to go {miles}')
John managed to go 1000.0
```

Rules for Identifiers

The Python identifier is made with a combination of **lowercase** or **uppercase letters**, **digits** or an **underscore**.

Lowercase letters (a to z)
Uppercase letters (A to Z)
Digits (0 to 9)
Underscore (_)

It cannot start with digit!
You cannot use symbols like !,#,@,%,$

Best practice

- Class names should start with a capital letter and all the other identifiers should start with a lowercase letter
- Begin private identifiers with an underscore (_)
- Use double underscores (__) around the names of magic methods
- Always prefer using names longer than one character. index=1 is better than i=1
- It’s better to use combined names like car_colour instead of carcolour or CarColour

Key words

Interactive help: in pyton interpreter type *help()* and after it *keywords*

```
help> keywords

Here is a list of the Python keywords.  Enter any keyword to get more help.

False               break               for                 not
None                class               from                or
True                continue            global              pass
__peg_parser__      def                 if                  raise
and                 del                 import              return
as                  elif                in                  try
assert              else                is                  while
async               except              lambda              with
await               finally             nonlocal            yield
```

Let’s talk about style

Lines and spaces:

```
if True:
        print("True")
else:
        print("False")
...
True
```

Multiline

```
days = ['Monday', 'Tuesday', 'Wednesday',
        'Thursday', 'Friday']
```

Quotes

```
word = 'word'
sentence = "This is a sentence."
paragraph = """This is a paragraph. It is
made up of multiple lines and sentences."""
```

Comments

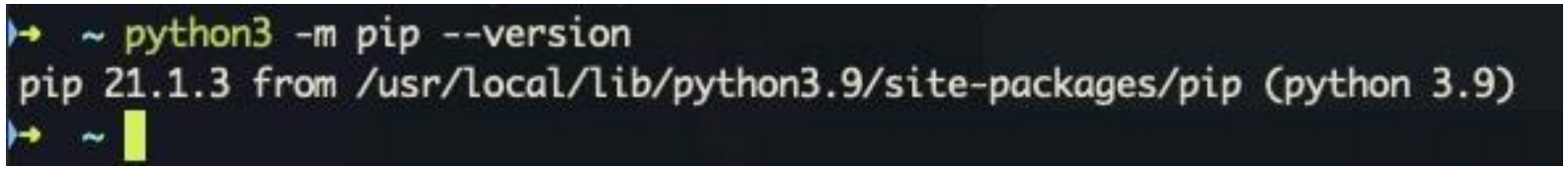
Don’t forget about comments! It’ll make your life easier

```
# First comment
print("Hello, Python!") # second comment
```

Instruments

Pip

Pip is a package manager for Python. It helps you to install components to use them in your code. Also, you can use it to manage your libraries, dependencies which are not a part of standard Library



Virtualenv & venv

The venv module provides support for creating lightweight “virtual environments” with their own site directories, optionally isolated from system site directories.

python3 -m venv /path/to/new/virtual/environment