

# Usare Python

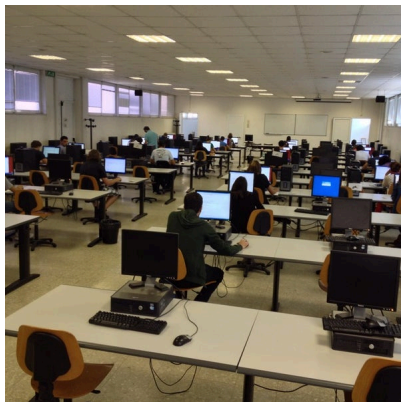
Informatica@DSS 2023/2024

Massimo Lauria <massimo.lauria@uniroma1.it>  
<https://massimolauria.net/informatica2023/>

# Contenuto di queste slide

- ▶ descrizione dell'ambiente di lavoro in laboratorio
- ▶ suggerimenti per l'ambiente di lavoro a casa
- ▶ puntatori a risorse e strumenti aggiuntivi

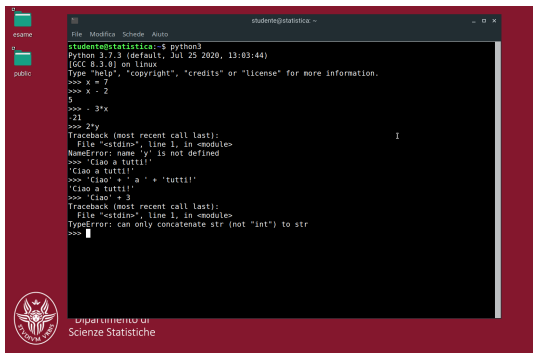
# Lavorare in laboratorio



# Sessione interattiva: terminale

(Dal menù) *Strumenti di sistema* → *Terminale*

Piccoli esperimenti  
iniziali



```
studente@statistica ~  
File Modifica Schede Aiuto  
studente@statistica:~$ python3  
Python 3.7.3 (default, Jul 25 2020, 13:03:44)  
[GCC 8.3.0] on linux  
Type "help", "copyright", "credits" or "license" for more information.  
>>> x = 7  
>>> x - 2  
5  
>>> - 3*x  
-21  
>>> 2*y  
Traceback (most recent call last):  
  File "<stdin>", line 1, in <module>  
NameError: name 'y' is not defined  
>>> 'Ciao a tutti!'  
'Ciao a tutti!'  
>>> 'Ciao' + ' a ' + 'tutti!'  
'Ciao a tutti!'  
>>> 'Ciao' + 3  
Traceback (most recent call last):  
  File "<stdin>", line 1, in <module>  
TypeError: can only concatenate str (not "int") to str  
>>>
```

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# Thonny: ambiente integrato Python

(Dal menù) *Programmazione* → *Thonny*

- ▶ Editor di testo
- ▶ Ambiente interattivo python
- ▶ Integrazione tra i due

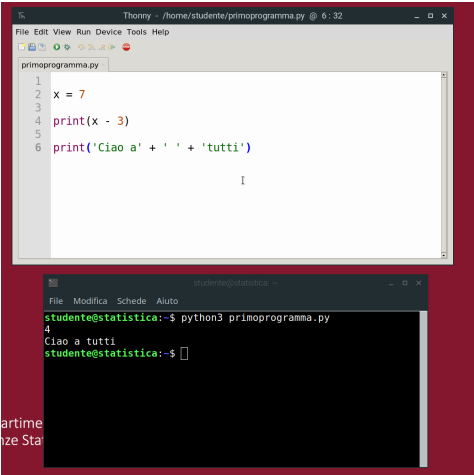
```
File Edit View Run Device Tools Help
primoprogramma.py
1
2
3 print('Ciao a' + ' ' + 'tutti')
4
5 for i in range(20):
6     print(i, end=' ')
7
8 for i in range(20):
9     print(i*i, end=' ')
10

Shell
>>> %Run primoprogramma.py
Ciao a tutti
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 0 1 4 9 16 25 36 49 64 81 100
121 144 169 196 225 256 289 324 361
>>>
```

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# Scrittura di programmi: terminale + editor

- ▶ Usare i programmi fuori da Thonny
- ▶ Usare i file di test del laboratorio



The image shows two overlapping windows. The top window is the Thonny IDE, titled 'Thonny - /home/studente/primoprogramma.py @ 6:32'. It displays a Python script named 'primoprogramma.py' with the following code:

```
1
2 x = 7
3
4 print(x - 3)
5
6 print('Ciao a' + ' ' + 'tutti')
```

The bottom window is a terminal window titled 'studente@statistica ~'. It shows the execution of the script:

```
studente@statistica:~$ python3 primoprogramma.py
4
Ciao a tutti
studente@statistica:~$
```

Partial text from the slide is visible on the left side of the terminal window: 'artime' and 'nze Sta'.

# Lavorare a casa



# Impostare un ambiente di lavoro

Dovete impostarvi un ambiente di programmazione **il prima possibile**

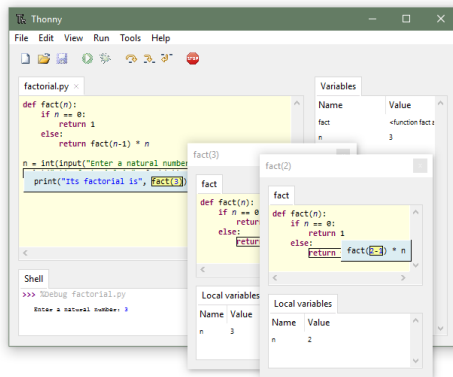
- ▶ Un qualunque PC, anche non recente, va benissimo
- ▶ Dovete essere in grado di **scrivere** ed **eseguire** programmi python



# Scrittura/Debug/Interazione: Thonny

Lo strumento principale del corso.

Potete usare altri strumenti, ma è garantito che Thonny sia installato sui PC d'esame.



<http://thonny.org>

# Perché Thonny?

- ▶ semplice da usare
- ▶ non richiede di installare Python3 a parte
- ▶ lo usiamo a lezione

**Thonny**  
Python IDE for beginners



Download version [3.2.1](#) for  
[Windows](#) • [Mac](#) • [Linux](#)

```
factorial.py x
def fact(n):
    if n == 0:
        return 1
    else:
        return fact(n-1) * n

n = int(input("Enter a natural number"))
print("Its factorial is", fact(3))
```

Name	Value
fact	<function fact: ...>
n	3

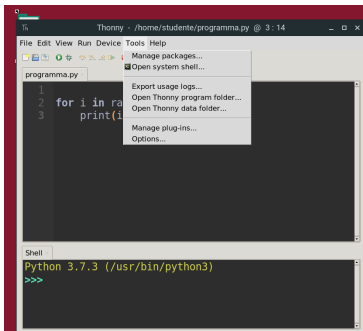
```
fact(3)
fact
def fact(n):
    if n == 0:
        return
```

```
fact(2)
fact
def fact(n):
    if n == 0:
```

# Python su terminale

Se avete Thonny installato, potete lanciare un terminale con un python già configurato, dal suo menù

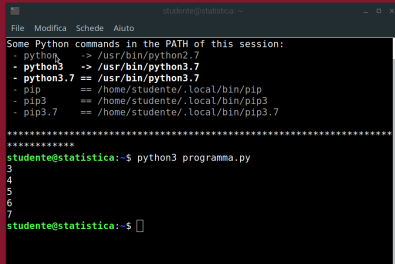
*Tools* → *Open System Shell*



The screenshot shows the Thonny IDE interface. The 'Tools' menu is open, and 'Open system shell...' is selected. The editor window shows a Python script named 'programma.py' with the following code:

```
1
2 for i in range(3):
3     print(i)
```

The Shell window at the bottom shows the prompt 'Python 3.7.3 (/usr/bin/python3)' and the input '>>>'.



The screenshot shows a terminal window with the following output:

```
Some Python commands in the PATH of this session:
- python2  -> /usr/bin/python2.7
- python3  -> /usr/bin/python3.7
- python3.7 == /usr/bin/python3.7
- pip      == /home/studente/.local/bin/pip
- pip3     == /home/studente/.local/bin/pip3
- pip3.7   == /home/studente/.local/bin/pip3.7

*****
studente@statistica:~$ python3 programma.py
3
4
5
6
7
studente@statistica:~$
```

**Altro materiale utile**

# Python tutor — <http://pythontutor.com/>

- ▶ evoluzione delle variabili
- ▶ osservare i singoli passi di esecuzione
- ▶ andare avanti e indietro

Get live help!

These Python Tutor users are asking for help right now. Please volunteer to help!

user\_c9d from Petaling Jaya, Malaysia needs help with Python3 - 3 people chatting - [click to help](#) (active a minute ago, requested an hour ago)

user\_91f from Singapore, Singapore needs help with Python3 - [click to help](#) (active a few seconds ago, requested a few seconds ago)

user\_016 from Tallinn, Estonia needs help with Python3 - [click to help](#) (idle: last active 11 minutes ago, requested 11 minutes ago)

Start private chat

(warning: chat service may crash at any time)

Python 3.6

```
1
2 A = [7, 'gatto', 3.5, 'cane', 12, 0.3]
3 B = []
→ 4 while len(A)>0:
→ 5     y=A.pop()
6     B.append(y)
```

[Edit this code](#)

→ line that has just executed

→ next line to execute

Click a line of code to set a breakpoint; use the Back and Forward buttons to jump there.



Frames

Objects

Global frame  
A  
B  
y 12

list			
0	1	2	3
7	"gatto"	3.5	"cane"

list	
0	1
0.3	12

# Documentazione standard

<https://docs.python.org/3/>

- ▶ molto ricca e dettagliata
- ▶ richiede un po' di esperienza
- ▶ in inglese

# Bibliografia web

Libro di testo: [https://github.com/AllenDowney/ThinkPythonItalian/raw/master/thinkpython\\_italian.pdf](https://github.com/AllenDowney/ThinkPythonItalian/raw/master/thinkpython_italian.pdf)

Il linguaggio Python

- ▶ Pagina principale: <https://www.python.org/>
- ▶ Documentazione ufficiale Python: <https://docs.python.org/3/>

Thonny: <https://thonny.org/>

Altre risorse

- ▶ Python Tutor: <http://pythontutor.com/>
- ▶ Tutorial uso del terminale: [https://tutorial.djangogirls.org/it/intro\\_to\\_command\\_line/](https://tutorial.djangogirls.org/it/intro_to_command_line/)