



Practical exercises: Python

Tibor Šimko

@tiborsimko

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Python

The screenshot shows the Python.org homepage with a dark blue background. At the top left is the Python logo and the word "python" with a trademark symbol. To the right is a search bar with a magnifying glass icon, a "GO" button, and links for "Socialize" and "Sign In". Below this is a horizontal navigation bar with links for "About", "Downloads", "Documentation", "Community", "Success Stories", "News", and "Events". The main content area features a code snippet on the left and an "Intuitive Interpretation" section on the right. The code snippet shows simple arithmetic operations in Python 3. The "Intuitive Interpretation" section explains that calculations are simple and lists operators like +, -, *, and /, along with a link for more information. At the bottom of the page, a white text box contains the message: "Python is a programming language that lets you work quickly and integrate systems more effectively. >>> [Learn More](#)".

```
# Python 3: Simple arithmetic
>>> 1 / 2
0.5
>>> 2 ** 3
8
>>> 17 / 3 # classic division returns a float
5.666666666666667
>>> 17 // 3 # floor division
5
```

Intuitive Interpretation

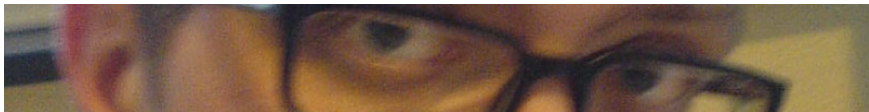
Calculations are simple with Python, and expression syntax is straightforward: the operators `+`, `-`, `*` and `/` work as expected; parentheses `()` can be used for grouping. [More about simple math functions in Python 3.](#)

1 2 3 4 5

Python is a programming language that lets you work quickly and integrate systems more effectively. >>> [Learn More](#)

<https://www.python.org/>

Nice short introductory tutorials



- 1 “Instant Hacking” by Magnus Hetland
<http://hetland.org/writing/instant-hacking.html>
- 2 “Instant Python” by Magnus Hetland
<http://hetland.org/writing/instant-python.html>

Variables

```
$ ipython
```

```
Python 3.5.2 (default, Nov 7 2016, 11:31:36)
```

```
Type "copyright", "credits" or "license" for more information.
```

```
IPython 5.1.0 -- An enhanced Interactive Python.
```

```
?          -> Introduction and overview of IPython's features.
```

```
%quickref -> Quick reference.
```

```
help       -> Python's own help system.
```

```
object?   -> Details about 'object', use 'object??' for extra details.
```

```
In [1]: width = 20
```

```
In [2]: height = 30
```

```
In [3]: area = width * height
```

```
In [4]: print(area)
```

```
600
```

Conditions

```
In [5]: temperature = input("What is the temperature?")
```

```
In [6]:
```

```
if temperature > 30:
    print("It is hot.")
elif temperature > 20:
    print("It is pleasant.")
elif temperature > 10:
    print("It is chilly.")
elif temperature > 0:
    print("It is cold.")
else:
    print("It is freezing.")
```

Loops

In [7]:

```
for number in range(1,100):  
    print("Just", 100 - number, "more to go...")  
print("That was the last one... Phew!")
```

Functions

In [8]:

```
def area(width, height):  
    return width * height
```

In [9]: `area(20, 30)`

Out[9]: 600

In [10]: `area(4, 5)`

Out[10]: 20

Data structures

```
In [11]: working_days = 5
```

```
In [12]: greeting = 'Hello world'
```

```
In [13]: beverages = ['tea', 'coffee', 'juice']
```

```
In [14]: friend = {'name': 'Jane',  
                  'phone': 123456,  
                  'address': 'Baker Street 221B'}
```