

A Quick Python Tour



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What is Python?

- Programming Language created by **Guido van Rossum**
- It has been around for over **20** years
- Dynamically typed, object-oriented language
- Runs on Win, Linux/Unix, Mac, OS/2 etc
- Versions: **2.x** and **3.x**



What can Python do?

- Scripting
- Rapid Prototyping
- Text Processing
- Web applications
- GUI programs
- Game Development
- Database Applications
- System Administrations
- And many more.

wxPython



django

A Sample Program

function

```
def greetings(name=''):
    '''Function that returns a message'''
    if name=='':
        msg = "Hello Guest. Welcome!"
    else:
        msg = "Hello %s. Welcome!" % name
    return msg
```

docstring

indentation

variable

```
>>> greetings("John")
'Hello John. Welcome!'
>>> greetings()
'Hello Guest. Welcome!'
```

name is 'John'

comment

Python Data Types

- Built-in types
 - int, float, complex, long
- Sequences/iterables
 - string
 - dictionary
 - list
 - tuple

Built-in Types

- Integer

```
>>> a = 5
```

- Floating-point number

```
>>> b = 5.0
```

- Complex number

```
>>> c = 1+2j
```

- Long integer

```
>>> d = 12345678L
```

String

- Immutable sequence of characters enclosed in quotes

```
>>> a = "Hello"
```

```
>>> a.upper()           # change to uppercase
```

```
'HELLO'
```

```
>>> a[0:2]            # slicing
```

```
'He'
```

List

- Container type that stores a sequence of items
- Data is enclosed within square brackets []

```
>>> a = ["a", "b", "c", "d"]
```

```
>>> a.remove("d") # remove item "d"
```

```
>>> a[0] = 1      # change 1st item to 1
```

```
>>> a
```

```
[ 1, "b", "c" ]
```

Tuple

- Container type similar to list but is **immutable**
- More efficient in storage than list.
- Data is enclosed within braces ()

```
>>> a = ('a', 'b', 'c')
```

```
>>> a[1]
```

```
'b'
```

```
>>> a[0] = 1      # invalid
```

```
>>> a += (1, 2, 3) # invalid
```

```
>>> b = a+(1,2,3) # valid, create new tuple
```

Dictionary

- Container type to store data in key/value pairs
- Data is enclosed within curly braces {}

```
>>> a = {"a":1, "b":2}
```

```
>>> a.keys()
```

```
['a', 'b']
```

```
>>> a.update({'c':3})    # add pair {'c':3}
```

```
>>> a.items()
```

```
[('a', 1), ('c', 3), ('b', 2)]
```

Control Structures

- Conditional
 - if, elif, else - branch into different paths
- Looping
 - while - iterate until condition is false
 - for - iterate over a defined range
- Additional control
 - break - terminate loop early
 - continue - skip current iteration
 - pass - empty statement that does nothing

if, else, elif

- **Syntax:**

```
if condition1:  
    statements
```

```
[elif condition2:  
    statements]
```

```
[else:  
    statements]
```

- **Example:**

```
x = 1
```

```
y = 2
```

```
if x>y:
```

```
    print "x is greater."
```

```
elif x<y:
```

```
    print "y is greater."
```

```
else:
```

```
    print "x is equal to y."
```

- **Output:**

```
y is greater.
```

while

- Syntax:

```
while condition:  
    statements
```

- Example:

```
x = 1  
while x<4:  
    print x  
    x+=1
```

- Output:

```
1  
2  
3
```

for

- Syntax:

```
for item in sequence:  
    statements
```

- Example:

```
for x in "abc":  
    print x
```

- Output:

a

b

c

Function

- A **function** or method is a group of statements performing a specific task.

- **Syntax:**

```
def fname(parameters):  
    ["" doc string ""]  
    statements  
    [return expression]
```

- **Example:**

```
def triangleArea(b, h):  
    """Return triangle area"""  
    area = 0.5 * b * h  
    return area
```

- **Output:**

```
>>> triangleArea(5, 8)  
20.0
```

```
>>> triangleArea.__doc__  
'Return triangle area'
```

class and object

- A **class** is a construct that represent a kind using **methods** and **variables**. An object is an instance of a class.

- **Syntax:**

```
class ClassName:  
    [class documentation]  
    class statements
```

- **Example:**

```
class Person:  
    def __init__(self, name):  
        self.name = name  
    def introduce(self):  
        return "I am %s." % self.name
```

- **Output:**

```
>>> a = Person("John"). # object  
>>> a.introduce()  
'I am John.'
```

End of Tour

This is just a brief introduction.

What is next?

- Read **PySchools** [Quick Reference](#)
- Practice the online tutorial on [PySchools](#)

Have Fun!