

Python Tutorial

Part I

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Outline

Introduction to Python

What is Python?

Features

Why Python?

Dos and Don'ts

Python Standard Types

Arithmetic

Strings

Data Structures



What is Python?

Python is an easy to learn, powerful programming language. It has efficient high-level data structures and a simple but effective approach to object-oriented programming. Python's elegant syntax and dynamic typing, together with its interpreted nature, make it an ideal language for scripting and rapid application development in many areas on most platforms.

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- ▶ has *Vast Libraries*

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- ▶ is *Dynamic*
- ▶ is *Portable*
- ▶ is *Object Oriented*
- ▶ has *Vast Libraries*
- ▶ is *Simple and non-obtrusive*

Why?

- ▶ It is easy to remember

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- ▶ You can develop rapidly

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- ▶ You can develop rapidly
- ▶ Interface with C libraries

Must and Must Not

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- ▶ Import only what you need
- ▶ Run pychecker on your code

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Numeric types

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- ▶ float (53 bits precision)
- ▶ complex ($1 + 2j$)

Operators

► + (add)

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- ▶ % (modulo)
- ▶ = (assign)

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>>> 'Hello' + 'World'  
'HelloWorld'
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▶ >>> 'HelloWorld'[0]
'H'
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▶ >>> 'HelloWorld'[6:]
'orld'
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- ▶ Simple concatenation:

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- ▶ Slicing:

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▶ >>> 'HelloWorld'[0]  
'H'
```

```
▶ >>> 'HelloWorld'[6:]  
'orld'
```

- ▶ Unicode Strings:

```
>>> ur'Hello\u0020World !'  
u'Hello World !'
```




Lists

```
▶ >>> a = ['spam', 'eggs', 100, 1234]
>>> a
['spam', 'eggs', 100, 1234]
```



Lists

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► Negative indices:

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► Concatenation:

`>>> a[:2] + ['bacon', 2*2]`

`['spam', 'eggs', 'bacon', 4]`



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▶ Concatenation:

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▶ Comprehension:

```
for i in a:
    print i
```

Tuples

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- ▶ Immutable (just as strings)
- ▶ Indexed
- ▶ Nested

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set(['orange', 'pear', 'apple', 'banana'])
```



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▶ Operators:



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- ▶

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- ▶ $a - b$ (in a but not in b)
- ▶ $a | b$ (in a or in b)
- ▶ $a \& b$ (in a and in b)
- ▶ $a \wedge b$ (in a or b but not in both)

Maps of objects

Dictionaries

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► Easy to create

```
>>> dict([('sape', 4139), ('guido', 4127), ('jack', 4098)])  
{'sape': 4139, 'jack': 4098, 'guido': 4127}
```


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```
>>> dict([('sape', 4139), ('guido', 4127), ('jack', 4098)])  
{'sape': 4139, 'jack': 4098, 'guido': 4127}
```

- ▶ Simple to use

```
>>> tel = dict([('sape', 4139), ('guido', 4127), ('jack', 4098)])  
>>> tel['jack']  
4098
```