



# J/Python in a Nutshell

Statements

Functions

Strings

Sequences, Sets, Maps

Classes, Objects

Java vs. Jython

**Jython is Python 2.7, but on top of Java**

# Statements

```
print "hello",'world',  
print "!"
```

```
if len(x)==0 :  
    x = [1,2]  
else:  
    x = x+[2,5]  
print x
```

```
while x<10 :  
    x=x-1
```

```
for e in [1,2,'a',True] :  
    print e
```

```
try:  
    z = x / y  
except:  
    z = 100
```

Blocks are based on code formatting  
**Nb of spaces in indentation is important!**

# Functions

```
def add(x,y):  
    return x+y
```

```
def prt(x,indent="  ",level=0):  
    """ print the string representation of x  
        optionnaly prefixed by a indentation.  
    """  
    r = indent*level+str(x)  
    print r
```

```
prt([2,3,True],level=3)
```

# Collections

## Sequences

- Strings `"ello"` immutable
- Ranges `range(2,5)` immutable
- Tuples `('a',5)` immutable
- Lists `[3,4,3,"a",True,[3,2]]` mutable
- Set `set([2,3,2,2])` mutable

## Map

- Dictionary `{ 3 : "III", 4 : "IV" }`

# Sequences (1/3)

```
len([]) # 0
[6] + [6,7,True] # [6,6,7,True]
"-" * 5 # "-----"
"hello world"[1] # "e"
"hello world"[-1] # "d"
[5,1,3,4,"b"][2:] # [3,4,"b"]
[5,1,3,4,"b"][2:-1] # [3,4]
1 not in [2,3,"a"] # True
"l" in "hello" # True
[2,3,4,[3]].count(3) # 1
"hello world".count("l") # 1
```

# Sequences (2/3)

```
[2,3,4,3].index(3)           # 1
[2,3,4,3].index(12)          # ValueError raised
sorted([7,3,"a",True])      # [True,3,7,"a"]
max([7,3,"a",True])         # "a"
min([7,3,"a",True])         # 1
sum([1,3,2])                 # 6
zip([1,2], ["I","II"])      # [(1,"I"),(2,"II")]
```

# Sequences (3/3)

```
map(len,["a","bc",""])           # [1,2,0]
map(lambda x:x*x,range(1,4))     # [1,4,9]
[ x*2 for x in range(1,4) ]      # [1,4,9]
[ x*2 for x in range(1,4) if x%2==0 ] # [4]
filter(lambda x:x>=10,[2,3,12,5]) # [12]
all([False,True,False])         # False
any([False,True,False])         # True
reduce((lambda x,y:x+y),"abcd")  # (('a'+b')+c)+d'
```

# Strings

```
str(11+1)+"1" # "121"
"hello world !".split() # ["hello","world","!"]
"a::b::c::, ::".split("::") # ['a', 'b', 'c', ', ', '']
", ".join(["a","b","c"]) # "a,b,c"
"hewo wor".replace("wo","X") # "heX Xr"
"hello".startswith("he") # True
"hello".endswith("lo") # False
"hello2 world".islower() # True
"Hello!".isupper() # False
"hello2 world".upper() # "HELLO2 WORLD"
"heLLo World".capitalize() # "Hello world"
```



# Sets

```
set([2,2,3,2])           # set([3,2])
len (set([2,2,3,2]))     # 0
4 not in set([2,2,3,2]) # True
set([2,3]) | set([3,4]) # set([2,3,4])
set([2,3]) & set([3,4]) # set([3])
set([2,3]) < set([2,3]) # False
set([2,3]) <= set([2,3]) # True
set([2,3]) - set([3,4]) # set([2])
set([2,3]) ^ set([3,4]) # set([2,4])
```

# Maps

```
len({"a":1,True:"test",True:"y"}) # 2
{"a":"alpha","b":"beta"} ["a"] # "alpha"
{"a":"alpha","b":"beta"} ["x"] # raise KeyError
"a" in {"a":"alpha","b":"beta"} # True
{1:"a",2:"b"}.keys() # [2,1]
{1:"a",2:"b"}.values() # ["b","a"]
{1:"a",2:"b"}.items() # [(2, 'b'), (1, 'a')]
m[3] = "c" # {1:"a",2:"b",3:"c"}
del m[1] # {2:"b",3:"c"}
m.update({3:"C",4:"D"}) # {2:"b",3:"C",4:"D"}
m.clear() # {}
m.copy() # {}
```

# Classes and Objects

```
class Point(object) :  
    def __init__(self,x,y):  
        self.x = x  
        self.y = y  
    def transpose(self):  
        t = self.x; self.x = self.y; self.y = t  
        return self  
    def distance(self,p2):
```

...

```
class ColoredPoint(Point):  
    def __init__(self,x,y,color):  
        super. __init__(self,x,y)
```

...

```
Point(2,4).transpose().distance(Point(6,7,Color("#FFEE00")))
```

```
x = None  
if o is None: ...  
if o1 is o2: ...  
if isinstance(o,C): ...  
if issubclass(C1,C2): ...  
if type(o) == C: ...
```

# Java vs. Jython

```
import x.y.C
```

```
if (x == null) {  
    int y = a && b  
} elseif (x instanceof C) {  
    C c = new C(12)  
}
```

```
from x.y import C
```

```
if x is None:  
    y = a and b  
elif isinstance(x,C):  
    c = C(12)
```

# Using API - Java vs. Python

```
IModelingSession s = Modelio.getInstance().getModelingSession();  
ITransaction tr = session.createTransaction("create component") ;  
comp = s.getModel().createComponent();  
comp.setOwner(s.getModel().getRoot());  
s.commit(tr);
```

```
s = Modelio.getInstance().getModelingSession()  
tr = s.createTransaction("create component")  
comp = s.getModel().createComponent()  
comp.setOwner(s.getModel().getRoot())  
s.commit(tr)
```

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[stackoverflow.com/questions/7409780/reading-entire-file-in-python](https://stackoverflow.com/questions/7409780/reading-entire-file-in-python) ▼  
Sep 13, 2011 - If you **read** an entire **file** with `content = open("Path/to/file", 'r').read()` is the ... In your code, that object is mentioned only **once**, in an expression, ...

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[stackoverflow.com/questions/19251736/python-read-whole-file-at-once](https://stackoverflow.com/questions/19251736/python-read-whole-file-at-once) ▼  
Oct 8, 2013 - As mentioned there is an EOF character ( `0x1A` ) that terminates the `.read()` operation. To reproduce this and demonstrate: `# Create file of 256 bytes ...`

**string - Python: read file line by line into array - Stack Overflow**  
[stackoverflow.com/questions/.../python-read-file-line-by-line-into-array](https://stackoverflow.com/questions/.../python-read-file-line-by-line-into-array) ▼  
Jul 18, 2010 - How do I **read** every line of a **file** in **Python** and store each line as an .... (there may be an OS limitation on the number of **files** open at **once**), and ...  
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**7. Input and Output — Python 2.7.11 documentation**