

Comparison Operators

<code>x < y</code>	Less	<code>x <= y</code>	Less or eq
<code>x > y</code>	Greater	<code>x >= y</code>	Greater or eq
<code>x == y</code>	Equal	<code>x != y</code>	Not equal

Boolean Operators

<code>not x</code>	<code>x and y</code>	<code>x or y</code>
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Arithmetic Operators

<code>x + y</code>	add	<code>x - y</code>	subtract
<code>x * y</code>	multiply	<code>x / y</code>	divide
<code>x % y</code>	modulus	<code>x ** y</code>	x^y

Assignment shortcuts: `x op= y`
 Example: `x += 1` increments `x`

Exception Handling

```
try:
    statements
except [ exception type [ asvar ] ]:
    statements
finally:
    statements
```

String / List / Tuple Operations

<code>len(s)</code>	length of <code>s</code>
<code>s[i]</code>	ith item in <code>s</code> (0-based)
<code>s[start : end]</code>	slice of <code>s</code> from <code>start</code> (included) to <code>end</code> (excluded)
<code>x in s</code>	True if <code>x</code> is contained in <code>s</code>
<code>x not in s</code>	True if <code>x</code> is not contained in <code>s</code>
<code>s + t</code>	the concatenation of <code>s</code> with <code>t</code>
<code>s * n</code>	<code>n</code> copies of <code>s</code> concatenated
<code>sorted(s)</code>	a sorted copy of <code>s</code>
<code>s.index(item)</code>	position in <code>s</code> of <code>item</code>
<code>s.lower()</code>	lowercase copy of <code>s</code>

String / List / Tuple Operations (cont)

<code>s.replace(old, new)</code>	copy of <code>s</code> with <code>old</code> replaced with <code>new</code>
<code>s.split(delim)</code>	list of substrings delimited by <code>delim</code>
<code>s.strip()</code>	copy of <code>s</code> with whitespace trimmed
<code>s.upper()</code>	uppercase copy of <code>s</code>
See also	http://docs.python.org/library/stdtypes.html#stringmethods

Environment

<code>sys.argv</code>	List of command line arguments (<code>argv[0]</code> is executable)
<code>os.environ</code>	Dictionary of environment variables
<code>os.getcwd()</code>	String with path of current directory
<code>import sys; print(sys.argv)</code> or <code>from sys import argv; print(argv)</code>	

Python List Methods

<code>append(item)</code>	<code>pop(position)</code>
<code>count(item)</code>	<code>remove(item)</code>
<code>extend(list)</code>	<code>reverse()</code>
<code>index(item)</code>	<code>sort()</code>
<code>insert(position, item)</code>	

Python sys.argv

<code>sys.argv[0]</code>	<code>foo.py</code>
<code>sys.argv[1]</code>	<code>bar</code>
<code>sys.argv[2]</code>	<code>-c</code>
<code>sys.argv[3]</code>	<code>qux</code>
<code>sys.argv[4]</code>	<code>--h</code>
<code>sys.argv</code> for the command:	
<code>\$ python foo.py bar -c qux --h</code>	

Function Definitions

```
def name(arg1, arg2, ...):
    statements
    return expr
```

Conversion Functions

<code>int(expr)</code>	Converts <code>expr</code> to integer
<code>float(expr)</code>	Converts <code>expr</code> to float
<code>str(expr)</code>	Converts <code>expr</code> to string
<code>chr(num)</code>	ASCII char <code>num</code>

Data Types

Integer	-256, 15
Float	-253.23, 1.253e-10
String	"Hello", 'Goodbye', ""Multiline""
Boolean	True, False
List	[value, ...]
Tuple	(value, ...) ¹
Dictionary	{ key: value, ... }
Set	{ value, value, ... } ²

1. Parentheses usually optional
2. Create an empty set with `set()`

Mutating List Operations

<code>del lst[i]</code>	Deletes <code>th</code> item from <code>lst</code>
<code>lst.append(e)</code>	Appends <code>e</code> to <code>lst</code>
<code>lst.insert(i, e)</code>	Inserts <code>e</code> before <code>th</code> item in <code>lst</code>
<code>lst.sort()</code>	Sorts <code>lst</code>

See also

<https://docs.python.org/3/library/stdtypes.html#typesseq-mutable>

Python File Methods

<code>close()</code>	<code>readlines(size)</code>
<code>flush()</code>	<code>seek(offset)</code>
<code>fileno()</code>	<code>tell()</code>
<code>isatty()</code>	<code>truncate(size)</code>



Python File Methods (cont)

next()	write(<i>string</i>)
read(<i>size</i>)	writelines(<i>list</i>)
readline(<i>size</i>)	

Python Indexes and Slices

len(a)	6
a[0]	h
a[5]	n
a[-1]	n
a[-2]	m
a[1:]	[i,j,k,m,n]
a[:5]	[h,i,j,k,m]
a[:-2]	[h,i,j,k]
a[1:3]	[i,j]
a[1:-1]	[i,j,k,m]
b=a[:]	Shallow copy of a

Indexes and Slices of a=[h,i,j,k,m,n]

Statements

If Statement

```
if expression:
    statements
```

```
elif expression:
    statements
```

```
else:
    statements
```

While Loop

```
while expression:
    statements
```

For Loop

```
for var in collection:
    statements
```

Counting For Loop

```
for i in range(start, end [,
step]):
    statements
(start is included; end is not)
```

Python Date Formatting

%a	Abbreviated weekday (Sun)
%A	Weekday (Sunday)
%b	Abbreviated month name (Jan)
%B	Month name (January)
%c	Date and time
%d	Day (leading zeros) (01 to 31)
%H	24 hour (leading zeros) (00 to 23)
%I	12 hour (leading zeros) (01 to 12)
%j	Day of year (001 to 366)
%m	Month (01 to 12)
%M	Minute (00 to 59)
%p	AM or PM
%S	Second (00 to 61 ⁴)
%U	Week number ¹ (00 to 53)
%w	Weekday ² (0 to 6)
%W	Week number ³ (00 to 53)
%x	Date
%X	Time
%y	Year without century (00 to 99)
%Y	Year (2008)
%Z	Time zone (GMT)
%%	A literal "%" character (%)

¹ Sunday as start of week. All days in a new year preceding the first Sunday are considered to be in week 0.

² 0 is Sunday, 6 is Saturday.

³ Monday as start of week. All days in a new year preceding the first Monday are considered to be in week 0.

⁴ This is not a mistake. Range takes account of leap and double-leap seconds.

Python Datetime Methods

today()	fromordinal(<i>ordinal</i>)
now(<i>timezoneinfo</i>)	combine(<i>date</i> , <i>time</i>)
utcnow()	strptime(<i>date</i> , <i>format</i>)
fromtimestamp(<i>timestamp</i>)	
utcfromtimestamp(<i>timestamp</i>)	

Python Class Special Methods

__new__(cls)	__lt__(self, other)
__init__(self, args)	__le__(self, other)
__del__(self)	__gt__(self, other)
__repr__(self)	__ge__(self, other)
__str__(self)	__eq__(self, other)
__cmp__(self, other)	__ne__(self, other)
__index__(self)	__nonzero__(self)
__hash__(self)	
__getattr__(self, name)	
__setattr__(self, name, attr)	
__delattr__(self, name)	
__getattr__(self, name)	
__call__(self, args, kwargs)	

Python Time Methods

replace()	utcoffset()
isoformat()	dst()
__str__()	tzname()

strftime(*format*)