

Powering Up Your FME workspaces with Python



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()

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)

Arithmetic Operators

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

Assignment shortcuts: x op= y

Example: x += 1 increments x

Comparison Operators

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

Boolean Operators

not x	x and y	x or y
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Exception Handling

```
try:
    statements
except [ exception type [ as var ] ]:
    statements
finally:
    statements
```

Conversion Functions

int(expr)	Converts expr to integer
float(expr)	Converts expr to float
str(expr)	Converts expr to string
chr(num)	ASCII char num

String / List / Tuple Operations

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

More String Operations

s.lower()	lowercase copy of s
s.replace(old, new)	copy of s with old replaced with new
s.split(delim)	list of substrings delimited by delim
s.strip()	copy of s with whitespace trimmed
s.upper()	uppercase copy of s

See also <http://docs.python.org/library/stringtypes.html#string-methods>

Mutating List Operations

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

See also <http://docs.python.org/library/stringtypes.html#typeseq-mutable>

Dictionary Operations

len(d)	Number of items in d
del d[key]	Removes key from d
key in d	True if d contains key
d.keys()	Returns a list of keys in d

See also <http://docs.python.org/library/stringtypes.html#mapping-types-dict>

Function Definitions

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

String Formatting

```
"Hello, {0} {1}".format("abe", "jones")
```

Hello, abe jones

```
"Hello, {fn} {ln}".format(fn="abe", ln="jones")
```

Hello, abe jones

```
"You owe me ${0:.2f}".format(253422.3)
```

You owe me \$253,422.30

```
'{:%Y-%m-%d %H:%M:%S}'.format(datetime.now())
```

2012-05-16 15:04:33

See also <http://docs.python.org/library/string.html#format-specification-mini-language>

Useful Functions

exit(code)	Terminate program with exit code
input("prompt")	Print prompt and readline() from stdin

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Cheat Sheet

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<https://fmeuc.com>

Other References

<https://www.cheatography.com/davechild/cheat-sheets/python/>
More Python Cheatsheet Goodness

<https://community.safe.com/>
FME Community

<https://community.safe.com/s/article/python-and-fme-basics>
Tutorial: Python and FME Basics

<https://docs.safe.com/fme/html/fmepython/index.html>
Official FME Python API Documentation

Code Snippets

Loop Over Sequence

```
for index, value in enumerate(seq):  
    print("{} : {}".format(index, value))
```

Loop Over Dictionary

```
for key in sorted(dict):  
    print(dict[key])
```

Read a File

```
with open("filename", "r") as f:  
    for line in f:  
        # Strip newline  
        line = line.rstrip("\n")  
        print(line)
```

FME Execution Order

1. Python Scripted Parameter (in order)
2. FME Python Startup script
3. Workspace with PythonCaller and PythonCreator
4. FME Python Shutdown script

FMELogfile()

logMessageString(message, severity)	Write a Message to the log, severity is optional
FME_INFORM	The default log level
FME_WARN	Warning messages
FME_ERROR	Error messages
FME_FATAL	Fatal error messages

FMEFeature()

getAttribute(attributeName)	Query attribute value
setAttribute(attributeName, attributeValue)	Set an attribute value
getGeometry()	Query geometry
removeAttribute()	Remove attribute
getAllAttributes()	Get a list with all attributes

FME Python Startup Script

fme.logFileName	The name of the log file used for this translation.
fme.macroValues	A Python dictionary, indexed by macro name, which holds the value of each macro known within the workspace or mapping file at the end of parsing.

FME Python Shutdown Script

Note: To import the 'fme' Python module, execute the statement `import fme`.

fme.failureMessage	The failure message if the translation failed, blank if the translation succeeded.
fme.featuresRead	A Python dictionary, indexed by feature type, which holds the number of features read for that feature type.
fme.featuresWritten	A Python dictionary, indexed by feature type, which holds the number of features written for that feature type.
fme.logFileName	The name of the log file used for this translation.
fme.status	False if the translation failed and True if it was successful
fme.totalFeaturesRead	The total number of features read
fme.totalFeaturesWritten	The total number of features written

FME Web Services API

Note: Use with 'import fmeweb services'

FMENamedConnectionManager()	Get the instance of the manager object.
FMENamedConnectionManager.getNamedConnection('name')	Obtain a named connection which does not block access on the DB to that given named connection. Will return None if the connection name doesn't exist.
FMEBasicConnection.getUserName()	Retrieves the user name associated with this connection.
FMEBasicConnection.getPassword()	Retrieves the user password associated with this connection.
FMEBasicConnection.getType()	Retrieves the type of the named connection.

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