

Python Basics

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- Using IDLE
- Hello World in Python
- Basic Python Programming

Using the Python Shell

- Select IDLE (Python GUI) and Window with header Python 2.7.5 Shell should appear
- In Python 2.7.5 Shell, under File, select New Window
- In the new window, enter the following:

```
#My Python Program  
print "Hello World" #Maybe should use Hello Python
```
- Note comments starting with # can be entered at the end of any line or on a line on their own.
- Under File, select Save as to Save and use the file extension .py
- Under Run, select Run Module and program will run in your first window, i.e. the Shell.

Basic Python Programming

- Variable names start with a letter or underscore, can contain further letters, underscores and numbers: Name, name which are different.
- Name = Value assigns the specified Value to Name
- Basic values are Strings, Numbers, Lists, Booleans e.g.
“Hello World”, ‘My \” Quote \” is here’, 42, 99.99, [1, “Two”, 3], True, False
- Multiple assignments via Name1, Name2,... = Value1, Value2,
- Name1 = Name2 = Name3 = 0 will assign 0 to all the named variables.
- You need to assign values to variables before you use them and usually this is done at the start of your script/module where initial values are assigned.

Basic Exercises

- In the Python Shell, when a variable name is entered, its value results:

```
>>> Message = "Hello World!"
>>> Message
'Hello World!'
>>>
```

- Standard Mathematical Operators are used (+, -, *, /, %(Modulo), **)
- String Operators: + for join and * followed by an integer to repeat a string
- A full list of basic operators can be found here http://www.tutorialspoint.com/python/python_basic_operators.htm
- Experiment in the Shell trying out the above.

More Advanced Use of Lists

- List can be indexed using [indices], e.g. `MyList[1]` returns the 2nd item in the list, `MyList[0:2]` returns the first 2 items in the list, and
- When using `[index1:index2]` either may be omitted. `[:index2]` is from the start to index2 and `[index1:]` is from index1 to the end.
- The above applies to Strings in Python.
- Lists can be nested, so `MyList[1][0]` returns the first item of the second item which must be a list.

Branching

- Here is an example of an If statement in Python:

```
if len(file_name) == 0:  
    print "Next time please enter something!"  
else:  
    print "We will now process your file."
```
- If the condition after the if and before the : is True, then the indented statement(s) following are executed; and if the condition is False, the indented statement(s) following the else: are executed. The else part is optional. For nested ifs, use elif condition: instead of else:
- In Python, the condition must evaluate to either True or False.
- More details at http://www.tutorialspoint.com/python/python_decision_making.htm

Looping

- Conditional loops using the while statement with optional else, e.g.

```
while file_text != file_finish:
    file_text = raw_input("Enter text: ")
else:
    print "File Finish has been entered."
```

- Iterations using the for statement, e.g.

```
fruits = ['banana', 'apple', 'mango']
for fruit in fruits: # Second Example
    print 'Current fruit :', fruit
```

- More details at http://www.tutorialspoint.com/python/python_loops.htm

- Try running the Python code found here:

http://www.tutorialspoint.com/python/python_basic_syntax.htm

(Note examples taken from these webpages.)

- Simpler Python programs with branches and loops can be found here:

<http://dev.laptop.org/git/users/cscott/pippy-examples/tree/en/2-simple-programs>

References and Further Resources

- Official Python website <http://www.python.org>
- Python wiki <http://wiki.python.org> including <http://wiki.python.org/moin/BeginnersGuide/NonProgrammers>
- Python Editor in IDLE [http://www.annedawson.net/Python Editor IDLE.htm](http://www.annedawson.net/Python%20Editor%20IDLE.htm)
- Python from Scratch (5 Tutorials) <http://net.tutsplus.com/tutorials/python-tutorials/python-from-scratch-getting-started/>
- Tutorialspoint Python Tutorial <http://www.tutorialspoint.com/python/index.htm>
- More Python program examples at <http://wiki.laptop.org/go/Pippy#Examples>