Python Programing Basics

# 1. Background

The Python programing language is used the main programing language for the course GEOG479. In particular, we will write python scripts to use Hadoop Streaming API, interact with Spark, as well as data analytics using Pandas and scikit-learn, etc.

# 2. Basics to get started program in Python

# Function

def function\_B(parameter1, parameter2, parameter3):

result = parameter1 + parameter2 + parameter3

return result

def function\_A():

output = function\_B(1,2,3)

if output > 10:

print 100

else:

print output

Pay attention to how to define a function, how to pass parameters, in particular, the indentation

# Lambda function

**Normal function**

def function(x):

return x\*\*2

>> function (2)

Or you can use a **lambda function**

r = lambda x: x\*\*2

>> r(2)

**Embed lambda function in a normal function**

def make\_incrementor (n):

return lambda x: x + n  
  
>> f = make\_incrementor(2)  
>> g = make\_incrementor(6)  
  
>>> print f(42), g(42)

|  |
| --- |
| 44 48 |

>>> print make\_incrementor(22)(33)

|  |
| --- |
| 55 |

More complicated case with **filter, map and reduce** functions in Python

>> foo = [2, 18, 9, 22, 17, 24, 8, 12, 27]   
>> print filter(lambda x: x % 3 == 0, foo)

|  |
| --- |
| [18, 9, 24, 12, 27] |

>> print map(lambda x: x \* 2 + 10, foo)

|  |
| --- |
| [14, 46, 28, 54, 44, 58, 26, 34, 64] |

>> print reduce(lambda x, y: x + y, foo)

|  |
| --- |
| 139 |

# Split

example1 = “this is a case”

example2 = “this, is, another, case”

example3 = “this^is^the^third\_case”

>> result = example.split(“ ”)

>> print result

|  |
| --- |
| [“this”, “is”, “a”, “case”] |

>> result2 = example3.split(“^”)

What is result2

# Replace

example1 = “this is a case”

example2 = “this, is, another, case”

example3 = “this^is^the^third\_case”

>> result = example.replace(“ ”, “xxx”)

>> print result

|  |
| --- |
| “thisxxxisxxxaxxxcase” |

>> result2 = example3.replace(“^”, “,”)

What is result2

# List, tuple and dictionary

These are lists: [1,2,4,5], [“student”, “name”, “whatever”]

These are tuples: (1,2,3), (1,2,”student”, “whatever”)

These are dictionaries: dict = {'Name': 'Zara', 'Age': 7, 'Class': 'First'};

print dict['Name']

print dict['Age']

To be continued …