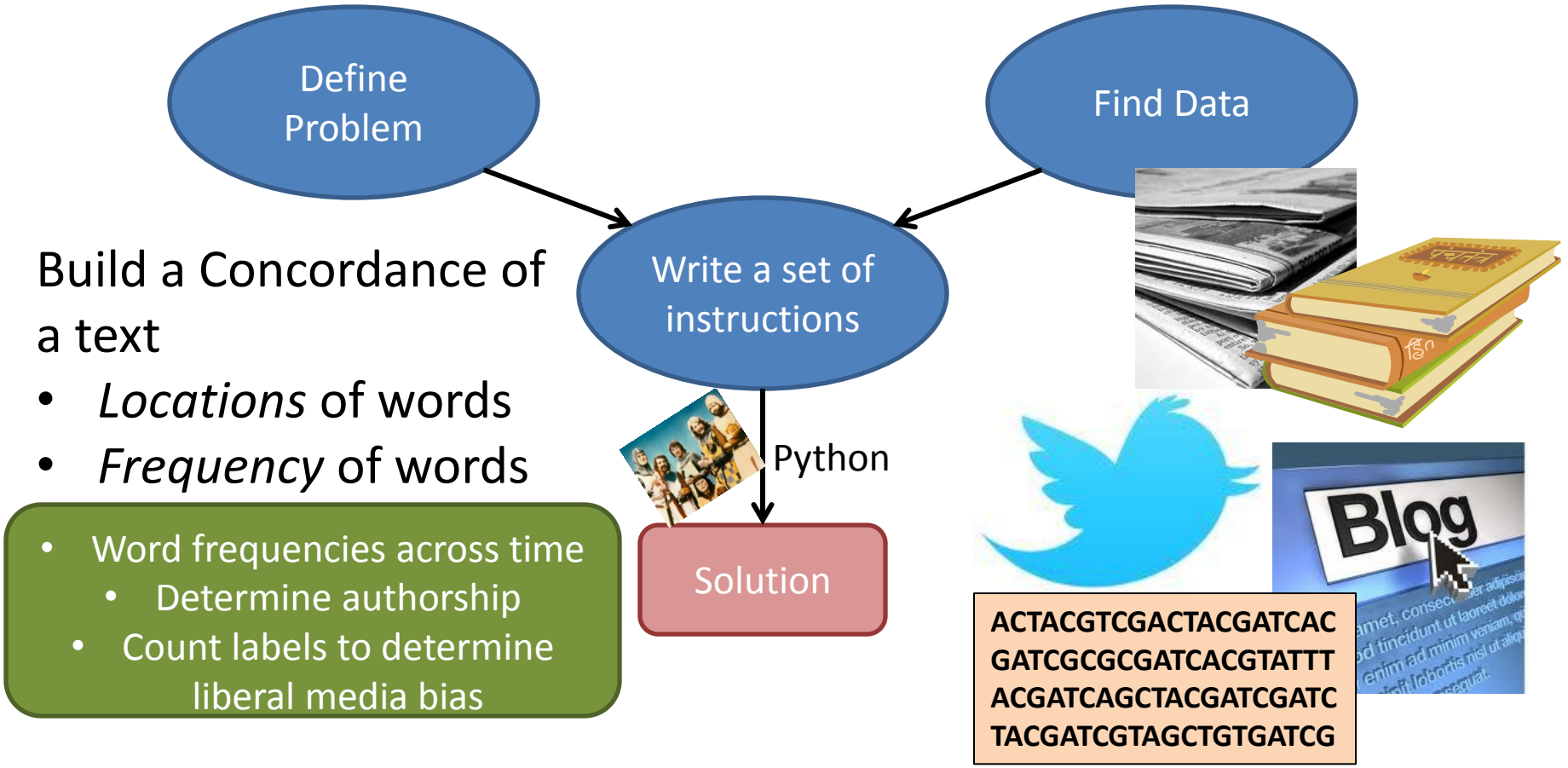
Textual Analysis: Summary Statistics

March 1, 2012

Textual Analysis



The Big Picture

Overall Goal

Build a Concordance of a text

- *Locations* of words
- *Frequency* of words

Today: Summary Statistics

- Review material from last class
- Count the number of words in poem.txt (by Shel Silverstein)
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- Find the longest word in Moby Dick

ACT2-2

- Do Task 1

ACT2-2

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Question: What is the difference between *returning* a value and *printing* a value?

```
def addOne(t):
    y = t + 1
    return y
```

vs.

```
def addOne(t):
    y = t + 1
    print y
    return
```

Working with Files

"Inputs" are also called *Arguments.*

Preloaded Functions		
Name	Inputs	Outputs
`open`	Two Strings 1. File Name 2. "r" for read (for now)	File
`read` (On a File)	none	String
`close` (On a File)	none	none
`split` (On a String)	(optional) delimiter	List of Strings

Working with Files

```
>>> shelList = readShel()
>>> shelList
['Sarah', 'Cynthia', 'Sylvia', 'Stout', 'Would', 'not',
'take', 'the', 'garbage', 'out!', "She'd", 'scour', 'the',
'pots', 'and', 'scrape', 'the', 'pans,', 'Candy', 'the',
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```

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'simply', 'would', 'not', 'take', 'the', 'garbage',
'out.', 'And', 'so', 'it', 'piled', 'up', 'to', 'the',
'ce                                                  s,',
'B
..
'a
'r                                                   ',
'l                                                   out',
'A
```

Escape Characters

'\' means interpret the NEXT character differently.

- \n : "new line"
- \' : "apostrophe"
- \t : "tab"

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Python `For` Statements (For Loops)

"For each element in list myList, do something"

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>>> myList = [1,2,3]
>>>
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>>> for element in myList:
        print element


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3
>>>
```

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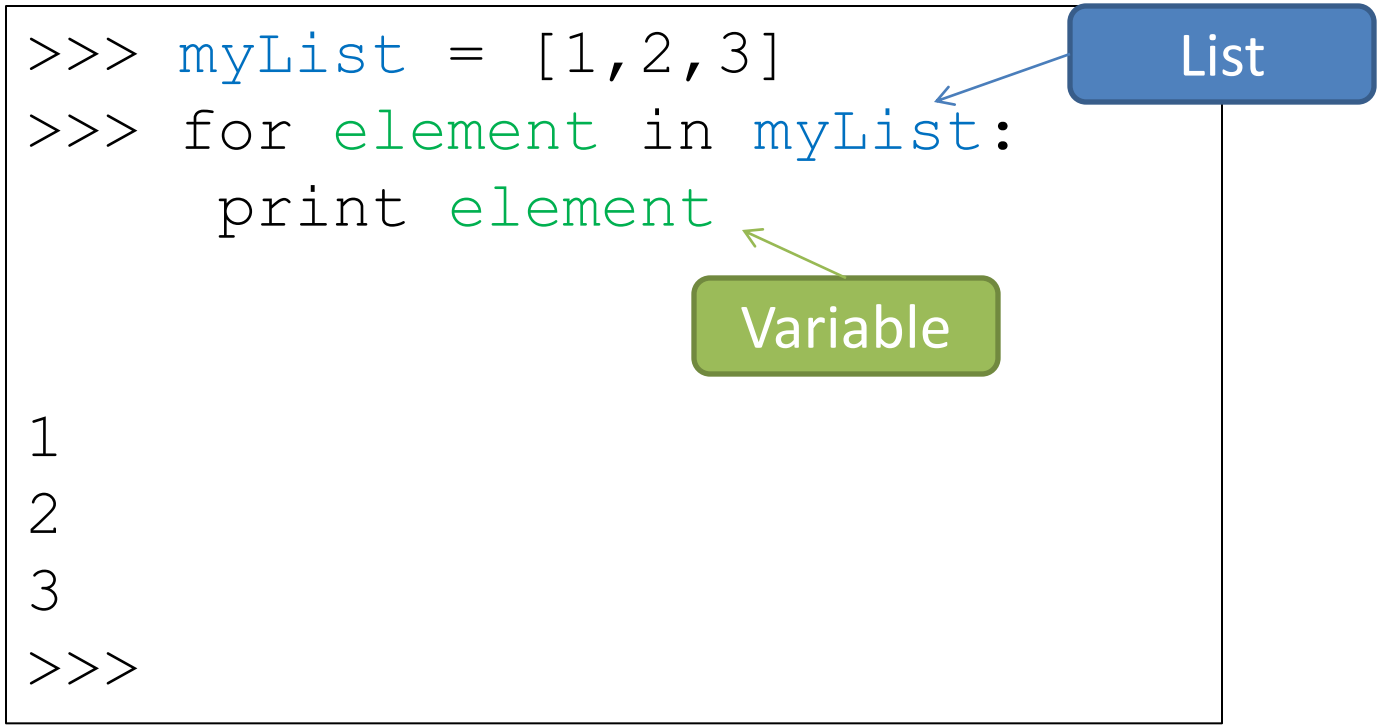

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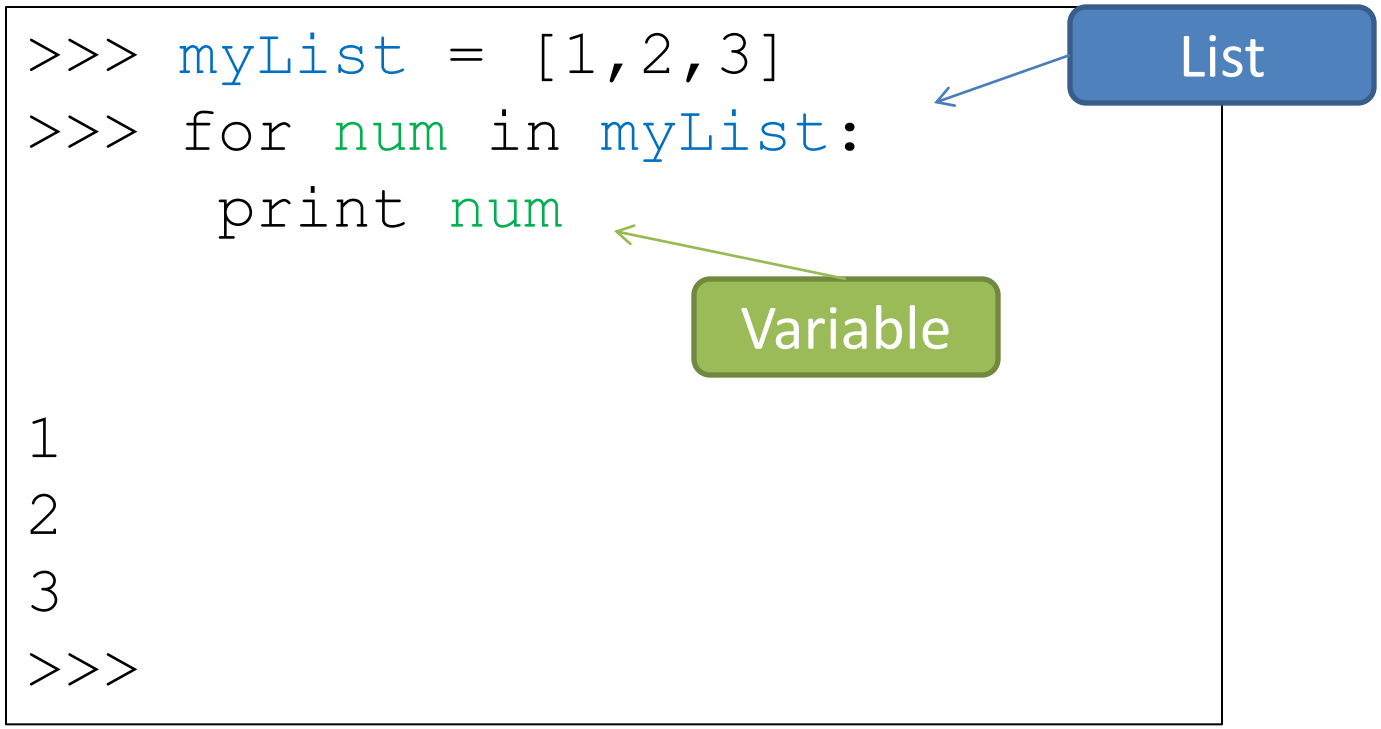

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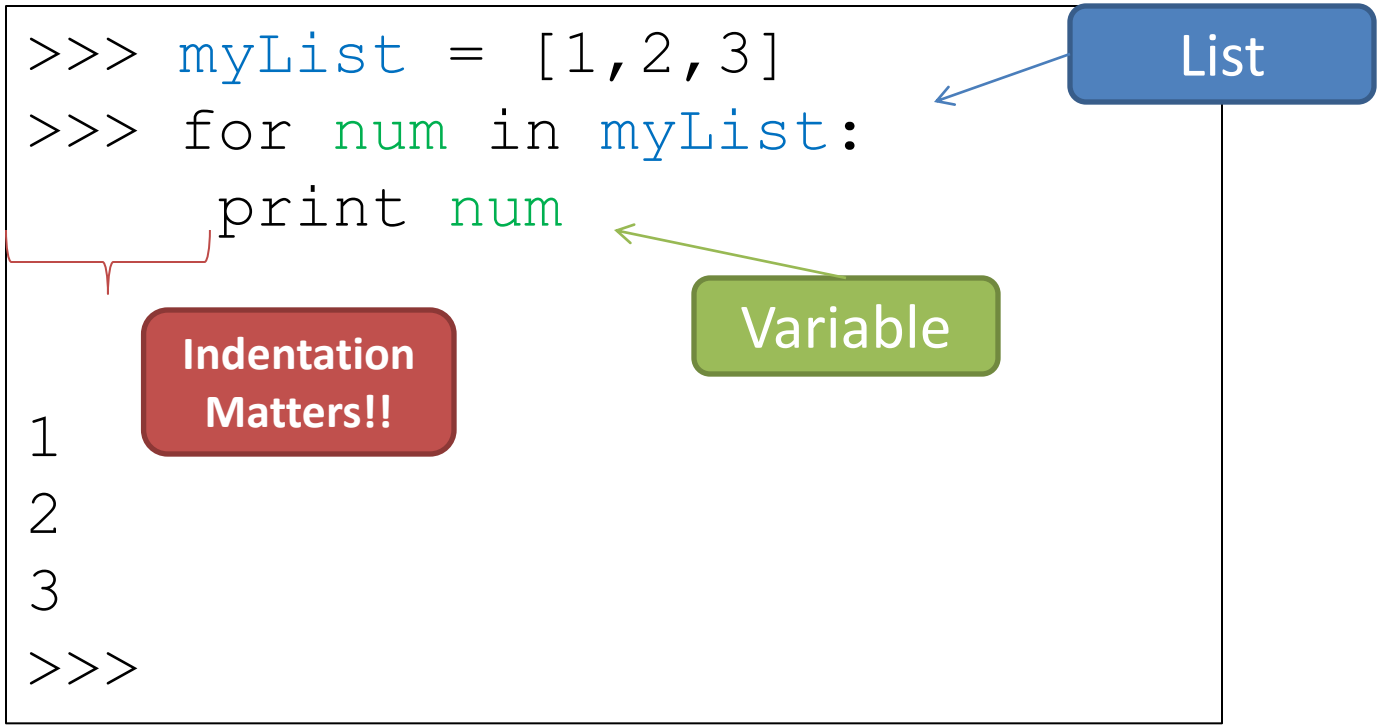

Word Count for Shel's Poem

```
def countWordsInShel():
    '''Returns the number of words in the poem.'''




    return count
```

Word Count for Shel's Poem

```
def countWordsInShel():
    '''Returns the number of words in the poem.'''
    myList = readShel()
    # the 'count' variable counts the number of words
    count = 0
    for word in myList:
        count = count + 1
    print "There are ",count," words in the poem."
    return count
```

Word Count for Shel's Poem

Good Programming Practices: Documentation!

```
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    '''Returns the number of words in the poem.'''
    myList = readShel()
    # the 'count' variable counts the number of words
    count = 0
    for word in myList:
        count = count + 1
    print "There are ",count," words in the poem."
    return count
```

Program Description (triple quotes)

Comment (#)

Print Statement

Activity

- Do Task 2

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A Shortcut to List Length

Preloaded Functions		
`len`	List	Integer

```
>>> len(myList)
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These functions *cast* a variable of one type to another type

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Do Task 3

Compute the Average Word Length of Moby Dick

```
def avgWordLengthInMobyDick():
    '''Gets the average word length in MobyDick.txt'''
    myList = readMobyDick()
    s = 0
    for word in myList:
        s = s + len(word)
    avg = s/float(len(myList))
    return avg
```

Compute the Average Word Length of Moby Dick

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    myList = readMobyDick()
    s = 0
    for word in myList:
        s = s + len(word)
    avg = s/float(len(myList))
    return avg
```

Is our Program Accurate?

```
>>> MDList = readMobyDick()
>>> MDList[0:99]
['CHAPTER', '1', 'Loomings', 'Call', 'me', 'Ishmael.',
'Some', 'years', 'ago--never', 'mind', 'how', 'long',
'precisely--', 'having', 'little', 'or', 'no', 'money', 'in',
'my', 'purse,', 'and', 'nothing', 'particular', 'to',
'interest', 'me', 'on', 'shore,', 'I', 'thought', 'I',
'would', 'sail', 'about', 'a', 'little', 'and', 'see', 'the',
'watery', 'part', 'of', 'the', 'world.', 'It', 'is', 'a',
'way', 'I', 'have', 'of', 'driving', 'off', 'the', 'spleen',
'and', 'regulating', 'the', 'circulation.', 'Whenever', 'I',
'find', 'myself', 'growing', 'grim', 'about', 'the',
'mouth;', 'whenever', 'it', 'is', 'a', 'damp,', 'drizzly',
'November', 'in', 'my', 'soul;', 'whenever', 'I', 'find',
'myself', 'involuntarily', 'pausing', 'before', 'coffin',
'warehouses,', 'and', 'bringing', 'up', 'the', 'rear', 'of',
'every', 'funeral', 'I', 'meet;', 'and']
```

Is our Program Accurate?

```
>>> shelList
['Sarah', 'Cynthia', 'Sylvia', 'Stout', 'Would', 'not',
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We'll come back to this…

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New Type: Booleans

- Either `True` or `False`
  - Note the capitalization

```
>>> x = True
>>> x
True
>>> y = False
>>> y
False
```

New Type: Booleans

- Either `True` or `False`
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- New Operators

Remember

Numerical Operators		
Operator	**Example**	**Result**
Sum	`1 + 2`	`3`
Difference	`1 - 2`	`-1`

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Boolean Operators		
Operator	**Example**	**Result**
Equality	`1 == 2`	
Inequality	`1 != 2`	
Less Than	`1 < 2`	
Less Than or Equal To	`1 <= 2`	
Greater Than	`1 > 2`	
Greater Than or Equal To	`1 >= 2`	

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New Type: Booleans

- Either `True` or `False`
  - Note the capitalization
- New Operators
- These are **expressions**
- Assignments have only **one** equals sign.

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Boolean Types

Last Boolean Operators: `and`, `or` and `not`

Boolean Operators			
Operator	**Examples**		**Result**
`and`	`(4<5) and (6<3)`		
`or`	`(4<5) or (6<3)`		
`not`	`not(4<5)`		

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More Examples		**Result**
`(4<5) and ((6<3) or (5==5))`		
`(5==4) or (not(6<3))`		

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Boolean Statements (`If` Stmts)

- "If something's true, do A"

```
if 6 > 5:
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6 is greater than 5
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if 6 > 5:
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- "If something's true, do A, otherwise, do B"

```
if 5 == 6:
       print '5 equals 6'
else:
       print '5 does not equal 6'

5 does not equal 6
```

Boolean Statements (`If` Stmts)

- "If something's true, do A, otherwise, do B, otherwise, do C"

```
if 5 == 6:
        print '5 equals 6'
else:
        if 5 > 6:
                print '5 is greater than 6'
        else:
                print '5 is less than 6'


5 is less than 6
```

Get the Longest Word in Moby Dick

```
def getLongestWordInMobyDick():
    '''Returns the longest word in MobyDick.txt'''




    return longestword
```

Get the Longest Word in Moby Dick

```
def getLongestWordInMobyDick():
    '''Returns the longest word in MobyDick.txt'''
    myList = readMobyDick()
    longestlen = 0
    longestword = ""
    for word in myList:
        if len(word) > longestlen:
            longestlen = len(word)
            longestword = word
    return longestword
```

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