

1. Strings in Python are **immutable** sequences containing only characters. They cannot be modified, but new strings can be created using them. For example, to make a string upper-case:

```
myString = "Mark Guzodial"
```

```
myString = myString.upper()
```

The `myString.upper()` method call creates a new string and returned it. Since we didn't need the old string we re-assigned `myString` to the new string.

A Python *list* is also a sequence collection, but a list can contain items of any type (e.g., character, strings, integers, floats, other lists, etc.). Lists are represented by comma-separated values enclosed in square brackets ('[', ']'). See the Python Summary handout for operations on lists, but they include: `myList=[5, 6, 7, 8]` `ListB=[8, 9]`

Operation	Operator	Explanation	Example	Result of Example
Indexing	[<index>]	Access the element specified by the index	<code>myList[2]</code>	7
Slicing	[:]	Extract a part of the list	<code>myList[1:3]</code>	[6, 7]
Concatenation	+	Combine lists together	<code>myList + ListB</code>	[5, 6, 7, 8, 8, 9]
Repetition	*	Concatenate a repeated number of times	<code>ListB * 3</code>	[8, 9, 8, 9, 8, 9]
Membership	in	Ask whether an item is in a list	<code>3 in myList</code>	False
Length	<code>len(list)</code>	How many items are in the list?	<code>len(myList)</code>	4

1. For the following lists, predict the results:

```
cheer = [ 2, 4, 6, 8, 'who', 'do', 'we', 'appreciate']
```

```
rhyme = [ 1, 2, 'buckle', 'your', 'shoe']
```

Expression	Predicted Result	Actual Result
<code>cheer[4]</code>		
<code>cheer[2:6]</code>		
<code>rhyme[:4]</code>		
<code>cheer[1:4] + rhyme[-2:]</code>		
<code>cheer[:2] * 3</code>		
<code>6 in rhyme</code>		
<code>len(cheer)</code>		
<code>[cheer[2:4]*4]</code>		

2. Lists in Python are mutable, i.e., they can be changed by assigning individual elements or slices new values.

For the following lists, predict the resulting lists:

Initial List Value	Expression	Result
<code>temp = ['a', 'b', 'c', 'd']</code>	<code>temp[1] = 99</code>	
<code>temp = ['a', 'b', 'c', 'd']</code>	<code>temp[1] = 'cat'</code>	
<code>temp = ['a', 'b', 'c', 'd']</code>	<code>temp[1] = ['cat', 'dog']</code>	
<code>temp = ['a', 'b', 'c', 'd']</code>	<code>temp[1:3]=[6, 7, 8, 9]</code>	
<code>temp = ['a', 'b', 'c', 'd']</code>	<code>temp[1:2] = 5</code>	

3. See the Python Summary for List methods in Python.

What would be the value of myList and temp after each of the following Python statements?

```
myList = range(5)
temp = range(10, 7, -1)

last = myList.pop()
myList.extend(temp)
myList.insert(4, 3)
item = myList.pop(5)

del myList[2]
```

4. Suppose you have a small business and are maintaining customer information in a text file: customerData.txt.

First Name,Middle Initial,Last Name,Street Address,City,State,Zip Code,Country,Email Address,Telephone Number,Gender,Birthday Woodrow,C,Wilson,2362 New Street,Eugene,OR,97408,US,Woodrow.C.Wilson@spambob.com,541-337-9453,male,11/26/1984 Eric,A,Stutler,568 Nuzum Court,East Aurora,NY,14052,US,Eric.A.Stutler@trashymail.com,716-652-4943,male,11/24/1947 Rena,D,Adkins,3153 Cardinal Lane,Cleveland Heights,OH,44118,US,Rena.D.Adkins@trashymail.com,216-932-7637,female,1/14/1975 Jane,D,Smith,123 Main Street,Cedar Falls,IA,50613,US,Jane.D.Smith@gmail.com,319-555-1234,female,4/14/1970

Write a function generateList to read each line of text about a customer and generate a list of fields and list of customers. Insert the list of fields for each customer into a customers list. Thus, the customers list is a list-of-lists where each item contains the information about a single customer. The general approach you should take is to:

- read each line from the file (contains all the information about a customer) as a string,
- split the line by commas into a list of strings for the fields,
- insert this list of strings into the customers list.

```
import os
def main():
    """ Open's file, reads customer information into a list-of-lists, closes the file"""
    setMediaFolder()
    selectedFolder = getMediaFolder()
    os.chdir(selectedFolder)
    custFile = open('customerData.txt', 'r')
    customerFields, customerList = generateList(custFile)
    custFile.close()

    print "customerFields:", customerFields      # Echo customer fields
    print "customerList[0]:", customerList[1]      # Echo first customer information
    print "customerList[-1]:", customerList[-1]    # Echo last customer information

def generateList(custFile):
    """ Reads customer data from custFile and returns a list of fields
        and a list-of-lists of customers"""
    pass
```