Media Computation Lecture 38 Name:________________

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 Guzdial"
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:

0 1 2

`myList=[5,6,7,8]`   `ListB=[8,9]`

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

1. For the following lists, predict the results:

0 1 2 3 4 5

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

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

0 1 2 3

Expression	Predicted Result	Actual Result
`cheer[4]`	'who'	
`cheer[2:6]`	[6,8,'who','do']	
`rhyme[:4]`	[1,2,'bucklo','your']	
`cheer[1:4] + rhyme[-2:]`	[4,6,8,'your','shoe']	
`cheer[:2] * 3`	[2,4,2,4,2,4]	
`6 in rhyme`	~~True~~ False	
`len(cheer)`	8	
`[cheer[2:4]*4]`	~~[[6,8],[6,8],[6,8],[6,8]]~~	([6,8,6,8,6,8,6,8])

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
`temp = ['a','b','c','d']`	`temp[1] = 99`	['a',99,'c','d']
`temp = ['a','b','c','d']`	`temp[1] = 'cat'`	['a','cat','c','d']
`temp = ['a','b','c','d']`	`temp[1] = ['cat', 'dog']`	['a',['cat','dog'],'c','d']
`temp = ['a','b','c','d']`	`temp[1:3]=[6, 7, 8, 9]`	['a',6,7,8,9,'d']
`temp = ['a','b','c','d']`	`temp[1:2] = 5`	['a',5,'c','d']

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)` ~~mylist [0, 1, 2, 3, 4]~~

`temp = range(10, 7, -1)` temp [10, 9, 8]

`last = myList.pop( )` last [4]

`myList.extend(temp)` mylist [0, 1, 2, 3, 3, ~~10~~, 9, 8]

`myList.insert(4, 3)` 0 1 2 3 4

`item = myList.pop(5)` item [10] mylist [0, 1, ~~2~~, 3, 3, 9, 8]

`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 \n
Woodrow,C,Wilson,2362 New Street,Eugene,OR,97408,US,Woodrow.C.Wilson@spambob.com,541-337-9453,male,11/26/1984 \n
Eric,A,Stutler,568 Nuzum Court,East Aurora,NY,14052,US,Eric.A.Stutler@trashymail.com,716-652-4943,male,11/24/1947 \n
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"""
  fieldsStr = custFile.readline().strip()
  customerFields = fieldsStr.split(',')      ['First Name','Middle Initial',...
  customerList = []
  for custLine in custFile:
      custInfoList = custLine.strip().split(',')
      customerList.append(custInfoList)
  return customerFields, customerList
```