

Objectives:

- Practice text-file I/O
- Practice string manipulation using string methods and sequence operations
- Practice list manipulation using list methods and sequence operations

For today's lab you'll need several files, so start the lab by downloading the following file to your desktop:

<http://www.cs.uni.edu/~fienu/cs051s10/labs/lab8.zip>

Extract this file to the Desktop (or your flash drive) by right-clicking on lab8.zip icon and selecting Extract All.

Part A: Yesterday in lecture we wrote the following program to read a small business's customer information from the text file: customerData.txt into a customerList. Recall that the order of the fields on a line is: First Name, Middle Initial, Last Name, Street Address, City, State, Zip Code, Country, Email Address, Telephone Number, Gender, and Birthday.

```
def main():
    """ Open's file, reads customer information into a list, closes the file"""
    custFile = open('customerData.txt','r')
    customerList = generateList(custFile)

    # Echo first and last enter from the customerList
    print "customerList[0]:", customerList[0]
    print "customerList[-1]:",customerList[-1]

    custFile.close()

def generateList(custFile):
    """ Reads customer data from file and returns a list of customers"""
    customers = []
    for line in custFile:
        # Strip the new-line character from the end of the line, then split
        # the line on the commas (',') to get a list of customer fields
        custInfoList = line.strip().split(',')
        customers.append(custInfoList)
    return customers

main()
```

Part A. From the main program call a function that processes the customer list to generate a text file containing mailing labels for only female customers living in Iowa (IA).

The general approach you should take is to:

- pass the customerList as a parameter to this function
- open the mailing label file (mailingLabels.txt)
- the function should loop over all the customer records in the list
- if a record satisfies the criteria listed above (female from Iowa), build the mailing label by concatenating select elements from the customer record's field list, and
- write the mailing label to the file (mailingLabels.txt)

Each mailing label should be formatted as below with 5 blank line separating each label:

Jane Smith
123 Main Street
Cedar Falls, IA 50613

After you have the program for part A working correctly, raise your hand and we'll check your work.

Part B: In part B, we'll process the same data file: customerData.txt, but your program should tally the number of customers from each state, and print the number from each state sorted from most to least. One way to do this is to use parallel lists: one to maintain the state initials and one to maintain the count of each state. For example, the following diagram shows 'OR' with a count of 54 occurrences, 'NY' with a count of 115 occurrences, etc.

```
statesList = [ 'OR', 'NY', 'ID', .... ]
statesCount = [ 54, 115, 17, ... ]
```

These lists would initially be empty lists (statesList = [] and statesCount = []) with the general processing being:

- read each line as a string,
- split the line into a list of strings for the fields to get the state
- check to see if the state is already in the statesList. If it is, find the index of the state and use that index to increment the corresponding count in the statesCount list
- if the state is not in the statesList, then add it to the end of the statesList and add a 1 to the end of the statesCount list.
- After processing the whole file, make a list of lists that combines the statesList and statesCount such as:

```
combinedStatesList = [ [54, 'OR'], [115, 'NY'], [17, 'ID'], .... ]
```

- The sort method can then be used to sort the list of lists
- Print the sorted state and number-of-occurrence pairs to the screen.

After you have the program for part B working correctly, raise your hand and we'll check your work.

If you complete all parts of the lab, nothing needs to be turned in for this lab. If you do not get done today, then show me the completed lab in next week's lab period.

Make sure that you log off the computer before you leave.