Name : _____

- INTEGRITY: By taking this exam, you pledge that this is your work and you have neither given nor received inappropriate help during the taking of this exam in compliance with the Academic Honor Code of Georgia Tech. Do NOT sign nor take this exam if you do not agree with the honor code.

- DEVICES: If your cell phone, pager, PDA, beeper, iPod, or similar item goes off during the exam, you will lose 10 points on this exam. Turn all such devices off and put them away now. You cannot have them on your desk.

- ACADEMIC MISCONDUCT: Academic misconduct will not be tolerated. You are to uphold the honor and integrity bestowed upon you by the Georgia Institute of Technology.

  - Keep your eyes on your own paper.
  - Do your best to prevent anyone else from seeing your work.
  - Do NOT communicate with anyone other than a proctor for ANY reason in ANY language in ANY manner.
  - Do NOT share ANYTHING during the exam. (This includes no sharing of pencils, paper, erasers).
  - Follow directions given by the proctor(s).
  - Stop all writing when told to stop. Failure to stop writing on this exam when told to do so is academic misconduct.
  - Do not use notes, books, calculators, etc during the exam.

- TIME: Don't get bogged down by any one question. If you get stuck, move on to the next problem and come back once you have completed all of the other problems. This exam has 7 questions on 8 pages including the title page. Please check to make sure all pages are included. You will have 50 minutes to complete this exam.

I commit to uphold the ideals of honor and integrity by refusing to betray the trust bestowed upon me as a member of the Georgia Tech community. I have also read and understand the requirements outlined above.

Signature: _____

Question	Points	Score
1. Vocabulary	9	
2. List Dictionary	4	
3. Multiple Choice	3	
4. Reading Functionals	6	
5. List Question	4	
6. Erica's Menu	10	
7. Red Blend	10	
Total:	46	

1. *(9 points)*
   For each of the following vocabulary terms, write a concise 1-2 sentence definition. Be brief, and to the point.

   (a) [3 pts] clone

   > **Solution:** In python, the operation of making a complete copy of some data item, such as a picture or a list. This allows you to modify the clone without affecting the original.

   (b) [3 pts] decrement

   > **Solution:** decrement - The process of decreasing a variable, typically by one. aVar = aVar - 1

   (c) [3 pts] traverse

   > **Solution:** To move through all elements of a set, performing a similar operation on each element.

2. *(4 points)*
   Write down exactly what the following code prints. If it generates an error, say which line genered the error and why.

```
aList = [12, 13, 89]
aDict = { print("Meredith") : "Olivia Benson"}
aList.append(aDict)
stuff = aList[3][aList.append("test")]
print(stuff)
result = aList[-1]
print(result)
```

> **Solution:**
>
> ```
> Meredith
> Olivia Benson
> test
> ```
>
> Grading:
> +1 for Meredith (only if the first printout) +1 for Olivia Benson somewhere in the middle of anything else. +1 for test (only if the last printout) +1 if all three lines are exactly correct.
>
> -1 penalty for more than 3 lines.

3. *(3 points)*
   For each of the following multiple choice questions, indicate the most correct answer! Indicate your selected answer by circling it.

   (a) [3 pts] Examine the following code which defines a class and then creates an instance of the object, then answer the following questions about it:

   ```python
   class Test2:
       def __init__(self,x,y):
           self.x=x
           y=self.recursionFun(y)

       def recursionFun(self,x):
           print("recursionFun called, x is:", x)
           for i in x:
               if int(i) > 5:
                   return self.x
               else:
                   self.x=self.x+self.recursionFun(i[0])
                   return self.x
   ```

   ```python
   app=Test2(3,['12',8,[99],21])
   ```

   What is app.y? A. None B. 0 C. 3 D. 6 **E. Not Defined.**

   What is app.x? A. None B. 0 **C. 3** D. 6 E. Not Defined.

   How many times total was the recursionFun method called, either by itself or other methods?

   A. 0 **B. 1** C. 2 D. 3 E. 4 F. 5

4. *(6 points)*
   Examine the following python code that uses functional programming.

```
a = [0,1,2,3,4,5]
b = map(lambda x: x+2, a)
c = filter(lambda x: x/2>2, b)
d = reduce(lambda x,y: x+y, c)
```

Tell us what each of the above variables refers to after the code is executed:

```
a: _____
b: _____
c: _____
d: _____
```

Solution:

```
Answers:
 [0, 1, 2, 3, 4, 5]
 [2, 3, 4, 5, 6, 7]
 [5, 6, 7]
 18

Grading: +1 point for a and b if fully correct.
 +2 points for c and d (if fully correct.)
```

5. *(4 points)*
   Beside the following code, write down exactly what would be printed after it is executed by the python interpreter.

   ```
   oList = []
   iList = [20]
   for index in range(3):
       oList.append(iList)
       iList[0] = iList[0] + 20
   print(oList)
   ```

   > **Solution:**
   >
   > ```
   > [[80], [80], [80]]
   > ```
   >
   > ```
   > +1 prints a list (of anything)
   > +1 List has proper number of items (3)
   > +1 Items in list are nested lists
   > +1 if integers inside nested lists are correct (80)
   > ```

6. *(10 points)*
   Oh No! I'm ordering food for Erica's party and the restaurant just sent a copy of their menu as a text file. It all sounds really good, except for the fact that she doesn't eat any vegetables. Write a function called removeVegetables to remove all the lines with vegetables from the menu. Your function will be given a string that represents the file name, and a list of strings (each of the vegetables to remove if found). Look for lines that do not contain any vegetables and write them out to another file called 'EricasMenu.txt'. You may assume that the vegetable will be separated from other words by a space.

   Example: If the menu.txt file contains the following...

   ```
   Tomato Soup, $4.56
   Sushi, $15.89
   Eggs with Onions, $1.23
   Cheese Grits, $5.67
   Beef Stew, $3.25
   Tacos, $3.27
   Spinach Ravioli, $9.75
   ```

   After running `removeVegetables("menu.txt", ['Onions', 'Tomato', 'Spinach'])` the EricasMenu.txt file should contain:

Sushi, $15.89
Cheese Grits, $5.67
Beef Stew, $3.25
Tacos, $3.27

Solution:

```
def removeVegetables(fileName, listOfVeg):
    fIn = open(fileName, 'r')
    fOut= open('EricasMenu.txt', 'w')
    lines = fIn.readlines()
    fIn.close()
    for line in lines:
        keepLine = True
        for word in listOfVeg:
            if word in line:
                keepLine = False

        if keepLine == True:
                fOut.write(line)

  fOut.close()
```

Grading:

(10 points)
```
+1      correct header
+1      opens file using input parameter for reading
+1      opens output file named "EricasMenu.txt" for writing
+1      reads all the data from input file
+2      correctly checks the line against the list of veggies.
(+1 of 2 if they only check one word, such as the first correctly)
+2      writes correct lines to "EricasMenu.txt"
+1      closes reading file
+1      closes writing file
```

This page intentionally left blank so that you may answer the question on the previous page here.

7. *(10 points)*

Write a function named `redBlend` that accepts two picture objects (that have already been loaded from disk) as parameters. It should set the red values in the first picture to the red value of the corresponding pixel in the second picture. You may assume that both pictures are the same size. Because you are modifying the first picture parameter, you do not need to return anything.

Some functions that might be helpful for this question:

- `getPixels(picture)`
- `getPixel(picture, x, y)`
- `getWidth(picture)`
- `getHeight(picture)`
- `getX(pixel)`
- `getY(pixel)`
- `getRed(pixel)`
- `setRed(pixel,value)`

Solution:

```
def redBlend(p1, p2):
    for px1 in getPixels(p1):
        px2 = getPixel( p2, getX(px1), getY(px1)  )
        setRed(px1, getRed(px2))
```

Grading: 2 points for correct header, 2 points for looping through all pixels in the first image. 4 points for finding the corresponding pixel in the 2nd image. 1 points for getting the red value from picture two, 1 point for setting the red value in picture one to match. (-1 if they return something other than None) -1 If they accidentally modify picture 2 instead of picture 1 but are otherwise correct)