Instructions:

- Please write clearly. What I cannot read, I will not grade.
- Show all your work in detail. I give partial credit.
- This exam has 7 pages including the title page. Please check to make sure all pages are included.
- This exam is closed book, closed notes, no calculators.
- Don’t get bogged down on any one question. You will have 50 minutes to complete this exam.

\[I\ commit\ to\ uphold\ the\ ideals\ of\ honor\ and\ integrity\ by\ refusing\ to\ betray\ the\ trust\ bestowed\ upon\ me\ as\ a\ member\ of\ the\ Georgia\ Tech\ community.\]

Signature: ______________________________

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Spring 2010
1. For each of the following vocabulary terms, write a concise 1-2 sentence definition. Be brief, and to the point.

(a) (3 points) dictionary

(b) (3 points) slice

c) (3 points) traverse

d) (3 points) mutable type

e) (3 points) decrement

Multiple Choice

2. For each of the following questions, select the appropriate answer by circling it.

(a) (1 point) Order the following items from earliest (older) to latest (newer):
   1. Konrad Zuse’s Z1 computer
   2. The Transistor
   3. ARPANET

   A. 1,2,3  B. 2,3,1  C. 1,3,2  D. 2,1,3  E. None of these.

(b) (1 point) Order the following items from earliest (older) to latest (newer):
   1. The Jacquard Loom
   2. Ada Lovelace’s program for the Analytical Engine
   3. Jacques De Vaucanson’s Digesting Duck

   A. 1,2,3  B. 3,1,2  C. 2,3,1  D. 2,1,3  E. None of these.

(c) (1 point) Which of these would you use to print a number to four decimal places?
   A. “%4i”  B. “0%.4i”  C. “%4f”  D. “%.4f”  E. “%0.5f”

(d) (1 point) Convert 11011001₂ to decimal (base 10):
   A. 217  B. 225  C. 232  D. 233  E. 234

(e) (1 point) Which data type is mutable?
   A. int  B. float  C. str  D. list  E. tuple
Short Answer

3. Three functions for reading from a file are read(), readline(), and readlines(). Briefly explain what each of these functions returns when called. Be sure to explain how each function differs in behavior.

   (a) (2 points) read() -

   (b) (2 points) readline() -

   (c) (2 points) readlines() -

Code Understanding

4. (6 points) Fill in the blanks so that, when run, the code below will output the following:

   >>> func1()
   DooWaa
   Diddy
   Diddy
   Dum
   Diddy
   Doo

   def func1():
       print "DooWaa"
       for i in range( ___________________ ):

           print _____________

           if i == ____________ :
               print "Dum"
       print "Doo"
5. (3 points)

```python
def mysteryFunc(x, y):  # x and y are non-negative integers
    if y == 0:
        return 0
    else:
        return x + mysteryFunc(x, y-1)
```

What does this mystery function do? Also tell us the value returned as a result of calling mysteryFunc(5,2)

6. Examine the following code:

```python
def trainCrash (x):
    while x <= 10:
        if x % 5 == 0:
            return "oh no, Crash!"
        if x % 3 == 0:
            print "I’m a train..."
        x = x +1
        print "Choo-choo!"
    return "I’m too tired to go on"
```

If this code is called from the IDLE window as follows:

```python
y = trainCrash(8)
```

(a) (3 points) What is displayed on the screen?
(b) (2 points) What will be stored in the y variable from the example function call above?
7. (7 points) Breakup - Write a function called `breakUp` that accepts a string as a parameter. It should return a list which is made up of single character strings, one per letter in the original string.

For example:

```python
>>> result = breakUp( "Yey excellence fees!" )
>>> print result
['Y', 'e', 'y', ' ', 'e', 'x', 'c', 'e', 'l', 'l', 'e', 'n', 'c', 'e', ' ', 'f', 'e', 'e', 's', '!', ']
```
8. (9 points) Stick Together - Write a function called \texttt{stickTogether} that accepts a list as a parameter. It should return a string that is the concatenation of all string elements in the list. Note that non-string elements should be skipped, including nested lists.

For example:

```python
def stickTogether(lst):
    result = 
```