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.

CS 1301 Exam 1 Answers
Fall 2009

Problem	Earned Points	Possible Points
1. Vocabulary		18
2. Python Expressions		26
3. Fill in the Blank		11
4. Multiple Choice		6
5. Reading Code		5
6. Combinations		5
7. MovieView		6
8. IsEven		5
9. Blastoff		8
10. Count J's		10
Total:		**100**

1. Vocabulary (18 points)
For each of the following words, write a 1-2 sentence definition of the word as used in this class. Your definition should be concise and to the point, while proving you know what the term means.

a) evaluate - To calculate the value of an expression.
b) iteration - To repeatedly execute a block of code.
c) modulus - % operator, that calculates the remainder of an integer division.
d) proprioception - on a robot, internal sensing mechanisms. On a human, a sense of the relative positions of different parts of ones own body.
e) semantic error - An error that makes a program behave differently than intended by the programmer, but does not actually generate a syntax or runtime error.
f) type conversion - Deliberately changing the type of a value, using a function such as int(), str(), or float().

Grading: 3 points if the definition is very good, 2 points if they mostly got the concept, 1 point if they included a few of the right keywords, and zero if they get it completely wrong.

2. Python Expressions (26 points)
Act like the python interpreter and evaluate the following expressions. Write what value the expressions evaluate to as well as its type (integer, float, string, boolean, etc...).

Expression	Evaluated Result (1 points)	Type of the Result (1 point)
"Hello" + "World" + "!"	"HelloWorld!"	String
5 + 6	11	Int
"cs1301" * 2	"cs1301cs1301"	String
int(5.9) / 3	1	Int
(6.0 – 1) ** 2 + 3	28.0 .	Float
"92" + str(34) + "Four"	"9234Four"	String
True and (3 != 2)	True .	Boolean
range(3,7)	[3,4,5,6]	List
(7.0 + 6) / 2	6.5	Float
range(3,10,2)	[3,5,7,9]	List
5.0 > 5.0	False .	Boolean
"Pumpkin %.3f" % 3.1459	"Pumpkin 3.146"	String
7 + 3 / 2 > 8	False .	Boolean
(raw_input() > 3) and False	False .	Boolean

3. Fill in the Blank (11 points)

The name of my grading TA is: __<Appropriate Name>_____ and I am in section _<SECTION>__.

For homeworks 2 & 3 my partner was: _____<NAME>_____.

In Python, a = is used for __assignment_, while a == is used for ___equivalence checking __.

When a function calls itself, it is said to be ___Recursive / Recursion_____.

In python, the **if** keyword is used to make a ___conditional_ statement, while the **for** and **while** keywords are used to make __ loops (1/2 point: iteration) ___.

The decimal (base 10) number { 43 }$_{10}$ is represented as ___ 101011 ____ in binary.

The binary number { 100101 }$_2$ is represented as ____37_____ in decimal.

The number { 28 }$_{10}$ is represented as _____1C _____ in hexadecimal.

4. Multiple Choice: Circle the correct choice. (6 points)

4a. Ada Lovelace is widely regarded as the first:

A. Computer Scientist   **B. Programmer**   **C**. Compiler   **D**. Discrete Mathematician   **E**. None of these

4b. Douglas Engelbart demonstrated the worlds first _____ in 1964 at Stanford.

A. Transistorized Computer   **B. Mouse**   **C.** Solid Sate Memory   **D.** Tape Drive   **E.** Transistor

4c. Grace Hopper was:

A. A Rear Admiral.   **B.** Awarded the "man-of-the-year" award from DPMA in 1969.

C. Instrumental in the development of COBOL.   **D**. Credited for developing the first compiler.

E. All of the above.

Grading: 2 points for each correct answer.

5. Reading Code (5 points)

Act like the python interpreter and run the following program. Write what would be printed out by the program in the box to the left.

```
def fun1(x):
    print "Fun1 x:", x
    return x * 2

print "Start"

y = fun1(10)

if (5 > y ):
    print y
elif ( 15 > y ):
    print y + 10
elif (25 > y ):
    print y + 100
elif (35 > y):
    print y + 1000
else:
    print y + 10000

print "End"
```

Start
Fun1 x: 10
120
End

Grading: 1 point for each line they get in the correct order, two points for getting "Fun1 x: 10"

6. Writing Code - Combinations (5 points)

Write a function named **combine** that accepts two strings as parameters. The function should concatenate the strings (putting the second parameter after the first parameter), and return the new combined string.

```
def combine( string1, string2):
    return( string1 + string2)
```

Grading: +1 point for getting the header correct.
             +2 point for adding the two strings,
             +2 point for returning the correct result

7. Correcting Code: MovieView (6 points)

Look over the following lines of code, and for each line determine if the code will run (syntax is correct). If the line of code is correct, just tell us "It works!", if it will not, please explain why/correct the error.

```
1:     define movieView(age):
2:        name = raw_input("What is your name?  ")
3:        if age < 17
4:           print "Sorry %d, you can't see the movie alone." % name
5:        else age >= 17:
6:            print "Enjoy the film, %s!" % name
```

Line 1:   def instead of define
Line 2:   It works!
Line 3:   Missing colon (:) after the 17
Line 4:   %d needs to be a %s to accept a string (name)
Line 5:   No boolean condition after the else, remove (age >= 17)
Line 6:   It works!

8.Write Code - IsEven (5 points)
Write a function called **IsEven** that accepts a single parameter **aNum**. If **aNum** is even (evenly divisible by 2) the function must return True, otherwise, it must return False.

```
def IsEven( aNum):
   if (aNum % 2 == 0):
      return True
   else:
      return False
```

Grading:
+1 point for getting the header correct
+2 points for determining if the value is even/odd
+2 points for returning the correct boolean

9.Write Code - Blastoff (8 points)

Write a function called blastoff that will accept a single parameter called N. Your function should start counting down from N, printing each number one per line until N reaches zero. When N reaches zero, instead of printing "0", the function should print "Blastoff!".

For example, if you called blastoff and gave it an N of 5, this would be the result:

```
>>>blastoff(5)
5
4
3
2
1
Blastoff!
>>>
```

```python
def blastoff( N ):
   while (N > 0):
      print N
      N = N - 1
   print "Blastoff!
```

Grading:
 +2 point for getting the header correct
 +4 points for printing each number from N to 1 (+2 if they miss one number at either end)
 +2 point for printing "Blastoff" at the end

10.Write Code - Count Js (10 points)

Write a function named **countJs** that accepts a single string parameter called **aString**. The countJ's function should keep a count of how many times the capital letter "J" appears in the string, and return the final count.

```python
def countJs( aString ):

   counter = 0

   for letter in aString:

      if( letter = = "J"):
         counter = counter + 1

   return( counter)
```

Grading:
+2 for getting the header correct
+2 for having a counter that starts at zero
+2 for comparing each element to a "J"
+2 for incrementing the counter if it was a "J"
+2 for returning a result