Name : _____

Grading TA: _____

- 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 8 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. Short Answer	10	
3. Multiple Choice	7	
4. True or False	4	
5. NumLegs	2	
6. Find Errors	5	
7. pygLatin	6	
8. Triangle	10	
Total:	53	

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] high-level language

   (b) [3 pts] low-level language

   (c) [3 pts] None

2. *(10 points)*
   For each of the following questions, give a brief answer:

   (a) [3 pts] What is printed when the following lines of code are evaluated?

```
def ohHeyGuys(x):
  y=x*5
  return(y)
  print("Boo!")

print("Omg I love CS!")
x=ohHeyGuys(2)
print("ERMAHGERD")
print(x)
```

(b) [3 pts] What is printed when the following lines of code are evaluated?

```
x = 0
while x < 3:
  if x <= 1:
     print("Ramblin' Wreck")
  else:
     print("From Georgia Tech")
  x = x + 1
```

(c) [3 pts] A function with a mysterious purpose. Assume both parameters are numbers.

```
def mysteryFunction(a,b):
  if a < b:
     return a
  return b
```

What does this function return if called with `mysteryFunc(5,10)`?

Describe at a high level the purpose of this function:

(d) [1 pt] Convert the decimal number 218 into binary:

3. *(7 points)*
   For each of the following multiple choice questions, indicate the best answer by circling it.

   (a) [1 pt] Given the following code, what is printed?

   ```
   if type("True") == bool or type(5 // 4) == float:
      print ("Braves")
   elif type(5) == int:
      print("Falcons")
   else:
      print("Hawks")
   ```

   A. Braves
   B. Falcons
   C. Hawks
   D. A and B
   E. None of the above

(b) [1 pt] Who is known as the father of theoretical computer science?

A. Steve Jobs   B. Alan Turing   C. Kurt Gödel   D. Charles Babbage   E. C and D

(c) [1 pt] The __was a direct replacement for bulky vacuum tubes and was a smaller, more reliable and power saving part.

A. microprocessor   B. transistor   C. integrated circuit   D. mercury delay line

(d) [1 pt] What is the value of newStr after the code below is executed?

```
aStr = "abc"
anum="3"
newStr = aStr * len(anum)
```

    A. 'abc3'

    B. 'abcabc'

    C. 'abc'

    D. 'abcabcabc'

    E. The code produces an error

(e) [2 pts] Assume the following code has been executed by the python interpreter:

```
z = 4//2/2
```

What is the TYPE of the value stored in z?

A. Integer   B. Float   C. String   D. List   E. NoneType

What is the VALUE stored in z?

A. 1   B. 1.0   C. '1'   D. '1.0'   E. 4   F. 4.0   G. '4'   H. '4.0'

(f) [1 pt] What is the type of the data stored in X after this line of code is executed?

```
X = print("2.0")
```

A. String   B. Int   C. Float   D. Bool   E. NoneType

4. *(4 points)*
   Examine the following function:

```
def trueOrFalse(a,b,c,d):
  a = input("Enter a: ")
  b=b
  d=c
  c = b//d
  d=d

  #Print all variables
  print( a, b, c, d )
```

Assume the function is called as follows:

```
trueOrFalse(4,1,2,3)
```

and the number 30 is typed for the input prompt: *Enter a:*

At the end of the function, we print the four variables. At this point in the flow of exectuion, indicate if each of the following statements is True or False:

T / F 1. The variable a will point at 30 whose type is int.
T / F 2. The variable b will point at 2 whose type is int.
T / F 3. The variable c will point at 0.5 whose type is float.
T / F 4. The variable d will point at 3 whose type is int.

5. *(2 points)*

What is printed by the following function if it is given the number 1 as n?

```
def numLegs(n):
    if n == 0:
        print("haha you can't walk!")
    if n == 1:
        print( "you hop!")
    if n == 2:
        print("thats normal")
    else:
        print("you must trip yourself")
```

$>>>$ numLegs(1)

6. *(5 points)*

The following code is intended to calculate what George P. Burdell can buy from the bookstore. He only wants to buy the one item so your code should only make a single printout. The suggested item should be the most expensive thing he can purchase with the money he has. If he has $10 or less, he cannot buy anything, so you should tell him this.

Clearly circle and EXPLAIN all errors present in the code, whether syntax-based or logic-based, that prevent this code from working as intended. Each error should be considered independent of the others (i.e. while inspecting one bit of code, you should assume the rest of the function works/runs as intended). You should assume that the input will be a valid set of digits.

Note There are no accidental typos in the code presented below. Any mistake that you see should be identified.

```
money=input("How much money do you have on you?")
if money>30
    print("You can buy a GT polo!")
elif money>20:
    return("You can buy GT flip flops!")
if money>10:
    print("You can buy a buzz plush toy!")
else:
    print(You can't buy anything :()
```

7. *(6 points)*

Write a function called pygLatin() that takes a string as its only parameter. You may assume that the string will be a single word, containing at least one letter. Your function should return a new string that represents the pygLatin version of the word. To do this, remove the first letter, add it to the back of the string, and add "ay" after it. Return this new string.

Example test cases:

```
>>> x = pygLatin("Run")
>>> print(x)
 unRay
>>> y = pygLatin("a")
>>> print(y)
 aay
```

8. *(10 points)*

Write a function named `triangle`. This function will cause your robot to move/draw an equalateral triangle. (an equalateral triangle has 3 sides of equal length and each corner has a 60 degree interior angle) The function will accept one integer parameter, representing the length of each side of the triangle in inches.

You may assume that your robot moves one inch per second (forward or backwards), and turns 360 degrees in a time of 3 seconds (when traveling at full speed). When the function finishes running, it should beep in celebration and return the total distance travelled by the robot, in inches (excluding turns, as the robot does not "travel" while rotating).

You may assume that `from Myro import *` has already been executed, and that the correct `init(...)` call has already been made, so your robot is ready to execute myro robot movement functions.