Name : _____

1. *(2 points)*

   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
TA Name	2	
2. Vocabulary	9	
3. For Range	4	
4. While True	4	
5. CopyPart	4	
6. Seek Light	10	
7. Stick Together	9	
8. Fill a Dictionary	10	
Total:	52	

2. *(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] compound data type

   (b) [3 pts] global variable

   (c) [3 pts] proprioception

3. *(4 points)*

   The following code is executed:

```
for i in range(5,1,-1):
  print "^" * i
  print "!"
```

   Draw what is printed:

4. *(4 points)*

Assume the following function is defined and then executed:

```
def testFunc(aNum, aStr):
    while True:
        aNum = aNum + 1
        if aNum % 2 == 1:
            print aNum
        if aStr[0] == "y":
            return aNum
        else:
            aStr = aStr[1:]
        print "Loop Running"

aVar = testFunc(5, "vwxyz")
```

What value is stored in aVar?

What does the program PRINT when executed?

5. *(4 points)*
   Assume the following function has been defined and executed as follows:

```
def copyPart(fileName):
   f = open(fileName,"r")
   out = open("output.txt","w")
   data = f.readline()
   aList = []
   while data != "":
      if not (data in aList):
         out.write(data)
         aList.append(data)
      data = f.readline()
   out.close()
   f.close()

copyPart("infile.txt")
```

If the contents of infile.txt are the following lines:

```
pineapple
eggs
batteries
milk
eggs
cereal
pineapple
milk
juice
milk
```

Write below the contents of the output.txt file:

6. *(10 points)*

Write a function named `seekLight` that accepts an integer as a parameter. The integer corresponds to how long your function should run, in seconds, before returning.

While running, your function should get the value of the robots' center light sensor (using a `getLight('center')` call). If the value returned is smaller than 500, your robot should move forward at full speed for one second. If the light sensor value is larger than (or equal to) 500, the robot should beep at 800Hz for 1 second, and not move.

Make sure that, no matter what, your robot stops and the function returns when the time is up! You may assume that the myro library is already loaded and that your robot is already connected (init has been called) to the computer.

When your function returns, it should return None.

7. *(9 points)*

   Stick Together - Write a function called `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:

   ```
   >>> result = stickTogether( [ 4, "Hello", ["bob",3], " ", True, "There!", 7]  )
   >>> print result
    "Hello There!"
   ```

8. *(10 points)*

   Create a function named charMap that accepts a string as a parameter. Your function
   should create a dictionary that has each unique character in the string as a key. The
   value associated with the key will be a tuple that contains all of the (integer) positions
   (indices) in the string where that character occurs. Your function should return this
   dictionary after creating it.

   ```
   Example output:
   >>> result = charMap("Hello World")
   >>> print result
   {' ': (5,), 'e': (1,), 'd': (10,), 'H': (0,), 'l': (2, 3, 9), 'o': (4, 7),
       'r': (8,), 'W': (6,)}
   ```

This page intentionally left blank. You may use it as scratch paper. If you place an answer on this page, box it, label it clearly, and indicate clearly on the original problem page that your answer is on this page.