**Made by Max Poole**

**True or False?**

1. **All functions must have a return statement**
2. **An integer is mutable**
3. **You cannot do this: “Hello” + “Goodbye”**
4. **x+=1 adds one to the value of x (assume that x is an integer)**
5. **Dictionaries can have multiple values attached to one key**

**Write a program that simulates connect 4 or write a program that for numbers between 0 and 100 (inclusive of 100) prints out “no” if the number is divisible by 3, “nope” if the number is divisible by 5, and “nonono” if the number is divisible by both 3 and 5. If the number is not divisible by 3 or 5, then print the number.**

**Convert from base 8 to base 10**

*130*

**Convert from base 4 to base 2**

*121*

**Convert from base 10,000,000,000 to base 89:**

*1*

**Evaluate whether the following statements are true or false:**

*not(True or False) and True*

*True and False and True and True and False and False or True*

**What part of the below code will not get evaluated due to short circuit evaluation?**

*hasATire = True*

*hasAWheel = False*

*numberTire = 4*

*if hasAWheel and hasATire and numberTire = 4:*

 *Print(“This is probably a car”)*

**Describe any three emacs commands that you did not use on your midterm:**

**Given a non-empty string like "Code" return a string like "CCoCodCode".**

**Examples:**

**string\_splosion('Code') → 'CCoCodCode'**

**string\_splosion('abc') → 'aababc'**

**string\_splosion('ab') → 'aab'**

**Describe a bubble sort algorithm using words, pictures, code, or interpretive dance:**

**Sort the following sorting algorithms by their average speed in Big O notation (slowest to fastest):**

1. *Bubble Sort*
2. *Selection Sort*
3. *Merge Sort*
4. *Quick Sort*
5. *Bogo Sort (randomizes a list and then checks if it is sorted)*

**What is the Big O for the following program?**

def testQuestion(n):

 for i in range(n):

 for j in range(n):

 print(“yuperdoodle”)

**What will the below code print?**

def my\_function(param=[ ]):

param.append("thing")

return param

print(my\_function())

print(my\_function())

**What will the below code print?**

def my\_function(param = 3):

 param += 2

 return param

print(my\_function())

print(my\_function())

**Write a function that takes the contents of “test.txt” and prints out each character in the file. The file contains the message:**

**“***I am a file, yes”*

**There are no line breaks or tabs.**

**Make a set, list, and tuple containing the numbers 1, 2, and 3**

**What are the differences between these three?**

**Sally loves Iguanas, Sam loves dogs, and Robert loves only himself. What data structure would be best to store this information? Use that data structure to store this information.**

**Write two functions: One that finds the sum of the entries in a list iteratively and one that finds the sum recursively.**

**Write a recursive function that returns the nth fibonacci number**

**Find all the errors in the following code:**

*myList = [1,2,3]*

*for i in range(myList):*

 *if i = 1:*

 *print “not again”*

 *else:*

 *print(max(myList)*