# Exam 2 Review Sheet

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| Big Ideas |
| Each team should add one question to this section. No need to label your team name in this section. |

1. What is the difference between using classes and using only functions to accomplish a task?
2. What is the advantage of test-driven development?
3. In your own words describe what a class is.
4. Describe the advantage of using test suites.
5. What is the point of a CRC card?
6. What are the benefits of object oriented development?
7. True or False: Can you import other files, outside of Python, into your program?
8. What are the differences between a tuple and a list
9. Describe the difference between the mutability and immutability of a data type, and give an example of each data type.
10. Why is it important to use Test Suites?
11. What are some of the main differences between lists, tuples, and dictionaries, and what are the applications of each?
12. In object-oriented programming the focus is on the creation of objects which contain both \_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_ together.
13. Give an example of how would we optimize storage for this sparse matrix: M=[[0,0,0],[0,8,0][0,0,0]]

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| Q8 |
| Team Name: Six Flags |

1. True or False: Tuples are mutable.
2. Which of the following gives ["H", "o", "m", "e"] from s=["H", "o", "m", "e", "w", "o", "r", "k"]?
   1. s[0:4]
   2. s[1:3]
   3. s[2:5]
   4. s[0:3]
3. Lists are:
4. Mutable
5. Immutable
6. Both above
7. None of the above

8. What does the following code print:

x = "Hello World"

print(list(x))

1. "Hello World"
2. Error: Cannot convert string to list implicitly
3. ["H", "e", "l", "l", "o", " ", "W", "o", "r", "l", "d",]
4. ["x"]
5. What does the following code print out?

s = [1]

t = s\*4

print (s)

* 1. 4
  2. Error:Multiplication not applicable for lists.
  3. [4]
  4. [1, 1, 1, 1]

1. What is the difference between tuples and list?
2. What does the following print?

alist = [1,3,5]  
blist = [2,4,6]

print(alist + blist)

1. What does the following code do?

clist = [12, 97, 833]  
 dlist = [32, 46, 92]  
 print(clist + dlist)

1. True or False: Lists are immutable.

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| Q9 |
| Team Name: Half and Half |

1. What is printed from the following statement?

alist = [3, 67, "cat", [56, 57, "dog"], [ ], 3.14, False]  
print(len(alist))

2. What is printed from the following statement?

this\_list = ["cat", 12, "dog"]

print(this\_list[1:])

1. What is a nested list?
   1. A list that contains a mathematical formula
   2. A list that draws a turtle
   3. A list that is an element of another list
   4. None of the above
2. True or False: A list’s data is mutable.
3. True or False: a change to newList will change List.  
   list1 = [1,2,3,4,5]

newList = list1

1. What is the output of the following code?  
   list0 = [0, 7, [8,9], "apple", [0,7,0]]

print(list0[2][1])

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| Q10 |
| Team Name: Team Tired |

1. True or False: Using new\_list = my\_list[:] will make new\_list a shallow copy of my\_list.
2. A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ copy will serve as a pointer to the object that is copied, rather than creating a new object.
3. What is the difference in what these two pieces of code do in python?

open(filename,'r')

open(filename,'w')

1. What does the method .readline(12) do?
2. Reads 12 lines
3. Reads 12 characters
4. Results in a syntax error
5. 12
6. Describe the difference between read(n) method and readline(n) method.

1. What happens if you try to write to a file that doesn’t exist?
   1. Python crashes, resulting in a runtime error.
   2. Python creates the file in the same directory that you are working in.
   3. Python creates the file in the different directory that you are working in.
   4. None of the above is true.

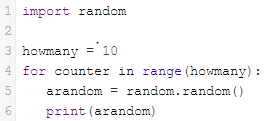
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| Q11 |
| Team Name:Half and Half |

1. What is upper in this statement?  
   s = "this is a string."  
   s.upper()

10. What is printed from the following code?

n = 10  
 m = 3  
 def f(n):  
 m = 7  
 return 2\*n+m  
  
 print(f(5), n, m)

1. True or False: A module is a file containing Python definitions and statements intended for use in other Python programs.
2. Which of the following is not an important level of scope in Python?
3. Local Scope
4. Primary Scope
5. Global Scope
6. Built-In Scope
7. In Python, a module is:
   1. A file containing Python definitions and statements intended for use in other Python programs.
   2. A separate block of code within a program.
   3. One line of code in a program.
   4. A file that contains documentation about functions in Python.
8. The random module used in the code pictured allows this function to \_\_\_\_\_\_\_\_\_\_?



1. print 10 random numbers in a random range
2. print 40 random strings
3. print numbers between 0 and 9
4. prints 10 random numbers between 25 and 35

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| Q12 |
| Team Name: Team Name |

1. \_\_\_\_\_\_\_\_\_\_\_ oriented programming combines both data and functionality.
2. How do you set the starting values of a class object?
   1. def \_\_init\_\_
   2. def start
   3. class \_\_init\_\_
   4. class start
3. True or False: The initializer method is called when a new instance of a class is created.
4. Class collaboration is when\_\_\_\_\_\_\_\_\_\_\_.
5. A class gets called multiple times in a file
6. The entire class collaborates on a code
7. Another class is used inside of a class
8. You call multiple classes within your code
9. What’s the definition of object oriented programming:
10. In object oriented programming the focus is on the creation of \_\_\_\_\_\_\_\_\_\_\_\_ which contain both data and functionality.
11. A method is:
    1. A function that is defined inside a class definition and is invoked on instances of that class.
    2. An attribute that is used to make an object perform various actions
    3. A list of actions that can be performed by an object
    4. A user-defined compound type

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| Q13 |
| Team Name: Team Tired |

1. Objects are able to change. This is called being \_\_\_\_\_\_\_\_\_\_
2. True or False: Deep copy is to copy the contents of an object and any objects embedded
3. True or False: Objects are mutable.
4. True or False: Using the == operator to check equality between two user defined objects will return the shallow equality.
5. What is the difference between deep copy and shallow copy?
6. Which line of code does a deep copy?
   1. arr1 = arr2;
   2. arr1 = arr2.clone();

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| Q14 |
| Team Name: Half and Half |

1. What would this code produce?

inventory = {'lazy elephants': 2, 'smiling sushi': 5, 'squatting squids': 9, 'prickly pumpkins': 23}

print(inventory.get("galloping groupies", 0))

1. What would this code print?

bag = {"pineapple":3, "apple": 7, "pear": 4}

good \_stuff = bag["pear"]

print(good\_stuff)

1. True or False: A dictionary is mutable.
2. What does the method "items" do?
   1. Returns a view of the values in the dictionary
   2. Returns the value associated with key; None otherwise
   3. Returns a view of the key-value pairs in the dictionary
   4. Returns a view of the items in the dictionary
3. Which of these is not a dictionary method?
   1. keys()
   2. values()
   3. pos()
   4. items()
   5. All of the above are dictionary methods
4. The following is from a program that uses a dictionary to produce an output.

Dictionary0 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_

for akey in Dictionary0.keys():

print("Hello", Dictionary0[akey])

The output of this program is:

Hello Tobi

Hello Tom

What is dictionary0? Build a dictionary with the above output.

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| T7 |
| Team Name: Six Flags |

1. What does the following code print?

a = [81, 82, 83]

b = a

print(a is b)

1. True
2. False
3. What is a pure function?
4. What does the following produce?

def mad\_lib():

s1 = """She {0} quickly while holding a {1}, which was very {2}.  
 It’s alright though, she always uses {3} when she {4}."""  
   
 past\_tense\_verb = ran  
 noun = cello  
 adjective = tiny  
 noun\_2 = baking soda  
 verb = drives  
 print(s1.format(past\_tense\_verb, noun, adjective, noun\_2, verb))

1. What python method is used to insert a user’s input into a mad lib story?
   1. .format()
   2. .write()
   3. .insert()
2. What does the following produce?

letter = """

Dear {0} {2}.

{0}, I have an interesting proposition for you!

"""

print(letter.format("Paris", "Whitney", "Hilton"))

2. Designing a program in plain English before writing the actual code is called \_\_\_\_\_\_\_\_\_.

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| T9 |
| Team Name: Team Tired |

1. How would pseudocode be useful in the design of a program?
2. \_\_\_\_\_\_\_\_\_\_ is the process of taking a complex process and breaking it down into smaller, simpler parts.
3. What is functional decomposition?
4. The process of functions looping infinitely.
5. The decomposition of programming.
6. The process of taking a complex process and breaking it down into smaller, simpler parts.
7. The program used to break down a cypher.
8. What are stubs used for?
9. Describe a benefit of designing an algorithm for a particular code in plain English. For example, designing the UPC Bar Code in plain English before writing the actual code.
10. When facing a problem that seems too large to tackle, it is best to:
    1. Break down the problem into smaller, more manageable chunks.
    2. Start coding and figure out the issues as you go.
    3. Silently weep in your room, alone, you worthless script kiddie.
    4. Only do what you know and let others finish it for you.

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| T10 |
| Team Name: Team Name |

1. What is the difference between a list and a tuple?
2. What does the following code print?

a, b, c = ("apple", "orange", "banana")

print(b)

1. What type of file do you use to import a picture?
2. When should you use tuples and when should you use lists?
3. What are the primary differences in using tuples to make a matrix vs. using lists to make a matrix?
4. What method would you use to open a file?
5. load("filename")
6. open.file("filename")
7. open("filename")
8. load("filename")

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| T11 |
| Team Name: Six Flags |

1. How can we get the number 127 from lis2?

row1 = [255, 0, 0]

row2 = [0, 127, 0]

row3 = [200, 100, 50]

lis2 = [[255, 0, 0], [0, 127, 0], [200, 100, 50]]

print(lis2[0] == row1)

* 1. lis2[0][2]
  2. lis2[1][0]
  3. lis2[1,2]
  4. lis[1][1]

1. What does the code below print?

row1 = [255, 0, 0]

row2 = [0, 127, 0]

row3 = [200, 100, 50]

lis2 = [[255, 0, 0], [0, 127, 0], [200, 100, 50]]

print(lis2[1]==row2)

Describe two examples where a matrix would be an appropriate data structure to represent something in a program:

A.

B.

1. Given:

image = [[255, 0, 0], [255, 0, 0], [255, 255, 255]]

1. What value is stored in the matrix element image[2][1]?
2. What value is stored in the matrix element image[1][2]?
3. What value is stored in the matrix element image [0] [2]?

1. What does the following code give?

m=[[0,0,0],[0,1,0],[5,2,3]]

print(m[1,1])

1. Write code to print the last row of the matrix m above.

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| T12 |
| Team Name: Team Name |

1. True or False: Test suites should not be written until you have completely coded all of your functions.
2. Which is not a module that we have used before?
   1. Random
   2. Turtle
   3. Sys
   4. PyGame
3. What is the wrong way of importing the names into the current namespace?
   1. from math import cos, sin, sqrt
   2. import from math \*
   3. from math import \*
   4. import math
4. Import the math module into local namespace (hint: add a line of code)

def area(radius):

return math.pi \* radius \* radius

x = math.sqrt(10)

1. Why do you need the following code to call main when using test suites?

if \_\_name\_\_ == "\_\_main\_\_":

main()

1. Which statement should you use to access a test suite from another file?
2. from \_\_\_\_ get \*
3. import \_\_\_
4. from \_\_\_\_ get
5. from \_\_\_\_ import \*
6. None of the above

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| T13 |
| Team Name: Team Tired |

1. Which of the following is the purpose of the \_\_str\_\_() method?
   1. To designate the string representation of class instances
   2. To construct class values from constructor arguments
   3. To delete (or "destruct") the class when it is done being used
   4. The \_\_str\_\_() method serves no purpose in a class
2. True or False: A class is a blueprint for that class type, and is usually described by a noun
3. What is a class?
4. What are the benefits of creating your own class?
5. Describe the difference between class attributes and class methods.
6. True or False: For a class, \_\_init\_\_(): creates a new object instance.

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| T14 |
| Team Name: Team Name |

1. What is the benefit of having a class for making shapes instead of separate functions?
2. Which method does not work to pull in another python file into your current code?
   1. import filename
   2. from filename import \*
   3. import filename as x
   4. import(filename)
3. How do you find the exterior angle of a polygon?
4. Which of the following is not a component of a CRC card?
5. Class Name
6. Class Attributes
7. Class Methods
8. Class Abilities
9. True or False: \_\_name\_\_ == "\_\_main\_\_ will ensure the code only runs when you use the code indirectly.
10. How do multiple files collaborate? (i.e., if the file **crazy\_rectangles.py** needed the Rectangles class, how would that class be incorporated into the file?)
    1. Import the class
    2. The class will automatically be called into the file
    3. Draw a pentagram in turtle and hope to summon some crazy rectangles.
    4. Files in python cannot collaborate with each other, which is a drawback of the program.

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| A6 |
| Team Name:Half and Half |

1. The nucleotides in a DNA strand are A,T,C, and G. What would the following code result in?

testit(is\_nucleotide("CTAGTCATGCT") == False)

* 1. Failed
  2. Ok

1. State some importance of using test suites.
2. What is the importance of test\_suites in your code?
3. What do you get from this line of code:  
   print ("hello " +"my " + "friend")
4. What does the following function do?

def complement\_strand(sequence):

complement = "" # This can be used to "build" the complement

letter\_dictionary = {"A": "T", "C": "G", "T": "A", "G": "C"}

for letter in sequence:

if letter in letter\_dictionary:

complement += letter\_dictionary[letter]

else:

return "Sequencing Error"

return complement

1. When do we use {}?
2. List
3. Dictionary
4. Tuple
5. String

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| A7 |
| Team Name: Team Tired |

1. True or False: Lists can be iterated through and sliced like strings.
2. When slicing a list at a desired index which of the following is needed
   1. [ : ]
   2. ( : )
   3. ( , )
   4. (" ")
3. Why are there separate codes, for the left and for the right side of the center, in a UPC bar code?
4. What do the black and white bars represent?

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| A8 |
| Team Name:Six Flags |

1. Why is the method of making a parity bit important?
2. Explain how check digits allow for the detection of errors in data.
3. What is this function checking for?

def check(num)

list="01"

for i in num:

if i not in list:

return False

return True

2. What does this function do when a user gives an input?

def function(input):

if len(input) % 7 == 0:

return True

else:

return False

1. Would you add a 1 or 0 parity bit to x?

x = 1010101

1. True or False: Smoke signals are a form of binary communication.
2. What form of development were we supposed to use for this assignment?
   1. Test-driven
   2. Object oriented
   3. Arrested
3. How many bits are in a byte?

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| A9 |
| Team Name: Team Name |

1. What does the /> do in an xhtml tag?
2. What is the correct code to read a line in a file?
3. filename.readline()
4. filename.read()
5. read(filename)
6. get\_line(filename, line number)
7. In the updated form of XHTML, <br> becomes what?
   1. </br>
   2. <br />
   3. </br/>
   4. <br><br>
8. What does the acronym HTML stand for?
9. Hyper Text Mark-up Language
10. Heavy Title Mark-up Language
11. High Transitioned Model Language
12. Hamburg-Texas Model Language
13. What do we get from using the split method on a string?
14. A list of lists
15. A tuple
16. A string
17. A list of strings
18. If you want to rewrite an existing file, which of the following methods would you use?
    1. open(filename, "r")
    2. open(filename, "w")
    3. filevariable.close()
    4. write.text(input)

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| A10 |
| Team Name: Team Name |

1. Describe a Caesar Cipher and give an example.
2. Encrypt the word "apple" using a Caesar Cipher and a key of 3.
3. How does a Caesar Cipher encrypt its message?
4. True or False: You can make an encrypt function a decrypt function.
5. What does the decrypt() method do?
6. Checks a dictionary to see what the original message was.
7. Uses a loop to change all the letters in the message back to the original letters while adding the value of one to the key with each loop.
8. Converts the text back to its original state by shifting all changed characters to left by the value of the key.
9. Multiple answers are correct.
10. Is there a way to decrypt that is not the inverse of the encryption?

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| A11 |
| Team Name: Team Name |

1. True or False: You can use classes inside other classes.
2. \_\_\_\_\_\_\_\_\_ is the smallest addressable element in an image.
3. If an image is 10x10, how many number values are a part of the ppm code for that image?
4. What are the two parts of a PPM image?
5. In regards to images, what does RGB stand for?
6. Red, Green, Blue
7. Random, Global, Boustrophedon
8. Red, Green, Black
9. What is PPM?
10. Portable Pixel Map
11. Proper Pixel Mapping
12. Proportionate Pixel Map
13. Peoples" Potatoes, Mashed
14. Which of the following lines set the dimensions of the screen being set up?
    1. P3
    2. # Created by Dr. Scott Heggen
    3. 8 10
    4. 255
    5. 140 140 140 120 120 120 100 100 100 80 80 80 60 60 60 40 40 40 20 20 20 0 0 0