

# CMSC 201 Final Review Sheet 2

1. Circle valid python variable names (all of these don't follow coding standards, but some are valid variable names)

1Direction4Ever                      ILOVECMSC201                      \_num\_fru!ts  
DoGsRgOoD                              thebestclassis201                      print

2. Does the following code snippet cause an error? Why or why not?

```
myList = ["here", "are", "some", "strings"]  
x = 4  
if x < len(myList) and len(myList == 5):  
    print(myList[x + 1])
```

3. What gets printed on lines 8 and 10? If they are the same, justify your answer

```
1 def doSomething(myString):  
2     myString = myString.upper()  
3     myList = myString.split()  
4     myString = "".join(myList)  
5  
6 def main():  
7     myString = "hello world"  
8     print(myString)  
9     doSomething(myString)  
10    print(myString)  
11  
12 main()
```

4. Describe the difference between for and while loops.
5. Why do we use Boolean flags?
6. Why in File I/O is it important to close the file after use?
7. What is the difference between appending and writing to a file?
8. What are the components of a dictionary?
9. Describe the hash function's purpose.
10. What happens when a function is called?
11. Are tuples mutable or immutable? What abouts lists? Dictionaries?
12. Match brackets to the data structure () - tuples, [] - list, {} - dictionary
13. Describe Top-Down/Bottom-Up problem-solving.
14. What is incremental development?
15. Recursive Fibonacci problem

16. Why would you use a dictionary over a list?
17. What data types are immutable?
18. What is the output of this code snippet

```
1 def countVowels(word):
2     vowels = ["a", "e", "i", "o", "u"]
3     if word == "":
4         return 0
5     elif word[0] in vowels:
6         return countVowels(word[1:]) + 1
7     else:
8         return countVowels(word[1:])
9
10 def main():
11     word = "Elephants Are Great"
12     print("The Number of Vowels is {:>5d}"countLetters(word))
```

19. Given the following code write the output
  - a. fact = "201 has the Coolest Professors , shhh!"
    - i. Code: ``print(fact[4:6] + fact[21] + fact[33:35])``
    - ii. Answer: harsh
  - b. fact = "201 students will do great on the exam if they try hard!"
    - i. Code: ``print(fact[4:8]+fact[46])``
    - ii. Answer: study
  - c. fact = "Finally, the Important Things In Life That Matter!"
    - i. Code: ``print(fact[0:5]+fact[28]+fact[43:])``
    - ii. Answer: ``FinalsMatter!``

20. What is the minimum number of base cases required for a recursive function? Minimum for recursive cases?
21. What is the correct order for the range() parameters?
  - A. start , step , stop
  - B. start , stop , step
  - C. step , start , stop
22. Why can't you iterate directly over a dictionary? What can you use to iterate over this?
23. What is the difference between a function and a method?
24. What is the difference between sentinel values and a boolean flag?

25. Follow Up Question: Will the following code work without syntax or logic errors, and why?

```
def search(myList, item):
    index = len(myList) // 2
    tempList = myList[:]
    for i in range(len(myList)):
        if tempList[index] == item:
            return True
        elif tempList[index] > item:
            tempList = tempList[:index]
            index = len(tempList) // 2
        else:
            tempList = tempList[index:]
            index = len(tempList) // 2
    return False

def main():
    theList = [0,2,4,3,6,8,7,9]
    print("Is 0 in the list? : ",search(theList,0))
    print("Is 1 in the list? : ",search(theList,1))
    print("Is 2 in the list? : ",search(theList,2))
    print("Is 3 in the list? : ",search(theList,3))z
    print("Is 4 in the list? : ",search(theList,4))
    print("Is 5 in the list? : ",search(theList,5))
    print("Is 6 in the list? : ",search(theList,6))
    print("Is 7 in the list? : ",search(theList,7))
    print("Is 8 in the list? : ",search(theList,8))
    print("Is 9 in the list? : ",search(theList,9))
    print("Is 10 in the list? : ",search(theList,10))

main()
```

26. What will be printed to the screen?

```
def main():
    myList = ["p" , "e" , "a" , "r"]
    aThing = "\t".join(myList)
    aThing + "\ts"
    aThing = aThing.split()
    aThing.remove( myList[0] )

    print( "".join(aThing) )

main()
```