

Name: \_\_\_\_\_

## CS 151 Fall 2010 at ISU, Exam 3 SAMPLE

**Prepared by** assistant professor Jeff Kinne on December 1, 2010. You have until 2:55pm to take the exam. I will give you a copy of the latest version of my study sheet that you can use, but this and blank paper I provide are all you will have to use (no computer, textbook, notes, cellphone, calculator, etc.). I have put point values on the questions so it adds up to 24. There are 1 true/false (1 point), 2 multiple choice (3 points each), 2 fill in the code (3 points each), 2 say what the output is (3 points each), 2 short answer (3 points each), and 1 give code for a function (5 points).

### True/False

(1 point). Circle True or False.

**Problem 1** Suppose you run the following code:

```
askAgain = true
while (askAgain):
    x = requestInteger("Hello there. Tell me your favorite number.")
    if (x == 42):
        askAgain = false
print x
```

True or False: The value printed after the while loop is always 42. **Answer: True.**

## Multiple Choice

(3 point each, 6 points total). For each of the following, circle the correct answer. **For each of the incorrect answers**, circle the part that is incorrect. You will receive credit for circling the correct answer in addition to marking the parts on the incorrect answers that are wrong.

**Problem 2** Which of the following is a function that correctly reads in a file and prints how many times the letter 'e' occurs in the file.

- a. 

```
def countE():  
    file = open(pickAFile(), "wt")  
    s = file.read()  
    num = s.count("e")  
    print "Number of e's is", num  
    return num
```
- b. 

```
def countE():  
    file = open(pickAFile(), "rt")  
    num = file.count("e")  
    print "Number of e's is", num  
    return num
```
- c. 

```
def countE():  
    file = open(pickAFile(), "rt")  
    s = file.read()  
    num = s.count("e")  
    print "Number of e's is", num  
    return num
```

**Answer:** a. is wrong because of "wt". b. is wrong because of file.count. c. is correct.

**Problem 3** Suppose you have a variable called `text` that has lots of text. Which of the following would correctly split the text into sentences (assuming each sentence ends with '.') and prints the first sentence.

- a. 

```
lines = text.split(".")  
print lines[0]
```
- b. 

```
lines = text.split(".")  
print lines[1]
```
- c. 

```
lines = text.count(".")  
print lines[0]
```

**Answer:** a. is correct. b. is wrong because of 1 instead of 0. c. is wrong because `text.count` instead of `text.split`.

## Fill in the code

(3 points each problem, 6 points total). For each of the following, fill in what the missing code should be to complete the function correctly.

**Problem 4** Fill in the blanks of the following function that is supposed to ask the user to enter “Yes” or “No”. The function should keep asking them as long as they have not entered “Yes” or “No”.

```
def askYesNo():
    askAgain = _____
    while (askAgain):
        s = requestString("Yes or No?")
        if (s == "Yes" or s == _____):
            askAgain = _____
    return s
```

First blank: **Answer: true**

Second blank: **Answer: “No”**

Third blank: **Answer: false**

**Problem 5** Fill in the following code that is supposed to choose a random number, then output “you win” if the number is greater than 0.

```
import _____
def gameOfChancee():
    num = random.randint(-10, 10)
    if (_____ > 0):
        print "You Win!"
    _____:
        print "You lose!"
```

First blank: **Answer: random**

Second blank: **Answer: num**

Third blank: **Answer: else**

## What is the output

(3 points each problem, 6 points total) For each of the following, give what the output of the function will be. **To figure this out, keep track of what the values are of the different variables.** You will be given credit for both.

**Problem 6** Suppose you have the following functions loaded.

```
def func2(s2):
    s2 = s2 + '*'
    return s2
def func1(s):
    for i in range(0, 3):
        s = func2(s)
    print s
    return s
```

Keep track of what the values of the variables are when you call `>>> func1('What?')`, and circle the final output that is printed.

<code>s= Answer: 'What?' 'What?*' 'What?***' 'What?****'</code>
<code>i= Answer: 0 1 2</code>
<code>s2= Answer: 'What?' 'What?*' 'What?***' 'What?****'</code>

**Final Output:** `'What?****'`

**Problem 7** Suppose you have the following function loaded.

```
def listFun(w1, w2, w3):
    list1 = [w1, w2, w3]
    list2 = [len(w1), len(w2), len(w3)]
    list = [list1, list2]
    val = list[1][1:len(list2)]
    print val
    return val
```

Keep track of what the values of the variables are when you call `>>> listFun('Tres', 'Dos', 'Uno')`, and circle the final output that is printed.

<code>w1= Answer: 'Tres'</code>
<code>w2= Answer: 'Dos'</code>
<code>w3= Answer: 'Uno'</code>
<code>list1= Answer: ['Tres', 'Dos', 'Uno']</code>
<code>list2= Answer: [4, 3, 3]</code>
<code>list= Answer: [['Tres', 'Dos', 'Uno'], [4, 3, 3]]</code>
<code>val= Answer: [3, 3]</code>

**Final Output:** `'[3, 3]'`

## Short Answer

(3 points each, 6 points total) Give a brief response for each of the following.

**Problem 8** Explain briefly how a while loop works.

**Answer:** A while loop has the form:

```
while (condition):  
    statements
```

The first time Python gets to the while loop, it checks to see if the condition is true or false. If it is false, then the loop is done. If the condition is true, the statements are run. After the statements are run, the condition is checked again to see if it is still true. If it is false now, the loop is done. If it is true, the statements are run again. The statements continue to be run again and again until the condition is false.

**Problem 9** Explain what the steps are to reading information from a file. Explain what the steps are to writing information to a file.

**Answer:** To read from a file, we open the file, then read the data into a string, and then close the file. To write to a file, we open the file, then write the data from a string into the file, then close the file.

## Give JES/Python Code

(5 points) Give JES/Python code to solve the problem.

**Problem 10** Give the code for a function called `makeList` that reads information from a file and puts it into a nested list, where the data is split on each line and on each space. So if the text file looked like this

```
1 2 3 4
hi there john boy
oh no not
```

then the list produced would look like

```
[['1', '2', '3', '4'], ['hi', 'there', 'john', 'boy'], ['oh', 'no', 'not']]
```

```
def makeList(filename):
```

**Answer:**

```
f = open(filename,"rt")
s = f.read()
f.close()
list = s.split("\n")
bigList = []
for i in range(0, len(list)):
    line = list[i].split(" ")
    bigList.append(line)
print bigList
return bigList
```