CS 115 Exam 2, Spring 2013

Your name: _____

Rules

- You may use one handwritten 8.5 x 11" cheat sheet (front and back). This is the only resource you may consult during this exam.
- Explain/show work if you want to receive partial credit for wrong answers.
- As long as your code is correct, you will get full credit. No points for style.
- When you write code, be sure that the indentation level of each statement is clear.

Grade (instructor use only)

	Your Score	**Max Score**
Problem 1		20
Problem 2		15
Problem 3		40
Problem 4		25
Total		100

Problem 1: Tracing code (20 points)

What will print to the screen when each of the following snippets of code is executed in IDLE?

Be very clear with spacing, line breaks, etc.

Note: the parts of this problem are independent.

(a)

```
for j in range(3):
     for k in range(2):
          print(k)
```

(b)

```
date = "April 2 2013"
d = date.split()
print(d[2])
print(date[2])
```

(c)

```
month = "April"
for i, c in enumerate(month):
     print(i, c)
```

(d)

```
months = ["June", "July", "August"]
print(len(months))
print(months[1:])
```

Problem 2: 15 points.

What will print to the screen when each of the following snippets of code is executed in IDLE?

Be very clear with spacing, line breaks, etc.

Note: the parts of this problem are *independent*.

For all parts of this problem, assume that the following functions have been defined.

```
def f1( ):
    return 6

def f2(x):
    return x / 2

def f3(s):
    return (s == s.upper())

def f4(x, y):
    return f2(y) + x
```

(a)

```
print(f1())
```

(b)

```
print(f4(6, 30))
```

(c)

```
if f3("JANUARY"):
     a = f2(6)
else:
     a = f2(100)
print(a)
```

Problem 3: Defining functions (40 points)

Define functions to perform the following tasks.

Keep in mind the following:

- Your functions should NOT ask the user for input.
- Your functions should NOT print anything.
- Your functions should NOT call sys.exit() to terminate the program.

(a) Define a function called `perim_sq` that…

- has one parameter: the side length of a square
- returns the ***perimeter*** of the square.

(b) Define a function called `contains_q` that…

- has one input parameter: a string
- returns `True` if the string contains the letter *Q* (uppercase or lowercase), and `False` otherwise.

(c) Define a function called `first_double` that…

- has one input parameter: a string
- returns the first double letter (or character) in the string, or returns the empty string if there are no double letters.

Double letters (or characters) are 2 or more adjacent, identical characters.

Here are some examples:

- If the string is `"bubble"`, the function should return `"b"`.
- If the string is `"bookkeeper"`, the function should return `"o"` (since the 'o' is the first double letter).
- If the string is `"fuzZy"`, the function should return an empty string. That is, the `z/Z` pair do not count as double letters.
- If the string is `"sucCess"`, the function should return `"s"`. That is, it should ignore the mismatched c/C pair and consider the `"s"` to be the first double letter.

(d) Define a function called `count_letter` that…

- has two input parameters: a string and a character
- returns the number of times the character occurs in the string. For example, if you pass it `"success"` and `"s"`, it should return 3, since the character `"s"` appears 3 times in the word `"success"`.

Problem 4: A complete program (25 points)

For this problem, you must write a **complete program**. That includes a docstring, a `def main()`, any necessary library imports, etc.

Read the instructions carefully before you start coding! If you get stuck, try to maximize your partial credit.

Your program should contain the following:

1. The definition of a function called `check_user_string` that:
    - takes a string as its input parameter
    - returns `True` if the string contains at least 3 words and `False` otherwise

2. The definition of a function called `get_user_name` that:
    - does not have any input parameters
    - repeatedly prompts the user for his/her full name until the user enters a string that contains at least 3 words
    - calls `check_user_string` to check each of the user's entries

3. A main function that
    - Calls `get_user_name` to get the user's full name
    - Prints the user's name in both of the following formats:
        - Firstname M. Lastname
        - F. M. Lastname

    Details:
    - If the user has multiple middle names, you should print all of his/her middle initials.
    - Be sure you include periods and spaces after the user's initials.

Here is a sample input and output sequence, with the user's input *italicized and underlined.*

```
What is your name? John
Error: enter your full name. hobbit guy
Error: enter your full name. John Ronald Reuel Tolkien
John R. R. Tolkien
J. R. R. Tolkien
```

[Space for Problem 4. If you detach this page, please write your name at the top.]