Question 1. [5 MARKS]

We know that strings are immutable, so we can't change what's inside a string object. But we can assign a variable to a new string object.

The following program runs without errors:

```
1   def make_enthusiastic(s):
2       s = s * 3 + "!"
3       print "Last line of function"
4
5   if __name__ == "__main__":
6       word = "cool"
7       make_enthusiastic(word)
8       print word
```

Part (a) [4 MARKS]

Draw the state of memory at the moment when the program is about to reach line 3, as part of the call to function `make_enthusiastic`. Use the notation we have used in class. Include any namespaces and the names that have been defined within them.

Solution: See separate file with the drawing.

Part (b) [1 MARK]

What output is produced by the print statement on line 8?

Solution:

```
cool
```

Question 2. [8 MARKS]

Part (a) [5 MARKS]

Complete the following function according to its docstring.

```
def limit_right(snd, m):
    '''Return a copy of Sound snd, but where the right channel values never exceed int m.
    Change any right channel values that would have exceeded m to m.'''

    snd_copy = sound.copy(snd)
    for sample in snd_copy:
       if sound.get_right(sample) > m
           sound.set_left(sample,m)
    return snd_copy
```

Part (b) [3 MARKS]

Write a main block that (1) allows the user to choose a file, and then (2) plays a version of the sound contained in the file that has had its right channel limited to 100. Assume both the sound and media modules have been imported and that the user chooses a `.wav` file.

Make sure that if this module is imported, none of the code for steps (1) and (2) executes – just the function definition.

```
if __name__ == '__main__':
    file = media.choose_file()
    snd = sound.load_sound(file)
    sound.play(limit_right(snd, 100))
```

Question 3. [5 MARKS]

Note: This question uses string method `isalpha`. See the last page of the test for its docstring. Examples: `"c".isalpa()` returns `True` and `"csc108".isalpa()` returns `False`.
Consider the python program below, which runs without errors.

```
def mystery(s):
    result = ''
    for ch in s:
        if ch in 'AEIOUaeiou':
            result += 'x'
        elif ch.isalpha():
            result += '_'
        else:
            result += ch
    return result

if __name__ == '__main__':
    print mystery('Why')
    print mystery('am')
    print mystery('I')
    print mystery('having fun?')
```

Part (a) [2 MARKS]

Show the exact output of the program.

```
___
x_
x
_x_x__ _x_?
```

Part (b) [3 MARKS]

Write a good docstring for the function.

```
'''Return a copy of string s, where every vowel has been replaced with x,
every consonant is replaced with _ and all non-alphabetic characters are left unchanged.'''
```

Question 4. [3 MARKS]

Suppose `s` refers to a string of length 10 and `n` refers to an integer. Write a single line of code to accomplish each of the tasks below.

Print all of `s` except the character at position 3.	`print s[:3]+s[4:]`
Make a new variable `copy_s` refer to a copy of the string that `s` refers to.	`copy_s = s`
Print `True` if `n` is odd and `False` otherwise.	`print n % 2 == 1`

[Use the space below for rough work. This page will not be marked unless you clearly indicate the part of your work that you want us to mark.]