

Lab 14 - More on functions

Submission:

This lab has to be demoed on week 13, together with all other labs published between weeks 8 and 13. You will have to explain your code, so make sure it is well documented and you understand it.

Objective:

To better understand Python scope and functions.

Questions:

1. What is the difference between an argument and a parameter?
2. What does the following code print?

```
def my_function(b_list):  
    b_list[0] = 100  
    a_list = [1,2,3]  
a_list = [5,6,7]  
my_function(a_list)  
print(a_list)
```

3. What does the following code print? Explain.

```
def f(a, b=2):  
    pass
```

```
f(a=3, b=4)  
print(a, b)
```

4. Consider the following code. The “print(x)” statement generates an error. Provide two different ways to print “x” properly.

```
def add_one(number):  
    x=1  
    number = number + x  
    print(number)
```

```
add_one(3)
```

```
print(x)
```

5. Give the output indicated for the following program. It will be helpful to draw diagrams to indicate the relationships among arguments, parameters, and their objects. Think about which arguments are mutable and which are immutable.

```
def func1(list1, list2, str1):  
    if len(list1) > 3:  
        list1 = list1[:3]  
    list2[0] = 'goodbye'  
    str1 = ''.join(list2)
```

```
arg1_list = ['a', 'b', 'c', 'd']  
arg2_list = ['hello', 'mother', 'and', 'father']  
arg_str = 'sister'
```

```
func1(arg1_list, arg2_list, arg_str)
```

```
print(arg1_list) # Line 1  
print(arg2_list) # Line 2  
print(arg_str)  # Line 3
```

- (a) What output is produced by Line 1 when the program is executed?
- (b) What output is produced by Line 2 when the program is executed?
- (c) What output is produced by Line 3 when the program is executed?

6. Remove odds or evens:

- (a) Write a function that takes a list of integers as an argument, removes even numbers from the list, and returns the modified list.
- (b) Write a function that takes a list of integers as an argument, removes odd numbers from the list, and returns the modified list.
- (c) Write a function that takes a list of integers and a Boolean as arguments. If the Boolean is True, the function removes odd numbers from the list; otherwise, evens are removed. The function returns the modified list.