

CS:1210 Practice Problem Set 7

Complete before Tuesday, March 10th

1. Suppose that the list L equals [100, ["hello", "bye"], 1000, [[1, 2], [2, 3], [3, 4]], 1000, 900.7]. Write down the value of L after each of these Python statements. For each problem start with the value of L given above.
 - (a) L.extend([1000, 2000])
 - (b) L.insert(4, "hello")
 - (c) L.insert(len(L)-1, "Mario")
 - (d) L.insert(len(L), "Luigi")
 - (e) L.remove(1000)
 - (f) L[3][1] = 23
 - (g) L[1][0] = "Good bye"
 - (h) L.remove(100)

2. Suppose that the list L equals [100, ["hello", "bye"], 1000, [[1, 2], [2, 3], [3, 4]], 1000, 900.7].
 - (a) What happens when you execute the Python statement L.remove([2, 3])? Briefly explain why.
 - (b) What happens when you execute the Python statement L[1][0] = "c"? Briefly explain why?

3. Answer the questions below about this code.

```
import time

start1 = time.time()
L1 = []
index = 0
while index < 100000:
    L1.append(index)
    index = index + 1
end1 = time.time()

start2 = time.time()
L2 = []
index = 0
while index < 100000:
    L2 = L2 + [index]
    index = index + 1
end2 = time.time()

print(end1-start1)
print(end2-start2)
```

- (a) Are L1 and L2 identical when the program ends?

(b) The output from running this program on my machine shows the first running time as 0.03107213974 and the second running time as 37.6824028492. Thus the second running time is more than 1000 times the first running time. Can you explain why?

4. What output is produced when the following code fragment is executed?

```
L = [2, 3, 4, 5, 6]
LL = L
L.append(11)
print(L, LL)
L = L + [10]
print(L, LL)
LL.append(20)
print(L, LL)
```

5. Write a function `removeAll` that takes as parameters a list `L` and a number `n` and removes all occurrences of `n` from `L`. The function should modify the list `L` in-place. I would like to be able to use this function as follows

```
L = [2, 3, 3, 4, 2, 1, 2]
removeAll(L, 2)
print(L)
```

and I would expect the list `[3, 3, 4, 1]` as output.
