Python Exercise 9 & 10

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1 Instructions

Finish the following exercises **without referring to your notes** on a piece of paper and scan a PDF file by 20:59 PM CST, Jan 20. The exercise takes no more than **30** minutes in total. Record the time it takes to finish, and write it down at the end of your answers.

2 Class Recap

In today's lesson, we dived deeper in Python list, learnt several handy methods and the concept of shallow and deep copy.

Codes for every classes can be accessed here.

3 Exercise

3.1 Basic List

Suppose we have a list `lst = [1,2,2,3,4,2,3,4,5]`,

1. What is the length of `lst`?
2. Determine if number 6 is inside the list?
3. What is the result of `lst + [6,7,8]`?
4. What is the result of `lst * 2`
5. Write codes to find the maximum number in `lst` using loop.
6. Write codes to find the minimum number in `lst` using loop
7. Write codes to add a new element 10 at position 1.
8. Write codes to add an element 20 at the end of the list.
9. Write codes to find the mean value of all items in the list.
10. Write codes to remove the element 1.
11. Write codes to find how many times number 2 occur?
12. Write code to reverse the list?
13. Write code to sort the list.

3.2 General Practice

1. Take two lists, say for example these two: `a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89]`, `b = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13]` and write a program that returns a list that contains only the elements that are common between the lists (without duplicates). Make sure your program works on two lists of different sizes.

2. Write a program that takes a list of numbers (for example, `a = [5, 10, 15, 20, 25]`) and makes a new list of only the first and last elements of the given list. For practice, write this code inside a function.

3. Write a function `is_prime()` to find all the prime numbers.