UNIV199 Introduction to Programming with Python

Homework #9

Due Date: December 9, 2020, Wednesday, 23:59

Lists: Various list operations

Write a Python program that will do the following:

1. Create a list **list1** whose elements are random integers between 1 and 100, and its length ***n*** is a random number between 3 and 21.

   Sample screen output:

```
My list lenght is 7.
List1 (Original list):
[73, 98, 9, 33, 16, 64, 98]
```

2. Create **list2** with the same number of elements as **list1.** Each element in **list2** must be the sum of the same element in **list1** and its left and right neighbors. Note that the first element does not have a left-hand neighbor and the rightmost element does not have a right-hand neighbor. This list must be created from **list1** by calling a function. When done, print **list2**.

   Sample screen output:

```
List2 (Sum of neighbors of List1):
[171, 180, 140, 58, 113, 178, 162]
```

3. Create **list3** that will take its even indexed elements from **list1** and its odd indexed elements from **list2**. So the elements of **list3** will be in the following order: (first element of **list1**), (first element of **list2**), (second element of **list1**), (second element of **list2**), etc. When done, print **list3**.

   Sample screen output:

```
List3 (List1 and List2 merged):
[73, 171, 98, 180, 9, 140, 33, 58, 16, 113, 64, 178, 98, 162]
```

4. Remove all odd values from **list3** (do not copy to another list). When done, print **list3**.

   Sample screen output:

```
List3 with odd numbers removed:
[98, 180, 140, 58, 16, 64, 178, 98, 162]
```

5. Create **list4** such that every ***m***th element of **list4** is the sum of the ***m***th element from the left and right ends of **list3**. So the first element of **list4** is the sum of the first and last elements of **list3**; the second element of **list4** is the sum of the second elements from the left and the right ends of **list3** and so on. If **list3** has an odd number of elements, the center element of **list3** should be copied to **list4** without any summing. When done, print **list4**.

   Sample screen output:

```
List4 (Summing List3 from two sides):
[260, 278, 318, 122, 16]
```

6. Sort **list4** in descending order. When done, print **list4**.

   Sample screen output:

```
List4 sorted in descending order:
[318, 278, 260, 122, 16]
```

Make sure you place comments in your program. Place your name, ID and date the program was written as comments at the top of your program.

Overall sample screen output:

```
My list lenght is 7.
List1 (Original list):
[73, 98, 9, 33, 16, 64, 98]
List2 (Sum of neighbors of List1):
[171, 180, 140, 58, 113, 178, 162]
List3 (List1 and List2 merged):
[73, 171, 98, 180, 9, 140, 33, 58, 16, 113, 64, 178, 98, 162]
List3 with odd numbers removed:
[98, 180, 140, 58, 16, 64, 178, 98, 162]
List4 (Summing List3 from two sides):
[260, 278, 318, 122, 16]
List4 sorted in descending order:
[318, 278, 260, 122, 16]
```

Name your Python py-file as **h09*yourlastname*.py** and then upload it to Blackboard Learn at https://ku.blackboard.com. Anyone e-mailing his/her homework will lose points!

While doing all your homework assignments, remember that:

- ***You should not work together,***
- ***You should not give or take any files,***
- ***You should not give or take help other than simple verbal hints.***