

CS 515 Homework 5

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Homework 5: Loops

Due: 3/2/22 at 11:59pm

Please submit this homework as a single file containing all functions, called `hw5.py`

A reminder: Please name all functions the same as in the file

Introduction

For this homework, all solutions must be written using loops. Solutions not using loops will receive no credit.

1 Question 1: Calculate the running average

Write a function `runningAverage(L)` which takes in a list `L` and returns a new list where at each index `n` is the running average up to `n` in the original list.

```
runningAverage([1,2,3,4,5]) -> [1, 1.5, 2, 2.5, 3]
```

2 Question 2: Recreate map and filter

Write two functions: `customMap` and `customFilter` which take in a function `f` and a list `L` and replicate the behavior of `map` and `filter` respectively.

NOTE: You CANNOT use `map` or `filter` in these functions.

```
def double(n):  
    return 2 * n  
def isEven(n):  
    return n % 2 == 0  
customMap(double, [1,2,3]) -> [2,4,6]  
customFilter(isEven,[1,2,3]) -> [2]
```

3 Question 3: Remove Adjacent Duplicates

Write a function called `removeAdjDuplicates(L)` which removes adjacent duplicates from the input list.

```
removeAdjDuplicates([1,1,2,3,4,1,5,5,5,5,5]) -> [1,2,3,4,1,5]
```

4 Question 4: Flatten

Write a function called `flatten(L)` which takes in a list which may contain other lists, and flattens it so that it has a depth of 1.

```
flatten([1,2,[3,4],5,[6,[7,8]]]) -> [1,2,3,4,5,6,7,8]
```

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