

Assessment 3 & 4

Deadline- Tuesday 17th November 2020, 11:30pm

Instruction: 5 questions in assessment 3(functions) and 4 questions in assessment 5(lists), attempt all

Date and time assigned: saturday 14th, november 2020, 4pm

FUNCTIONS

1. Write a function called merge that takes two already sorted lists of possibly different lengths, and merges them into a single sorted list.

(a) Do this using the sort method.

(b) Do this without using the sort method.

2. (a) Write a function called primes that is given a number n and returns a list of the first n primes. Let the default value of n be 100.

(b) Modify the function above so that there is an optional argument called start that allows the list to start at a value other than 2. The function should return the first n primes that are greater than or equal to start. The default value of start should be 2.

3. Write a function called change_case that given a string, returns a string with each uppercase letter replaced by a lower case letter and vice-versa.

4. Write a function called matches that takes two strings as arguments and returns how many matches there are between the strings. A match is where the two strings have the same character at the same index. For instance, 'python' and 'path' match in the first, third, and fourth characters, so the function should return 3.

5. Write a function called one_away that takes two strings and returns True if the strings are of the same length and differ in exactly one letter, like bike/hike or water/wafer.

LISTS

1 Write a program that asks the user to enter a list of integers. Do the following:

- (a) Print the total number of items in the list.
- (b) Print the last item in the list.
- (c) Print the list in reverse order.
- (d) Print Yes if the list contains a 5 and No otherwise.
- (e) Print the number of fives in the list.
- (f) Remove the first and last items from the list, sort the remaining items, and print the result
- (g) Print how many integers in the list are less than 5.

2. Write a program that generates a list of 20 random numbers between 1 and 100.

- (a) Print the list.
- (b) Print the average of the elements in the list.
- (c) Print the largest and smallest values in the list.
- (d) Print the second largest and second smallest entries in the list
- (e) Print how many even numbers are in the list.

3. Start with the list [8,9,10]. Do the following:

- (a) Set the second entry (index 1) to 17
 - (b) Add 4, 5, and 6 to the end of the list
 - (c) Remove the first entry from the list
 - (d) Sort the list
 - (e) Double the list
 - (f) Insert 25 at index 3
- The final list should equal [4,5,6,25,10,17,4,5,6,10,17]

4. Create the following lists using a for loop.

- (a) A list consisting of the integers 0 through 49
 - (b) A list containing the squares of the integers 1 through 50.
 - (c) The list['a','bb','ccc','dddd',. . .]
- that ends with 26 copies of the letter z.

5. Write a program that takes any two lists L and M of the same size and adds their elements together to form a new list N whose elements are sums of the corresponding elements in L and M.

For instance, if L=[3,1,4] and M=[1,5,9], then N should equal[4,6,13]

