BENNETT UNIVERSITY TIMES OF INDIA GROUP

Tutorials on list structures in Python

Q 1> Given two numbers r1 and r2 (which defines the range), write a Python program to create a list with the given range (inclusive).

Input:

r1=1 and r2=8

Output:

[1, 2, 3, 4, 5, 6, 7, 8]

Q 2> Write a program to find sum of the smallest and largest numbers in the list.

Input:

10 23 14 25

OUTPUT:

35

Q 3> Initialize a 2D list of 3*3 matrix. E.g.-

1	2	3
4 7	5	6
7	8	9

Check if the matrix is symmetric or not.

Q 4> Alex works at a clothing store. There is a large pile of socks that must be paired by color for sale. Given a list of integers representing the color of each sock, determine how many pairs of socks with matching colors there are.

For example, there are n=7 socks with List=[1,2,1,2,1,3,2] colors. There is one pair of color 1 and one of color 2. There are three odd socks left, one of each color. The number of pairs is 2.

Write a python program than print an integer representing the number of matching pairs of socks that are available.

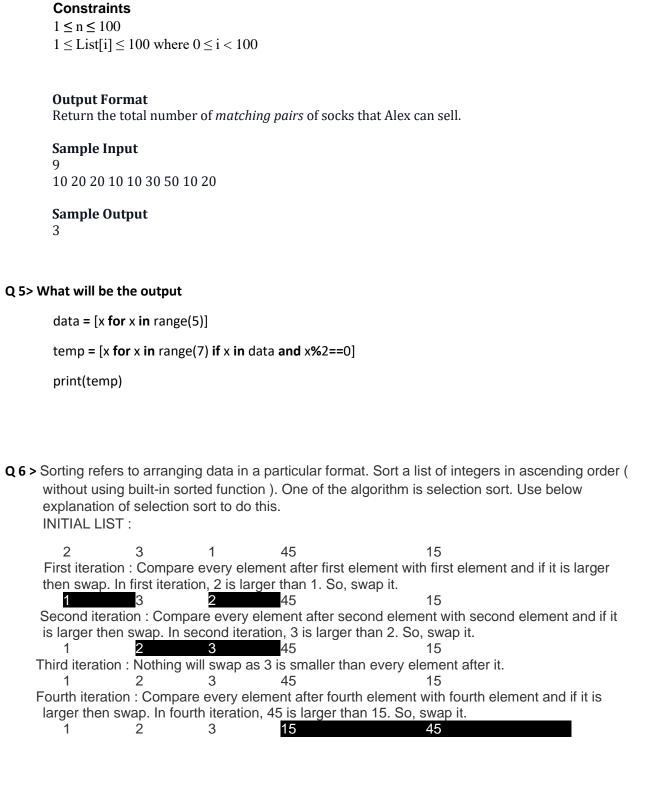
Input Format

The first line contains an integer n, the number of socks represented in List.

The second line contains n space-separated integers describing the colors List[i] of the socks in the pile.

BENNETT UNIVERSITY TIMES OF INDIA GROUP

Tutorials on list structures in Python





Tutorials on list structures in Python

Q 7> Given three integers A, B and C, the task is to find the length of a race track if 3 racers are competing in a race where the first racer beats the second racer by A metres, the first racer beats the third racer by B meters and the second racer beats the third by C meters.

Case 1: By the time when the First racer finished the race, distances covered by all the 3 racers are:

First = X, Second = X - A, Third = X - B

Let the time taken by the First racer to finish the race be T_1 .

Case 2: By the time when the Second racer finished the race, distances covered by the remaining 2 racers are:

Second = X, Third = X - C

Let the time taken by the Second racer to finish the race be T_2 .

Sample Input & Output:

Input: A = 11, *B* = 90, *C* = 80

Output: 880

Input: A = 10, B = 20, C = 12

Output: 60

Q 8> Using range(1,101), make two list, one containing all even numbers and other containing all odd numbers

Q 9> Shallow coping of a list by copy()

```
round1 = ['chuck norris', 'bruce lee', 'sonny chiba']
round2 = round1.copy()
round1.remove('sonny chiba')
print(round1)
print(round2)
```

Q 10> Predict the output

```
lst = ['python', 'is', 'cool', 'language']
for i in range(len(lst)+1):
    print(lst[i])
```

ECSE105L: Computational Thinking and Programming

BENNETT UNIVERSITY TIMES OF INDIA GROUP

Tutorials on list structures in Python

- Q 11> An avid hiker keeps meticulous records of their hikes. During the last hike that took exactly **steps** steps, for every step it was noted if it was an *uphill*, **U**, or a *downhill*, **D** step. Hikes always start and end at sea level, and each step up or down represents a 1 unit change in altitude. We define the following terms:
 - A *mountain* is a sequence of consecutive steps *above* sea level, starting with a step *up* from sea level and ending with a step *down* to sea level.
 - A *valley* is a sequence of consecutive steps *below* sea level, starting with a step *down* from sea level and ending with a step *up* to sea level.
 - Given the sequence of *up* and *down* steps during a hike, Write a python program to find and print the number of *valleys* walked through.

Example

Steps = 8 paths = [DDUUUUDD]

The hiker first enters a valley 2 units deep. Then they climb out and up onto a mountain 2 units High. Finally, the hiker returns to sea level and ends the hike.

Returns

int: the number of valleys traversed

Input Format

The first line contains an integer *steps*, the number of steps in the hike.

The second line contains a single string *path*, of *steps* characters that describe the path.

Constraints

 $2 \le steps \le 10000000$ Path[i] $\in \{U, D\}$

Sample Input

8

UDDDUDUU

Sample Output

1