

Python Exercise

Date and Time: Jan, 2024

Batch: -

Python Class: Kurdistan(1&2)

Q1: Python Program to Find Sum of Array

Given an array of integers, find the sum of its elements.

Example



Input: `arr[] = {1, 2, 3}`

Output: 6

Explanation: $1 + 2 + 3 = 6$

Q2: Python Program for Reversal algorithm for array rotation

Write a function rotate(arr[], d, n) that rotates arr[] of size n by d elements.

Example



Input: arr[] = [1, 2, 3, 4, 5, 6, 7]

d = 2

Output: str = arr[] = [3, 4, 5, 6, 7, 1, 2]

Q3: Python Program to Split the array and add the first part to the end

There is a given array and split it from a specified position, and move the first part of the array add to the end.

Example



Input: arr[] = {12, 10, 5, 6, 52, 36}
k = 2

Output: arr[] = 5, 6, 52, 36, 12, 10

Explanation: Split from index 2 and first part 12, 10 add to the end .

Q4: Python program to read character by character from a file

Python is a great language for file handling, and it provides built-in functions to make reading files easy with which we can read file character by character. In this article, we will cover a few examples of it.

Example



Input : Geeks

Output : G

e

e

k

s

Explanation : Iterated through character by character from the input as shown in the output.

Q5: Python Program to check if given array is Monotonic

Given an array A containing n integers. The task is to check whether the array is Monotonic or not. An array is monotonic if it is either monotone increasing or monotone decreasing. An array A is monotone increasing if for all $i \leq j$, $A[i] \leq A[j]$.

An array A is monotone decreasing if for all $i \leq j$, $A[i] \geq A[j]$.

Return Type: Boolean value, “True” if the given array A is monotonic else return “False” (without quotes).

Example



Input : 6 5 4 4

Output : true

Input : 5 15 20 10

Output : false

Q6: Python program to find smallest number in a list

We are given a list of numbers and our task is to write a Python program to find the smallest number in given list. For the following program we can use various methods including the built-in min method, sorting the array and returning the last element, etc.

Example



Input : list1 = [10, 20, 4]

Output : 4

Input : list2 = [20, 10, 20, 1, 100]

Output : 1

Q7: Python program to find N largest elements from a list

Given a list of integers, the task is to find N largest elements assuming size of list is greater than or equal to N.

Example



Input : [4, 5, 1, 2, 9]

N = 2

Output : [9, 5]

Input : [81, 52, 45, 10, 3, 2, 96]

N = 3

Output : [81, 96, 52]

Q8:Python program to print all odd numbers in a range

Given starting and endpoints, write a Python program to print all odd numbers in that given range.

Example



Input : start = 4, end = 15

Output : 5, 7, 9, 11, 13, 15

Input : start = 3, end = 11

Output : 3, 5, 7, 9, 11

Q9: Python program to print negative numbers in a list

Given a list of numbers, write a Python program to print all negative numbers in the given list.

Example



Input : list1 = [12, -7, 5, 64, -14]

Output : -7, -14

Input : list2 = [12, 14, -95, 3]

Output : -95

Q10: Remove multiple elements from a list in Python

Given a list of numbers, write a Python program to remove multiple elements from a list based on the given condition.

Example



Input : [12, 15, 3, 10]

Output : Remove = [12, 3], New_List = [15, 10]

Input : [11, 5, 17, 18, 23, 50]

Output : Remove = [1:5], New_list = [11, 50]

Q11: Adding and Subtracting Matrices in Python

In this article, we will discuss how to add and subtract elements of the matrix in Python.

Example



Suppose we have two matrices A and B.

$A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

$B = \begin{bmatrix} 4 & 5 \\ 6 & 7 \end{bmatrix}$

then we get

$A+B = \begin{bmatrix} 5 & 7 \\ 9 & 11 \end{bmatrix}$

$A-B = \begin{bmatrix} -3 & -3 \\ -3 & -3 \end{bmatrix}$

Q12: Python program to create a list of tuples from given list having number and its cube in each tuple

Given a list of numbers of list, write a Python program to create a list of tuples having first element as the number and second element as the cube of the number.

Example



Input : list = [1, 2, 3]

Output : [(1, 1), (2, 8), (3, 27)]

Input : list = [9, 5, 6]

Output : [(9, 729), (5, 125), (6, 216)]

Q13: Python – All pair combinations of 2 tuples

Sometimes, while working with Python tuples data, we can have a problem in which we need to extract all possible combination of 2 argument tuples. This kind of application can come in Data Science or gaming domains. Let's discuss certain ways in which this task can be performed.

Example

Input : test_tuple1 = (7, 2), test_tuple2 = (7, 8)

Output : [(7, 7), (7, 8), (2, 7), (2, 8), (7, 7), (7, 2), (8, 7), (8, 2)]

Input : test_tuple1 = (9, 2), test_tuple2 = (7, 8)

Output : [(9, 7), (9, 8), (2, 7), (2, 8), (7, 9), (7, 2), (8, 9), (8, 2)]

Q14: Python – Flatten tuple of List to tuple

Sometimes, while working with Python Tuples, we can have a problem in which we need to perform the flattening of tuples, which have listed as their constituent elements. This kind of problem is common in data domains such as Machine Learning. Let's discuss certain ways in which this task can be performed.

Example



Input : test_tuple = ([5], [6], [3], [8])

Output : (5, 6, 3, 8)

Input : test_tuple = ([5, 7, 8])

Output : (5, 7, 8)