**•Problem Statement : With a given list L of integers, write a program to print this list L after removing all duplicate values with original order preserved.**

**•Objectives :**

**!~s1To understand List data structure and its methods in Python programming.**

**!~s1To learn the loop traversal in Python programming**

**•Theory :**

**Python is a clear and powerful object-oriented programming language, comparable to Perl, Ruby, Scheme, or Java.**

**Some of Python's notable features:**

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**•Uses an elegant syntax, making the programs you write easier to read.**

**•Is an easy-to-use language that makes it simple to get your program working. This makes Python ideal for prototype development and other ad-hoc programming tasks, without compromising maintainability.**

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**The most basic data structure in Python is the sequence. Each element of a sequence is assigned a number - its position or index. The first index is zero, the second index is one, and so forth.**

**The list is a most versatile datatype available in Python which can be written as a list of comma-separated values (items) between square brackets. Important thing about a list is that items in a list need not be of the same type.**

**Creating a list is as simple as putting different comma-separated values between square brackets.**

**List is equivalent to arrays in other languages, with the extra benefit of being dynamic in size. In Python, list is a type of container in Data Structures, which is used to store multiple data at the same time. Unlike Sets, the list in Python are ordered and have a definite count.**

**There are multiple ways to iterate over a list in Python using LLoops.**

**•Algorithm :**

**!~s2Take the number of elements in the list and store it in a variable.**

**!~s2Accept the values into the list using a for loop and insert them into the list.**

**!~s2Use a for loop to traverse through the elements of the list.**

**!~s2Use an if statement to check if the element is already there in the list and if it is not there, append it to another llist.**

**!~s2Print the non-duplicate items of the list.**

**!~s2Exit.**

**•Steps for Implementation :**

**!~s3User must enter the number of elements in the list and store it in a variable.**

**!~s3User must enter the values of elements into the list.**

**!~s3The append function obtains each element from the user and adds the same to the end of the list as many times as the number of elements taken.**

**!~s3The for loop basically traverses through the elements of the list and the if statement checks if the element is a duplicate or not.**

**!~s3If the element isn’t a duplicate, it is added into another list.**

**!~s3The list containing non-duplicate items is then displayed.**

**•Sample Code :**

**a=[]**

**n= int(input("Enter the number of elements in list:")) for x in range(0,n):**

**element=int(input("Enter element" + str(x+1) + ":")) a.append(element)**

**b = set() unique = [] for x in a:**

**if x not in b: unique.append(x) b.add(x)**

**print("Non-duplicate items:") print(unique)**

**•Platform : Ubuntu**

**•Input :**

**Enter the Elements of the list : 10 20 20 30 40 40 50**

**•Output : [10, 20, 30, 40, 50]**

**•Conclusion : The program helps to understand the working of Lists and loop traversal. It also helps to become familiar with the methods used in Lists.**

**•FAQs :**

**!~s4When to use python lists and when to use tuples, dictionaries or sets.**

**.> Lists are just like dynamic sized arrays, declared in other languages (vector in C++ and ArrayList in Java).**

**.>Tuple is a collection of Python objects much like a list. The sequence of values stored in a tuple can be of any type, and they are indexed by integers. It is immutable.**

**.>Set is an unordered collection of data type that is iterable, mutable and has no duplicate elements. The major advantage of using a set, as opposed to a list, is that it has a highly optimized method for checking whether a specific element is contained in the set.**

**.>A dictionary is a key:value pair, similar to an associative array found in other programming languages.**

**!~s4How to transform Python lists into other data structures?**

**.>Python has inbuilt support for typecasting lists into other data types, for instance the join() function can be used to cast a list into a string, the tuple() function can be used to cast it into a tuple, similarly, a set function also exists, beyond these, the list can be iterated through to cast individual elements.**

**!~s4How to clone or copy a list in Python?**

**.>This can be accomplished either by using the list.copy() function in the newer Python versions, or by slicing the list to output the complete list, i.e. list[:].**

**!~s4How to count occurrences of a list item in Python?**

**.>The count() method returns the number of times element appears in the list.**

**!~s4How to concatenate and sort the lists in Python?**

**.>The '+' operator can be used to concatenate two lists while the list.sort() function is used to sort the list.**

**•Practice Assignments :**

**!~s5Write a Python program to calculate the average of numbers in a given list.**

**!~s5Write a Python program to get the largest number from a list.**

**!~s5Write a Python program to check a list is empty or not.**

**!~s5Write a Python program that takes two lists and returns True if they have at least one common member.**

**!~s5Write a Python program to print the numbers of a specified list after removing even numbers from it.**

**!~s5Write a Python program to get the difference between the two lists.**