MIT-WPU

MIT-WORLD PEACE UNIVERSITY

F. Y. B. Tech

Trimester: I/II/III Subject: Programming and Problem Solving

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Experiment No.: 10

Name of the Experiment: Python program to sort n numbers.

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AIM: Write a python program to accept n numbers and sort them in ascending and descending order

OBJECTIVE: To study sort and reverse function in python

THEORY:

List:
A list is a collection which is ordered and changeable. In Python lists are written with square brackets. 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.

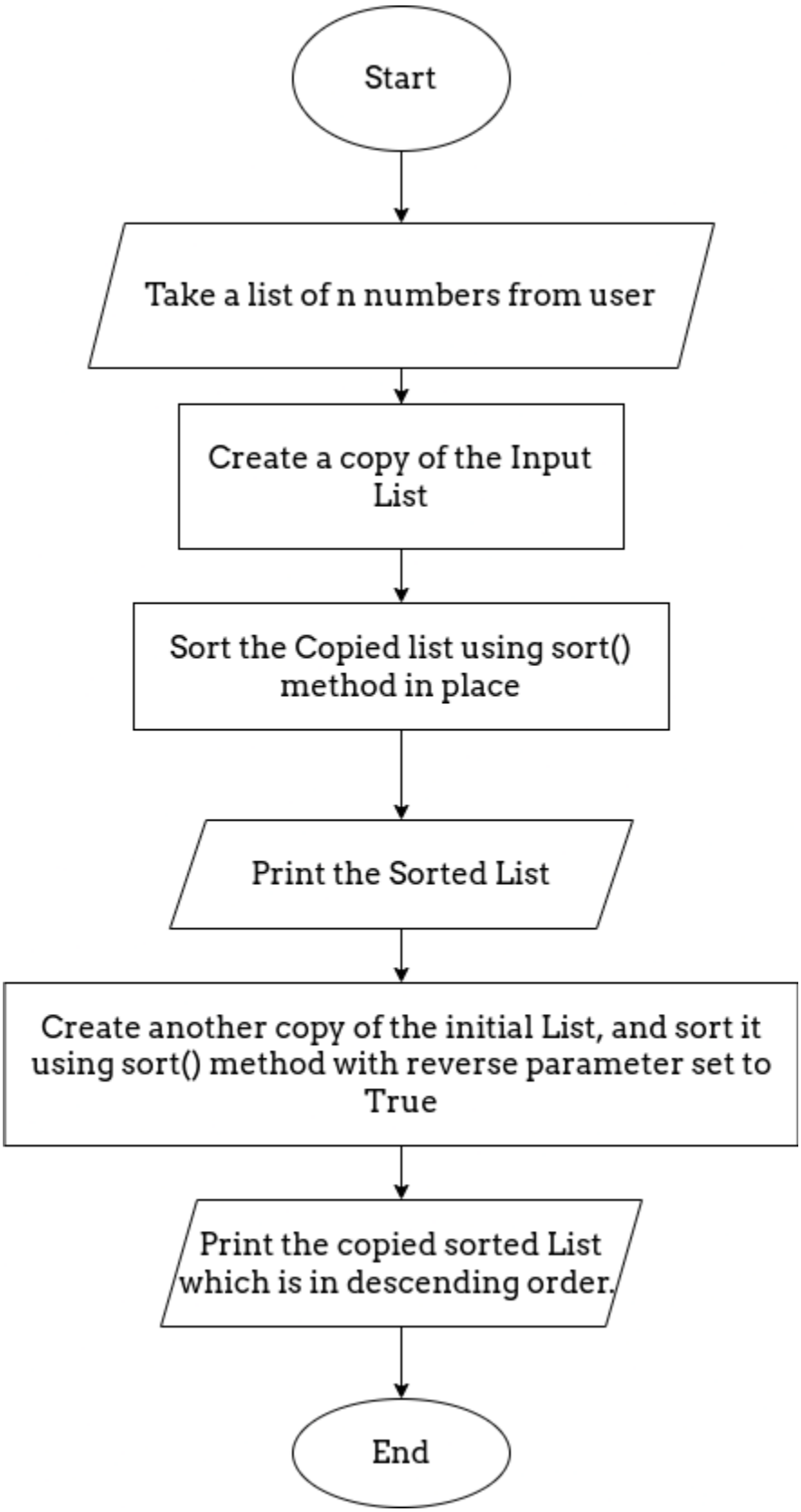
Sort():
sort() is a inbuilt method in Python, it is used to sort the elements/objects of the list in Ascending and Descending Order. To sort a list in descending order, pass reverse=True as an argument with sort() method.

PLATFORM: *Arch Linux 64 Bit with Python 3.10.1 from the AUR*

ALGORITHM:

Step 1:Step 1: Take a list of n numbers from user
Step 2: Create a sorted copy of existing list using sort()
Step 3: Sort the List in Place
Step 4: print the List which is ascending order .
Step 5: Create a sorted copy of existing list
Step 6: Create sorted list in reverse order by setting reverse equal to True
Step 7: Print the List in descending order
Step 8: Stop

Flowchart:


Start
Take a list of n numbers from user
Create a copy of the Input List
Sort the Copied list using sort() method in place
Print the Sorted List
Create another copy of the initial List, and sort it using sort() method with reverse parameter set to True
Print the copied sorted List which is in descending order.
End

CODE:

```
# Program to sort an array in python using default list sort function and then using
Bubble sort.

initial_list = []
limit = int(input("How many elements are there in the list?"))

for i in range(limit):
    val = int(input())
    initial_list.append(val)

ascending_list = initial_list[:]
print('Here is the Array sorted in Ascending order by default sort function')
ascending_list.sort()
print(ascending_list)

descending_list = initial_list[:]
print('Here is the Array sorted in Descending order by default sort function')
descending_list.sort(reverse=True)
print(descending_list)
```

OUTPUT

```
How many elements are there in the list? 5
2
1
45
2
1
Here is the Array sorted in Ascending order by default sort function
[1, 1, 2, 2, 45]
Here is the Array sorted in Descending order by default sort function
[45, 2, 2, 1, 1]
```

CONCLUSION:

Thus understood the concept of inbuilt function sort and reverse

FAQs:

1. **What is a List**

Ans: A list is **a data structure in Python that is a mutable, or changeable, ordered sequence of elements**. Each element or value that is inside of a list is called an item. Just as strings are defined as characters between quotes, lists are defined by having values between square brackets [ ]

2. **Explain sort()**

Ans: The sort() method is **a built-in Python method that, by default, sorts the list in ascending order**. However, you can modify the order from ascending to descending by specifying the sorting criteria.

3. **Explain reverse()**

Ans:Python List reverse() is an inbuilt method in the Python programming language that **reverses objects of the List in place**.

Syntax: list_name.reverse()

4. **What are different methods available in python ?**

Ans: Generally, there are three types of methods in Python:

1) Instance Methods.
2) Class Methods
3) *Static Methods*