EX-2.1

Title :

Sort a list with various special cases including empty list, single element list, identical elements, and negative numbers.

Aim:

To design and implement a Python program to sort a list correctly over different special cases like empty, single element, identical elements, and negative numbers.

Procedure:

1. Take input list from user.

2. Handle cases directly and then sort the list in ascending order.

3. Print the sorted list as output.

Algorithm:

1. Start

2. Read the list input from user (allow empty list).

3. Use built-in sorting function to sort the list.

4. Print the sorted list.

5. Stop

Input:

 (empty line for empty list)

1

Output:

7 7 7 7

-5 -1 -3 -2 -4

Program :

```
def sortList(arr):
    arr.sort()
    return arr
input_str = input("Enter list elements separated by space (leave empty for empty list): ").strip()
if input_str == "":
    arr = []
else:
    arr = list(map(int, input_str.split()))

result = sortList(arr)
print(result)
```

Performance Analysis:

> **Time Complexity:** O(n log n)
>
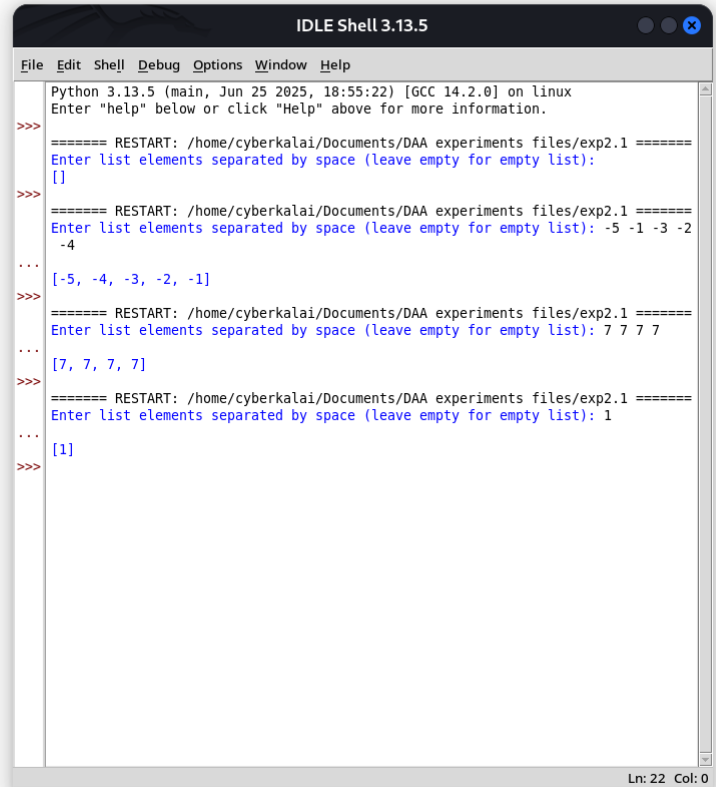> **Space Complexity:** O(1) or O(n)

program output:

```
File  Edit  Format  Run  Options  Window  Help
def sortList(arr):
    arr.sort()
    return arr

input_str = input("Enter list elements separated by space (leave empty for empty list): ").strip()
if input_str == "":
    arr = []
else:
    arr = list(map(int, input_str.split()))

result = sortList(arr)
print(result)
```

```
IDLE Shell 3.13.5

File  Edit  Shell  Debug  Options  Window  Help
    Python 3.13.5 (main, Jun 25 2025, 18:55:22) [GCC 14.2.0] on linux
    Enter "help" below or click "Help" above for more information.
>>>
    ======= RESTART: /home/cyberkalai/Documents/DAA experiments files/exp2.1 =======
    Enter list elements separated by space (leave empty for empty list):
    []
>>>
    ======= RESTART: /home/cyberkalai/Documents/DAA experiments files/exp2.1 =======
    Enter list elements separated by space (leave empty for empty list): -5 -1 -3 -2
     -4
...
    [-5, -4, -3, -2, -1]
>>>
    ======= RESTART: /home/cyberkalai/Documents/DAA experiments files/exp2.1 =======
    Enter list elements separated by space (leave empty for empty list): 7 7 7 7
...
    [7, 7, 7, 7]
>>>
    ======= RESTART: /home/cyberkalai/Documents/DAA experiments files/exp2.1 =======
    Enter list elements separated by space (leave empty for empty list): 1
...
    [1]
>>>
                                                                    Ln: 22  Col: 0
```

Result :

Thus the given program Sorting Various Lists is executed and got output successfully.