EX-1.8

Title:

Sort an array of integers using the bubble sort technique.

Aim:

To design and implement a Python program to sort an array using the bubble sort algorithm.

Procedure:

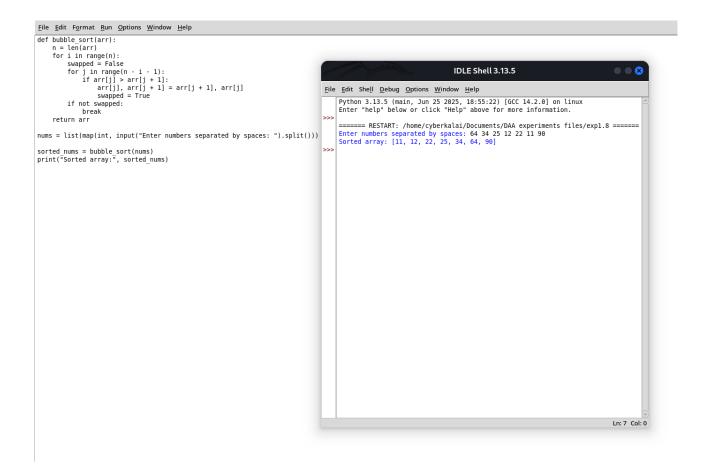
- 1. Read the input size n.
- 2. Read n integers into the array.
- 3. Perform bubble sort:
 - Repeatedly traverse the array, comparing adjacent elements.
 - Swap them if they are in the wrong order.
 - Repeat this until the array is sorted.
- 4. Print the sorted array after sorting.

Algorithm:

- 1. Start
- 2. Read size n and array arr.
- 3. For i from 0 to n-1:
 - For j from 0 to n-i-2:
 - If arr[j] > arr[j+1], swap arr[j] and arr[j+1].
- 4. Print the sorted array.
- 5. Stop

```
Input:
5
64 34 25 12 22
Output:
12 22 25 34 64
Program:
def bubbleSort(arr):
  n = len(arr)
  for i in range(n):
    for j in range(n - i - 1):
       if arr[j] > arr[j + 1]:
         arr[i], arr[i + 1] = arr[i + 1], arr[i]
n = int(input("Enter size of array: "))
arr = list(map(int, input("Enter array elements: ").split()))
bubbleSort(arr)
print("Sorted array:", ' '.join(map(str, arr)))
Performance Analysis:
      Time Complexity: O(n<sup>2</sup>)
      Space Complexity: O(1)
```

program output:



Result:

Thus the given program Bubble Sort is executed and got output successfully.