EX-1.5

Title :

Write a program FOR THE BELOW TEST CASES with least time complexity

Aim:

To design and implement a Python program to find the maximum element in an array.

Procedure:

1. Read input size n.
2. Read n space-separated integers as the array elements.
3. Initialize a variable `max_val` to the first element of the array.
4. Traverse the array:
    - Compare each element with `max_val`.
    - If greater, update `max_val`.
5. Print the `max_val` as result.

Algorithm:

1. Start
2. Read n
3. Read n integers into array `arr`
4. Initialize `max_val = arr`
5. For each element `num` in `arr`:
    - If `num > max_val`, update `max_val`
6. Print `max_val`
7. Stop

Input:

5

1 2 3 4 5

Output:

5

Program :

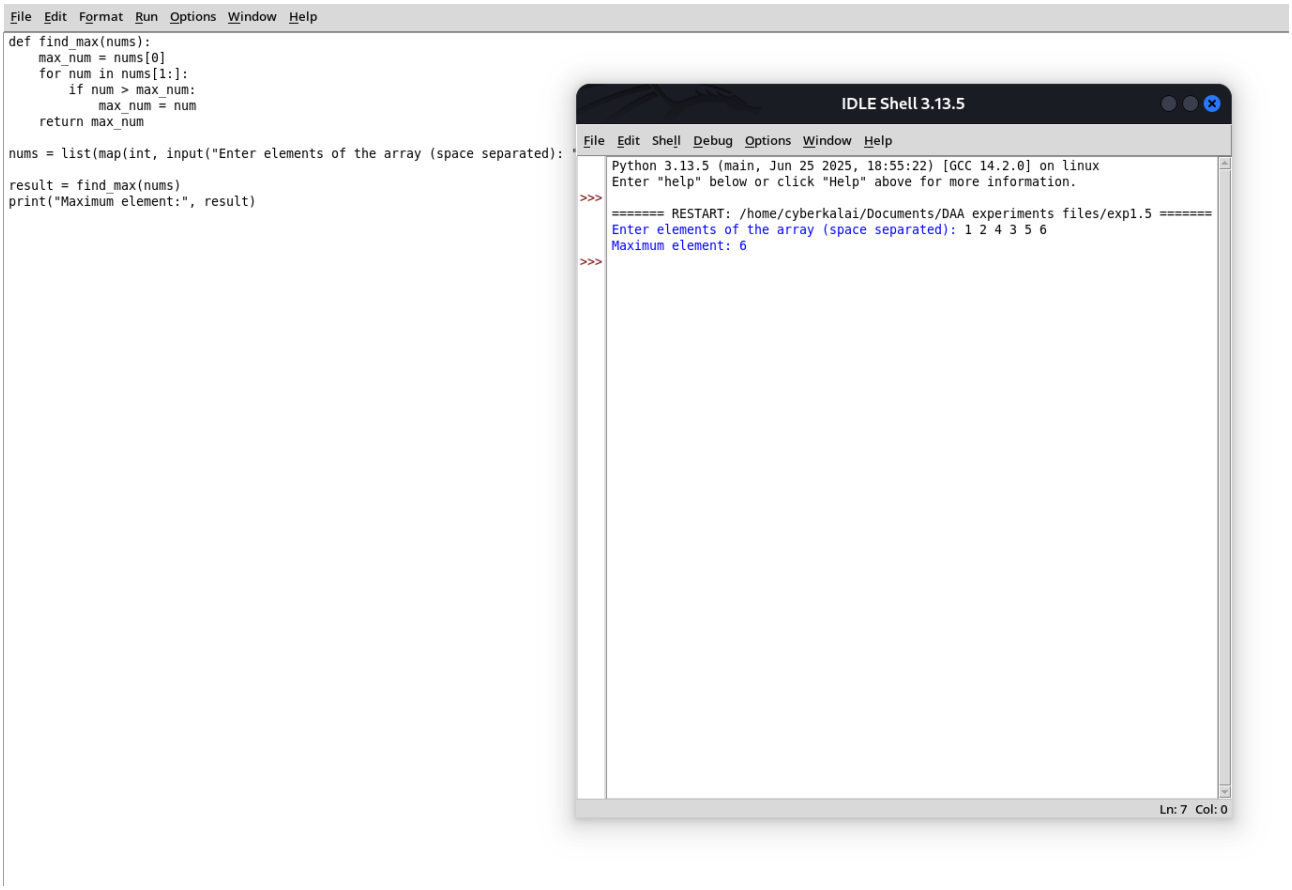
```
def findMaximum(arr):
    max_val = arr
    for num in arr:
        if num > max_val:
            max_val = num
    return max_val
n = int(input("Enter size of array: "))
arr = list(map(int, input("Enter array elements: ").split()))

result = findMaximum(arr)
print("Maximum element in the array:", result)
```

Performance Analysis:

Time Complexity: O(n), entire array scanned once

Space Complexity: O(1), only one variable (max_val) used

program output:



Result :

Thus the given program Maximum Element is executed and got output successfully.