

daa 2.py - C:/Users/Veera Vaishnavi/daa 2.py (3.11.9)

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```
def binary_search(arr, key):
    arr.sort()
    left, right = 0, len(arr)-1
    while left <= right:
        mid = (left+right)//2
        if arr[mid] == key:
            return f"Element {key} is found at position {mid}"
        elif arr[mid] < key:
            left = mid+1
        else:
            right = mid-1
    return f"Element {key} is not found"

print(binary_search([3,4,6,-9,10,8,9,30], 10))
print(binary_search([3,4,6,-9,10,8,9,30], 100))
# Time complexity: O(log n)
```

Python Shell 3.11.9

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Python 3.11.9 (tags/v3.11.9:de54cf5, Apr 2 2024, 10:12:12) [MSC v.1938 64 bit (AMD64)] on win32

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>>>

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Element 10 is found at position 6

>>> Element 100 is not found

>>>

Ln: 7 Col: 0

Ln: 17 Col: 0

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```
def climb_stairs(n):  
    a = b = 1  
    for _ in range(n-1):  
        a, b = b, a+b  
    return b  
  
print(climb_stairs(4)) # 5  
print(climb_stairs(3)) # 3
```

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```
>>>  
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5  
3  
>>>
```

Ln: 7 Col: 0

Ln: 9 Col: 0

3 BSE midcap
-0.85%



Search



ENG
IN



15:33
25-09-2025

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```
def find_ways(m, n, N, i, j):  
    from functools import lru_cache  
    @lru_cache(None)  
    def dp(x, y, steps):  
        if x<0 or x>=m or y<0 or y>=n:  
            return 1  
        if steps==0:  
            return 0  
        return dp(x+1,y,steps-1)+dp(x-1,y,steps-1)+dp(x,y+1,steps-1)+dp(x,y-1,steps-1)  
    return dp(i,j,N)  
  
print(find_ways(2,2,2,0,0)) # 6  
print(find_ways(1,3,3,0,1)) # 12
```

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```
>>>  
= RESTART: C:/Users/Veera Vaishnavi/daa 2.py  
6  
12  
>>>
```

Ln: 7 Col: 0

Ln: 14 Col: 0

```
def merge_sort(arr):  
    if len(arr) <= 1:  
        return arr  
    mid = len(arr)//2  
    left = merge_sort(arr[:mid])  
    right = merge_sort(arr[mid:])  
    result = []  
    i = j = 0  
    while i < len(left) and j < len(right):  
        if left[i] < right[j]:  
            result.append(left[i])  
            i += 1  
        else:  
            result.append(right[j])  
            j += 1  
    result.extend(left[i:])  
    result.extend(right[j:])  
    return result  
  
print(merge_sort([5,2,9,1,5,6]))
```

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>>>

```
= RESTART: C:/Users/Veera Vaishnavi/daa 2.py  
[1, 2, 5, 5, 6, 9]
```

>>>

Ln: 6 Col: 0

Ln: 21 Col: 0



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>>>
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None

5

3

>>> |

```
daa 2.py - C:/Users/Veera Vaishnavi/daa 2.py (3.11.9)
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def unique_elements(nums):
    seen = set()
    unique = []
    for num in nums:
        if num not in seen:
            seen.add(num)
            unique.append(num)
    return unique

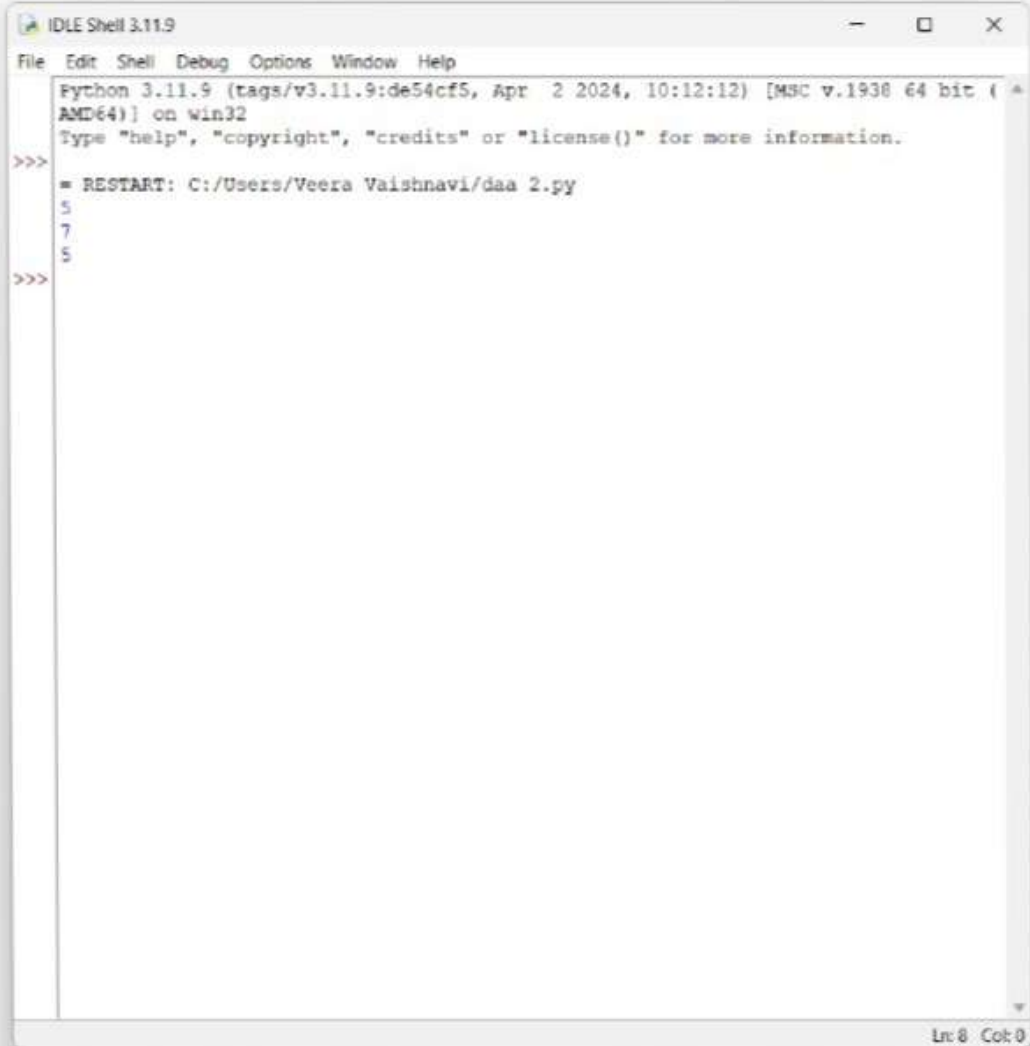
print(unique_elements([3,7,3,5,2,5,9,2]))
print(unique_elements([-1,2,-1,3,2,-2]))
print(unique_elements([1000000,999999,1000000]))
# Space complexity: O(n)
```

```
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AMD64)] on win32
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>>>
= RESTART: C:/Users/Veera Vaishnavi/daa 2.py
[3, 7, 5, 2, 9]
[-1, 2, 3, -2]
[1000000, 999999]
>>>
```

Ln: 8 Col: 0

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```
def findMax(nums):  
    return max(nums)  
  
print(findMax([1, 2, 3, 4, 5])) # Output: 5  
print(findMax([7, 7, 7, 7, 7])) # Output: 7  
print(findMax([-10, 2, 3, -4, 5])) # Output: 5
```



```
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>>>  
= RESTART: C:/Users/Veera Vaishnavi/daa 2.py  
5  
7  
5  
>>>  
Ln: 8 Col: 0
```

Ln: 7 Col: 0

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```
def bubble_sort(arr):  
    n = len(arr)  
    for i in range(n):  
        for j in range(0, n-i-1):  
            if arr[j] > arr[j+1]:  
                arr[j], arr[j+1] = arr[j+1], arr[j]  
    return arr
```

```
# Time complexity: O(n^2)  
print(bubble_sort([5,1,4,2,8]))
```

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>>>

```
= RESTART: C:/Users/Veera Vaishnavi/daa 2.py  
[1, 2, 4, 5, 8]
```

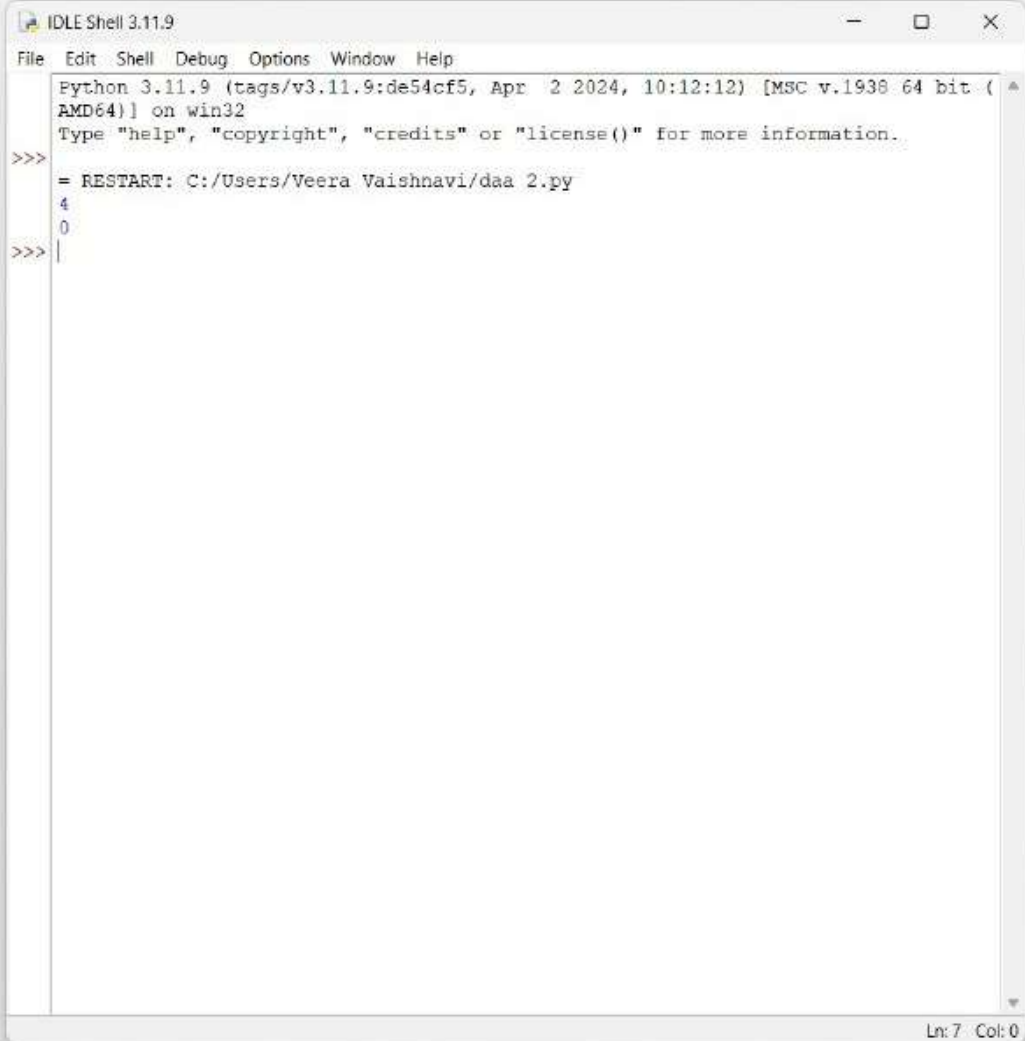
>>>

Ln: 6 Col: 0

Ln: 11 Col: 0

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```
def countPairs(nums, k):  
    n = len(nums)  
    count = 0  
    for i in range(n):  
        for j in range(i+1, n):  
            if nums[i] == nums[j] and (i * j) % k == 0:  
                count += 1  
    return count  
  
print(countPairs([3,1,2,2,2,1,3], 2)) # Output: 4  
print(countPairs([1,2,3,4], 1))      # Output: 0
```



```
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>>> = RESTART: C:/Users/Veera Vaishnavi/daa 2.py  
4  
0  
>>> |  
Ln: 7 Col: 0
```

Ln: 12 Col: 0

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```
def sumOfSquares(nums):  
    n = len(nums)  
    total = 0  
    for i in range(n):  
        seen = set()  
        for j in range(i, n):  
            seen.add(nums[j])  
            total += len(seen) ** 2  
    return total  
  
print(sumOfSquares([1,2,1])) # Output: 15  
print(sumOfSquares([1,1])) # Output: 3
```

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```
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>>>  
= RESTART: C:/Users/Veera Vaishnavi/daa 2.py  
15  
3  
>>>|
```

Ln: 7 Col: 0

Ln: 1 Col: 1