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main.py



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Output

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```
1 def selection_sort(arr):
2     n = len(arr)
3     for i in range(n):
4         min_index = i
5         for j in range(i + 1, n):
6             if arr[j] < arr[min_index]:
7                 min_index = j
8         arr[i], arr[min_index] = arr[min_index], arr[i]
9 arr = [29, 10, 14, 37, 13]
10 selection_sort(arr)
11 print("Sorted array:", arr)
12
```

Sorted array: [10, 13, 14, 29, 37]

=== Code Execution Successful ===

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```
1 def bubble_sort(arr):
2     n = len(arr)
3     for i in range(n):
4         swapped = False
5         for j in range(0, n - i - 1):
6             if arr[j] > arr[j + 1]:
7                 arr[j], arr[j + 1] = arr[j + 1], arr[j]
8                 swapped = True
9         if not swapped:
10             break
11 arr = [3, 2, 1, 5, 4]
12 bubble_sort(arr)
13 print("Sorted array:", arr)
14
```

Sorted array: [1, 2, 3, 4, 5]

=== Code Execution Successful ===



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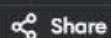
Clear

```
1 def insertion_sort(arr):
2     for i in range(1, len(arr)):
3         key = arr[i]
4         j = i - 1
5         while j >= 0 and arr[j] > key:
6             arr[j + 1] = arr[j]
7             j -= 1
8         arr[j + 1] = key
9 arr = [5, 3, 8, 3, 1, 8, 5]
10 insertion_sort(arr)
11 print("Sorted array:", arr)
12
```

Sorted array: [1, 3, 3, 5, 5, 8, 8]

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```
1 def analyze_list(lst):
2     if not lst:
3         return "The list is empty."
4     elif len(lst) == 1:
5         return f"The list has one element: {lst[0]}"
6     elif all(x == lst[0] for x in lst):
7         return f"All elements in the list are identical: {lst}"
8     elif any(x < 0 for x in lst):
9         return f"The list contains negative numbers: {lst}"
10    else:
11        return f"The list is: {lst}"
12 test_cases = [
13     [],
14     [42],
15     [7, 7, 7, 7],
16     [-5, -1, -3, -2, -4],
17     [3, 5, -1, 8]
18 for i, test in enumerate(test_cases, 1):
19     print(f"Test Case {i}: Input: {test}")
20     print("Output:", analyze_list(test))
21     print("-" * 30)
22
```

```
Test Case 1: Input: []
Output: The list is empty.
-----
Test Case 2: Input: [42]
Output: The list has one element: 42
-----
Test Case 3: Input: [7, 7, 7, 7]
Output: All elements in the list are identical: [7, 7, 7, 7]
-----
Test Case 4: Input: [-5, -1, -3, -2, -4]
Output: The list contains negative numbers: [-5, -1, -3, -2, -4]
-----
Test Case 5: Input: [3, 5, -1, 8]
Output: The list contains negative numbers: [3, 5, -1, 8]
-----
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```

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```
1 def find_kth_missing(arr, k):
2     left, right = 0, len(arr) - 1
3     while left <= right:
4         mid = (left + right) // 2
5         missing_up_to_mid = arr[mid] - (mid + 1)
6         if missing_up_to_mid < k:
7             left = mid + 1
8         else:
9             right = mid - 1
10    return left + k
11 arr = [2, 3, 4, 7, 11]
12 k = 5
13 print("The", k, "th missing positive integer is:", find_kth_missing
14       (arr, k))
```

The 5 th missing positive integer is: 9

=== Code Execution Successful ===



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```
1 def find_peak_element(nums):
2     left, right = 0, len(nums) - 1
3     while left < right:
4         mid = (left + right) // 2
5         if nums[mid] < nums[mid + 1]:
6             left = mid + 1
7         else:
8             right = mid
9     return left
10 nums = [1, 2, 3, 1]
11 print("Index of a peak element is:", find_peak_element(nums))
12
```

Index of a peak element is: 2

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Output

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```
1 def find_peak_element(nums):
2     left, right = 0, len(nums) - 1
3     while left < right:
4         mid = (left + right) // 2
5         if nums[mid] < nums[mid + 1]:
6             left = mid + 1
7         else:
8             right = mid
9     return left
10 nums = [1, 2, 3, 1]
11 print("Index of a peak element is:", find_peak_element(nums))
12
```

Index of a peak element is: 2

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```
1- def strStr(haystack: str, needle: str) -> int:
2-     return haystack.find(needle)
3- haystack = "hello"
4- needle = "ll"
5- print("The index of the first occurrence is:", strStr(haystack, needle
6-     ))
```

The index of the first occurrence is: 2

=== Code Execution Successful ===