Activity 4

Write a program to perform searching activity using Linear and binary search .

#Write a program to perform searching activity using Linear and binary search.

def linear\_search(arr, target):

    for i in range(len(arr)):

        if arr[i] == target:

            return i  # Return the index of the target element

    return -1  # Return -1 if the target element is not found

# Example usage:

arr = [1, 2, 3, 4, 5, 6, 7, 8, 9]

target = 5

result = linear\_search(arr, target)

if result != -1:

    print(f"Element {target} found at index {result}.")

else:

    print(f"Element {target} not found in the list.")

# Binary search

def binary\_search(arr, target):

    left, right = 0, len(arr) - 1

    while left <= right:

        mid = left + (right - left) // 2  # Calculate the middle index

        if arr[mid] == target:

            return mid  # Return the index of the target element

        elif arr[mid] < target:

            left = mid + 1

        else:

            right = mid - 1

    return -1  # Return -1 if the target element is not found

# Example usage:

arr = [1, 2, 3, 4, 5, 6, 7, 8, 9]

target = 5

result = binary\_search(arr, target)

if result != -1:

    print(f"Element {target} found at index {result}.")

else:

    print(f"Element {target} not found in the list.")