3. Write C program that demonstrates the usage of these notations by analyzing the time complexity of some example algorithms.

Program:

```
import time
def linear_search(arr, target):
    for i in range(len(arr)):
        if arr[i] == target:
            return i
    return -1
def analyze_time_complexity(algorithm,
input_size):
    start_time = time.time()
    data = list(range(input_size))
    target = input_size - 1
    algorithm(data, target)
    end_time = time.time()
    execution_time = end_time - start_time
    return execution_time
input_sizes = [1000, 2000, 3000]
for size in input_sizes:
    linear_search_time =
analyze_time_complexity(linear_search, size)
    print(f"Input size: {size}")
    print(f"Linear search time:
{linear_search_time} seconds")
```

print()

Output:

```
C:\Users\srika\Desktop\CSA0863\pythonProject\.venv\Scripts\python.exe C:\Users\srika\Desktop\CSA0863\pythonProject\problem.py
Input size: 1000
Linear search time: 0.0 seconds

Input size: 2000
Linear search time: 0.0 seconds

Input size: 3000
Linear search time: 0.0 seconds
```

Time complexity:O(n)