# Exercise 2 – E-commerce Platform Search Function

## Objective:

To compare linear and binary search approaches for finding a product in an e-commerce platform based on product name.

## Big O Notation Explanation:

Big O notation describes the time complexity (upper bound) of an algorithm as input size increases.  
  
- Linear Search:  
 - Best Case: O(1)  
 - Average/Worst Case: O(n)

- Binary Search:  
 - Best Case: O(1)  
 - Average/Worst Case: O(log n)  
 - Requires sorted input

## Testing Result:

- Linear Search successfully found the product with full scan.  
- Binary Search returned the same result but faster due to sorted list.

## Conclusion:

Binary search is more efficient for large, sorted datasets.  
However, for small or unsorted collections, linear search is simpler.  
In an optimized production environment, binary search is preferred with pre-sorted product catalogs.