# E-commerce Platform Search Function

## 1. Understanding Asymptotic Notation

Big O notation is a way to describe how the runtime of an algorithm increases with the size of the input. It helps us understand the efficiency of an algorithm.

Best Case: The algorithm runs in the shortest possible time (e.g., item is found at the start).

Average Case: The algorithm runs in an average time for random input.

Worst Case: The algorithm takes the longest time (e.g., item is at the end or not found).

## 4. Analysis

Linear Search has time complexity O(n). It checks each item one by one, so it is slower for large data.

Binary Search has time complexity O(log n). It is faster but needs the data to be sorted.

Conclusion: Binary search is better for large and sorted datasets. Linear search is simpler and can work for small or unsorted data.