E-commerce Platform Search Function

1. Understand Asymptotic Notation:

* Big O Notation is used to describe the performance or complexity of an algorithm. It specifically describes the worst-case scenario and helps in understanding the upper limit of the algorithm’s running time or space requirements.
* Best-case is the scenario where the algorithm performs the minimum number of steps. Average-case is the scenario where the algorithm performs an average number of steps. Worst-case is the scenario where the algorithm performs the maximum number of steps.

1. Setup:

* A class “Product” with attributes for searching, such as “productId”, “productName”, and “category” was created.

1. Implementation:

* Linear search and Binary search algorithms were implemented.
* For linear search, the products were stored in an array. For binary search, the products were stored in a sorted array.

1. Analysis:

* Time Complexity:
* Linear Search: O(n)
* Binary Search: O(log n)
* For an e-commerce platform with potentially large datasets, binary search is more suitable due to its efficiency in handling large volumes of data. However, it requires the data to be sorted, which can be managed with periodic sorting or maintaining a sorted data structure.