**Exercise-2: E-commerce Platform Search Function**

**Understanding Asymptotic Notation:**

**Big O Notation:**

* Big O notation is used to describe the performance or complexity of an algorithm. It gives an upper bound on the time (or space) taken by an algorithm as a function of the input size. Big O notation helps in comparing the efficiency of different algorithms, especially for large input sizes.

**Search Operations:**

**Linear Search:**

Best Case: O (1)

Average Case: O(n)

Worst Case: O(n)

**Binary Search**:

Best Case: O (1)

Average Case: O (log n)

Worst Case: O (log n)

**Analysis:**

**Time Complexity:**

Linear Search: O(n) for all cases

Binary Search:

* Best Case: O (1)
* Average and Worst Case: O (log n)

**Suitable Algorithm:**

* Binary search is more efficient for large datasets due to its O (log n) complexity. However, it requires the array to be sorted. If the product list is frequently updated, the overhead of keeping it sorted must be considered. For static or rarely updated lists, binary search is ideal. For frequently changing lists, linear search might be simpler despite its lower efficiency.