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

**Understanding Asymptotic Notation:**

Big O notation is used to describe the performance or complexity of an algorithm. It provides an upper bound on the time (or space) an algorithm takes to run as a function of the input size, ignoring constant factors and lower-order terms. This helps in understanding the scalability and efficiency of an algorithm.

**Search Scenarios:**

* Linear Search: O(n) for best, average, and worst cases.
* Binary Search: O(1) for best and O(log n) for average cases and worst-cases, but it requires a sorted array.

**Analysis:**

* Linear Search: Suitable for small datasets or unsorted arrays where the overhead of sorting isn't justified.
* Binary Search: More efficient for large datasets but requires the array to be sorted.

Given the nature of e-commerce platforms, where fast search performance is crucial and inventories can be large, **binary search** is generally more suitable. However, maintaining a sorted array requires additional management, so a hybrid approach or using a more advanced data structure like a balanced tree or hash table could also be considered for optimized performance.