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

**Step 1: Understand Asymptotic Notation**

Big O notation is used to describe the efficiency of an algorithm in terms of time or space as the input size grows. It focuses on how quickly the runtime increases relative to the input size.

In search operations:

* Best case is when the element is found at the first try.
* Average case is when the element is found somewhere in the middle.
* Worst case is when the element is not found at all or is found at the end.

**For example:**

* In linear search, best case is O(1), and worst case is O(n), where n is the number of products.
* In binary search, best case is O(1), and worst case is O(log n), but the array must be sorted.

**Step 4: My Recommendation and Analysis**

After analysing both algorithms, If the product list in the e-commerce platform is frequently updated, such as adding, removing, or editing products, I would prefer Linear Search. It’s simple, flexible, and doesn’t require the data to be sorted.

However, if the product list is relatively stable and can be kept sorted, I recommend using Binary Search. It offers much faster search performance (logarithmic time), which is crucial when dealing with a large dataset.

So, my final recommendation depends on the scenario:

* For dynamic data: go with Linear Search.
* For large, sorted datasets with frequent searches: Binary Search is the better choice.