Big O notation describes the **upper bound of time or space complexity** of an algorithm as input size grows. It helps compare efficiency of algorithms, especially for large datasets.

| Algorithm | Best Case | Average Case | Worst Case |
| --- | --- | --- | --- |
| **Linear Search** | O(1) – element is first | O(n/2) or O(n) | O(n) – last or not found |
| **Binary Search** | O(1) – element in middle | O(log n) | O(log n) – recursive/iterative |

Step-4 : Analysis

Linear Search : O(n)

Binary Search: O(log n)

Linear Search is suited for smaller datasets , while Binary suited for larger and ordered datasets

Binary Search will be more suited for the e-commerce platform cause we would have large datasets , and usually we order them by product id , thus binary being easier with efficient algorithm and less time.