◆ **Big O Notation:**

It describes the upper bound of an algorithm's running time in terms of input size n. It helps predict scalability and performance.

Case	Meaning
Best Case	The most favourable input scenario.
Average Case	The expected performance over all inputs.
Worst Case	The least favourable (slowest) scenario.

Analysis

Algorithm	Time Complexity	Use Case
Linear Search	O(n)	Small unsorted datasets
Binary Search	O(log n) (after sort O(n log n))	Large, sorted datasets

Recommendation:

- Use **Binary Search** for large datasets **if sorted or indexed** (e.g., via database index or pre-sorted list).

- For **real-time search** across unsorted in-memory products, **Linear Search** may be sufficient if the data size is small or caching is applied.