LEARNING PART  
  
  
  
What is Big O Notation?

Ans: The way the runtime or space increases with the size of the input is described by Big O notation. It aids in assessing algorithm efficiency while omitting implementation or hardware specifics.  
  
O(1): Constant time — fastest  
  
Logarithmic time, or O(log n)  
  
O(n): Linear time, which becomes slower as data volume increases  
  
O(n log n), O(n²): Slower as data increases

### Best, Average & Worst Case for Search:

| **Search Type** | **Best Case** | **Average Case** | **Worst Case** |
| --- | --- | --- | --- |
| Linear Search | O(1) | O(n/2) ≈ O(n) | O(n) |
| Binary Search | O(1) | O(log n) | O(log n) |

ANALYSIS PART   
Time Complexity:

Linear Search: Best: O(1) Worst: O(n)

Binary Search (sorted array):Best: O(1) Worst: O(log n)

Which is Better for the Platform?

Small data or unsorted data ➝ Linear Search (simpler)

Large sorted data ➝ Binary Search (faster)