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1. Big-O notation is a way to describe how the time or space needed for a process grows as the size of the input gets larger . it helps to understand how fast or slow an algorithm might be when dealing with huge input. It gives us the general idea about the behavior of the algorithm.
2. Binary searching is faster because it cuts the search area in half in every step . Focusing only the data interval .Only when the data is sorted it is possible . On the other hand , linear searching checks every single element one by one . it take more time when input size increases. That’ s why Binary search is more efficient to use. The time complexity of Binary search is O(log(n)) where the time complexity of Linear search is O(n).
3. Hashing is efficient because it locate item almost instantly using a unique code called hash . unlike other method hashing skips unnecessary step . it direct access the required element from the array. The complexity of Hashing is O(1). Which is constant . So it is more efficient .