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

1. Explain Big O notation and how it helps in analyzing algorithms.
   * Big O Notation: Mathematical notation, represents the upper limit for runtime or space requirements of an algorithm at the function of the input size. It will help analyze the efficiency of an algorithm by examining its performances on the worst-case possible scenarios. Big O notations give an overview of the growth rate or the scalability of the algorithm.
2. Describe the best, average, and worst-case scenarios for search operations.
   * Best Case: The case under which the algorithm would be executing the least number of operations. In the search operation, it can, for example be, when the target element is found at the start of the data structure.
   * Average Case: This could be the average or expected number of operations that the algorithm is going to perform, typically over all of the possible inputs.
   * Worst Case: It is the case when algorithm performs maximum number of operations. For an operation involving search, it may be the case when target element not found at the end or in very last situation of data structure.
3. Compare the time complexity of linear and binary search algorithms.
   * Linear Search:
     1. Best Case: O(1) - When the target element is the first element.
     2. Average Case: O(n) - Target element is in the middle.
     3. Worst Case: O(n) - When targeted element is present either at the end or isn't present at all.
   * Binary Search:
     1. Best Case: O(1) - When the target element is the middle element.
     2. Average Case: O(log n) - In most cases, the element is found in the middle of the sorted array.
     3. Worst Case: O(log n) - It's when the element is not found after several divisions of the array.
4. Discuss which algorithm is more suitable for your platform and why.
   * Both algorithms are in use on my platform for different search criteria to provide results, but in terms of efficiency alone, binary search is better than linear search for an E-Commerce Platform.