# E-commerce Platform Search Function

1. Linear Search:

Best-case: O(1). The element being searched is the first element in the list.

Average-case: O(n). On average, the search will need to check half of the elements in the list.

Worst-case: O(n). The element is either not in the list or is the last element.

2. Binary Search (for a sorted array):

Best-case: O(1). The middle element of the array is the target element.

Average-case: O(log n). The search repeatedly divides the array in half.

Worst-case: O(log n). The search has to go through the maximum number of divisions to find the element or determine it is not in the array.

Binary Search is more suitable as the data is already sorted.

  // Linear search method

    public static Product linearSearch(Product[] products, int productId) {

        for (Product product : products) {

            if (product.productId == productId) {

                return product;

            }

        }

        return null;

    }

//Binary search method

public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        System.out.println();

        // User input for number of products

        System.out.print("Enter the number of products: ");

        int numberOfProducts = scanner.nextInt();

        scanner.nextLine(); // Consume newline

        Product[] products = new Product[numberOfProducts];

        // User input for product details

        for (int i = 0; i < numberOfProducts; i++) {

            System.out.print("Enter product ID for product " + (i + 1) + ": ");

            int productId = scanner.nextInt();

            scanner.nextLine(); // Consume newline

            System.out.print("Enter product name for product " + (i + 1) + ": ");

            String productName = scanner.nextLine();

            System.out.print("Enter category for product " + (i + 1) + ": ");

            String category = scanner.nextLine();

            products[i] = new Product(productId, productName, category);

        }

## Output:

