**Why Data Structures and Algorithms are Essential:**

* **Efficiency:** Handling large inventories involves managing numerous items and operations (add, update, delete, query). Efficient data structures and algorithms help ensure these operations are performed quickly and use minimal resources.
* **Scalability:** As the number of products increases, It helps to handle data efficiently

**Suitable Data Structures:**

* **ArrayList:** Suitable for scenarios where the order of products matters and you frequently access items by index. However, operations like insertion and deletion can be costly due to shifting elements.
* **HashMap:** Ideal for scenarios where fast lookups, additions, and deletions are needed. Each product can be accessed quickly via its productId, which serves as a key.

I have used hash Map in my code because it has key value pairs and easy to acess elements in hash map than array list

**Time Complexity Analysis:**

* **Add Product**: O(1) - Inserting into a HashMap is an average-case constant time operation.
* **Update Product**: O(1) - Retrieving and updating a product by its ID in a HashMap is an average-case constant time operation.
* **Delete Product**: O(1) - Deleting an entry from a HashMap is an average-case constant time operation.