**INVENTORY MANAGEMENT SYSTEM**

Data structures and algorithms are essential for efficient, accurate, and scalable inventory management, enabling businesses to optimize their inventory operations and make data-driven decisions. They are used for efficient storage, quick retrieval of data, inventory tracking and scalability. They can analyze inventory data to provide valuable insights on sales trends, product demand, and supply chain optimization.

HashMap used for this problem.

**Time Complexity Analysis**:

The addProduct method involves adding a product to the HashMap.

Time Complexity: O(1) on average because HashMap provides constant time for insertion.

The updateProduct method involves checking if the product exists and then updating it.

Time Complexity: O(1) on average because HashMap provides constant time for insertion.

The deleteProduct method involves removing a product from the HashMap.

Time Complexity: O(1) on average as removal also has constant time complexity in HashMap.

The showProductDetails method involves showing a product details from the HashMap.

Time Complexity: O(1) on average because HashMap provides constant time for fetching details.

**We have the minimum time complexity O(1) in all cases.**