**Inventory Management System**

**Understanding the problem:**

**Explain why data structures and algorithms are essential in handling large inventories?**

For the following reasons:

Optimized data handling and other operations, memory efficient, fast retrieval of data, efficient data storage

**Discuss the types of data structures suitable for this problem**

ArrayList, Hashmap, TreeMap, Arrays can be used to handle this problem

**Analysis:**

Time complexity of each operation

Add :

Using HashMap takes O(1) On average

Update:

Using HashMap takes O(1) On average

Delete:

Using HashMap takes O(1) On average

**How to optimize these operations?**  
By improving load factor management, By indexing and catching, efficient use of hash functions

we can optimize these operations