**Exercise 1: Inventory Management System**  
  
**Why DSA Matters?**  
 **In an Inventory System:**  
 we need to deal with a lot of products   
 We need to search , add , delete , update and manipulate the products |  
**HashMap is ideal because:**  
 It offers O(1) average time Complexity for the manipulation operations.  
  
**Analysis of TimeComplexity:**  
 Add - O(1) average - HashMap inserts by key  
 Update - O(1) average - Direct Access by productid  
 Delete - O(1)average - Deletion by key   
 Display - O(n) - Insertion through all the products  
  
**Optimization Ideas:**  
 Usage of LinkedHashMap  
 For Sorted data , use TreeMap (O(logn)