Inventory Management System

1. Data Structures:

* Data structures are useful for organizing the inventory
* To make the process of searching less time-taking and more efficient
* To make insertion , deletion, modification of data simple

2. Data Structures for this System:

* HashMap : this data structure allows us to store products along with their IDs. This allows us to search for a product based on it’s ID

3. Time Complexity:

* addProduct() : O(1) . HashMap takes constant time to insert a new Record
* updateQuantity() : O(1) . HashMap takes constant time to search and update a record
* updatePrice() : O(1) . HashMap takes constant time to search and update a record
* deleteProduct() : O(1) . HashMap takes constant time to search and remove a record
* display() : O(n) . we have to traverse entire HashMap to print all products

HashMap makes use of id which is also known as a key and if we search using a key it takes constant time.

4. Optimization:

* We can implement caching if we are trying to frequently access a particular product