INVENTORY MANAGEMENT SYSTEM

DCIT 308: DATA STRUCTURES AND ALGORITHM 2

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An Inventory Management System is a high-performance software, which speeds up the business operations of an organization.

In this case we are going to take a look at an Inventory Management System for a provision store. Thus, taking an overview of the system's implementation, data structures, functionalities and performance analyses of significant algorithms.

**Data Structures:**

For the Inventory Management System to run effectively, some data structures are employed.

**Stacks**: Used to add and remove items in these categories: Beverages, Bread or Bakery, Canned or Jarred Goods and Dairy products in the system.

**Queues**: Used to add and remove items in these categories: Dry or Baking Goods, Frozen Products and Meat in the system.

**Lists**: Used to add and remove items in these categories: Farm Produce, Home Cleaners, Paper Goods and Home Care in the system.

**Maps:** Used to keep track of product sales.

**HashMaps:** Used to store information about vendors.

**Functionalities:**

The following functions are accessible to the store owner through the Inventory Management System:

**Adding and Removing of Items:** The owner can add and remove items from the system.in regards to name, quantity, price and category.

**Viewing Goods:** The owner of the store can view goods available as stock.

**Viewing Vendors**: Vendors in the system can be viewed and get to know their names and their products.

**Viewing Bills:** The system allows the store owner to take a look at bills either pending or cleared.

**Issuing Goods:** The store owner can issue items using the system in an effective way compared to the manual way of issuing goods or items.

**Viewing Issued Goods:** All items issued by the store owner can be reviewed on the system to be updated on the goods issued.

**Generating Reports:** The system generates reports to in regards sales.

**Performance Evaluation:**  
  
1.The time complexity of the stack algorithm for adding and removing items in the system is O(n) in a worst case scenario and O(1) in a best case scenario.  
2. The time complexity of the queue algorithm for adding and removing items in the system is O(n) in a worst case scenario and O(1) in the best case scenario   
3. The time complexity of the list algorithm for adding and removing items in the systems is O(n) for worst case and O(1) for best case.  
4. The time complexity for keeping track of product sales using maps is O(1).

5. The time complexity of storing vendors information using hashmaps is O(1)

**Conclusion:**  
This report provides a detailed analysis of the Inventory Management System from scope, data structures, to its functions.