DCCO



Second Semester

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OOP -

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Problem

We need a system that manages a company’s inventory, purchase records, sales returns, suppliers, and customers, to maintain a brief management of small businesses and this facilitates decision-making. To understand what the program should do, it is necessary to first understand some basic concepts about products, purchase and sales transactions, and related records.

Overview

In the field of inventory management, companies need to keep a detailed record of all product movements: when they are sold, when they are sold, when they are returned, and at what price. Additionally, the system will maintain a complete record of customers allowing tracking of their purchases and interaction history. An efficient inventory system helps reduce losses, optimize costs, and improve customer service through comprehensive management of products, suppliers and customers.

Background

In the modern business environment, any organization that handles physical products requires inventory control. This management system is designed to handle the full flow of goods, starting from purchasing from suppliers, through storage and stock control, to final sale to customers, including careful handling of any returns that may occur. The complexity of current business operations requires a robust technological solution that allows for complete traceability of each product throughout the entire internal supply chain. The platform is designed to manage three distinct categories of clients, which could be referred to, for example as retail client, wholesale client, and corporate client. The particularity of this classification lies in the fact that each type of client can have an associated price list that is specific and fully configurable. This means that the system user will be able to define, according to their business strategies and specific needs, the selling price that will apply to each product based on the category of the customer making the purchase. For example, the same product let’s say a break pad, could have a price of $35 for a retail customer buying individual units, a preferential price of $33 for a wholesale customer purchasing batches of ten units, and a special price of $30 for a corporate customer placing an order of fifty units to equip their company. This flexibility in pricing policy is a powerful tool to optimize profit margins and encourage loyalty among different market segments.

Inventory management constitutes the core of this system. Its operation is based on the meticulous recording of every movement affecting the stock, ensuring at all times that the theoretical stock reflected in the system exactly matches the physical stock available in the warehouse or point of sale. This control is exercised over three main types of operations. Purchases represent the entry of goods, where all new acquisitions from suppliers are recorded, immediately increasing stock levels.

For example, when the company receives a shipment of 100 brake pads from a supplier, the system updates the inventory by adding these units to the available count. Sales, on the other hand, represent the outflow of products, managing all processes where products are dispatched to customers, which consequently decreases the stock level. A sales transaction, such as 5 brake systems to a corporate client will automatically reduce the inventory by that amount.Finally, returns handle cases where products come back to the business, either from a customer, for reasons such as warranty or dissatisfaction with the product or to a supplier, due to manufacturing defects or products received in poor condition, making the corresponding adjustments in the inventory. A return of 2 brake pads from a customer, because they were defective, would result in an increase in stock once they are received and validated.

For any company, including small and medium sized enterprises, having consolidated and detailed reports on purchases, sales, and returns is not simply an operational advantage, but a fundamental strategic necessity. These reports provide an accurate snapshot of the business’s health, allowing managers and owners to analyze the real profitability of each product line, precisely identify the best selling items and those with low movement, make smart and data driven decisions for restocking, thus avoiding both excess inventory and that ties up capital and shortages that result in lost sales, and deeply understand the purchasing behaviour of different types of customers.