**Description:** *The project involves developing an advanced stock management system for a company. The system should allow the user to store and manage information on products, suppliers, customers, sales, promotions, discounts, returns, exchanges, etc. The system should also allow the user to search for products, customers, and suppliers, add new products, customers, and suppliers, and modify existing information on products, customers, and suppliers.*

For this project, the following data structures will be used:

**Data Structures to be Used:**

**Array**: to store information on products, customers, and suppliers.

**Linked List**: to store expired products, inactive customers, and inactive suppliers.

**AVL Tree**: to allow the user to search for products by code and search for customers and suppliers by name or code.

**Hash Table**: to allow the user to search for products by name.

**Queue**: to store orders for products waiting to be executed.

**Features:**

**Add a product to stock**: prompts the user to enter information about the product (name, code, quantity, price, expiration date, supplier) and adds the product to the stock array.

**Modify information about a product**: allows the user to search for a product by code and modify information about that product.

**Delete a product from stock**: allows the user to search for a product by code and delete that product from the stock array.

**Add a customer**: prompts the user to enter information about the customer (name, address, phone number, email address) and adds the customer to the customer array.

**Modify information about a customer**: allows the user to search for a customer by name or code and modify information about that customer.

**Delete a customer**: allows the user to search for a customer by name or code and delete that customer from the customer array.

**Add a supplier**: prompts the user to enter information about the supplier (name, address, phone number, email address) and adds the supplier to the supplier array.

**Modify information about a supplier:** allows the user to search for a supplier by name or code and modify information about that supplier.

**Delete a supplier:** allows the user to search for a supplier by name or code and delete that supplier from the supplier array.

**Search for a product by code**: allows the user to search for a product by code using an AVL tree.

**Search for a customer or supplier by name or code**: allows the user to search for a customer or supplier by name or code using an AVL tree.

**Search for a product by name:** allows the user to search for a product by name using a hash table.

**Minimum and maximum stock levels**: allows the user to set minimum and maximum stock levels for each product, with restocking alerts when the stock level reaches the minimum level.

**Sales and returns management:** allows the user to manage sales and returns of products, with automatic updates to stock levels and customer information.

**Promotions and discounts management:** allows the user to manage promotions and discounts, with automatic price calculations and updates to stock levels.