Description: The application is a simple inventory management system that allows users to add, remove, search, and display products. Users can interact with the system through a console-based menu, providing input to perform various operations such as adding new products, removing existing ones, and searching for products by ID or name. The system utilizes robust class structures for products and inventory management, implementing methods for data manipulation and retrieval.

Method: Main Class

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| Input | Process | Output |
| * User input from the console for selecting menu options. * User input for adding or removing a product (ID, name, price, quantity). * User input for searching by ID or name. | * Processing user input to determine the selected menu option. * Processing input for adding or removing a product. * Processing input for searching by ID or name. * Invoking appropriate methods in the Inventory class to perform actions (e.g., addProduct, removeProduct, searchByID, searchByName). * Handling exceptions for invalid input (e.g., non-numeric input for ID or price). | * Output messages to the console based on the actions performed (e.g., success messages for adding/removing products, product details for search results). * Output of product details when displaying all products. * Error messages for invalid input or when a product is not found during a search operation. |

Method: Inventory class

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| Input | Process | Output |
| * Input parameters for addProduct method: Product object to be added to the inventory. * Input parameters for removeProduct method: ID of the product to be removed. * Input parameters for searchByID method: ID of the product to search. * Input parameters for searchByName method: Name of the product to search. | * addProduct(Product product) method:   + Adding a product to the inventory list. * removeProduct(int ID) method:   + Removing a product from the inventory list based on the provided ID. * searchByID(int ID) method:   + Searching for a product in the inventory list by ID. * searchByName(String name) method:   + Searching for products in the inventory list by name. | * addProduct(Product product) method: No direct output. * removeProduct(int ID) method: Output message indicating whether the product was removed successfully. * searchByID(int ID) method: Returns a product object if found, or null if not found. * searchByName(String name) method: Returns a list of product objects with matching names, or an empty list if no matches are found. |

Method: Product class

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| Input | Process | Output |
| * Input parameters for the constructor: ID, name, price, and quantity of the product. * Input parameters for getter methods: No direct input, but accessed by other methods to retrieve product details. | * Constructor: Initializing the product object with provided ID, name, price, and quantity. * Getter and setter methods: Setting and retrieving values of instance variables. | * toString() method: Returns a string representation of the product details. |

Method: methodName4

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| Input | Process | Output |
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Method: methodName5

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| Input | Process | Output |
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Method: methodName6

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| Input | Process | Output |
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Method: methodName7

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| Input | Process | Output |
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Method: methodName8

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| Input | Process | Output |
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