Method : addProduct

Description : adds a new product and appends its information to the CSV file

Time complexity: O(1)

Space Complexity: O(1)

Method : removeProduct

Description : Removes a product by its ID by searching for it and setting its stock to 0 if found.

Time complexity: O(n)

Space Complexity: O(1)

Method : updateProduct

Description : Updates the details (name, price, and stock) of a product found by its ID.

Time complexity: O(n)

Space Complexity: O(1)

Method : searchProductId

Description : Searches the product list for a product with the specified ID and returns it if found, otherwise, returns null.

Time complexity: O(n)

Space Complexity: O(1)

Method : searchProductName

Description: Searches the product list for a product whose name matches the given name and returns it if found; otherwise, returns null.

Time complexity: O(n)

Space Complexity: O(1)

Method : trackOutOfStockProducts

Description: Creates and returns a list of all products that currently have zero stock.

Time complexity: O(n)

Space Complexity: O(m)

Method : registerCustomer

Description: Registers a new customer by writing their details to the customers file and adding them to the customer list.

Time complexity: O(1)

Space Complexity: O(1)

Method : searchCustomerId

Description: Finds and returns the customer whose ID matches the given customer ID, returns null if no match is found.

Time complexity: O(n)

Space Complexity: O(1)

Method : addOrder

Description: adds a new order by writing its details (including product IDs, total price, date, and status) to the orders file and adding it to the order list.

Time complexity: O(n)

Space Complexity: O(m)

Method : placeOrder

Description: Creates a new order for a customer by adding the selected products, updating their stock numbers, calculating the total price, saving the order, and returning it.

Time complexity: O(n)

Space Complexity: O(1)

Method : searchOrderId

Description :Searches the order list for an order with the specified ID and returns it if found, otherwise, returns null.

Time complexity: O(n)

Space Complexity: O(1)

Method : searchReviewId

Description : Searches through all products and their reviews to find and return the review with the specified ID, returns null if not found.

Time complexity: O(p*r) where p is the number of products and r is the number of reviews.

Space Complexity: O(1)

Method : getTopRatedProducts

Description : Finds and returns the top three products with the highest average ratings by going through all products and comparing their ratings.

Time complexity: O(p*r)

Space Complexity: O(1)

Method : searchOrderId

Description: Retrieves and returns all orders whose dates are between the specified start and end dates.

Time complexity: O(n)

Space Complexity: O(m)

Method : getOrdersBetweenDates

Description: Retrieves and returns all orders whose dates are between the specified start and end dates.

Time complexity: O(n)

Space Complexity: O(m)

Method : getCustomerReviews

Description: retrieves and returns all reviews written by a given customer by going through every product and its reviews.

Time complexity: O(p*r)

Space Complexity: O(m)

Method : findCommonProducts

Description: Finds and returns a list of products that were reviewed by both given customers and have an average rating greater than 4.0.

Time complexity: O(p*r)

Space Complexity: O(m)