Problem Statement : 1

Design and develop a functional inventory management system for a Dell E-commerce application using **JavaScript arrays** to manage a catalog of Dell products. The system should serve as a foundational backend component for a website, ensuring product information is accurate and up-to-date.

Core Information Requirements

The system must handle the following information:

- **Product Names**: A list of product names stored as strings.
- **Inventory Status**: Whether a product is in stock or not.

Functional Requirements

The inventory management system must perform the following actions:

- **Add New Items**: The user can add a new product name to the inventory. The system should prevent duplicate entries.
- **Delete Items**: The user can remove an existing product name from the inventory.

Technical Specifications

- **Data Structure**: The core of the inventory system must be implemented using a **JavaScript array**. Each item in the array will be a **string** representing a Dell product.
- **User Interface**: An interface built with **HTML and CSS** to allow user interaction.
- **Programming Language**: **JavaScript** for all application logic.

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Testing Requirements

The following test cases must be performed to ensure the system functions correctly:

1. **Add Item Test**:
    - **Test Case 2.1**: Add a new, unique product.
    - **Expected Result**: The product is added to the array and displayed in the inventory list.
    - **Test Case 2.2**: Attempt to add a product that already exists.
    - **Expected Result**: The product is not added, and an error message is displayed.
2. **Remove Item Test**:
    - **Test Case 3.1**: Remove an existing product.
    - **Expected Result**: The product is removed from the array and no longer displayed.
    - **Test Case 3.2**: Attempt to remove a non-existent product.
    - **Expected Result**: No changes are made to the array, and an error message is displayed.

Learning Objectives

Upon completion of this project, students will be able to:

- **Core Concepts**: Understand and apply the fundamental concepts of **JavaScript arrays**, including creating, modifying, and iterating over them.
- **JavaScript Functions**: Write and use **JavaScript functions (non-arrow functions)** to encapsulate logic and organize code.
- **Event Handling**: Use **event handling** to make the web application interactive, responding to user actions like button clicks and form submissions.
- **CRUD Operations**: Implement basic **CRUD** (Create, Read, Update, Delete) operations on an array data structure.
- **HTML/CSS/JS Integration**: Integrate **HTML** for structure, **CSS** for styling, and **JavaScript** for dynamic functionality to create a working web application.

- **Problem-Solving**: Break down a larger problem (inventory management) into smaller, manageable tasks and implement solutions for each.
- **Logic and Conditionals**: Utilize conditional statements (if/else) to handle different scenarios, such as checking for existing items or handling invalid inputs.