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:

- Display Inventory: The user should be able to view the current list of all products in the inventory.

- Check Availability: The user can input a product name and the system will check if it's currently in the inventory and report its availability.

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.

Testing Requirements

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

1. Display Inventory Test:

    o Test Case 1.1: Load the application with an initial list of products.

    o Expected Result: All initial products are displayed correctly on the screen.

    o Test Case 1.2: After adding a new product, check the display.

    o Expected Result: The new product is added to the displayed list.

    o Test Case 1.3: After removing a product, check the display.

    o Expected Result: The removed product is no longer visible in the displayed list.

2. Check Stock Test:

    o Test Case 4.1: Check for a product that is in the inventory.

    o Expected Result: A message confirming the product is in stock is displayed.

    o Test Case 4.2: Check for a product that is not in the inventory.

    o Expected Result: A message indicating the product is out of stock 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.

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- 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.