Problem Statement: 3 (JavaScript Objects/Array of Object to display the inevtory)

Design and develop a functional inventory management system for a Dell E-commerce application using a **JavaScript array of objects** 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 for each product:

- **Product ID:** A unique identifier for the product (e.g., a number or string).

- **Product Name:** The name of the product (e.g., 'Dell XPS 15').

- **Inventory Status:** A boolean value indicating whether a product is in stock (true) or not (false).

- **Price:** The price of the product.

- **Category:** A string representing the product category (e.g., 'Laptop', 'Monitor', 'Accessory').

Functional Requirements

The inventory management system must perform the following actions:

- **Display Inventory:** The user should be able to view a complete list of all products in the inventory, displaying **all properties** (ID, Name, Status, Price, and Category) for each product.

- **Check Availability:** The user can input a product ID or name, and the system will check its availability (in stock or out of stock) and report the current status.

Technical Specifications

- **Data Structure:** The core of the inventory system must be implemented using a **JavaScript array of objects**. Each object in the array will represent a Dell product with the properties specified above.

- **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:

Display Inventory Test

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

  - **Expected Result:** All initial products and their properties are displayed correctly.

Check Stock Test

- **Test Case 2.1:** Check for a product that is in the inventory.

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

- **Test Case 2.2:** Check for a product that is not in the inventory.

  - **Expected Result:** A message indicating the product is not found or 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 and objects, including creating, modifying, and iterating over an array of objects.

- **JavaScript Functions:** Write and use JavaScript functions (non-arrow functions) to encapsulate logic and organize code.

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- **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 of objects 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.

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