

## **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.

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### **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.
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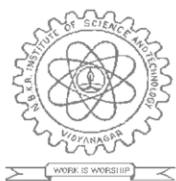
### **Functional Requirements**

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.
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### **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.

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- **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.