

Assignment 4: Working With Arrays and Objects

Objective: In this assignment, students will build a simple shopping cart management system to enhance their JavaScript skills. This system will allow users to view products, add items, and manage the cart's contents using JavaScript arrays and objects. This assignment will reinforce using arrays and objects to handle data and apply that data to create a dynamic user experience.

Requirements:

- **HTML Structure:**
 - Create a new HTML file named shopping_cart.html.
 - The page should include the following sections:
 - Product List: A section displaying available products with options to add to the cart.
 - Shopping Cart: A section that displays items currently in the cart.
 - Cart Summary: A section showing the total items and price.
- **JavaScript Arrays and Objects:**
 - Create a new JavaScript file named cart_script.js.
 - Define an array of product objects. Each product object should have the following properties:
 - name (string)
 - price (number)
 - description (string)
 - Initialize the array with at least five different product objects.
- **Displaying Products:**
 - Use JavaScript to dynamically generate and display the list of products from the array on the webpage.
 - Each product should be displayed with its name, price, description, and an "Add to Cart" button.
- **Managing the Shopping Cart:**
 - Create an array to represent the shopping cart. Each item in the cart should be an object with the following properties:
 - name (string)
 - price (number)
 - quantity (number)
 - When a user clicks "Add to Cart," the selected product should be added to the cart array. If the product is already in the cart, increase its quantity.

- **Displaying the Shopping Cart:**
 - Use JavaScript to display the current contents of the shopping cart in the designated section.
 - Each cart item should display the product name, price, quantity, and a "Remove" button.
 - The cart summary should be updated dynamically to show the total items and cost.
- **Updating and Removing Cart Items:**
 - Allow users to update the quantity of each item directly in the cart.
 - Implement functionality to remove items from the cart, updating the cart summary accordingly.

Deliverables:

1. **shopping_cart.html** - The HTML file containing the structure of the shopping cart application.
2. **cart_script.js** - The JavaScript file containing the code to manage the product list and shopping cart.
3. **styles.css** - (Optional) The CSS file with styles to improve the visual presentation of the shopping cart application.
4. Ensure all files are included in a ZIP or RAR file together.

Grading Criteria:

- **JavaScript Arrays and Objects (50%)**
 - Proper creation and manipulation of product and cart arrays.
 - Correctly add, update, and remove items in the cart.
 - Accurate calculations for total items and total price.
- **DOM Manipulation (30%)**
 - Efficiently updating the DOM to reflect product list and shopping cart changes.
 - Clear and organized display of products and cart contents.
- **User Experience (20%)**
 - User-friendly interface for browsing products and managing the cart.
 - Responsive updates to the cart summary and contents.

Conclusion:

By completing this assignment, students will gain a deeper understanding of JavaScript arrays and objects and how to manipulate data to create a dynamic, interactive

MGA Department of IT
ITEC 3280 – Web Programming

shopping cart application. This assignment builds on previous lessons by introducing more complex data management and DOM manipulation techniques, providing a comprehensive exercise in core JavaScript concepts.