

Title: Shopping Cart App using JS

Name: Abbas Khan

Registration Number: SP22-BSE-020

Date: September 22, 2024

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## Introduction

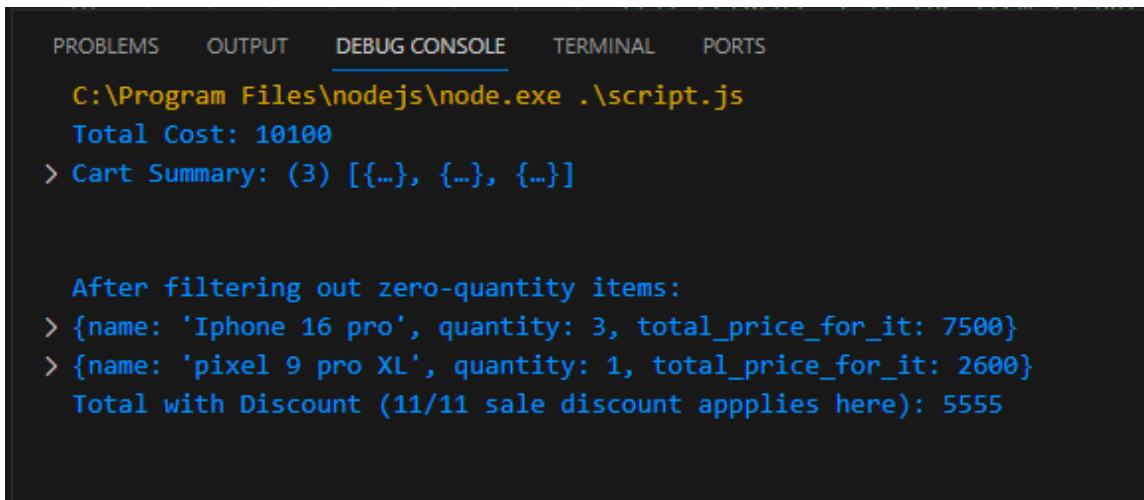
- **Objective:** The objective of this assignment is to develop a JavaScript-based shopping cart system. The cart allows adding items, removing them, updating their quantity, calculating the total cost, applying discounts, and filtering out items with zero quantity. It uses core JavaScript functions such as array manipulation methods (map, filter, reduce) and arrow functions to manage and manipulate the cart data efficiently.

## Code Explanation

1. **addItemToCart(iD, name, quantity, price):** This function adds a new product to the shopping cart by pushing an object with the item's details to the cart array.
2. **removeItemFromCart(iD):** Removes an item from the cart by finding the item's index using `findIndex`. If found, the item is removed using `splice`.
3. **updateItemQuantity(iD, newQuantity):** Updates the quantity of a specific product in the cart. The `map` function creates a new array where the updated product has its quantity changed.
4. **totalPrice():** Calculates the total cost of the items in the cart. The `reduce` function is used to sum the total price, considering the quantity of each item.
5. **displayCart():** Displays a summary of the cart's items. It uses `map` to return an array of objects, each containing the product name, quantity, and total price.
6. **filterOutCart():** Filters out any items with a quantity of zero. It uses `filter` to remove items from the cart array that do not meet the condition.
7. **applyDiscount(discountCode):** Applies a discount based on a discount code. The `discountPercentages` object stores possible discounts. The final price is calculated by multiplying the total cost by  $(100 - \text{discount}) / 100$ .

## Screenshots of results:

- **Console Output:**

A screenshot of the VS Code interface with the 'DEBUG CONSOLE' tab selected. The output shows the execution of a Node.js script. It starts with the command 'C:\Program Files\nodejs\node.exe .\script.js'. The output includes 'Total Cost: 10100', followed by a truncated 'Cart Summary' array: '> Cart Summary: (3) [{...}, {...}, {...}]'. Below this, it says 'After filtering out zero-quantity items:' and shows two objects: '{name: 'Iphone 16 pro', quantity: 3, total\_price\_for\_it: 7500}' and '{name: 'pixel 9 pro XL', quantity: 1, total\_price\_for\_it: 2600}'. The final line of output is 'Total with Discount (11/11 sale discount applies here): 5555'.

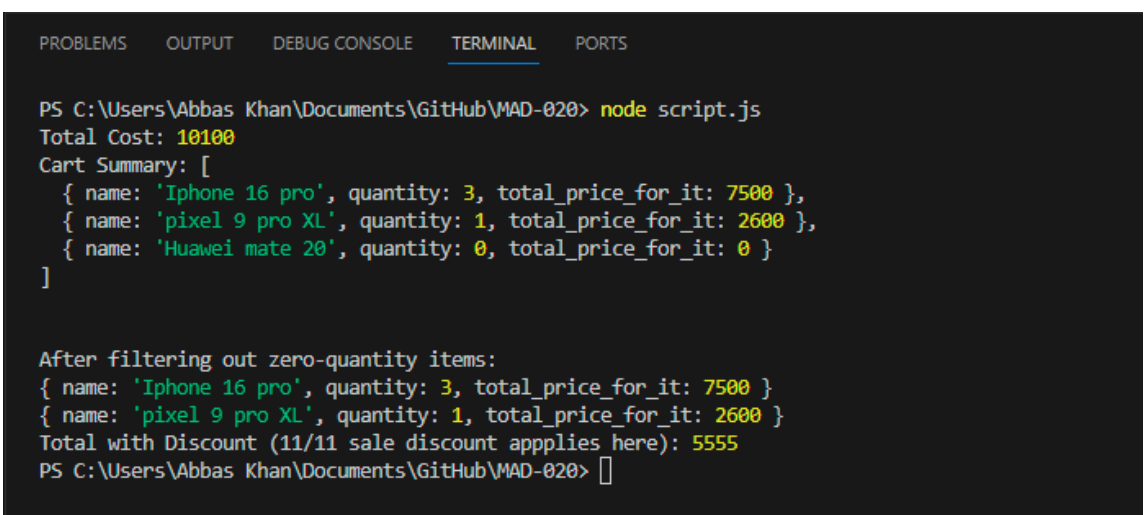
```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

C:\Program Files\nodejs\node.exe .\script.js
Total Cost: 10100
> Cart Summary: (3) [{...}, {...}, {...}]

After filtering out zero-quantity items:
> {name: 'Iphone 16 pro', quantity: 3, total_price_for_it: 7500}
> {name: 'pixel 9 pro XL', quantity: 1, total_price_for_it: 2600}
Total with Discount (11/11 sale discount applies here): 5555
```

Since we can see the cart summary is not showing us the complete cart array, the reason is that due to the inability of the debugging console to show complex structures such as the object array etc., we cannot simply display them over here using `console.log()` function. For such tasks, either we use browser console, or the terminal in our IDE, or the `foreach` loop (while using debugging console) to iterate over each object in our array.

- **Terminal Output:**

A screenshot of the VS Code interface with the 'TERMINAL' tab selected. The output shows the execution of a Node.js script in a PowerShell prompt. It starts with 'PS C:\Users\Abbas Khan\Documents\GitHub\MAD-020> node script.js'. The output includes 'Total Cost: 10100', followed by a full 'Cart Summary' array: 'Cart Summary: [ { name: 'Iphone 16 pro', quantity: 3, total\_price\_for\_it: 7500 }, { name: 'pixel 9 pro XL', quantity: 1, total\_price\_for\_it: 2600 }, { name: 'Huawei mate 20', quantity: 0, total\_price\_for\_it: 0 } ]'. Below this, it says 'After filtering out zero-quantity items:' and shows two objects: '{ name: 'Iphone 16 pro', quantity: 3, total\_price\_for\_it: 7500 }' and '{ name: 'pixel 9 pro XL', quantity: 1, total\_price\_for\_it: 2600 }'. The final line of output is 'Total with Discount (11/11 sale discount applies here): 5555'. The prompt ends with 'PS C:\Users\Abbas Khan\Documents\GitHub\MAD-020> ' and a cursor.

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

PS C:\Users\Abbas Khan\Documents\GitHub\MAD-020> node script.js
Total Cost: 10100
Cart Summary: [
  { name: 'Iphone 16 pro', quantity: 3, total_price_for_it: 7500 },
  { name: 'pixel 9 pro XL', quantity: 1, total_price_for_it: 2600 },
  { name: 'Huawei mate 20', quantity: 0, total_price_for_it: 0 }
]

After filtering out zero-quantity items:
{ name: 'Iphone 16 pro', quantity: 3, total_price_for_it: 7500 }
{ name: 'pixel 9 pro XL', quantity: 1, total_price_for_it: 2600 }
Total with Discount (11/11 sale discount applies here): 5555
PS C:\Users\Abbas Khan\Documents\GitHub\MAD-020> 
```

## Conclusion:

In this assignment, I learned how to implement and manipulate a shopping cart system using JavaScript. I applied various array methods such as map, reduce, and filter to manage the items in the cart. Challenges included managing object immutability (means the operations are not altering my original array), and ensuring that array operations did not modify the original data. This assignment improved my understanding of JavaScript functions and ES6 syntax.