Zach Van Cleef
Programming Usable Interfaces
Assignment 6B: Adding Functionality to a Website with JavaScript
Fall 2020

Links

Live prototype: https://zachvancleef.com/PUI-FA2020-homework6/

- Can navigate to/from 'Home', 'Cats' product browsing page, and 'Cat Harness' details page

GitHub repository: https://github.com/zvanclee/PUI-FA2020-homework6

Reflection

Overcoming Challenges & Bugs

This assignment brought about several challenges and bugs that I had not encountered in my prior web programming experiences. The first challenges and bugs I encountered were related to the setting up the grid for my website. This was my first time utilizing a grid layout for a website. In my prior experience, I had used an intricate layering of div blocks and span tags to render things in an "organized" way. I had initially done that on my homework 5 submission, but through feedback and some additional self-learning, I was able to learn grid layouts and, eventually, flex boxes to create a much better product page and shopping cart. While setting-up my grid, there was a lot of trial-and-error; I experimented with using pixels and percentages to make space for rows and columns until I created a layout that worked best for my design.

The other main challenges and bugs were encountered while getting my JavaScript functionality to work with maintaining and loading in local storage data between different pages of the website. Prior to this project, I had relatively limited experience working with multi-page websites, so maintaining local data across web pages was new challenge for me. Again, it took a lot of trial-and-error and self-learning to get my website to the point where it could maintain data for the shopping cart across all navigable pages. Overall, this was the hardest bug to overcome. I found myself spending a lot of time making small adjustments until I was able to make everything function properly. Overall, I was happy to find a solution and feel confident moving forward that I will be able to implement similar solutions in future projects.

Lastly, I found myself focusing much more on usability with this project compared to my prior web programming experiences. I spent more time on making sure the different elements of my web pages were visibly appealing (to the extent that they provide the user with good perceptual affordances, feedback, etc.) and functional. While did not really encounter any bugs related to this process, it was a fun challenge to work on and it persisted throughout all portions of the assignment.

Learned Programming Concepts

Creating and deleting elements with JavaScript

For my shopping cart page, it took me a while to figure out how I could populate the div block that contained all of the content for the user's shopping cart. I've had experience changing elements with JavaScript, but I have had limited experience creating new elements entirely. Specifically, I learned how to create a new element, assign it to a pre-defined id/class (from my styles sheet) and then append it to an unoccupied div block. This concept of creating entirety new elements from locally stored data, across web pages, was new and I am confident learning this skill will be helpful in future work. Along these same lines, I also learned how to delete these created elements, as well. The solution for deleting elements ended up being array manipulation, but I had not previously considered how elements could be deleted and rendered correctly on the shopping cart page.

Manipulating innerHTML content with JavaScript

Related to my first learned concept, I learned how to populate created elements with styled content. Specifically, in my 'cartItemsLoaded()' function call, I create a box with an image and relevant product information for each item added to the shopping cart. I've manipulated innerHTML text previously, but I did not know that the content being added/changed could be styled within the JavaScript file for rending on the web page. It took some testing to get everything configured correctly, but through innerHTML manipulation alone, I was able to render my product boxes on my shopping cart page.

Handling data with local storage

As mentioned in the bugs/challenges I encountered, this was my first time having to maintain data (for the shopping cart) across all of the navigable web pages. I used the web storage object 'localStorage' for retrieving and setting data to local storage. The learning curve this concept was not too steep, but it certainly took some testing to make sure all relevant data was being transferred and maintained when navigating the various web pages. I expect to use this concept in future work, so it was a really good learning experience and great practice for my first experience handling data across multiple web pages.

Debugging

In prior work, I had not really utilized much debugging, but I took some time to learn how the google chrome 'Inspect' feature could be used for effective debugging and it made a huge difference in the amount of time it took to fix bugs. Specifically, I had initially tried to maintain my shopping cart with an array and a deep copy of the array. This structure ended up causing much more problems than necessary, but I was able to finally diagnose the problem in my code after I learned how to debug with chrome. Then, I was able to use just the single, original, array and track its changes throughout all of my web pages.

Null datatype in JavaScript

While testing my cart item count display (visualized with a small icon above the cart when 1 or more items are added), I encountered some problems when the cart had not yet been populated with any items. I was getting null type errors and I had to learn some new strategies for dealing with null values. It was a bit of a struggle, initially, when handling this problem because when a user first opens the site, they will not have anything in their carts. Ultimately, I was able to resolve my problem by changing the way I was declaring data and adjusting conditional statements that dealt with the shopping cart before it was populated. In learning about null in JavaScript, I also learned about the undefined datatype and how it is handled in JavaScript – both very valuable for debugging and handling data.