Advanced Web Development and Web Scraping
Spring 2022, Assignment #3 -- JavaScript

Note: you must use *strict* mode in all of your JavaScript scripts, and best practices for variable declaration.

1. For background on JavaScript, you should complete the JavaScript tutorial from **JS Home** to **JS Mistakes** at https://www.w3schools.com/js/default.asp but you can skip the following:

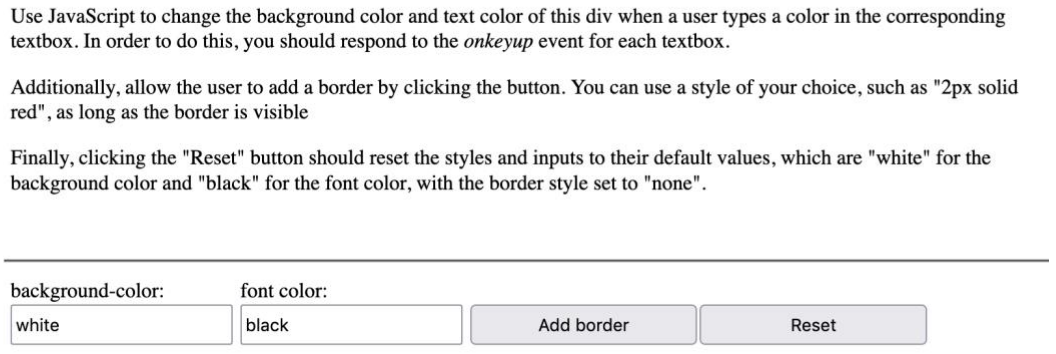
- JS Array Methods, JS Array Sort, and JS Array Iteration
- JS Array Iteration
- JS Dates, JS Date Formats, JS Date Get Methods, JS Date Set Methods
- JS Math, JS Random
- JS Switch
- JS Loop While
- JS Iterables, JS Sets, JS Maps
- JS Type Conversion, JS Bitwise, JS RegExp, JS Errors
- JS Classes, JS JSON

Complete the following Exercises from w3schools.com (not collected):
https://www.w3schools.com/js/exercise_js.asp

- JavaScript Variables, Exercises 2, 4, 5
- JavaScript Functions, Exercises 1, 2, 4
- JavaScript Objects, Exercises 1 – 3
- JavaScript Events, Exercises 1- 3
- JavaScript Arrays, Exercise 2-3

You should also complete the JS HTML DOM tutorials (which start with https://www.w3schools.com/js/js_htmldom.asp)

1. Open the “Question1” webpage and modify it as described. In addition, use an inline style sheet to style the *color-inputs* class as follows: a width of 20%, a padding of 5px, and an appropriate *display* value so that the inputs and buttons are side-by-side. Also change the height of the text inputs and buttons to be 25px and their width to be 100% (this is 100% of the element they are in, which will be a *div* that occupies 20% of the width of the window). After styling your webpage should look like the following:



Use JavaScript to change the background color and text color of this div when a user types a color in the corresponding textbox. In order to do this, you should respond to the *onkeyup* event for each textbox.

Additionally, allow the user to add a border by clicking the button. You can use a style of your choice, such as "2px solid red", as long as the border is visible

Finally, clicking the "Reset" button should reset the styles and inputs to their default values, which are "white" for the background color and "black" for the font color, with the border style set to "none".

background-color: white

font color: black

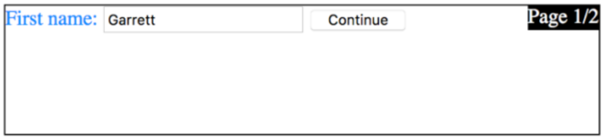
2. Create a webpage that uses JavaScript to store three web page URLs in an array, and uses a loop to display the links. The page should look as follows, with the heading displayed using pure HTML and the links displayed dynamically from your JavaScript array. Note that the links must be active links (i.e., the URLs are displayed using the proper <a> … </a> tags), and displayed in an ordered list. Hint: you can use HTML to include an empty div or unordered list, whose inner HTML can be changed using JavaScript. Alternatively, you can create new HTML nodes and add these as appropriate. I also recommend to start by creating the list with text only, then modifying your code to convert the plain text to links. Your result should look like the following:

   Some useful webpages are the following

   1. http://www.easternct.edu
   2. http://gdancik.github.io/
   3. https://easternct.blackboard.com/

3. ***Multi-page registration site.*** Modify the *registration.html* page as described below. This assignment must be completed using JavaScript, without modifying any of the HTML code, unless stated otherwise.

   a. Use CSS to change the layout of the “page” div so that this div is displayed on the top right of the “login” div as shown below: Hint: should the “page” div be “static”, “relative”, “fixed”, or “absolute”, with respect to the “login” div? Once set, where should its position be? Does the “login” div position need to be changed? **Note:** you must complete this question by changing the *position* and *location* CSS properties of the "login" and "page" divs only.



First name: Garrett

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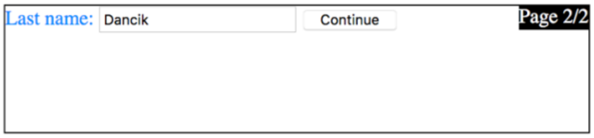
b. When the user enters their first name and clicks the Continue button, they are taken to the next "page" and prompted to enter their last name. The page number, label, and placeholder are all updated by using JavaScript to change the HTML of the appropriate divs.



Last name: Dancik

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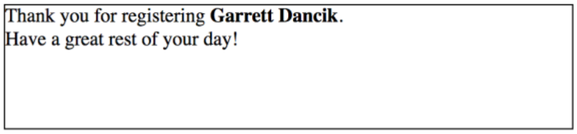
c. After entering their last name, JavaScript is used to display a confirmation:



Thank you for registering **Garrett Dancik**.
Have a great rest of your day!

d. If at any point the user clicks *Continue* without entering a name, an alert is issued that a name must be entered, and we stay on the current page.

4. Modify the web page you created for Assignment #2 as follows (you may simplify your web page if you like, but your table must have at least 4 rows and 3 columns containing a checkbox, a numeric input that accepts numbers in the range 1 – 10, and the item name. You may optionally choose to include tooltips and links as well. **Note:** the logic of your JavaScript code will require that each check box be linked to its corresponding numeric input (so that you can enable the first numeric input when the first checkbox is checked, for example). One way to do this is to give each pair of inputs matching ids, e.g., "check1" and "num1", and include the number as an argument of your JavaScript functions.

   a. The numeric inputs should be *disabled* by default (simply include *disabled* inside the <input> tag, which sets the disabled attribute to *true*). The inputs should not display any value by default.

b. When the user checks a checkbox, the corresponding numeric input is enabled (use JavaScript to set the *disabled* attribute of the element to *false*) and given the value "1".

c. When a checkbox is unchecked, the corresponding numeric input is disabled (set the *disabled* attribute to *true*), and any value in the numeric input is cleared.

d. When a numeric input loses focus (which triggers the *onblur* event), check whether or not the input is empty. If so, uncheck the corresponding checkbox and disable the numeric input.

e. When the user clicks the submit button, the form's *onsubmit* event should call a JavaScript function which gives a summary of the order that includes the items and the quantity of each. This summary can be displayed in an *alert* or can be displayed somewhere on the page. As discussed previously, all inputs should be part of a single form, and invalid inputs should stop the submission (this will be the case if the form and inputs are set up correctly).

   Note: It is important that the submission is handled by the form's *onsubmit* event rather than by the *onclick* event of the submit button. The form's *onsubmit* event handles invalid inputs based on the properties of its inputs (such as numbers outside the specified range). If the summary is handled by the button's *onclick* event, then you would end up summarizing an invalid order. For example, the order would be summarized and then the form would display an error message such as "Please enter a value that is no more than 10", which could be confusing to the user.

Challenge Question (optional)

Modify the web page you created in the previous question, but the table should be created entirely using JavaScript. In order to do this, first create an array containing information about the items/products in your table, and use a loop to generate the HTML that will display the table. Your array should contain the item names (as strings), or if you want to display more information, then your array should contain *objects* containing the information to be displayed (e.g., item name, link, etc). Note that this framework makes it very easy to add items to the table, since the HTML code is automatically generated from the array.

Note: To receive credit for the assignment, either show your instructor the assignment during class or create a *zip* file of your webpages, and submit the *zip* file. I will look at your code and evaluate it by copying/pasting your code into Glitch.