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Assignment 4

Question:

a] Create one button on every click of button different
colors should be applied to background.
Create one button on every click of button different
images should be applied.

b] Declare a Javascript String array of colors say colors
= [“Red”, “Green”, “Blue”] Accept a value from the user and add it to the array if the value is not present in the array.

c] Write a JavaScript code to apply font color and
background color to Heading from dropdown, if font color and background color
is same no changes should be reflected.

d} Create an array using
JavaScript and display the occurences of a specific character [For example; arr
= [‘a, ‘b’, ‘a’, ‘c’, ‘z’] Output should be occurrences of a is 2]

Theory:

a] To create a button that changes the background color or applies different images on every click, you need to have knowledge of HTML, CSS, and JavaScript. Here are the theoretical steps to implement this:

- HTML: Create a button element in your HTML markup, and also create a container element (e.g., a div) where you want to apply the background color or set the image.
- CSS: Define the initial styling for your container element, such as a default background color or image.

- JavaScript:
  - Attach an event listener to the button element so that it listens for click events.
  - Inside the event listener, you can generate random colors or select different images.
  - Apply the selected color or image as the background to the container element.

b] To declare a JavaScript string array of colors and add a value to the array if it's not already present, you need to understand how to work with arrays and user input. Here's the theoretical knowledge you need:

- JavaScript: Declare an array, and use the `push` method to add elements to the array only if they are not already present. You can use the `indexOf` method to check if the value is in the array.

c] To apply font color and background color to a heading element based on a dropdown selection, you should know how to work with HTML forms, JavaScript event handling, and CSS. Here's the theoretical knowledge required:

- HTML: Create a dropdown (select) element and a heading element.
- JavaScript:
  - Attach an event listener to the dropdown to detect changes in the selected option.
  - Get the selected font color and background color from the dropdown.
  - Check if the font color and background color are the same, and apply them to the heading using CSS.

d] To create an array in JavaScript and count the occurrences of a specific character, you need knowledge of JavaScript arrays and loops. Here's the theoretical knowledge required:

- JavaScript: Declare an array and use a loop (e.g., `for` loop) to iterate through the elements.
- Inside the loop, check each element to see if it matches the specific character you want to count.
- Maintain a counter variable to keep track of the occurrences of the character.

- Display the count after the loop has finished.

Implementing these tasks would require writing actual code, but the above knowledge should give you a solid foundation to get started with each of them.

Code:

A)

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Assignment 4</title>
</head>
<body>
  <h1 style="font-size: 4rem;">Click the button to change the background color!</h1>
  <button id="changeColorButton" style="font-size: 2rem;">Change Color</button>
  <script>
    function getRandomColor() {
      const letters = '0123456789ABCDEF';
      let color = '#';
      for (let i = 0; i < 6; i++) {
        color += letters[Math.floor(Math.random() * 16)];
      }
      return color;
    }

    function changeBackgroundColor() {
      const newColor = getRandomColor();
      document.body.style.backgroundColor = newColor;
    }
    const button = document.getElementById('changeColorButton');
    button.addEventListener('click', changeBackgroundColor);
  </script>
</body>
</html>
```

B)

```
<!DOCTYPE html>
<html lang="en">
<head>
 <meta charset="UTF-8">
 <meta name="viewport" content="width=device-width, initial-scale=1.0">
 <title>Color Array Manipulation</title>
</head>
<body>
 <h1>Assignment 4-B</h1>

 <script>
  const colors = ["Red", "Green", "Blue"];
  const userValue = prompt("Enter a color:");
  if (!colors.includes(userValue)) {
    colors.push(userValue);
```

```
    alert(`${userValue} has been added to the array.`);
  } else {
    alert(`${userValue} is already present in the array.`);
  }
  console.log("Updated array of colors:", colors);
 </script>
</body>
</html>
```

C)

```
<!DOCTYPE html>
<html lang="en">
<head>
 <meta charset="UTF-8">
 <meta name="viewport" content="width=device-width, initial-scale=1.0">
 <title>Assignment 4-C</title>
</head>
<body>
 <h1 id="heading">Sample Heading</h1>

 <label for="fontColor">Font Color:</label>
 <select id="fontColor">
  <option value="black">Black</option>
  <option value="red">Red</option>
  <option value="green">Green</option>
  <option value="blue">Blue</option>
 </select>

 <label for="bgColor">Background Color:</label>
 <select id="bgColor">
  <option value="black">Black</option>
  <option value="red">Red</option>
  <option value="green">Green</option>
  <option value="blue">Blue</option>
 </select>

 <script>
  const heading = document.getElementById("heading");
  const fontColorSelect = document.getElementById("fontColor");
  const bgColorSelect = document.getElementById("bgColor");

  function applyStyles() {
    const selectedFontColor = fontColorSelect.value;
    const selectedBgColor = bgColorSelect.value;

    if (selectedFontColor === selectedBgColor) {
      alert("Font color and background color are the same. No changes applied.");
      return;
    }

    heading.style.color = selectedFontColor;
    heading.style.backgroundColor = selectedBgColor;
  }

  fontColorSelect.addEventListener("change", applyStyles);
  bgColorSelect.addEventListener("change", applyStyles);
 </script>
</body>
```

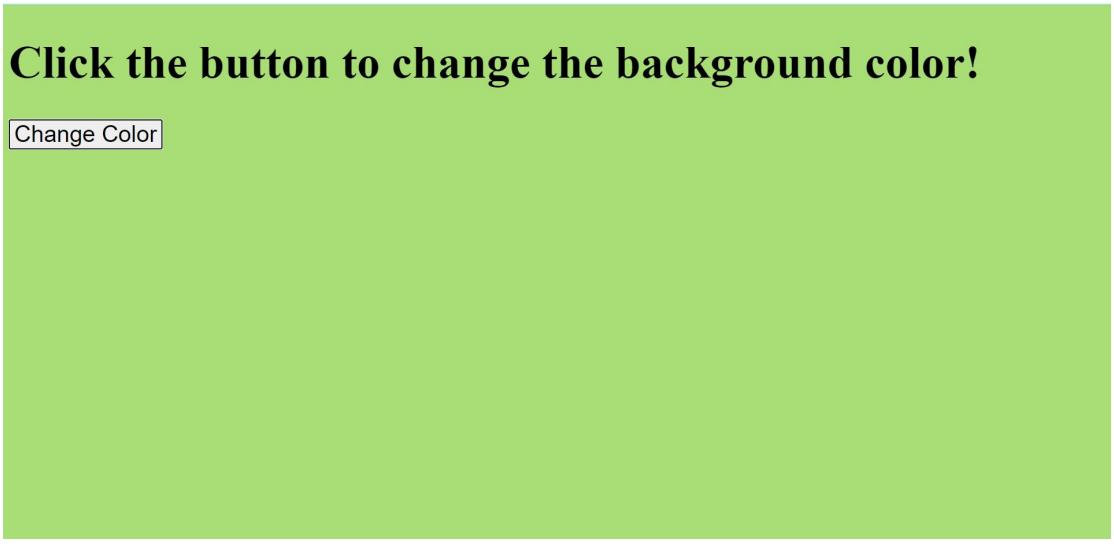
```
</html>
```

D)

```
<!DOCTYPE html>
<html lang="en">
<head>
 <meta charset="UTF-8">
 <meta name="viewport" content="width=device-width, initial-scale=1.0">
 <title>Assignment 4-D</title>
</head>
<body>
 <h1>Character Occurrences</h1>

 <p>Array: ['a', 'b', 'a', 'c', 'z']</p>

 <label for="targetCharacter">Enter a character:</label>
 <input type="text" id="targetCharacter">
 <button id="countButton">Count Occurrences</button>

 <p id="result"></p>

 <script>
  const arr = ['a', 'b', 'a', 'c', 'z'];

  document.getElementById("countButton").addEventListener("click", () => {
   const targetCharacter = document.getElementById("targetCharacter").value;

   function countOccurrences(array, target) {
    let count = 0;
    for (const char of array) {
     if (char === target) {
      count++;
     }
    }
    return count;
   }

   const occurrences = countOccurrences(arr, targetCharacter);
   document.getElementById("result").textContent = `Occurrences of ${targetCharacter} is ${occurrences}`;
  });
 </script>
</body>
</html>
```

Output:

A)


Click the button to change the background color!
Change Color

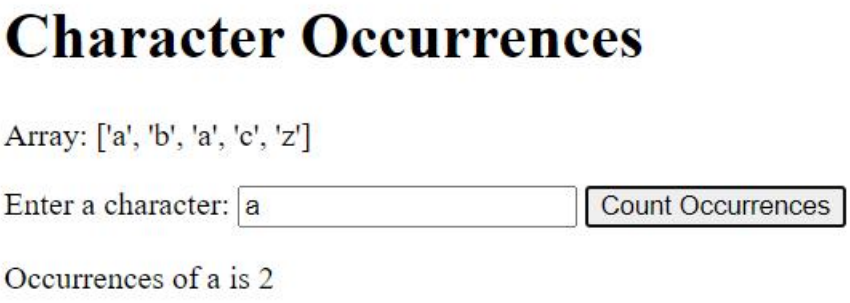
B)


127.0.0.1:5502 says
Yellow has been added to the array.
OK

C)


Sample Heading
Font Color: Black
Background Color: Blue

D)


Character Occurrences
Array: ['a', 'b', 'a', 'c', 'z']
Enter a character: a
Count Occurrences
Occurrences of a is 2

Conclusion:

The implementation of these tasks involves fundamental web development and JavaScript skills. By successfully creating buttons that change background colors or apply different images on each click, adding values to an array if they are not already present, dynamically applying font and background colors to a heading based on a dropdown selection while ensuring no changes when the colors are the same, and counting the occurrences of a specific character in an array, developers can demonstrate their proficiency in HTML, CSS, JavaScript, and problem-solving. These implementations showcase the ability to interact with user input, manipulate the DOM, and handle data effectively, which are essential skills for web development and front-end programming.