LAB 7 – DOM Events

Objective: Students will practice

- Higher-order function
- JavaScript DOM
- JavaScript Event

Lab instruction

- The LAB07 instruction and lab resources are posted on MS Teams channel LAB07 – JavaScript of subject 953262 (your section).
- Download the zipped file of resources-lab07.
- There are 6 assignments according to the LAB07 sheet posted on the channel.
- The LAB07 is worth 22 points in total.
- Score criteria: full point (for output correct); -1 (for output does not correct); -1 (for not follow problem constraint)
- **Assignment Submission:**
    - Upload your solutions to MS Team assignments. The submission later than the 'due date' will get 50% off your score. At the 'close date', you cannot submit your assignment to the system.
    - Post your 'Name and Student ID' on the MS Teams channel 'LAB07 – JavaScript. You should also be prompt for TA calling to verify your work on your computer.

Problems

1. Your own loop (3 Points)

Write a higher-order function loop that provides something like a for loop statement. It takes a value, a test function, an update function, and a body function. Each iteration, it first runs the test function on the current loop value and stops if that returns false. Then it calls the body function, giving it the current value. Finally, it calls the update function to create a new value and starts from the beginning.

When defining the function in the source code for **yourOwnLoop.js**, you can use a regular loop to do the actual looping.

Example

```
// Your code here.

loop(3, n => n > 0, n => n - 1, console.log);
// ⟶ 3
// ⟶ 2
// ⟶ 1
```

Save the file as **Q1.html** and submit it to MS Teams.

2. Flattening (3 Points)

Open flattening.js and write JavaScript to use the **reduce** method in combination with the concat method to "flatten" an array of arrays into a single array that has all the elements of the original arrays.

```
let arrays = [[1, 2, 3], [4, 5], [6]];

// Your code here.

// ⟶ [1, 2, 3, 4, 5, 6]
```

Hints: https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Array/Reduce

3. Finding the Intervals (5 Points)

In this activity, you will explore the HTML DOM and manipulate the elements.

Your task:

- Open **findTheInterval** folder. Inside, you will see **an index.html, a styles.css, a w3.css, and a findTheInterval.js**
- Open the **index.html** in a web browser, you will see that the column "Days" contains "??". These "??" should show the interval between the current day (which is "9/07/21" for this lab) and the event day specified in the "Date" column".
- Open and modify **findTheInterval.js** to use JavaScript replace "??" with the correct number".
    - You will see the function **DayCount** that will help you with interval calculation.
    - Using JavaScript, get each date in column "Date" to calculate the interval into days. Display days in the "Days" column
    - For example, "-31" for Date: 8/07/2021.
    - Hint: use a loop to get text in each row of a table. The table element contains rows[], which themselves contain cells[]. The reference for table elements can be found on http://www.w3schools.com/jsref/dom_obj_table.asp.
    - Remember to set the current day as "9/7/21"
    - The expected result is an accurate day count shown in the column "Days".
    - Hint: use querySelectorAll method
    - NOTE that you cannot change HTML code!!!
    - Save the folder as **Q2** and submit it to MS Teams.

4. Censored Keyboard (3 Points)

Between 1928 and 2013, Turkish law forbade the use of the letters Q, W, and X in official documents. This was part of a wider initiative to stifle Kurdish culture—those letters occur in the language used by Kurdish people but not in Istanbul Turkish.

Your task:

- Open **censoredKeyboard.html** to write JavaScript code to program a text field (an <input type="text"> tag) that these letters (Q, W, and X) **cannot** be typed into.

```
<input type="text">
<script>
  let field = document.querySelector("input");
  /**
   *     Your Code here.
   *        Hints:
   *           > Prevent default behavior of key events
   *           > You can handle “keypress” or “keydown”
   *           > Look into “preventDefault”
   *           > Use “key” to look at the letter
   *           > In “keyDown” you don’t have to worry about case
   */
</script>
```

Save the file as **Q3.html** and submit it to MS Teams.

5. Rainbow (3 Points)

Your task:

- Open **rainbow.html** and create six buttons, labeled one for each color: RED, ORANGE, YELLOW, GREEN, BLUE, PURPLE in the HTML.
- Write JavaScript to change the background color of the screen to the selected color when a button is pressed.
- Consider using `event.target` which is the target element that initiated the event.
- Save the file as **Q4.html** and submit it to MS Teams.

6: Game of Chase (5 Points)

Your task:

- Open **gameOfChase.html** and create a circle on the screen using absolutely positioned elements with a fixed size and background color (refer to the example of a primitive drawing program).
- Write JavaScript to make the circle move to another random location on the screen when the mouse hovers over the circle.
- The Circle must remain on the screen.
- If the circle is clicked, change the color of the circle.

- Save the file as **Q5.html** and submit it to MS Teams.