

Web Technology Lab Works (Part-3)

22. Learning Basic syntax of JavaScript for client-side scripting

- a) Create a web page having following JavaScript program inside `<script>` tag (internal JS)
 - Create following arrays with different syntax for each
 - array1: storing 10 natural numbers by initialization
 - array2: storing 10 floating point numbers taking form user using prompt dialog box
 - array3: empty array
 - Now find the sum of all elements of array1 and display whether the sum is divisible by 7 or not in alert dialog.
 - Add two elements at last of array2, delete first element and display all the elements of array before and after each operation in browser console.
 - Take a number from prompt dialog and display the sum of digits of that number in an alert box using *while-loop*. (if number is 1457 the result should be $(1+4+5+7) = 12$).
 - Use prompt dialogs to take numbers and a confirm dialogs to ask whether to take another number or not. Write a script that takes numbers from user until user want to enter another number and display the sum of the all entered numbers using *do-while - loop*.
 - Use at least 10 array methods in array3 for performing various array operations (like insert, delete, search, sort, slice, map, etc.)
 - Illustrate the use of *forEach()* method to iterate array2 .
 - Illustrate the use of *for-of* and *for-in* statements in array1.
- b) Create 3 user defined functions and call them. (use three different approach to create each of them like, normal definition, assigning function expression to variable, arrow function etc.)
- c) Create three user defined objects with properties and methods and demonstrate activities like reading, updating and deleting properties, calling methods, etc. (use three different techniques to create objects)
- d) Create a web page that asks user to enter a number form prompt dialog and displays whether the number is single digit number, double digit number, triple digit number or multi digit number using *if-else-if* statements.
- e) Use prompt dialogs to take two numbers and an operator (+, -, *, /, %) from user and display the result on alert box according to the operator entered using *switch-case* statements.
- f) WAP to demonstrate *try, catch, throw* and *finally* keywords for error handling in JS.

23. Exploring some *built-in JS objects*.

Explore the following built-in JS objects and write programs to show the use of some properties and methods of these objects. (Explore all or at least 5/5 important properties and methods)
(Hint : To work with Math object, consider the properties like E, PI, LN2, LN10, SQRT2 i.e. Math.E, Math.PI, Math.LN2, Math.LN10, Math.SQRT2 and methods like Math.floor(), Math.ceil(), Math.sqrt(), Math.round(), Math.pow())

- Math
- String
- Number
- Object
- Function
- Error
- Boolean
- Array

24. Working with Date object.

- a) Write a program to demonstrate *different ways to create date object* in JS
- b) Write a program to show the use of important 4 *getter methods and 4 setter methods of date object* in JS . (methods like getHour(), setMonth())
- c) Create a web page that *takes date of birth as input and display the age*
 - i. In years
 - ii. In years, months and days
- d) Create a web page having a *digital clock blinking each second* and displaying correct time. The page also should display the current date.
- e) Write a program to *display the date before after given*
 - i. Days
 - ii. Hours
- f) Create a web page containing *stop watch* (must contain start, pause and reset buttons)
- g) Create a live digital clock that blinks each second

25. Event handling in JavaScript

- a) WAP to demonstrate *different ways of registering events* in JS.(Hint: use click event for each technique)
- b) Create two text fields to take two numbers and three buttons each labeled with 'add', 'subtract' and 'multiply'. Write the scripts such that *when a button is clicked corresponding result will be displayed on the alert dialog box.*
- c) WAP to demonstrate following *mouse event* handling
 - Click
 - Mouseover

- Mouseout
 - Mousedown
 - Mouseup
 - Mousemove
- e) WAP to demonstrate following *keyboard event* handling
- Keydown
 - keyup
- f) WAP to demonstrate following *form event* handling
- Focus
 - Submit
 - Blur
 - Change
- g) WAP to demonstrate following *window/document* event handling
- Load
 - Unload
 - Resize
- h) Create a web page which shows an advertisement (in image format) during page load which can be closed by clicking on close button and the page will be shown after closing the advertisement.
- i) Write a JS program to highlight all of the words over eight characters long in the paragraph text (with yellow background) when a button below the paragraph is clicked.
- j) Create a webpage with following functionality.
- There should be three radio buttons labeled with three colors. When one is selected the background of the page must be changed to respective color.
 - There should be an image, when mouse cursor is placed over the image, description of the image should be displayed on a paragraph below that image and when mouse cursor is removed from the image, the description should be vanished.

26. HTML DOM Manipulation with JavaScript

- a) Create a HTML page and write a JS program to demonstrate the use of following properties of any node objects in DOM

nodeName	nodeType	lastChild
nodeValue	parentNode	nextSibling
previousSibling	childNodes	firstChild

b) Create a web page and write Script with JS for Selecting Document Elements as mentioned below:

- Selecting element by ID
- Selecting elements by name
- Selecting elements by tag type
- Selecting elements by CSS class
- Selecting element by `querySelector()`
- Selecting element by `querySelectorAll()`

c) Create a web page and write Script using JS for demonstrating

- Node creation
- Node insertion (using `appendChild()` and `insertBefore()`)
- Node replacement (using `replaceChild()`)
- Node Removal (using `removeChild()`)

d) Demonstrate the use of following methods in DOM to work with attributes of HTML document

<i><code>getAttribute()</code></i>	<i><code>setAttribute()</code></i>
<i><code>hasAttribute()</code></i>	<i><code>removeAttribute()</code></i>

e) Create a form to enter the record of books. The interface should be as in following figure and descriptions:

Add Book Records

Book Id: Title: Author(s): Price:

Book id initially should be 100 and increments by 1 on every click of plus button. This value should be shown on textbox but cannot be editable by user. When plus button is clicked similar row should appear below it.

f) Create a JS array containing some districts of your provenience. Now display those districts in unordered list dynamically on web page using DOM manipulation.

27. Understanding Regular Expression in JS

- a) Write a JS program to demonstrate the use of following concepts
 - two ways of creating regular expression pattern in JS
 - using **exec()**, **test()**, **match()**, **matchAll()**, **search()**, **replace()**, **replaceAll()** and **split()** functions.
- b) Create and test for following Regex patterns in JS
 - i. The first character of a string must be uppercase.
 - ii. A given value must contain a question marks, a dash and an underscore.
 - iii. The value must start from A or a and must end with full stop (.) or exclamation (!).
 - iv. The value must contain only one blank space.
 - v. The string must not contain any digits.
 - vi. The string must contain at least a symbol from the group of symbol (, , @, \$, _ , %, !, &, *, ^, ~, -, +, (,), {, }, [,], ., :)
 - vii. The value must not contain any special character and digits.
 - viii. The value must contain @ symbol between two words each of at least one character.
 - ix. The string must not start with digit.
 - x. The string must start with underscore character or alphabets.
 - xi. The value must start with 'BCA-TU-' and after these character there must be only digits.
 - xii. The value must be in email address format.
 - xiii. The value must contain at least a vowel letter.
 - xiv. The value contain ten digits and first digit cannot be 0.
 - xv. The value should be email address and its must end with 'edu.np'.
 - xvi. The value should be email address and it must contain 'gmail' or 'yahoo' after @ symbol.
 - xvii. The regex must match if the string contains 'nepal' case insensitively.

28. Client-side Form Validation using JS.

- a) Write a JS program to demonstrate the use of forms object (document.forms)
- b) Create a registration form and validate using separate JS file (should be from scratch. API /Library is not allowed). The form must include following entries and validation rules:

- First Name (required , must contain alphabets only the length should be 1 to 50)
- Last Name (optional, must contain alphabets only the length should be 1 to 50)
- Date of birth (required, use date type)
- Gender (required, must be selected from combo box)
- Provenience (required, must be selected from combo box, 7 Provenience of Nepal)
- District (required, must be selected from combo box, 77 districts of Nepal)
- Cell Phone (required, 10 digits only not other symbols and alphabets)
- Email address (optional, if entered must be in email address format)
- User Name (required, must start with alphabet, can contain digits and only two special character (@ and _) are allowed, length must be in between 6 to 15 characters)
- Password (required, must contain at least a digit, a special character, an uppercase letter and a lowercase letter, length must be in between 8 to 20 characters)
- Confirm password (required, must match the value entered in password field)
- Register (a submit button)

Show the error message with guideline next to the element in red color if the value is not satisfying the rule.

29. Creating Calculator App

Create a web application using JS to simulate simple calculator which can perform addition, subtraction, multiplication and division for both integer and floating-point numbers. Your application should contain all the required digits and symbols, displaying area and necessary other designs. The application should be able to response the input from keyboard press and mouse click both. **[you can print the whole content for this lab task]**

30. Working with Cookies in JS

Write a JS program to demonstrate following concepts:

- Different ways of cookie creation
- Reading cookie
- Changing cookie
- Deleting cookie

[place the screenshots of outputs to demonstrate each operation above]

31. Working with jQuery

- a) WAP to illustrate the concepts of *jQuery selectors*.
- b) WAP using jQuery to *validate a signup form* (use different form fields like text fields, radio buttons, check boxes, comb boxes, etc.)
- c) WAP using jQuery to handle any *five different types of events*.
- d) WAP to demonstrate any *five DOM manipulation tasks using jQuery*.
- e) WAP to *hide, unhide and toggle* an image using corresponding three buttons using jQuery.
- f) WAP having other five *jQuery effects* (other than mentioned in (e))

32. Working with JSON

- a) Create a JSON object representing a student's information with the following fields:

name (string) age

(integer) grade (string)

subjects (array of
strings)

contact_detail (nested object with email and phone)

Now write a JavaScript program to convert a JSON object into a string and print it.

- b) Write a program in JS to read data from JSON file and write data to JSON file.