

ASSIGNMENT NO :- 2

Aim :- Develop a web application using javascript to implement sessions, cookies, DOM. Perform validations such as checking for emptiness, only numbers for phone numbers, special characters requirement for password, regular expressions for certain format of the fields etc. Use the mysql database.

Objectives :-

- 1] To understand what form validation is.
- 2] To learn basic functioning of DOM objects.
- 3] To learn how to apply various techniques to implement it.

Theory :-

- 1] Explain the role of regular expressions. Why are they a suitable tool for validating data formats like a phone number or checking for the presence of specific characters in a password?

→ Role of Regular Expressions.

Regular expressions are patterns used to match character combinations in strings. They are ideal for data validation because :-

- They allow precise matching of formats, eg phone numbers, email and password.
- They can enforce rule like "only digits", "contains at least one special char", "matches a particular pattern".
- Regex is compact, powerful and highly customizable for input validation.

Q2] Explain the fundamental difference between a session and a cookie in the context of web application development. How do they work together to maintain a user's logged in state?

Aspect	Session	Cookie
1) Storage	Server-side	Client-side [browser]
2) Lifespan	Until browser closes or session ends	Can persist for days or longer.
3) Security	More secure data not exposed to client	Less secure, stored on client side
4) Size Limit	No strict size limit on server	Limited [4kB]
5) Purpose	Store sensitive user data & state	Store less sensitive info like preferences

How they work together:

Cookies can store a session ID on the client which the server uses to identify the session data stored on the server thus maintaining the logged in state.

Q3] What is the purpose of performing both client side and server side validation? Describe a scenario where relying solely on client side validation could lead to security vulnerability.

- • Client-side validation : Provides instant feedback, reduces server load, improves UX.
- Server-side validation : Ensures security as client side can be bypassed or tampered with.

Risk Scenario:

If only client-side validation is used, a malicious user can disable Javascript or forge requests with invalid/malicious data leading to SQL injection, XSS, or other attacks.

Q4) Provide a simple example of how Javascript script can interact with the DOM to dynamically change the content of a web page after a user action, such as a form submission.

```

→ <p id = "message">Hello ! </p>
  <button onclick = "changeText()">Click Me </button>

  <script>
    function changeText() {
      document.getElementById("message").innerHTML = "You
      clicked the button!";
    }
  </script>

```

Q5] Give the steps for connectivity from Front end using HTML CSS JS to mysql.

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- 1] Frontend : Create form in HTML and Collect data
 - 2] JavaScript : Optionally validate before submission.
 - 3] Send data : Use AJAX / fetch to send data to backend [Node.js, PHP, Python, etc.]
 - 4] Backend : Receive data, validate again then connect to MySQL.
 - 5] MySQL : Use a database driver/library (like mysql npm package for Node.js) to insert/query data.
 - 6] Response : Backend sends a success/failure response back to frontend.

FAQs:-

Q1] Write 3 reasons why Form Validations are important.

→ 3 reasons are:-

- 1] Prevents submission of invalid/incomplete data.
- 2] Improves user experience with instant feedback.
- 3] Protects server and database from malicious input.

Q2] Give an example of how to modify an attribute value using DOM.

→ Example to modify DOM is:-

```
document.getElementById('MyInput').setAttribute('placeholder', 'Enter your name');
```


Q3] What are the different features of Javascript?

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- Client-side scripting language
 - Event-driven and asynchronous
 - Supports OOP, functional programming
 - Manipulates DOM
 - Supports AJAX for asynchronous requests.
 - Supports closures prototypal inheritance.

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