

Web Programming Lab (BCSE203E)

LAB – 11

JavaScript DOM - Dynamic Elements, Event Handling, Event Listener, Form Validation

1) Write a JavaScript to

- (i) Create a dynamic table with three rows and three columns
- (ii) Change the color of the Button from red to green color on Mouse Over.
- (iii) Change the color of the Textbox from green to yellow color on Focus and display a greeting message on Change
***Note:** Both button and textbox should be created using CreateElement*
- (iv) Create an input field and a button. When the button is double clicked, add the input text as a new item to an unordered list.
- (v) Create two input fields: one for accepting input and another for counting and displaying the number of times any key is pressed.

Code:

Lab11Q1.html

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-
scale=1.0">
    <title>23BCE1087</title>
</head>
<body>
    <div id = "TableOut"></div><br>
    <div id = "Button"></div><br>
```

```
<div id = "Textbox1"></div><br>
<div id = "AddMore"></div><br>
<div id = "CountDisplay"></div><br>
```

```
<script>
```

```
  //(i)
```

```
  let table = document.createElement("table");
```

```
  table.border = "1";
```

```
  for(let i = 0;i<3;i++){
```

```
    let row = table.insertRow();
```

```
    for(let j = 0;j<3;j++){
```

```
      let cell = row.insertCell();
```

```
      cell.innerHTML = `Index : ${i+1}${j+1}`;
```

```
    }
```

```
  }
```

```
  table.style.width = "40vh";
```

```
  table.style.height= "40vh";
```

```
  table.style.fontWeight= "bold";
```

```
  table.style.fontSize = "20px";
```

```
  table.style.textAlign = "Center"
```

```
  document.getElementById("TableOut").appendChild(table);
```

```
  //(ii)
```

```
  let button = document.createElement("button");
```

```
  button.innerText = "Hover here";
```

```
  button.style.backgroundColor="red";
```

```
  button.style.width = "100px";
```

```
  button.style.height = "70px";
```

```
  button.style.transition = "background-color 0.3s ease-in"
```

```
  button.addEventListener("mouseover",()=>button.style.backgroundColor="green");
```

```
        button.addEventListener("mouseout",()=>button.style.backgroundColor="red");
```

```
        document.getElementById("Button").appendChild(button);
```

```
//(iii)
```

```
let input1 = document.createElement("input");
```

```
input1.type = "text"
```

```
input1.style.backgroundColor="green";
```

```
input1.addEventListener("focus",()=>{
```

```
    input1.style.backgroundColor="yellow";
```

```
});
```

```
input1.addEventListener("change",()=>{
```

```
    input1.value = "Changed.";
```

```
})
```

```
document.getElementById("Textbox1").appendChild(input1);
```

```
//(iv)
```

```
let inputField = document.createElement("input");
```

```
let addButton = document.createElement("button");
```

```
addButton.textContent = "Add Item";
```

```
let ul = document.createElement("ul");
```

```
addButton.addEventListener("dblclick", function() {
```

```
    if (inputField.value.trim() !== "") {
```

```
        let li = document.createElement("li");
```

```
        li.textContent = inputField.value;
```

```
        ul.appendChild(li);
```

```
        inputField.value = "";
```

```
    }
```

```
});
```

```
document.getElementById("AddMore").appendChild(inputField);
```

```
document.getElementById("AddMore").appendChild(addButton);
```

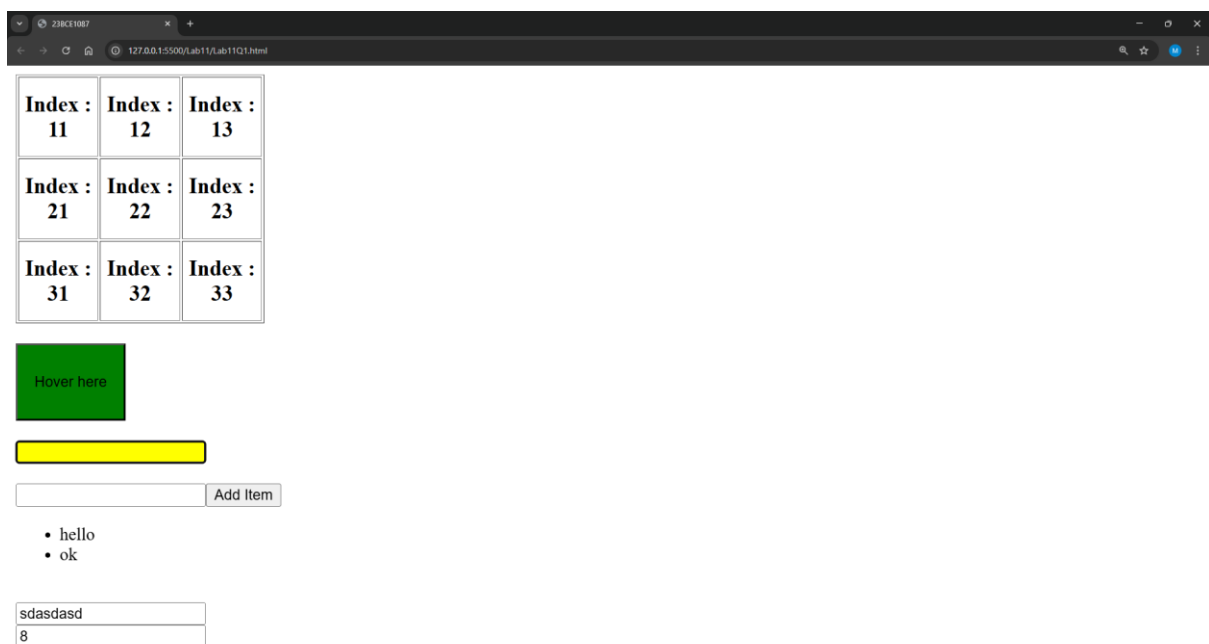
```

document.getElementById("AddMore").appendChild(ul);

//(v)
let input2 = document.createElement("input");
let countInput = document.createElement("input");
countInput.readOnly = true;
let count = 0;
input2.addEventListener("keydown",()=>{
    count++;
    countInput.value = count;
})
document.getElementById("CountDisplay").append(input2);
document.getElementById("CountDisplay").append(document.crea
teElement("br"))
document.getElementById("CountDisplay").append(countInput);
</script>
</body>
</html>

```

Output:



- 2) (i) Create a simple stopwatch with "Start", "Stop", and "Reset" buttons using JavaScript event listeners.
(ii) Create a text box to accept the Date of Birth and calculate the age on mouseover using an event listener.
(iii) Create a textarea with a character counter that updates dynamically as the user types using an event listener

Code:

Lab11Q2.html

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <meta name="viewport" content="width=device-width, initial-
scale=1.0" />
    <title>23BCE1087</title>
    <style>
      button {
        min-width: 100px;
        min-height: 50px;
        border-radius: 5px;
        margin: 2px;
        background-color: rgb(234, 168, 168);
      }
      .timer-container {
        width: 40vh;
        height: 40vh;
        border-radius: 50%;
        display: flex;
        align-items: center;
        justify-content: center;
        border: 2px solid black;
```

```

        margin: auto;
        font-size: 24px;
        margin-bottom: 10px;
        background-color: lightgray;
    }
</style>
</head>
<body>
    <div id="Timer"></div>
    <br />
    <div id="CalcAge"></div>
    <br />
    <div id="calcWords"></div>

    <script>
        // (i)
        let timer;
        let time = 0;
        const timerContainer = document.createElement("div");
        timerContainer.classList.add("timer-container");
        const display = document.createElement("span");
        display.textContent = "0";
        timerContainer.appendChild(display);
        document.getElementById("Timer").appendChild(timerContai
ner);

        const buttonContainer = document.createElement("div");
        buttonContainer.style.textAlign = "center";
        const startButton = document.createElement("button");
        startButton.textContent = "Start";
        const stopButton = document.createElement("button");

```

```
stopButton.textContent = "Stop";
const resetButton = document.createElement("button");
resetButton.textContent = "Reset";
```

```
startButton.addEventListener("click", function () {
    if (!timer) {
        timer = setInterval(() => {
            time++;
            display.textContent = time;
        }, 1000);
    }
});
```

```
stopButton.addEventListener("click", function () {
    clearInterval(timer);
    timer = null;
});
```

```
resetButton.addEventListener("click", function () {
    clearInterval(timer);
    timer = null;
    time = 0;
    display.textContent = "0";
});
```

```
buttonContainer.appendChild(startButton);
buttonContainer.appendChild(stopButton);
buttonContainer.appendChild(resetButton);
document.getElementById("Timer").appendChild(buttonConta
iner);
```

```

// (ii)
const dobInput = document.createElement("input");
dobInput.type = "date";
dobInput.style.marginRight = "10px";
const ageDisplay = document.createElement("input");
ageDisplay.type = "text";
ageDisplay.readOnly = true;
ageDisplay.style.width = "200px";
dobInput.addEventListener("mouseover", function () {
    if (dobInput.value) {
        let birthDate = new Date(dobInput.value);
        let age =
            new Date().getFullYear() -
birthDate.getFullYear();
        ageDisplay.value = `You are ${age} years old`;
    }
});
document.getElementById("CalcAge").appendChild(dobInput)
;

document
    .getElementById("CalcAge")
    .appendChild(document.createElement("br"));
document
    .getElementById("CalcAge")
    .appendChild(document.createElement("br"));

document.getElementById("CalcAge").appendChild(ageDispla
y);

// (iii)
const textarea = document.createElement("textarea");

```



```

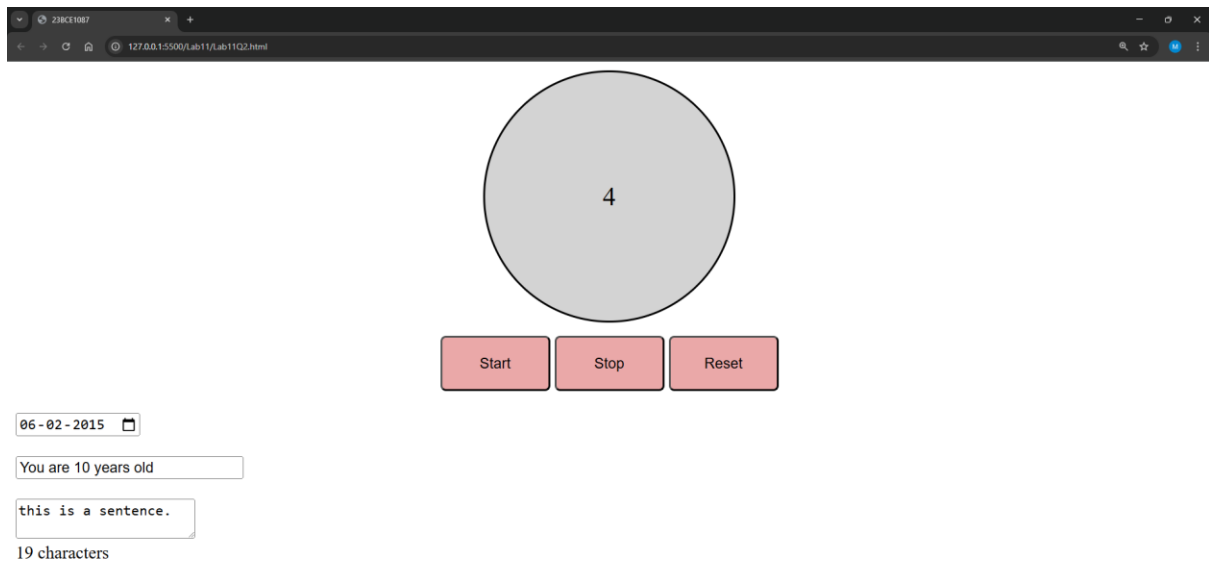
const charCount = document.createElement("span");
charCount.textContent = "0 characters";
textarea.addEventListener("input", function () {
    charCount.textContent = `${textarea.value.length}
characters`;
});
document.getElementById("calcWords").appendChild(textare
a);

document
    .getElementById("calcWords")
    .appendChild(document.createElement("br"));
document.getElementById("calcWords").appendChild(charCou
nt);

</script>
</body>
</html>

```

Output:



- 3) Design the below form and do the following
- Set the timer to display the current time
 - Print the form content. Use `getElementsByName` to display Gender, Country and Preferences
 - Validate
 - All Mandatory Fields (represented by *). If empty focus on the same field.
 - Name should not exceed 15 characters
 - Address – to be specified in Text Area
 - Zip code should be numeric and validated the maximum digits
 - Phone numbers should be numeric and validated the maximum digits 10
 - e-mail syntax should be validated
 - Password should contain a number, character & a special character and length should not exceed 15 and recede 8
 - PAN card number – Textbox (validate such that the PAN number is 10 digits and follows the pattern)

Test JavaScript Form Validataion

Time:11:30:55

Name*

Please enter your name!

Address

Zip Code*

Country*

Please select... ▼

Gender*

☐ Male
 ☐ Female

Pan No:

Preferences*

☐ Red
 ☐ Green
 ☐ Blue

Phone*

Email*

password (6-8 characters)*

Verify password*

SEND

CLEAR

Code:

Lab11Q3.html

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <meta name="viewport" content="width=device-width, initial-
scale=1.0" />
```

```
<title>23BCE1087</title>
<style>
  body {
    display: flex;
  }
  .Form-container {
    display: flex;
    flex-direction: column;
    border: 1px solid black;
    padding: 5px;
  }
  #header {
    display: flex;
    justify-content: space-between;
    align-items: center;
  }
  #Time {
    position: relative;
    border: 1px solid black;
    width: 150px;
    height: fit-content;
    padding: 8px;
    margin: 4px;
    align-items: center;
  }
  #spacer {
    width: 100px;
  }
</style>
</head>
```

```
<body>
  <div class="Form-container">
    <div id="header">
      <h1>Test JavaScript Form Validation</h1>
      <div id="spacer"></div>
      <div id="Time">Time:</div>
    </div>
    <form id="Test">
      <table>
        <tbody>
          <tr>
            <td>Name*</td>
            <td>
              <input type="text" id="name" />
            </td>
          </tr>
          <tr>
            <td>Address</td>
            <td>
              <input type="text" id="Address" />
            </td>
          </tr>
          <tr>
            <td>Zip Code*</td>
            <td>
              <input type="number" id="Zip" />
            </td>
          </tr>
          <tr>
            <td>Country*</td>
            <td>
              <input type="text" id="Country" />
            </td>
          </tr>
        </tbody>
      </table>
    </form>
  </div>
</body>
```

```

<td>
    <select id="Country" name="country">
        <option selected disabled>
            Please select..
        </option>
        <option>India</option>
        <option>Afganistan</option>
        <option>England</option>
        <option>Australia</option>
        <option>New Zealand</option>
        <option>South Africa</option>
    </select>
</td>
</tr>
<tr>
<td>Gender*</td>
<td>
    <input type="radio" name="gender"
id="male" />
    Male
    <input
        type="radio"
        name="gender"
        id="female"
    />Female
</td>
<td>Pan No:</td>
<td>
    <input type="text" name="Pan"
id="pan" />
</td>

```

```

        </tr>
        <tr>
            <td>Preferences*</td>
            <td>
                <input type="checkbox" name="Color"
id="Red" />
                Red
                <input
                    type="checkbox"
                    name="Color"
                    id="Green"
                />
                Green
                <input type="checkbox" name="Color"
id="Blue" />
                Blue
            </td>
        </tr>
        <tr>
            <td>Phone*</td>
            <td>
                <input type="tel" id="Phone" />
            </td>
        </tr>
        <tr>
            <td>Email*</td>
            <td>
                <input type="email" id="Email" />
            </td>
        </tr>
        <tr>

```

```

        <td>Password (6-8 characters)*</td>
        <td>
            <input type="password" id="password"
/>
        </td>
    </tr>
    <tr>
        <td>Verify password*</td>
        <td>
            <input type="password"
id="verifyPass" />
        </td>
    </tr>
    <tr>
        <td></td>
        <td>
            <button type="submit">SEND</button>
            <button type="reset">CLEAR</button>
        </td>
    </tr>
</tbody>
</table>
</form>
</div>
<script src="Lab11Q3.js"></script>
</body>
</html>

```

Lab11Q3.js

```
document.addEventListener("DOMContentLoaded", function () {  
    function updateTime() {  
        let now = new Date();  
        document.getElementById("Time").textContent =  
            "Time: " + now.toLocaleTimeString();  
    }  
    setInterval(updateTime, 1000);  
    updateTime();  
  
    document  
        .getElementById("Test")  
        .addEventListener("submit", function (event) {  
            event.preventDefault();  
            clearErrors();  
            let valid = validateForm();  
            if (valid) printFormData();  
        });  
  
    function validateField(input) {  
        let errorTd =  
            input.parentElement.parentElement.querySelector(".error-  
message");  
        if (errorTd) errorTd.remove(); // Remove previous error  
  
        function showError(message) {  
            let errorTd = document.createElement("td");  
            errorTd.classList.add("error-message");  
            errorTd.style.color = "red";  
            errorTd.textContent = message;
```



```

        input.parentElement.parentElement.appendChild(errorTd);
    }

    if (input.id === "name") {
        if (!input.value.trim()) showError("Required");
        else if (input.value.length > 15) showError("Max 15
chars");
    }

    if (input.id === "Address") {
        if (!input.value.trim()) showError("Required");
    }

    if (input.id === "Zip") {
        if (!input.value.match(/^\\d{5,10}$\\/))
            showError("5-10 digits required");
    }

    if (input.id === "Phone") {
        if (!input.value.match(/^\\d{10}$\\/))
            showError("Exactly 10 digits required");
    }

    if (input.id === "Email") {
        if (!input.value.match(/^([\\s@]+@[\\s@]+\\.([\\s@]+$\\/))
            showError("Invalid email");
    }

    if (input.id === "password") {
        if (
            !input.value.match(

```

```
        /^(?=.*[A-Za-z])(?=.*\d)(?=.*[@$!%*?&])[A-Za-z\d@$!%*?&]{8,15}$/
```

```
    )
```

```
  ) {
```

```
    showError("8-15 chars, 1 letter, 1 number, 1  
special");
```

```
  }
```

```
}
```

```
if (input.id === "verifyPass") {
```

```
  let password =  
document.getElementById("password").value;
```

```
  if (input.value !== password) showError("Passwords do  
not match");
```

```
}
```

```
if (input.id === "pan") {
```

```
  if (!input.value.match(/^[0-9]{10}$/))
```

```
    showError("Invalid PAN format");
```

```
}
```

```
}
```

```
document.querySelectorAll("input, textarea,  
select").forEach((input) => {
```

```
  input.addEventListener("blur", function () {
```

```
    validateField(input);
```

```
  });
```

```
input.addEventListener("keydown", function (event) {
```

```
  if (event.key === "Enter") {
```

```
    event.preventDefault(); // Prevent form submission
```

```
    let formElements = Array.from(
```

```

        document.querySelectorAll("input, textarea,
select")
        );
        let index = formElements.indexOf(event.target);
        if (index !== -1 && index < formElements.length - 1)
{
            formElements[index + 1].focus();
        }
    }
});
});

```

```

function clearErrors() {
    document
        .querySelectorAll(".error-message")
        .forEach((el) => el.remove());
}

```

```

function printFormData() {
    let name = document.getElementById("name").value;
    let address = document.getElementById("Address").value;
    let zip = document.getElementById("Zip").value;
    let phone = document.getElementById("Phone").value;
    let email = document.getElementById("Email").value;
    let country =
document.getElementsByName("country")[0].value;
    let genderElements = document.getElementsByName("gender");
    let gender = Array.from(genderElements).find((el) =>
el.checked);
    let preferenceElements =
document.getElementsByName("Color");
    let preferences = Array.from(preferenceElements)

```

```

        .filter((el) => el.checked)
        .map((el) => el.id)
        .join(", ");

console.log("Form Data:");
console.log("Name:", name);
console.log("Address:", address);
console.log("Zip Code:", zip);
console.log("Phone:", phone);
console.log("Email:", email);
console.log("Country:", country);
console.log("Gender:", gender ? gender.id : "Not selected");
console.log("Preferences:", preferences || "None");
    }
});

```

Output:

The screenshot shows a web browser window with the address bar displaying '127.0.0.1:5500/Lab11/Lab11Q3.html'. The page content includes a title 'Test JavaScript Form Validation' and a timestamp 'Time: 8:35:26 PM'. The form fields are as follows:

- Name*: Madhan
- Address: asdasda
- Zip Code*: 12345678
- Country*: India (dropdown menu)
- Gender*: ☒ Male ☐ Female
- Pan No: 1111111111
- Preferences*: ☒ Red ☐ Green ☐ Blue
- Phone*: 1234567890
- Email*: ma.ca@s.com
- Password (6-8 characters)*:
- Verify password*: Passwords do not match

At the bottom of the form, there are two buttons: 'SEND' and 'CLEAR'.