

ECM1417: Web Development

Workshop 08

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In the following workshop you will learn how to use JavaScript to manipulate the content of your documents. To this end you will:

- Use JS to navigate the DOM.
- Use JS to modify the DOM.
- Use JS to change the DOM.
- Use JS to react to browser events.

1 Walk the DOM

For the following exercise you should write a JavaScript program which outputs the DOM of the HTML document depicted in Fig. 1:

1. Create a recursive function to print the name and the value of every node. For better readability indent the output depending on the depth of the current node in the DOM.
2. Add the function as an event listener for the event "DOMContentLoaded" of the global object window, which executes after the complete DOM has been loaded.

```
<!DOCTYPE html>
<html>
  <head>
    <meta charset="UTF-8">
    <title>Walk the DOM</title>
  </head>
  <body>
    <h1>Welcome</h1>
    <p>This is a simple paragraph.</p>
    <h2>Overview</h2>
    <p>The following list contains some details:</p>
    <ul>
      <li>Name</li>
      <li>Surname</li>
      <li>Age</li>
    </ul>
    <h2>Education</h2>
    <table>
      <tr><th>When</th><th>Where</th></tr>
      <tr><td>1990</td><td>School</td></tr>
      <tr><td>2000</td><td>High School</td></tr>
      <tr><td>2020</td><td>University</td></tr>
    </table>
    <h2>Additional Information</h2>
    <p>Further information can be found
      <a href="http://www.mypage.com">here</a>.
    </p>
  </body>
</html>
```

Figure 1: HTML document.

2 Modifying the DOM

For the following exercise you should write a JavaScript program which modifies the DOM of the HTML document depicted in Fig. 2. In particular you should write the code to paint all diagonal table cells in red. You'll need to get all diagonal columns from the table and paint them using the code:

```
// td should be the reference to the table cell  
td.style.backgroundColor = 'red';
```

```

<!DOCTYPE HTML>
<html>
<head>
  <title>Modify the DOM</title>
  <style>
    table {
      border-collapse: collapse;
    }
    td {
      border: 1px solid black;
      padding: 3px 5px;
    }
  </style>
</head>
<body>
  <table>
    <!-- First row -->
    <tr>
      <td>1:1</td><td>2:1</td><td>3:1</td><td>4:1</td><td>5:1</td>
    </tr>
    <!-- Second row -->
    <tr>
      <td>1:2</td><td>2:2</td><td>3:2</td><td>4:2</td><td>5:2</td>
    </tr>
    <!-- Third row -->
    <tr>
      <td>1:3</td><td>2:3</td><td>3:3</td><td>4:3</td><td>5:3</td>
    </tr>
    <!-- Fourth row -->
    <tr>
      <td>1:4</td><td>2:4</td><td>3:4</td><td>4:4</td><td>5:4</td>
    </tr>
    <!-- Fifth row -->
    <tr>
      <td>1:5</td><td>2:5</td><td>3:5</td><td>4:5</td><td>5:5</td>
    </tr>
  </table>
</body>
</html>

```

Figure 2: HTML document.

3 Changing the DOM

For the following exercise you should write a JavaScript program which modifies the DOM of the HTML document depicted in Fig. 3. To this end you should add JavaScript code which allows a user to add new rows to the table or remove all the rows by clicking the corresponding buttons:

1. Add a function to create a new row.
2. Add a function to remove all rows.
3. Add the functions as handlers to the corresponding button events.

```

<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <title>Changing the DOM</title>
  <style>
    table {
      font-family: arial, sans-serif;
      border-collapse: collapse;
      width: 100%;
    }

    td, th {
      border: 1px solid #dddddd;
      text-align: left;
      padding: 8px;
    }

    tr:nth-child(even) {
      background-color: #dddddd;
    }
  </style>
</head>
<body>
  <p>
    Name: <input type="text" id="name"/>
    Surname: <input type="text" id="surname"/>
    <button>Add row</button>
    <button>Clear table</button>
  </p>
  <hr>
  <table id="table">
    <tr>
      <th>Name</th>
      <th>Surname</th>
    </tr>
  </table>
</body>
</html>

```

Figure 3: HTML document.

4 DOM Events

For the following exercise you should write a JavaScript program which modifies the DOM of the HTML document depicted in Fig. 4:

- Use JavaScript to change the colour of a row in the table when the mouse pointer is in that row.
- Use JavaScript to show the module code of the currently selected module in an alert box whenever a ROW is clicked.
- Use JavaScript to show the module name whenever the COLUMN containing the name is clicked.
- You will see that two alert boxes are shown when you click on a module name: First, the name and then the module code. Can you change the order to first show the module code and then the name?

```

<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8">
    <title>DOM Events</title>
    <style>
      table {
        font-family: arial, sans-serif;
        border-collapse: collapse; width: 100%;
      }
      td, th {
        border: 1px solid #dddddd;
        text-align: left;
        padding: 8px;
      }
      tr:nth-child(even) {
        background-color: #dddddd;
      }
    </style>
  </head>
  <body>
    <h1>My Modules</h1>
    <table id="mytable">
      <tr>
        <th>Code</th><th>Title</th><th>Description</th>
      </tr>
      <tr>
        <td>ECM1400</td>
        <td id="col1">Introduction to Programming</td>
        <td>Introduction to Python</td>
      </tr>
      <tr>
        <td>ECM1410</td>
        <td id="col2">Object Oriented Programming</td>
        <td>Introduction to Java</td>
      </tr>
      <tr>
        <td>ECM1417</td>
        <td id="col3">Web Development</td>
        <td>Foundations of the Web</td>
      </tr>
    </table>
  </body>
</html>

```

Figure 4: HTML document.