

# Database Systems Lab

## Interactivity

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August 21, 2024

# Document Object Model

Manipulate static HTML to avoid complete page reloads.

```
1 <input id="inp" type="text">
2 <button id="btn">Search</button>
3 <table id="tbl">
4   <thead>
5     <tr>
6       <th>Name</th>
7       <th>Price</th>
8     </tr>
9   </thead>
10  <tbody>
11    <!-- add rows here -->
12  </tbody>
13 </table>
```

# Attach Event Handlers

Get elements you want to react with.

```
1 const btn = document.getElementById('btn');  
2 const inp = document.getElementById('inp');  
3 const tbl = document.querySelector('#tbl tbody')
```

Attach event handlers.

```
1 btn.addEventListener('click', function() {
```

Inside the handler, indicate the ongoing action.

```
1     btn.disabled = true;  
2     tbl.innerHTML = '<tr><td colspan="2">Loading  
    ...<td></td></tr>'
```

Get user input from form fields to use them as parameters.

```
1     const term = inp.value;
```

# Asynchronous Communication

Load data asynchronously using the parameters.

```
1 fetch('/products?search=${term}&price=asc')
2   .then(result => { return result.json(); })
3   .then(data => {
```

Dynamically manipulate the DOM using the result.

```
1     tbl.innerHTML = '';
2     data.forEach(function(item) {
3         const row = '<tr>
4             <td>${item.name}</td>
5             <td>${item.price}</td>
6             </tr>';
7         tbl.innerHTML += row;
8     });
9     btn.disabled = false;
10 }
11 .catch(e => ...);
12 });
```

## Form Data / Frontend

Using HTML forms to process data without any JavaScript.

```
1 <!DOCTYPE html> <!-- inputname.html -->
2 <html>
3 <head><title>Input Name</title></head>
4 <body>
5     <form action="/welcome" method="post">
6         <label for="nm">Name:</label>
7         <input type="text" id="name" name="nm"
8             required>
9         <button type="submit">Submit</button>
10    </form>
11 </body>
</html>
```

```
1 <!DOCTYPE html> <!-- welcome.html -->
2 <html>
3     <head><title>Welcome</title></head>
4     <body><h1>{{name}}</h1></body>
5 </html>
```

## Form Data / Backend

Access the form data through the request in the backend.

```
1 from flask import Flask, render_template,
   send_from_directory, request
2 app = Flask(__name__)
3
4 @app.route('/inputname')
5 def inputname():
6     return send_from_directory(
7         'templates', 'inputname.html')
8
9 @app.route('/welcome', methods=['POST'])
10 def welcome():
11     name = request.form.get('name')
12     return render_template(
13         'welcome.html', name=name)
14
15 app.run(debug=True)
```

# Conclusion

Thank you for your attention!