Multimedia im Netz

Online Multimedia

Winter semester 2015/16

Tutorial 01 – Minor Subject
Welcome!
Today’s Agenda

• Organization & modalities
• Client side scripting: JavaScript (repetition)
  – Repetition of the basics
  – Event handling
• Quiz
Organization & Modalities
## Dates

### For major subject students *(Master)*

Medien-/Informatik, Mensch-Computer-Interaktion:

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Tutor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>16 – 18 h</td>
<td>Peter Juras</td>
</tr>
<tr>
<td>Monday</td>
<td>18 – 20 h</td>
<td>André Schmidt</td>
</tr>
<tr>
<td>Wednesday</td>
<td>14 – 16 h</td>
<td>Tobias Stockinger</td>
</tr>
<tr>
<td>Wednesday</td>
<td>18 – 20 h</td>
<td>Thomas Weber</td>
</tr>
</tbody>
</table>

### For minor subject students *(Bachelor)*

Kunst und Multimedia, Pädagogik, Statistik, Lehramt:

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Tutor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wednesday</td>
<td>16 – 18 h</td>
<td>Thomas Weber</td>
</tr>
</tbody>
</table>
Programming Trainings

- Depending on the demand, we offer programming trainings instead of regular tutorials

- Individual consultation is optional. Please contact your tutor to arrange an appointment.
Tutorials – Why are we doing this?

• Application and immersion of lecture content
• Hands-on activities and discussion
• Opportunity to ask questions
• Preparation of the upcoming assignment
• Discussion of the solutions to exercises
Procedure – Part 1

• Slides and assignment online prior to tutorial
• Due dates for assignments: one or two weeks. Wednesday to Wednesday.
• News, updates, and important announcements on the official website: http://www.medien.ifi.lmu.de/lehre/ws1516/mmn/
Procedure – Part 2

• Doing the assignments is completely **voluntary**.
• We recommend you do the assignments, because they ...
  – are fun and challenging.
  – go beyond the lecture content.
  – prepare you to pass the exam.
• Assignments are turned in via UniWorX
  – Make sure to check the due date
  – You can’t hand in an assignment after the deadline.
  – Individual- or group submission
  – Make sure to do the right assignment:
    • Assignment 01 (HF) = Hauptfach, major subject students
    • Assignment 02 (NF) = Nebenfach, minor subject students
Exam

- Date and time: **11.02.2016** between **10-12 a.m.**
- Location: Main building, lecture halls **M118** and **A240**
- Most likely open-book.
- The exam includes tasks from both the **lecture and tutorial!**
- Retry exam probably in April 2016.
## Semester Plan (subject to change)

<table>
<thead>
<tr>
<th>Dates</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.10.</td>
<td>Organization, JavaScript Basics and Repetition</td>
</tr>
<tr>
<td>28.10.</td>
<td>Server-side scripting with PHP – Basics</td>
</tr>
<tr>
<td>04.11.</td>
<td>PHP: Sessions</td>
</tr>
<tr>
<td>11.11.</td>
<td>MySQL</td>
</tr>
<tr>
<td>18.11.</td>
<td>PHP with MySQL</td>
</tr>
<tr>
<td>25.11.</td>
<td>jQuery: DOM Manipulation, Animations</td>
</tr>
<tr>
<td>02.12.</td>
<td>jQuery: AJAX</td>
</tr>
<tr>
<td>09.12.</td>
<td>HTML5 Form validation</td>
</tr>
<tr>
<td>16.12.</td>
<td>HTML5 Canvas</td>
</tr>
<tr>
<td>23.12.</td>
<td>Christmas Tutorial – Programming Consultation</td>
</tr>
<tr>
<td>13.01.</td>
<td>Multimedia Content Description</td>
</tr>
<tr>
<td>20.01.</td>
<td>HTML5 Multimedia</td>
</tr>
<tr>
<td>27.01.</td>
<td>Repetition</td>
</tr>
<tr>
<td>03.02.</td>
<td>Repetition</td>
</tr>
</tbody>
</table>
News, Readings, Q&A via Twitter

https://twitter.com/MMN_WS1516
Client Side Scripting: JavaScript + HTML5 = ♥

Where do you see it in action every day?
HTML5 introduced a bunch of new features:

- **New Elements:**
  - `<canvas></canvas>`
  - `<audio></audio>`
  - `<video></video>`

- **Form features (examples):**
  - Wildcards
  - Validation

- **Drag and Drop**
Editing HTML Files

- HTML files are regular **text-files** with special **mark-up**
- Programs installed on CIP-pool machines:
  - gedit
  - BlueFish
- Other HTML editors:
  - Aptana (IDE, open source)
  - Sublime (powerful text editor, commercial, free to try)
  - Webstorm (commercial IDE, free for students)
HTML5: Document Structure

```html
<!DOCTYPE html>
<html lang="de">
  
  <head>
    <meta charset="UTF-8" />
    <title>HTML5 Structure</title>
  </head>

  <body>
    </body>

</html>
```
JavaScript

• JavaScript is a dynamic scripting / programming language
• Code is interpreted by the web browser
• Code can be embedded into HTML
  `<script>
  /*
   * Here goes your script!
  * /
  </script>

• Alternatively, the code can be included anywhere in the `<head>` or `<body>` from a separate file
  `<script src="myScript.js"></script>`
Variables

• Values (numbers, strings...) can be stored in variables
• The values are changeable (hence the name „variable“)
• JavaScript does not require a type declaration, you only use the keyword `var` (dynamic type system)

• Declare variables:
  ```javascript
  var letterCount = 10; // explicit
  wordCount = 20;       // implicit
  ```
Functions

• Functions perform specific tasks as a unit
• Used to avoid redundant code
• In JavaScript, we can define functions in two ways:

```javascript
function sayHello(){ // option A
    alert("Hello!");
}

var sayHelloAgain = function(){ // option B
    alert("Hello again!");
}
```

• Difference: `sayHello` can be called in code above its definition, `sayHelloAgain` only works in code below its definition.

http://www.w3schools.com/js/js_function_definition.asp
Scopes

• Variables and functions have different visibilities (scopes) depending on where and how they were declared.

```html
<script>
    var letterCount = 10;

    function alertCounts(){
        var wordCount = 2;
    }
</script>
```

scopes_1.html
Advanced “Scope” Example

```javascript
var var1 = 10;
function fun1(){
    var var2 = 20;
    var3 = 30;
    var var1 = 40;
    alert("Fun1 Var 1: " + var1);
}

alert("Var 1: " + var1);
alert("Var 2: " + var2);
alert("Var 3: " + var3);

fun1();

alert("Var 1: " + var1);
alert("Var 2: " + var2);
alert("Var 3: " + var3);
```

scopes_2.html
Loops

• For loop:
  ```javascript
  for(var i=0; i<10; i++){
    console.log("I'm counting");
  }
  ```

• While loop
  ```javascript
  var nagCount=0;
  while(nagCount<10){
    console.log("Mommy!");
    nagCount++;
  }
  ```
Example: For Loops, Arrays, Concatenation

```html
<script>
var fruits = new Array("Oranges", "Apples", "Pears");
var output = "";
for(var i=0; i<fruits.length; i++){
    output = output + fruits[i] + ", ";
}

alert("I like eating: " + output);
</script>
```
User Interaction with Forms

- **Mouse Events**
  - onclick
  - onmouseover
  - ...
- **Keyboard Events**
  - onkeypress
  - onkeyup
  - ...
- ...
User Interaction - EventListener

- Basically all HTML elements can trigger certain events
- JavaScript can listen for and consequently handle such events
- EventListener attribute:

```html
<body>
<script>
    function showTime(){
        alert(new Date().toString());
    }
</script>

<button onclick="showTime()">Show Time!</button>
</body>
```

date_popup.html
DOM (Document Object Model)

- The DOM references every element and its content in an HTML (or XML) document.
- Elements, contents and structure can be modified:
  - `document`: Content of the browser window
  - `getElementById()`: gets an HTML element with a unique identifier
  - `getElementsByTagName()`: gets all elements by a specific tag
  - `querySelector()`: Find first node that matches a CSS selector
  - `Node.firstChild`: returns the first child node
  - `Node.nodeValue`: gets or sets the value of a node

  [http://de.selfhtml.org/javascript/index.htm](http://de.selfhtml.org/javascript/index.htm)
Example: Say Hello

```html
<body>
<input type="text" id="nameInput" />
<button onclick="sayHello()" />

<script>
  function sayHello(){
    var nameInput = document.getElementById('nameInput');
    var name = nameInput.value;
    if(name){
      alert("Hello "+name+"!");
    }
    else{
      alert("Why don't you tell me your name first?");
    }
  }
</script>
</body>
```
Break Out Task

• Create two user input fields
  – one for text input
  – the other is for a number

• Create a dynamic output
  – display the text input as often as the number indicates.
  – update the output when any of the two fields change

• Take 25 Minutes time
Break Out Task – Demo Video

Your Text

Factor
Quiz Part 1

1. Name 3 elements that are ‘new’ in HTML5!
2. Which document type is correct for HTML5:
   a) `<!DOCTYPE html>`
   b) `<!DOCTYPE HTML PUBLIC "-//W3C//DTD HTML 5.0//EN" http://www.w3.org/TR/html5/strict.dtd>`
   c) `<!DOCTYPE HTML5>`
3. Is JavaScript usually used on the client or the server side?
4. Which attribute of `<script>` is no longer required?
   rel | href | src | type
Quiz Part 2

1. What does `document.querySelector('input');` do?

2. What is the difference between these two declarations:
   ```javascript
   testCount = 2;
   var testCases = 10;
   ```

3. What event is fired when the user types in an input field?

4. `onclick` is an...
   a) element
   b) event attribute
   c) style attribute
Link Collection

• http://caniuse.com/
• http://www.w3schools.com/js/default.asp
• https://stackoverflow.com/
• https://www.coursera.org/learn/html-css-javascript
• http://www.html5rocks.com/
Thanks!

What are your questions?
Let’s begin with the Assignment!

- Download the assignment sheet
- Start with task 1
- You can collaborate with your neighbor

- Turn in the assignment by October 28, 12:00 noon via UniWorX