SUSS
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ICT239 Web Programming

Front End Development – Javascript - Seminar 3

SEMINAR 2 OVERVIEW

INTRODUCTION TO WEB PROGRAMMING – LEARNING OBJECTIVES

1. Analyse the HTTP protocol in a sequence of requests for coherent communication

2. Understand how to respond to an information request through HTTP protocol

3. Learn how application state is managed across a sequence of information request through HTTP

4. Structure and present information with Client side programming

5. Use HyperText Markup Language (HTML)

6. Use Cascading Style Sheet (CSS)

SEMINAR OVERVIEW

FRONT END DEVELOPMENT – JAVASCRIPT – LEARNING OBJECTIVES

1. Understand Document Object Model (DOM)

2. Use the Javascript Programing Language

3. Code in Javascript: Using Variables, Handling Conditions, Loops, Performing

4. String, Numeric Operations, Using Simple Arrays Data Structures

5. Use and Apply Complex Data structures - Javascript Objects

6. Use Advanced Javascript: JQuery and Client Side APIs

7. Understand the different purposes of Client side vs Server side programming

SEMINAR 3: Pre-Reading Reference

JavaScript — Dynamic client-side scripting

https://developer.mozilla.org/en-US/docs/Learn/JavaScript (dated 28 Mar 2020)

Section	Note
Javascript first steps	JavaScript first steps overview What is JavaScript? A first splash into JavaScript What went wrong? Troubleshooting JavaScript Storing the information you need — Variables Basic math in JavaScript — Numbers and operators Handling text — Strings in JavaScript Useful string methods Arrays Assessment: Silly story generator
Javascript Building Blocks	JavaScript building blocks overview Making decisions in your code — Conditionals Looping code Functions — Reusable blocks of code Build your own function Function return values Introduction to events Assessment: Image gallery

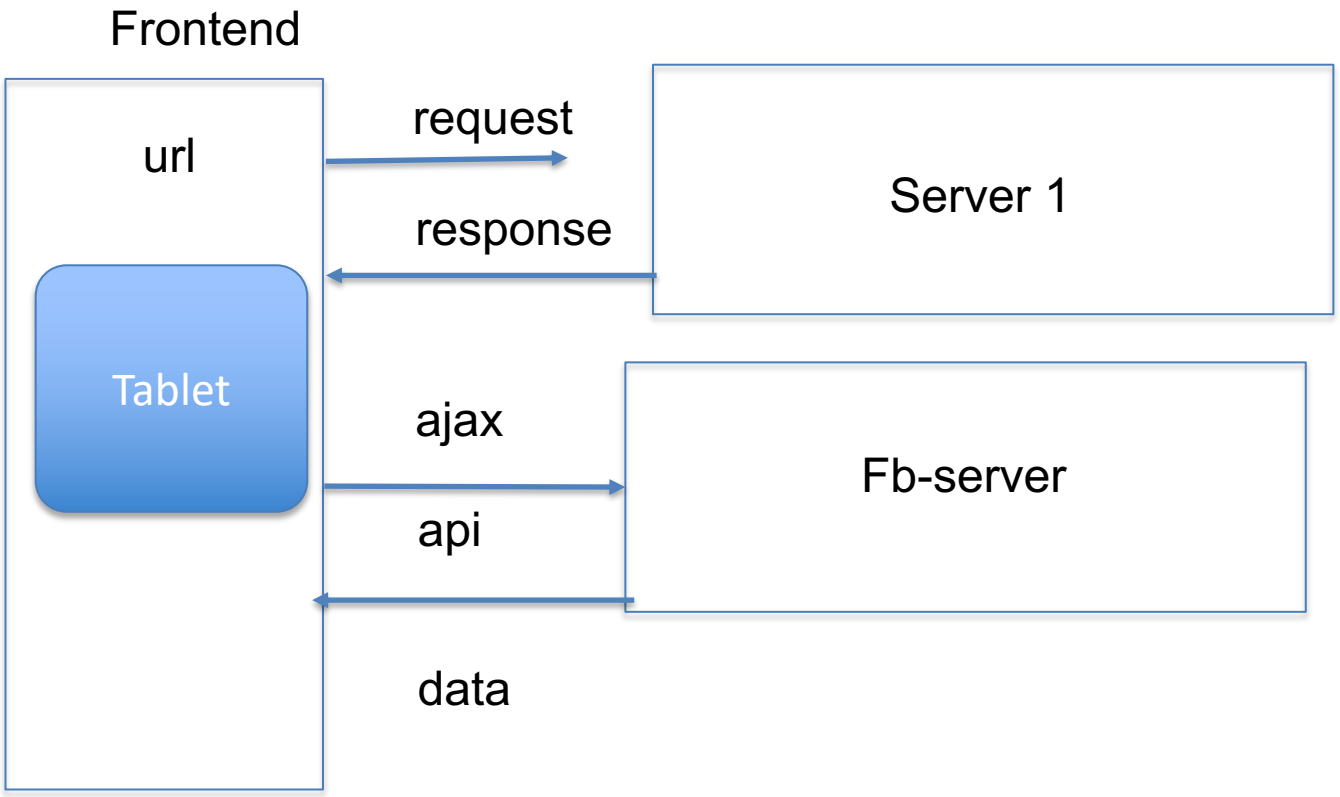
SEMINAR 3: Pre-Reading Reference

JavaScript — Dynamic client-side scripting

https://developer.mozilla.org/en-US/docs/Learn/JavaScript (dated 28 Mar 2020)

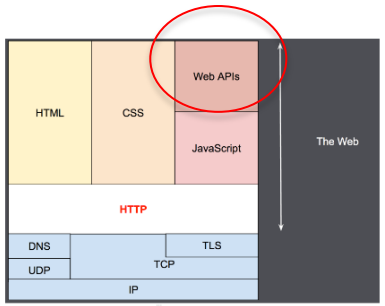
Section	Note
Introducing Javascript objects	Introducing JavaScript objects overview Object basics Working with JSON data
Asynchronous Javascript	Asynchronous JavaScript overview General asynchronous programming concepts Introducing asynchronous JavaScript
Client-side web APIs	Client-side web APIs Introduction to web APIs Manipulating documents Fetching data from the server Third party APIs

WEB API CONCEPT



WEB API CONCEPT

- Application Programming Interface (APIs) are constructs to allow developers to create complex functionality more easily.



- Examples
  - Browser APIs - codes built into the browser that sits on top of the JavaScript language and allow you to implement functionality more easily. For example, the alert() method.
  - JavaScript libraries - One or more JavaScript files containing custom functions that could be attached to web page to speed up or enable writing common functionalities. Eg jQuery library,
  - JavaScript frameworks – BootStrap, Ionic, React
  - Third Party APIs - codes built into third party platforms (eg Twitter) that allow you to use their functionality in your web pages

Javascript Overview

Client-side scripts that makes web pages dynamic

Advantages

- Easy to implement. The codes are simply put in the HTML document with <script></script> tag to tell the browser that they are Javascript.
- Continue to work on the web users' computer even when they are offline
- Loads content into the document dynamically, without reloading the entire page - a technique known as AJAX
- Used to test for what is possible in your browser and react accordingly
- It can be used to fix browser problems or areas lacking in older browser support

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Javascript Overview

DOM Javascripting

https://www.w3schools.com/tags/tryit.asp?filename=tryhtml_table_test

Document Object Model (DOM)

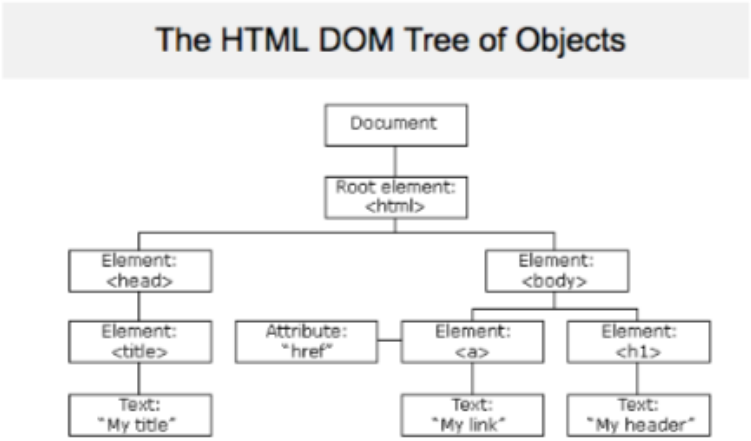
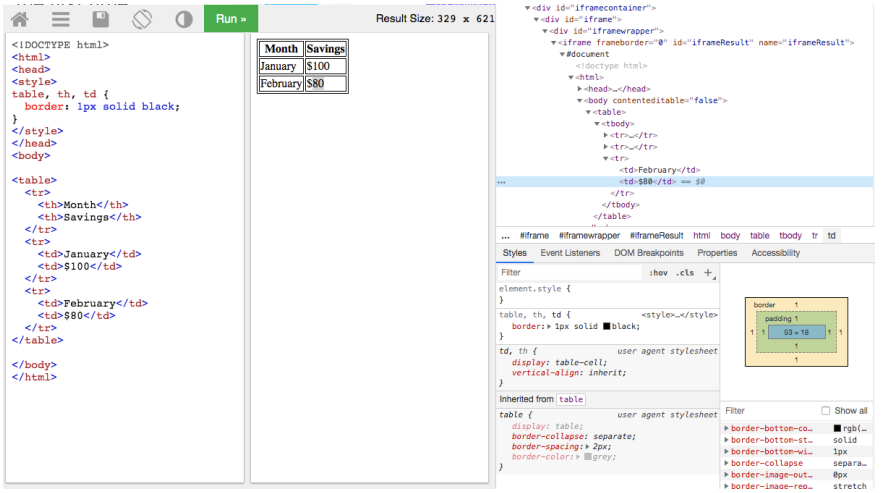


Figure 1: HTML DOM
Source: www.w3schools.com




```
1  var table = document.getElementById("table");
2  var tableAttrs = table.attributes; // Node/Element interface
3  for (var i = 0; i < tableAttrs.length; i++) {
4    // HTMLTableElement interface: border attribute
5    if(tableAttrs[i].nodeName.toLowerCase() == "border")
6      table.border = "1";
7  }
8  // HTMLTableElement interface: summary attribute
9  table.summary = "note: increased border";
```

Javascript Overview

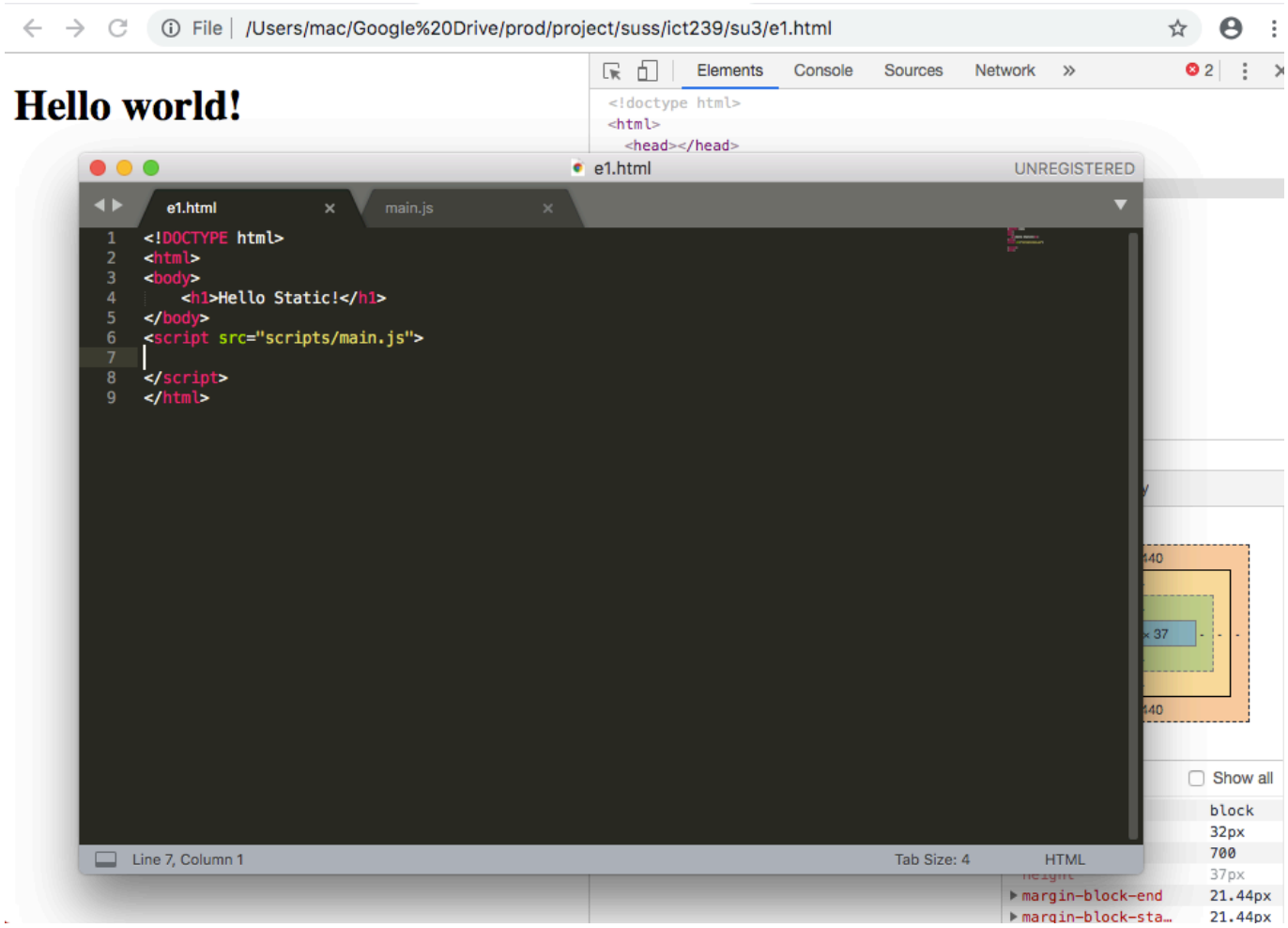
Topic 1: Overview

Examples of JS in action

- A sign-up form to check if a username is available when you enter it,
- A search box that gives you suggested results as you type - the *autocomplete* feature (eg google.com)
- Information that is loaded periodically without the need for user interaction, for example sports match results or stock market tickers (eg youtube.com)
- Information that is useful but might be redundant to some users - this information can be loaded on demand
- Fixing layout issues - eg, depending on the browser's dimension, displaying the right content that stays proportionately

Javascript Overview

Topic 2: Set Up Javascript for “Hello World”



Client Side Programming

Topic 3: Javascript Language Basics

Refer to Study Guide Javascript Chapter

https://developer.mozilla.org/en-US/docs/Learn/JavaScript

https://www.w3schools.com/js/default.asp

- How is Javascript (JS) used as a programming language
  - Data structure - Variables, arrays
  - Operators
  - Conditions
  - Loops
  - Events

- How is JS used within client side programming

DOM with Javascript

Topic 1: What is the DOM ?

- How is JS used within client side programming

https://www.w3schools.com/js/js_htmldom.asp

https://developer.mozilla.org/en-US/docs/Web/API/Document_Object_Model

```
<html>
  <head>
    <script>
       // run this function when the document is loaded
       window.onload = function() {

         // create a couple of elements in an otherwise empty HTML page
         var heading = document.createElement("h1");
         var heading_text = document.createTextNode("Big Head!");
         heading.appendChild(heading_text);
         document.body.appendChild(heading);
       }
    </script>
  </head>
  <body>
  </body>
</html>
```

DOM with Javascript

Topic 1: What is the DOM ?

- How is JS used within client side programming

- Events and DOMs
  - Registering events
  - https://developer.mozilla.org/en-US/docs/Web/API/Document_Object_Model/Events

  - Traversing an HTML table with JavaScript and DOM Interfaces
  - https://developer.mozilla.org/en-US/docs/Web/API/Document_Object_Model/Traversing_an_HTML_table_with_JavaScript_and_DOM_Interfaces

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7. Understand the different purposes of Client side vs Server side programming

TODO BEFORE NEXT SEMINAR

Reminder

- Read Study Unit 2,3 – they are related
- References
  - https://developer.mozilla.org/en-US/docs/Learn/JavaScript
  - https://developer.mozilla.org/en-US/docs/Learn/Tools_and_testing/Cross_browser_testing
  - Try out the exercises! (In the Study Unit, Mozilla site)
- Use your Canvas resources
  - Study Guide
  - Discussion Forums
  - Course Textbook / Google

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Thank You.