

Web Design and Programming (0107558)

Internet Programming (0107571)¹

Interactivity with JavaScript (AJAX and JSON)

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¹Michael Mendez. *The Missing Link: An Introduction to Web Development and Programming*. Open SUNY Textbooks 2014.

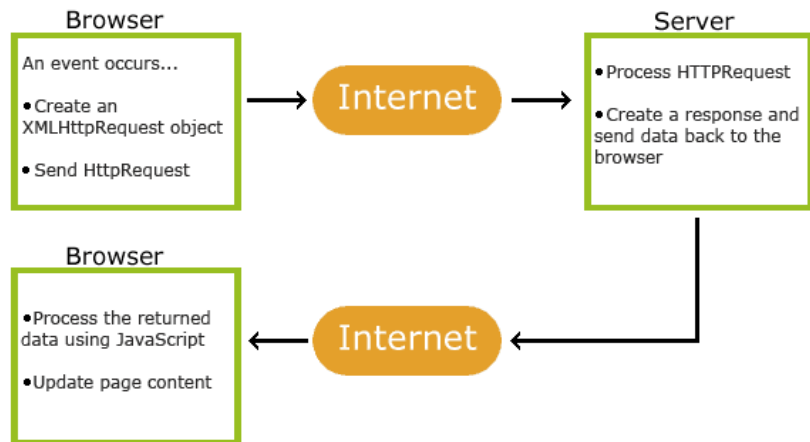
JavaScript

Introduction to Ajax

- ▶ AJAX = **A**synchronous **J**avaScript **A**nd **X**ML.
- ▶ AJAX is not a programming language.
- ▶ AJAX just uses a combination of:
 - ▶ A browser built-in XMLHttpRequest object (to request data from a web server)
 - ▶ JavaScript and HTML DOM (to display or use the data)

JavaScript

How Ajax works



JavaScript

How Ajax works

1. An event occurs in a web page (the page is loaded, a button is clicked)
2. An XMLHttpRequest object is created by JavaScript
3. The XMLHttpRequest object sends a request to a web server
4. The server processes the request
5. The server sends a response back to the web page
6. The response is read by JavaScript
7. Proper action (like page update) is performed by JavaScript

Demo

16-ajax.html

JavaScript

Quiz

1. One of the differences between a GET request and POST is that a GET request passes query parameters as part of the URL whereas POST request passes them as part of the body of the request.

- ▶ True
- ▶ False

2. Given the following JavaScript code snippet:

```
var name = "";  
// Making an Ajax call here, i.e., sendGetRequest  
$ajaxUtils.sendGetRequest("someURL", function (request) {  
    name = "TTU";  
});  
document.querySelector("#content").innerHTML = name;
```

What will be the contents of the element with the 'id' value of 'content' after the execution of this JavaScript code?

- ▶ It will be empty
- ▶ TTU
- ▶ Whatever the server returns plus the word TTU

JavaScript

JSON

- ▶ Stands for: **JavaScript Object Notation**
- ▶ Lightweight data-interchange format.
- ▶ Easy for humans to read and write.
- ▶ Easy for machines to parse and generate.

JavaScript

JSON Syntax Rules

- ▶ Subset of JavaScript object literals but:
 - ▶ Property names must be in double quotes.
 - ▶ String values must be in double quotes.

Example

```
{  
  "firstName": "Naeem",  
  "lastName": "Odat",  
  "taughtCourse": 2  
}
```

JavaScript

Conversion between JSON string and JavaScript object

- ▶ To convert from JSON string to object:
`var obj=JSON.parse(jsonString);`
- ▶ To convert from JavaScript object to JSON string:
`var str=JSON.stringify(obj);`

Demo

17-json.html

JavaScript

Quiz

1. Another name for Object Literal is JSON.

- ▶ True
- ▶ False

2. Identify invalid JSON string below:

```
'{  
  "courseName": "InternetProgramming",  
  "numberOfStudents": 6  
}'  
  
'{  
  "courseName": "InternetProgramming",  
  "studentsLoveCourse": true  
}'  
  
'{  
  'courseName': "InternetProgramming",  
  'numberOfStudents': 6  
}'  
  
'{  
  "courseName": {"name": "InternetProgramming"},  
  "numberOfStudents": 6  
'}
```

JavaScript

Dynamic loading of a webpage

- ▶ Using Ajax a template of the webpage content is requested from the server.
- ▶ The data (in JSON format) that should be filled in the template is requested from the server.
- ▶ An appropriate JavaScript code will work on both to put each item in its place.

Demo

18-dynamicloading.html