

Introduction to AJAX

AJAX = Asynchronous JavaScript and XML

Relies on JavaScript and HTTP requests to exchange data between client, and server.

Underlying technologies

- JavaScript
- HTML
- CSS
- XML
 - Plain text can also be used, so XML is optional
- JSON
- HTTP

JavaScript needs to send an XMLHttpRequest object to talk to the server.

Making an AJAX Request w/vanilla JavaScript

1. Create an XMLHttpRequest object.

- `let request = new XMLHttpRequest();`

2. Surround with try/catch.

```
function getXMLHttpRequest {  
  try {  
    let request = new XMLHttpRequest();  
  } catch(e) {  
    // do something  
  }  
  return request;  
}
```

3. Open the XMLHttpRequest object.

- `request.open(method, URL, asynchronous);`
 - Method: GET, POST, PUT, etc.
 - URL: Location of the data requested.
 - true by default. false makes the request synchronus. Deprecated.

4. Send the XMLHttpRequest object.

- If GET: `request.send(null);`
- If POST: `request.send(content)`

5. Listen for the ReadyStateChanges

- `request.addEventListener('readystatechange', someFn);`

6. Within `someFn`, check for `readyState` 4.

- `readyState === 0` - Object created, but not open.
- `readyState === 1` - Open, but not sent.
- `readyState === 2` - Sent, but no response.
- `readyState === 3` - Server has not completed the response.
- `readyState === 4` - The response has been received.

```
function someFn() {
  if (request.readyState === 4) {
    // Do something!
  }
}
```

fetch Method

New method in JS, allows for XHR objects using a single command.

```
fetch('url', {
  // JSON object of values for header, method, etc
  Method: 'GET'
}).then(resp => {
  // Do something with promise.
}).catch(err => {
  // Do something with error.
});
```

Navigating Nodes

- `childNodes` - all the children of the current node as an array.
 - `documentElement.childNodes` is all the children of the root element.
 - `getElementsByName("book")[0].childNodes` is all the children tags of the first book tag.
- `firstChild` - the first child of the given node.
- `nodeValue` - the value of the node "what's between the tags".
- `nodeType` - specifies the type of node you're looking at.
 - 1 - Element
 - 2 - Attribute
 - 3 - Text
 - 8 - Comment
 - 9 - Document
- `createElement` - makes a new element.
- `createTextNode`
- `createComment` **LITERALLY THE GREATEST THING I'VE EVER SEEN**
- `createCDATASection`
- `createAttribute`

jQuery

```
$(selector).load(url, data, callback);
```

Load external file on the local filesystem to the selected element.

Cross-Origin Resource Sharing (CORS)

Add some headers to allow two different domains to talk in JavaScript.

* Works around the Same Origin Policy

Part of the XMLHttpRequest2 object, which has superseded the XMLHttpRequest object.

Check if the withCredentials property exists in object for completeness.

```
if ("withCredentials" in xhr) { //do stuff }
```

Server needs to accept X-Origin requests. Needs to have

Access-Control-Allow-Origin. Client must have `xhr.withCredentials = true`.