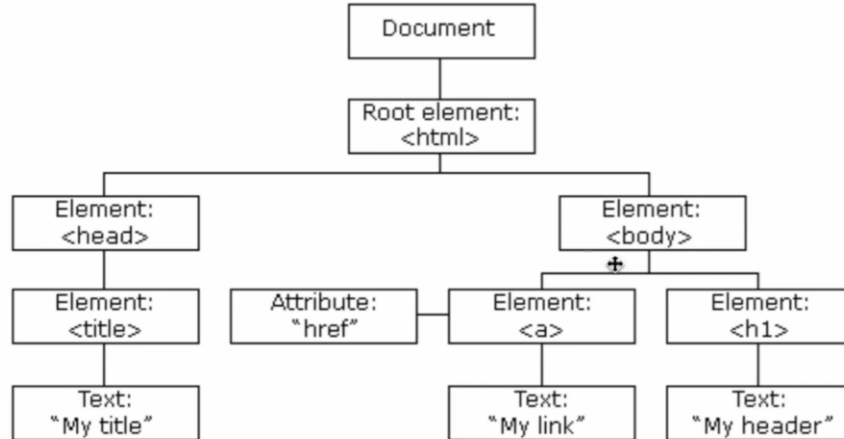


DOM, JSON And AJAX

DOM

What is DOM

Navigators use DOM to render the HTML file received from Server to graphical user interface. Therefore, if we change the information within the DOM, the GUI in the client site would be changed correspondently.



HTML → DOM → GUI

JS interacts with DOM

There are four common ways using JavaScript to interact with DOM

1. Use `id`
2. Use `element tag`
3. Use `class`
4. Use HTML object collections

ID

```
var head1 = document.getElementById("h1");  
head1.innerHTML="New Heading";
```

tag

```
var paragraphs = document.getElementsByTagName("p");  
for (const p of paragraphs) {  
  p.innerHTML = 'New Paragraph';  
};
```

class

```
var p2 = document.getElementsByClassName("c1");  
for (const obj of p2) {  
  obj.style.background = "pink";  
}
```

CSS Selectors

```
var x = document.querySelector("p.c1");  
x.style.background = "yellow";
```

HTML Object Collections

```
console.log(document.links.length);
```

JSON

What is JSON

JSON is a data structure JS used to pass data between Server side and Client side.

```
{  
  "employees": [  
    {"name": "Kevin", "age": "29"},  
    {"name": "David", "age": "31"},  
    {"name": "Peter", "age": "27"}  
  ]  
}
```

Transfer JSON to a JavaScript Object

```
<!DOCTYPE html>
<html>
<body>
<h2>Create Object from JSON String</h2>
<p id="demo"></p>
<script>
var jsonText = '{ "employees" : [' +
' { "name": "Kevin", "age": "29" }, ' +
' { "name": "David", "age": "31" }, ' +
' { "name": "Peter", "age": "27" } ] }';
jsonObject = JSON.parse(jsonText);
document.getElementById("demo").innerHTML =
jsonObject.employees[1].name + " " + jsonObject.employees[1].age;
</script>
</body>
</html>
```

Free JSON Data API

<https://jsonplaceholder.typicode.com/posts>

<https://gorest.co.in/public-api/users>

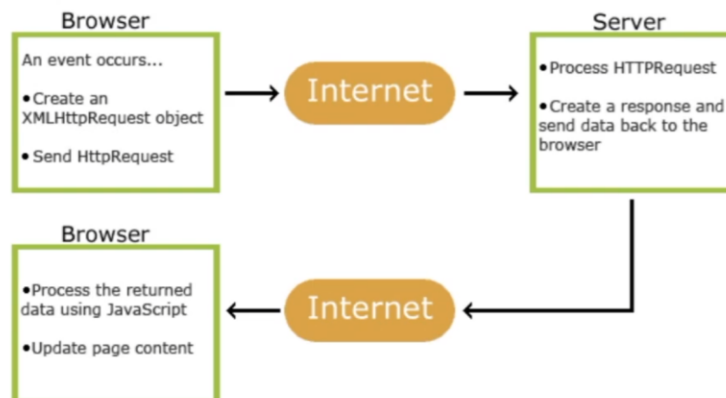
Asynchronous JavaScript and XML(AJAX)

What is AJAX

Compared to the traditional way, AJAX allows us do not refresh the whole website but update it accordingly based on the data received from Server side.

传统: Form → Server → New HTML

AJAX: Request → Data (XML, JSON) → Update data (DOM)



Example: get JSON data from free API

```
<html>
<head>
  <script>
    function loadJSON() {
      var xhttp = new XMLHttpRequest();
      xhttp.onreadystatechange = function() {
        if (this.readyState == 4 && this.status == 200) {
          displayData(this);
        }
      };
      xhttp.open("GET", "https://jsonplaceholder.typicode.com/posts/", true);
      xhttp.send();
    }
    function displayData(xhttp) {
      jsonData = JSON.parse(xhttp.responseText);
      var newContent = ""
      for (index in jsonData) {
        newContent += "<p>" + jsonData[index].body + "</p>";
      }
      document.getElementById("json-content").innerHTML = newContent;
    }
    function clearJSON() {
      document.getElementById("json-content").innerHTML = "";
    }
  </script>
</head>

<body>
  <h2>AJAX DEMO</h2>
  <button type="button" onclick="loadJSON()">Get JSON</button>
  <button type="button" onclick="clearJSON()">Clear JSON</button>
  <div id="json-content"></div>
</div>
</body>
</html>
```