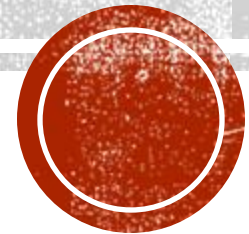# AJAX

(WITH JQUERY)

Data Representation

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AJAX

Asynchronous: Does not block code, the return function gets called when complete

Javascript: The language

And

XML: Well not much anymore, usually JSON or html is used

More info at https://www.w3schools.com/xml/ajax_intro.asp
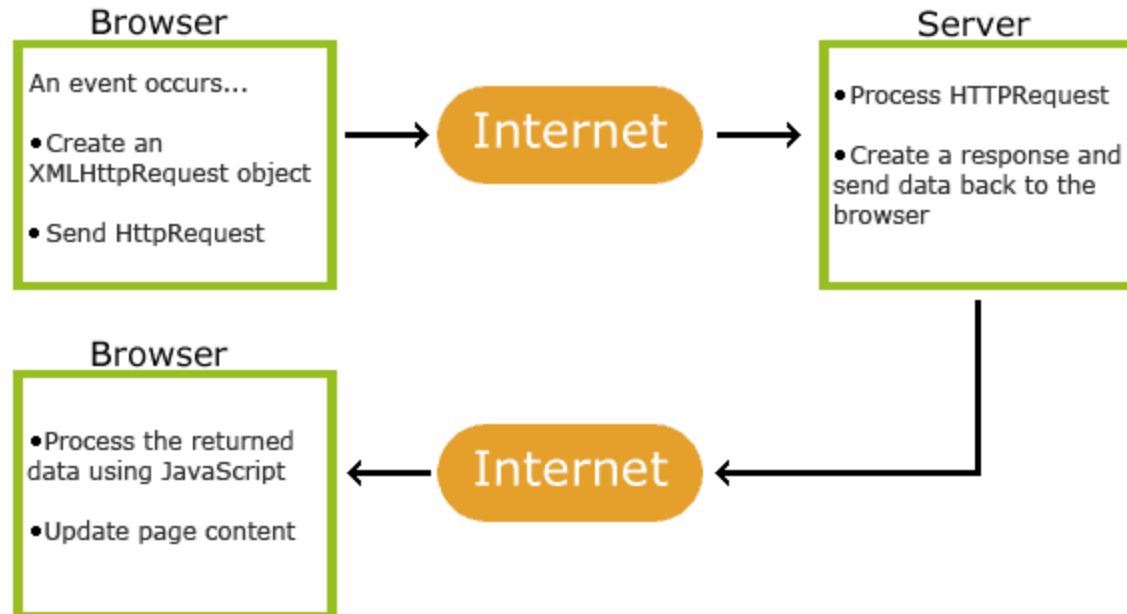
We will use AJAX with Jquery not the plain JavaScript version:

https://www.w3schools.com/jquery/jquery_ajax_intro.asp

WHAT DOES AJAX DO?

- Allows us to call up a resource with HTTP from inside a web page

Browser

An event occurs...

- Create an XMLHttpRequest object
- Send HttpRequest

Internet

Server

- Process HTTPRequest
- Create a response and send data back to the browser

Browser

- Process the returned data using JavaScript
- Update page content

Internet

CONSIDER THIS JSON

```json
{
    "url": "https://api.coindesk.com/v1/bpi/currentprice.json ",
    "method":"GET",
    "data":"",
    "dataType": "JSON",
    "success":function(result){
        console.log(result);
     },
     "error":function(xhr,status,error){
        console.log("error: "+status+" msg:"+error);
     }
}
```

- There are 6 attributes: url, method,data, datatype, success and error
- The first four have values of type string
- The last two have values of type function

JQUERY

- We will be using JQuery for AJAX,

- JQuery is a javascript library that make finding and manipulating elements in the HTML DOM tree easier.

- I am not going into detail about JQuery now

- You will need this magic line of code in the header of any page that uses Jquery

```
<head>
   <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.6.1/jquery.min.js"></script>
</head>
```

$.AJAX FUNCTION

- We will use the $.AJAX function, it takes on parameter, a JSON Object that descrips everything

```
$.ajax({the object that describes everything});
```

- EG

```
$.ajax({
    "url": "https://api.coindesk.com/v1/bpi/currentprice.json ",
    "method":"GET",
    "data":"",
    "dataType": "JSON",
    "success":function(result){
        console.log(result);
    },
    "error":function(xhr,status,error){
        console.log("error: "+status+" msg:"+error);
    }
}
)
```

```
{
    "url": "https://api.coindesk.com/v1/bpi/currentprice.json ",
    "method":"GET",
    "data":"",
    "dataType": "JSON",
    "success":function(result){
        console.log(result);
    },
    "error":function(xhr,status,error){
        console.log("error: "+status+" msg:"+error);
    }
}
```

- url   : the url to call

- method   : the HTTP method

- data   : parameters (none in this case)

- dataType   : that is returned JSON or HTML or XML

- success   : the function to call if this is a success (with the result from server)

- error   : The function to call if we don't get a status code in the 200s

Putting the code together

```html
<html>
    <head>
        <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.4.1/jquery.
min.js"></script>
        <title>
            read a simple json
        </title>
    </head>
    <body>
        <button onclick="readJSON()">go</button>
    </body>
    <script>
        function readJSON(){
            $.ajax({
                "url": "https://api.coindesk.com/v1/bpi/currentprice.json ",
                "method":"GET",
                "data":"",
                "dataType": "JSON",
                "success":function(result){
                    console.log(result);
                },
                "error":function(xhr,status,error){
                    console.log("error: "+status+" msg:"+error);
                }
            });

        }
    </script>
</html>
```

READ THE EURO PRICE FROM THE JSON

- Looking at the JSON you can see the value we are looking for is in the object:

  bpi.EUR.rate

- So the code to extract it is

```
var rate = result.bpi.EUR.rate
console.log(rate);

//document.getElementById("output")
.innerText = rate;
```

```
{
    "time": {
        "updated": "Oct 25, 2022 14:16:00 UTC",
        "updatedISO": "2022-10-25T14:16:00+00:00",
        "updateduk": "Oct 25, 2022 at 15:16 BST"
    },
    "disclaimer": "This data was produced from the CoinDesk Bitcoin Price Index (USD).
Non-USD currency data converted using hourly conversion rate from
openexchangerates.org",
    "chartName": "Bitcoin",
    "bpi": {
        "USD": {
            "code": "USD",
            "symbol": "&#36;",
            "rate": "19,449.7231",
            "description": "United States Dollar",
            "rate_float": 19449.7231
        },
        "GBP": {
            "code": "GBP",
            "symbol": "&pound;",
            "rate": "16,252.0330",
            "description": "British Pound Sterling",
            "rate_float": 16252.033
        },
        "EUR": {
            "code": "EUR",
            "symbol": "&euro;",
            "rate": "18,946.8700",
            "description": "Euro",
            "rate_float": 18946.87
        }
    }
```

BREAK TIME

Summary:
You can call restful APIs from
html/javascript pages using AJAX