Week 12
JSON with Ajax

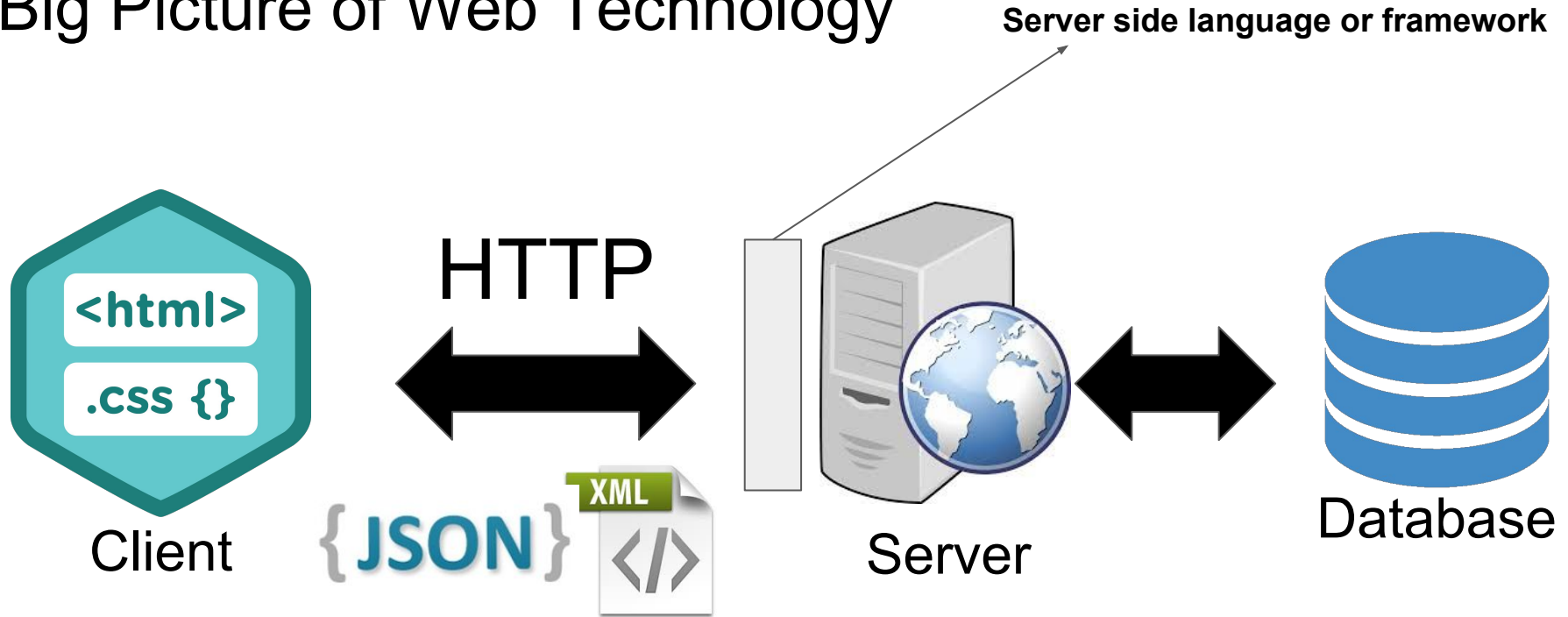2017, Fall
Web Application Programming
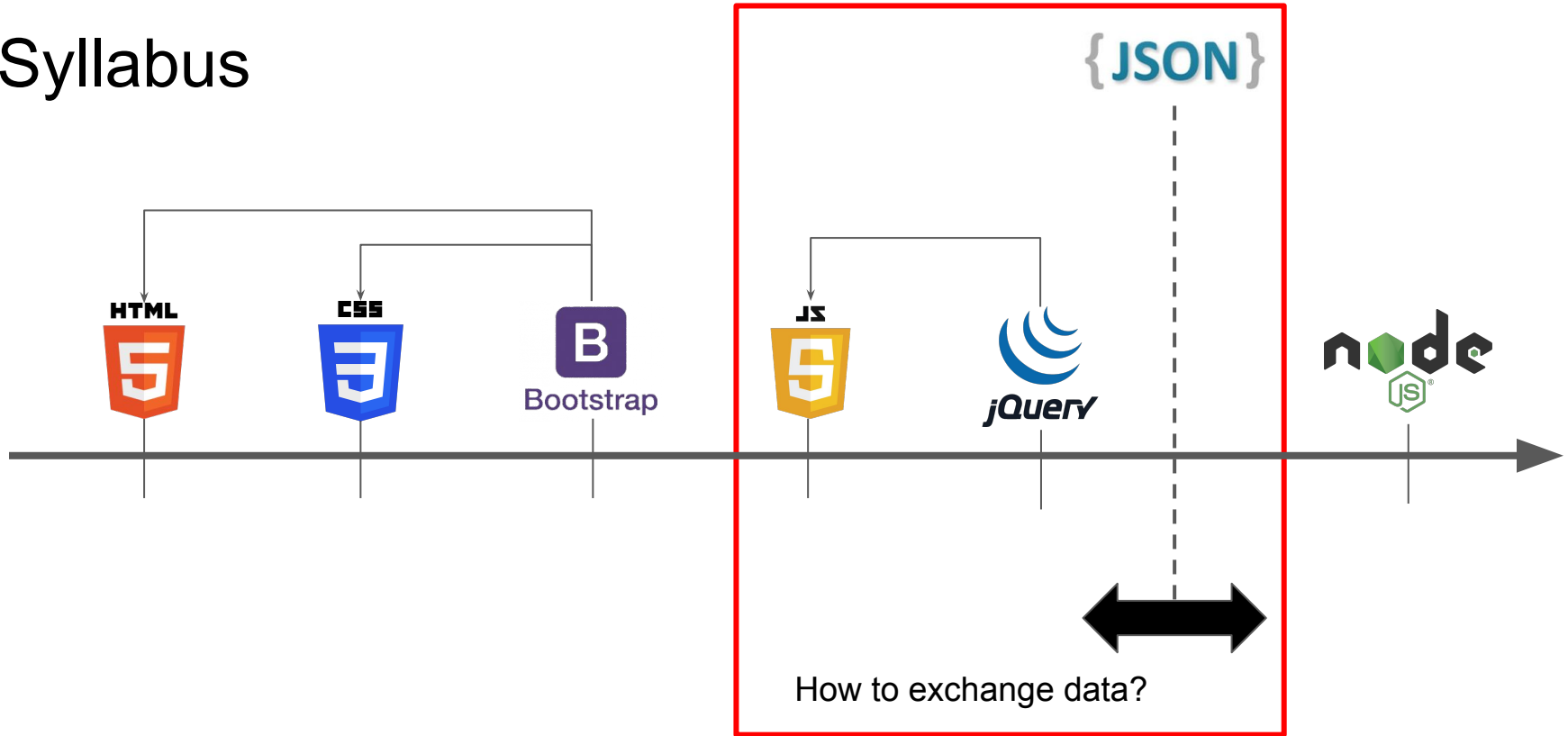Pusan National University
Hyung-Gyu Ryoo

Contents

- Resources, URIs, Representations, URLs
- Ajax (Asynchronous Javascript And XML)
- SOP(Same Origin Policy)
- Practice

Big Picture of Web Technology

Server side language or framework

HTTP

Client

Server

Database

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Syllabus
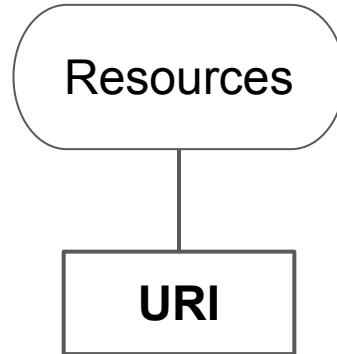

How to exchange data?

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Things are *Resources*

Resources

Resources can be items of information (a blog entry) or
informational descriptions of real things (a blog author)

# *Resources* have *URIs*

Resources

URI

Uniform Resource Identifier are unique ids for resources,
just like ISBN for a book or a driver's license for a person

Resources have *Representations*

Representation — Resources — **Representation**
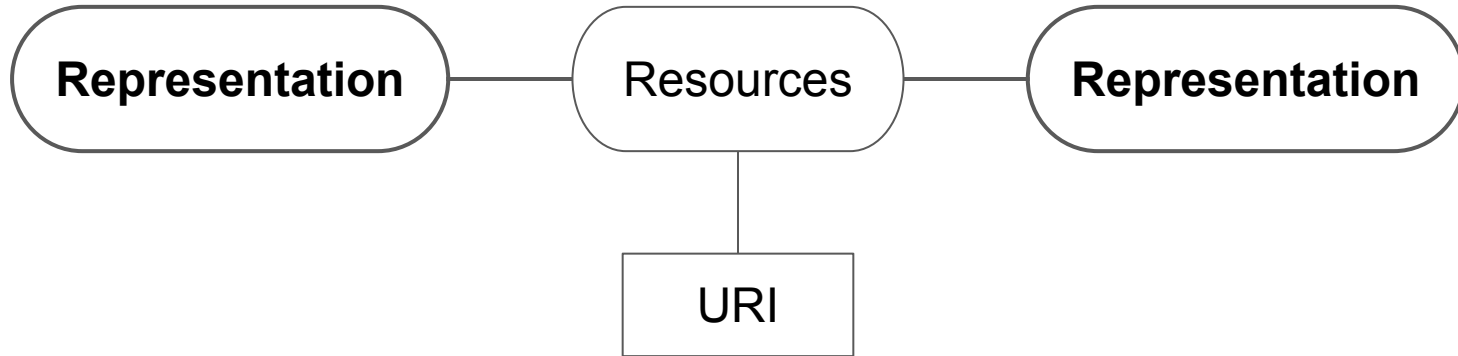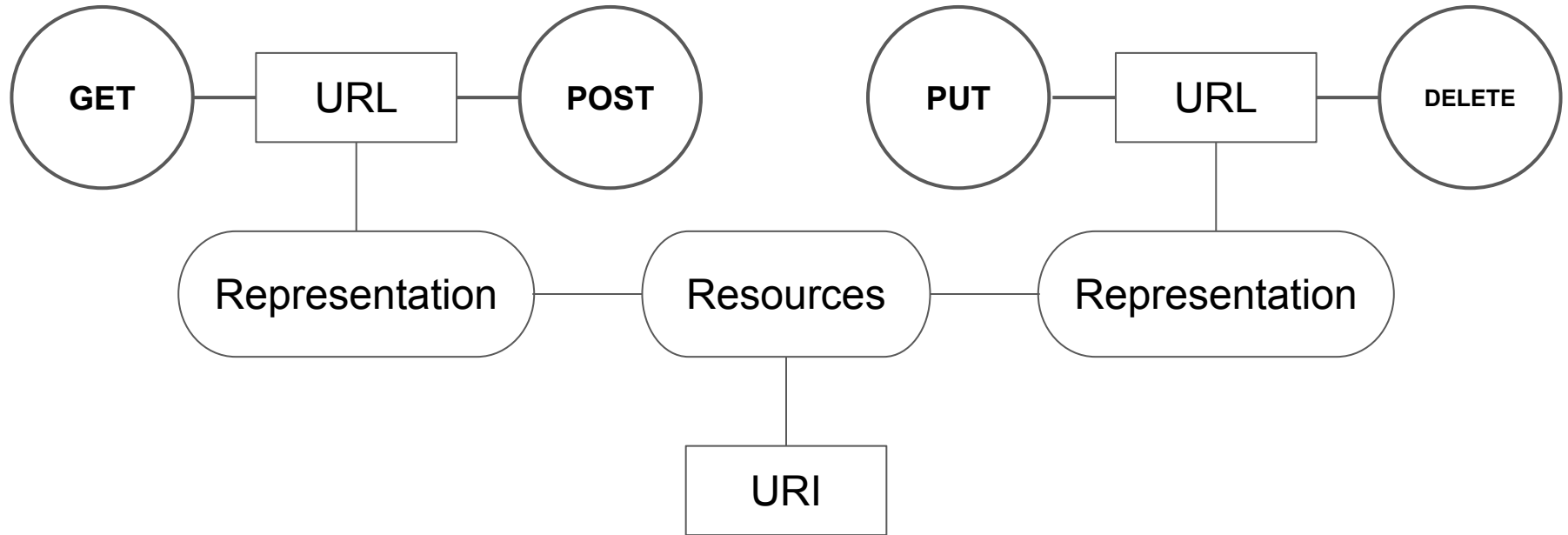
Resources
URI

Representations can have different formats (HTML, XML,
JSON) or show different aspects of a resource

Representations have *URLs*
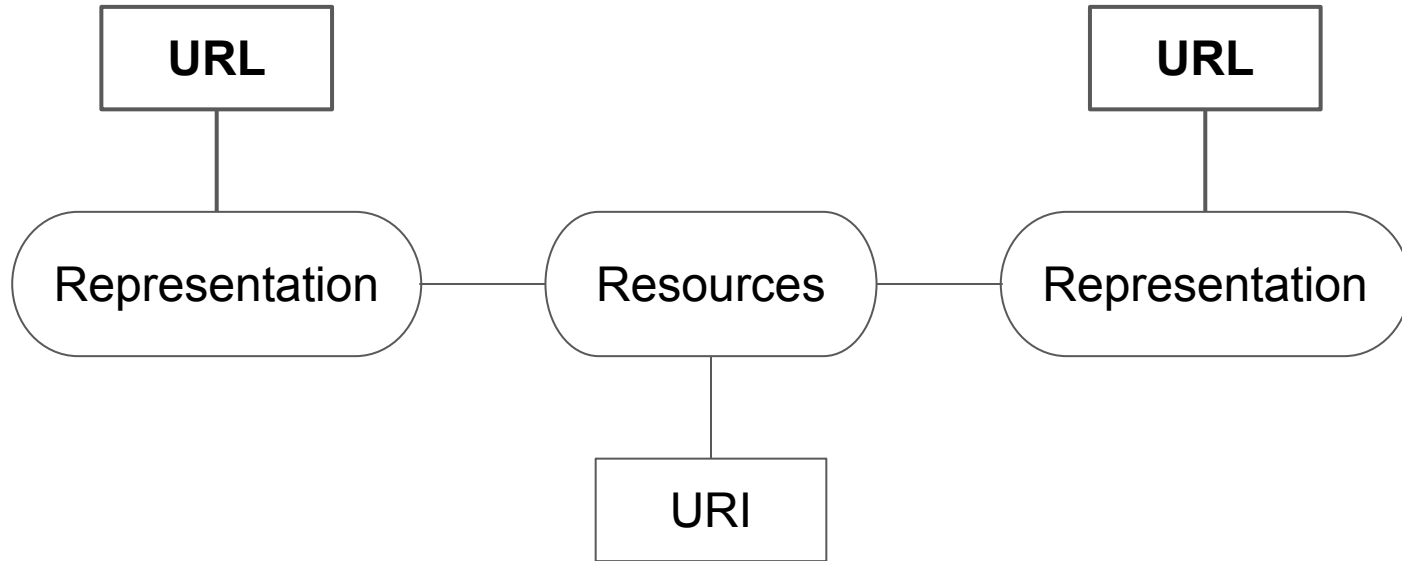
Uniform Resource Locators describe how to get to a representation of a resource, they include protocol, hostname, path and extra information

Clients interact via *Verbs*

What is 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)
- AJAX is a misleading name. AJAX applications might use XML to transport data, but it is equally common to transport data as plain text or JSON text.
- AJAX allows web pages to be updated **asynchronously** by exchanging data with a web server behind the scenes. This means that it is possible to update parts of a web page, without reloading the whole page.

How AJAX Works?

Client

Server

- An event occurs in a web page
- An XMLHttpRequest object is created by Javascript
- The XMLHttpRequest object sends a request
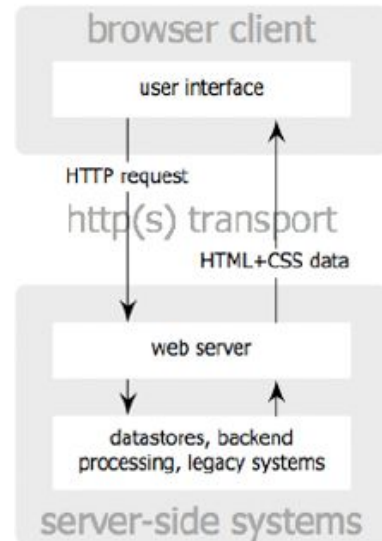
HTTP Request

- Process the request
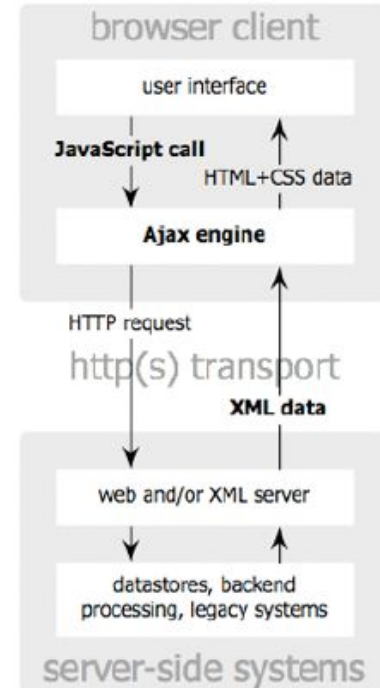- Sends a response back to the web page

HTTP Response

- The response is read by Javascript
- Proper action is performed by Javascript

Classic vs Ajax Model

classic
web application model

Ajax
web application model

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Let's Try first Ajax

```javascript
var xhttp = new XMLHttpRequest();

xhttp.onreadystatechange = function() {

  if (this.readyState == 4 && this.status == 200) {

    document.getElementById("demo").innerHTML = this.responseText;

  }

};

xhttp.open("GET", "ajax_info.txt", true);

xhttp.send();
```

XMLHttpRequest Object Properties

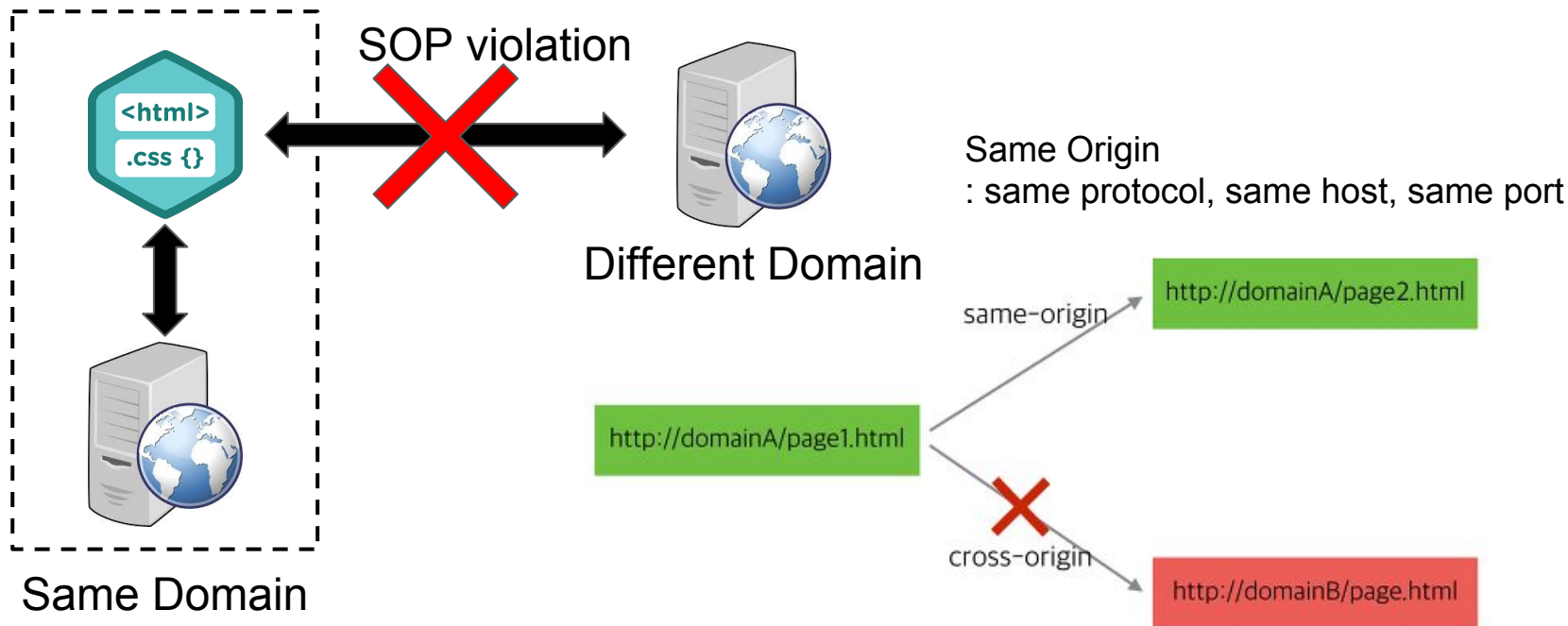| Property	Description
onreadystatechange	Defines a function to be called when the readyState property changes
readyState	Holds the status of the XMLHttpRequest. 0: request not initialized 1: server connection established 2: request received 3: processing request 4: request finished and response is ready
responseText	Returns the response data as a string
responseXML	Returns the response data as XML data
status	Returns the status-number of a request 200: "OK" 403: "Forbidden" 404: "Not Found" For a complete list go to the Http Messages Reference
statusText	Returns the status-text (e.g. "OK" or "Not Found")

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XMLHttpRequest Object Methods

Method	Description
new XMLHttpRequest()	Creates a new XMLHttpRequest object
abort()	Cancels the current request
getAllResponseHeaders()	Returns header information
getResponseHeader()	Returns specific header information
open(*method,url,async,user,psw*)	Specifies the request *method*: the request type GET or POST *url*: the file location *async*: true (asynchronous) or false (synchronous) *user*: optional user name *psw*: optional password
send()	Sends the request to the server Used for GET requests
send(*string*)	Sends the request to the server. Used for POST requests
setRequestHeader()	Adds a label/value pair to the header to be sent

❸ ► Failed to load <u>file:///D:/googledrive/M</u> <u>ajax_example1.html:13</u>
<u>yDocument/Class/2017-2/WebProgramming2017/Week%2011,12/week12/a</u>
<u>jax_info.txt</u>: Cross origin requests are only supported for
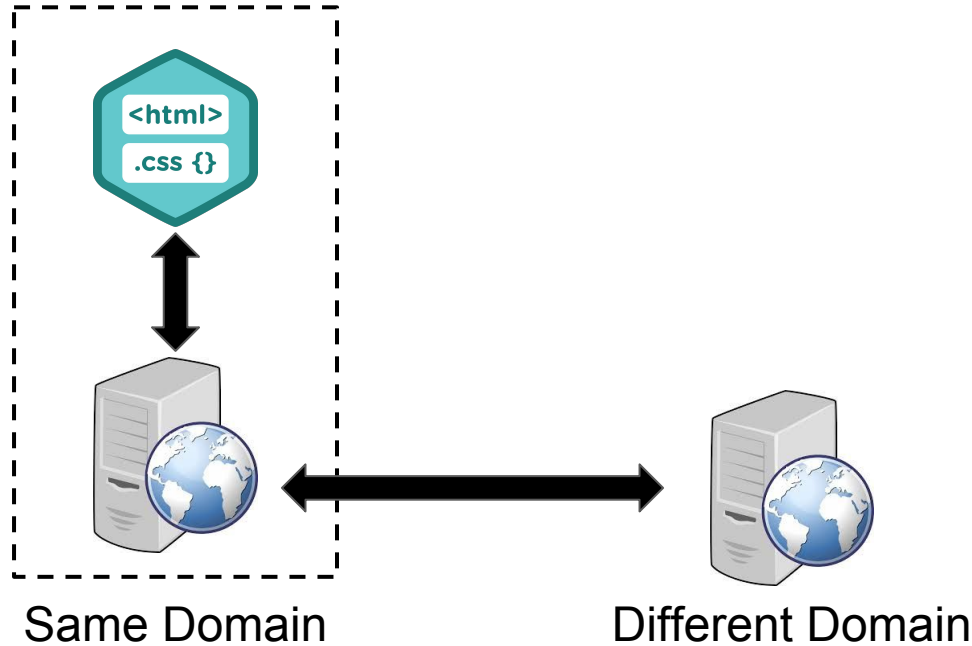protocol schemes: http, data, chrome, chrome-extension, https.

SOP(Same Origin Policy)?

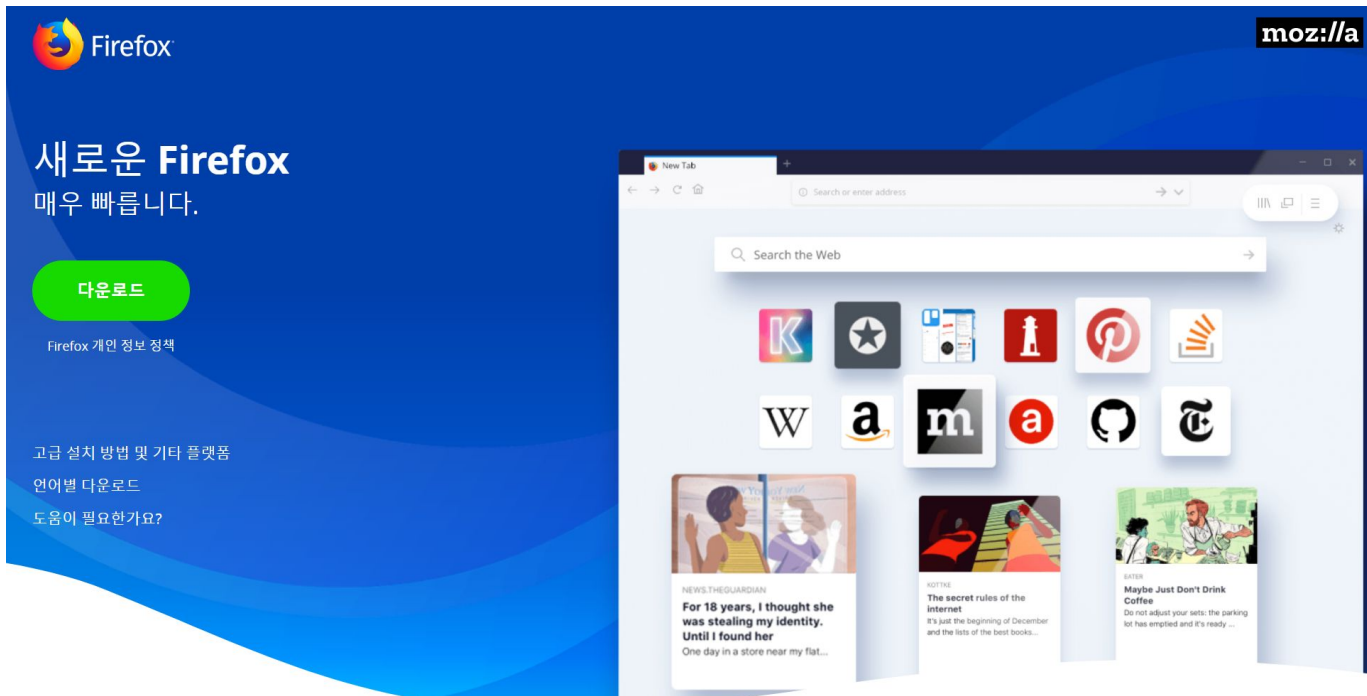- A security policy for the web to prevent cross-site issues

SOP violation

Same Origin
: same protocol, same host, same port

Different Domain

same-origin → http://domainA/page2.html

http://domainA/page1.html

cross-origin ✗ http://domainB/page.html

Same Domain

Discuss : How to solve it?

SOP(Same Origin Policy)?

Same Domain

Different Domain

Download Firefox

https://www.mozilla.org/ko/firefox/new/

# Ajax using jQuery

```
$(document).ready(function(){
    $("button").click(function(){
        $.ajax({
                url: "ajax_info.json",
                dataType:"json",
                success: function(result){
                        alert(result);
                        alert(result.employees[0].firstName);
        }});
    });
});
```
Reference : https://www.w3schools.com/jquery/ajax_ajax.asp

Practice : Create a Table from JSON Data

Firstname	Lastname	Email
John	Doe	john@example.com
Mary	Moe	mary@example.com
July	Dooley	july@example.com
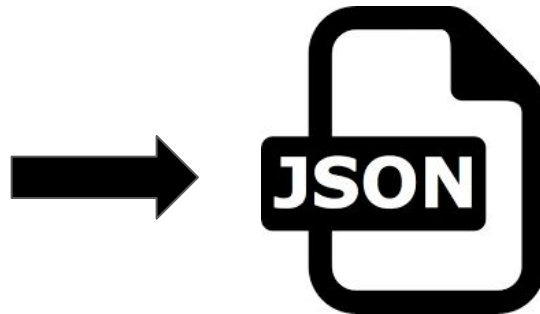
add data => Ki-Joune, Li, lik@pnu.edu

Draw a table from the JSON file using Ajax and Javascript