jQuery & AJAX

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NTOU CS

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What is jQuery

□ jQuery is a lightweight, "write less, do more", JavaScript library.

□ jQuery takes a lot of common tasks and wraps them into methods that you can call **with a single line of code**.

□ The purpose of jQuery is to make it much easier to use JavaScript on your website.

https://w3techs.com/technologies/overview/javascript_library/all

What is jQuery

- The jQuery library contains the following features:
  - HTML/DOM manipulation
  - CSS manipulation
  - HTML event methods
  - Effects and animations
  - AJAX (Asynchronous JavaScript and XML)
  - JSON Parsing
  - Utilities

Why jQuery

- Lots of other JavaScript frameworks out there, but jQuery seems to be the most popular, and also the most extendable.

History of jQuery

- jQuery was originally released in January 2006 at BarCamp NYC by John Resig and was influenced by Dean Edwards' earlier cssQuery library.
- It is currently maintained by a team of developers led by Timmy Willison (with the jQuery selector engine, Sizzle, being led by Richard Gibson).
- Marketshare of jquery: https://w3techs.com/technologies/details/js-jquery

Adding jQuery to Your Web Pages

- There are several ways to start using jQuery on your web site.
  - Download the jQuery library from jQuery.com
    - <script src="jquery-3.6.1.min.js" type="text/javascript"></script>
  - Include jQuery from a CDN (Content Delivery Network), like Google
    - <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.6.1/jquery.min.js" type="text/javascript"></script>

Download from jQuery.com

- There are two versions of jQuery available for downloading:
  - **Production version** - this is for your live website because it has been minified and compressed
    - jquery-3.6.1.min.js
  - Development version - this is for testing and development (uncompressed and readable code)
    - jquery-3.6.1.js

Example

```html
<!DOCTYPE html>
<html>

<head>
    <meta charset="utf-8">
    <title>First jQuery</title>
    <script src="jquery-3.6.1.min.js"></script>
    <script>
        $(document).ready(function () {
            document.write("Hello World!");
        });
    </script>
</head>

<body></body>

</html>
```

How to Test Your jQuery Code Quickly?

- JSFiddle: https://jsfiddle.net/
  - Frameworks & Extensions → jQuery

Include jQuery from a CDN$_1$

- □ If you don't want to download and host jQuery yourself, you can include it from a CDN (Content Delivery Network).
- □ Both Google and Microsoft host jQuery

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

```
<head>
<script src="http://ajax.aspnetcdn.com/ajax/jQuery/jquery-
3.6.1.min.js"></script>
</head>
```

Include jQuery from a CDN$_2$

- Advantage of using the hosted jQuery from Google or Microsoft
  - Many users already have downloaded jQuery from Google or Microsoft when visiting another site.
  - As a result, it will be loaded from cache when they visit your site, which leads to faster loading time.
  - Also, most CDN's will make sure that once a user requests a file from it, it will be served from the server closest to them, which also leads to faster loading time.

jQuery Syntax1

- The jQuery syntax is tailor made **for selecting HTML elements** and **performing some action** on the element(s).
  - 先選網頁元素、再對網頁元素做一些效果
- jQuery uses **CSS syntax** to select elements.
  - 如果CSS規則很熟，寫jQuery就成功一半
- Basic syntax is: *$(selector).action()*
  - A $ sign to define/access jQuery
  - A (selector) to "query (or find)" HTML elements
  - A jQuery action() to be performed on the element(s)

jQuery Syntax2

- Example of $(selector).action()
  - *$(this).hide()* - hides the current element.
  - *$("p").hide()* - hides all <p> elements.
  - *$(".test").hide()* - hides all elements with class="test".
  - *$("#test").hide()* - hides the element with id="test".

https://www.w3schools.com/code/tryit.asp?filename=FXKNJEZ3J5AD

jQuery Syntax: $()

- Experienced developers sometimes use the shorthand $() for $(document).ready().
  - If you are writing code that people who aren't experienced with jQuery may see, it's best to use the long form.

```
$(function() {
    window.alert( "ready!" );
});
```

jQuery Selectors

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jQuery Selector

- jQuery selectors allow you to select and manipulate HTML element(s).
- jQuery selectors are used to "find" (or select) HTML elements **based on their id, classes, types, attributes, values of attributes** and much more.
- All selectors in jQuery start with the dollar sign and parentheses: **$()**.

The Element (Tag) Selector

- Selects elements based on the element name.
- You can select all <p> elements on a page like this:

```
$(document).ready(function(){
        $("button").click(function(){
                $("p").hide();
        });
});
```

https://www.w3schools.com/code/tryit.asp?filename=FXKO2OH8K3RS

The #id Selector

- □ Uses the id attribute of an HTML tag to find the specific element.
- □ An id should be unique within a page, so you should use the #id selector when you want to find a single, unique element.
- □ To find an element with a specific id, write a hash (#) character, followed by the id of the HTML element:

The .class Selector

- Finds elements with a specific class.
- To find elements with a specific class, write a period (.) character, followed by the name of the class.

Basic Selectors

By Tag:

```
$("div")
// <div>Hello jQuery</div>
```

By ID:

```
$("#usr")
// <span id=“usr”>John</span>
```

By Class:

```
$(".menu")
// <ul class=“menu”>Home</ul>
```

More Precise Selectors

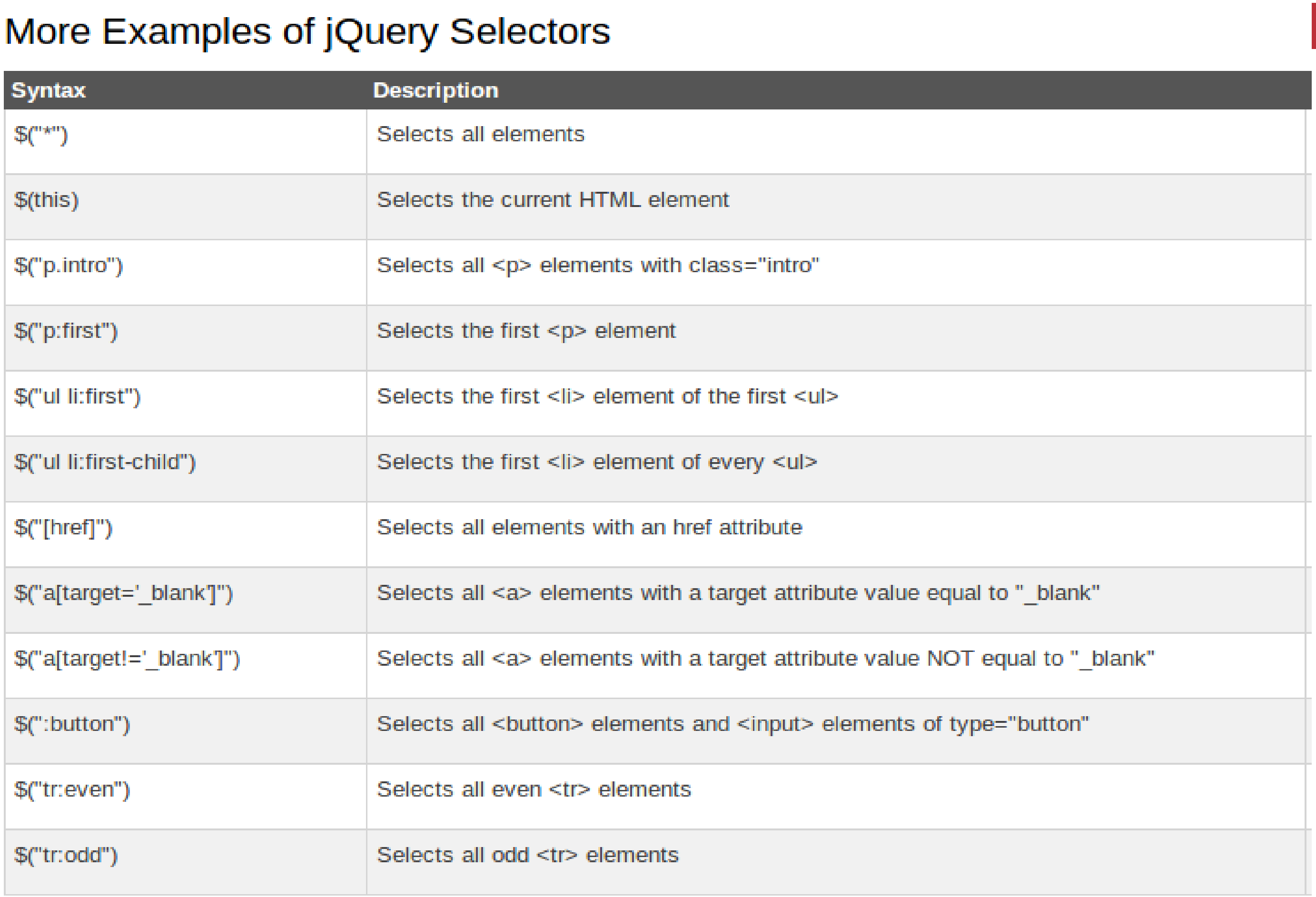
```
$("div.main")   // tag and class

$("table#data")// tag and id
```

Visibility Filters

```
$("div:visible")    // if visible
$("div:hidden")     // if not
```

More jQuery Selectors



More Examples of jQuery Selectors

Syntax	Description
$("*")	Selects all elements
$(this)	Selects the current HTML element
$("p.intro")	Selects all <p> elements with class="intro"
$("p:first")	Selects the first <p> element
$("ul li:first")	Selects the first <li> element of the first <ul>
$("ul li:first-child")	Selects the first <li> element of every <ul>
$("[href]")	Selects all elements with an href attribute
$("a[target='_blank']")	Selects all <a> elements with a target attribute value equal to "_blank"
$("a[target!='_blank']")	Selects all <a> elements with a target attribute value NOT equal to "_blank"
$(":button")	Selects all <button> elements and <input> elements of type="button"
$("tr:even")	Selects all even <tr> elements
$("tr:odd")	Selects all odd <tr> elements

https://www.w3schools.com/cssref/css_selectors.asp

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

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

If Using Pure JavaScript (Not jQuery)

- querySelectorAll()
  - https://developer.mozilla.org/en-US/docs/Web/API/Document/querySelectorAll
- querySelector()
  - https://developer.mozilla.org/en-US/docs/Web/API/Document/querySelector
- Return DOM objects
  - jQuery的$函式回傳的則是再包裝過的DOM物件

jQuery Events

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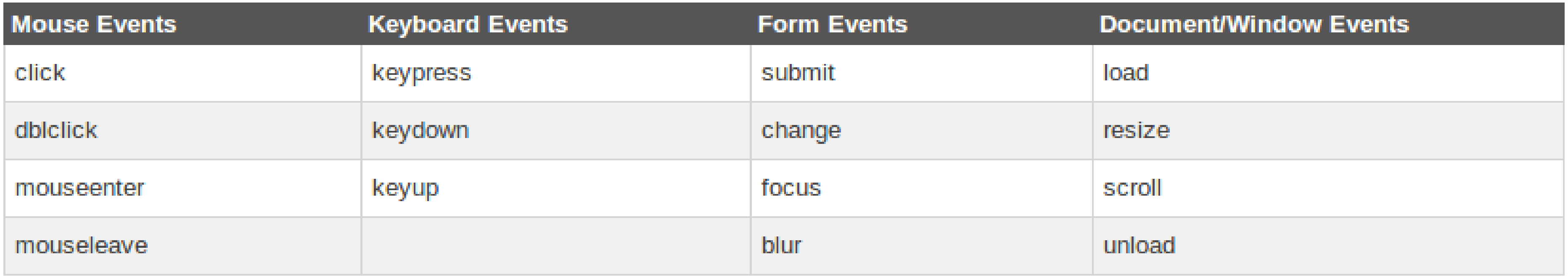
jQuery Events

Here are some common DOM events:



Mouse Events	Keyboard Events	Form Events	Document/Window Events
click	keypress	submit	load
dblclick	keydown	change	resize
mouseenter	keyup	focus	scroll
mouseleave		blur	unload

jQuery Syntax for Event Method

- In jQuery, most DOM events have an equivalent jQuery method.
- To assign a click event to all paragraphs on a page, you can do this:

```
$("p").click(…);
```

- The next step is to define what should happen when the event fires. You must pass a function to the

```
$("p").click(function(){
    // action goes here!!
});
```

Commonly Used jQuery Event Methods

- $(document).ready()
- click()
- dblclick()
- mouseenter()
- mouseleave()
- mousedown()
- mouseup()
- hover()
- focus()
- blur()

http://www.w3schools.com/jquery/jquery_events.asp
http://www.w3schools.com/jquery/jquery_ref_events.asp

When the DOM is ready…

```
  $(document).ready(function(){
     //…
   });
```

- □ Fires when the document is ready for programming.
- □ Uses advanced listeners for detecting.
- □ window.onload() is a fallback.

比onload的作法快一些→無需等待文字外的resource之loading時間

Attach Event

```
// execute always
$("div").on("click", fn);

// execute only once
$("div").one("click", fn);
```

- Possible event values: *blur, focus, load, resize, scroll, unload, beforeunload, click, dblclick, mousedown, mouseup, mousemove, mouseover, mouseout, mouseenter, mouseleave, change, select, submit, keydown, keypress, keyup, error*
  - (or any custom event)

Detaching Events

```
$("div").off("click", fn);
```

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

Events Triggering

```
$("div").trigger("click");
```

- Triggers browser’s event action as well.
- Can trigger custom events.
- Triggered events bubble up.

https://www.w3schools.com/jquery/tryit.asp?filename=tryjquery_event_trigger

JSON and Ajax

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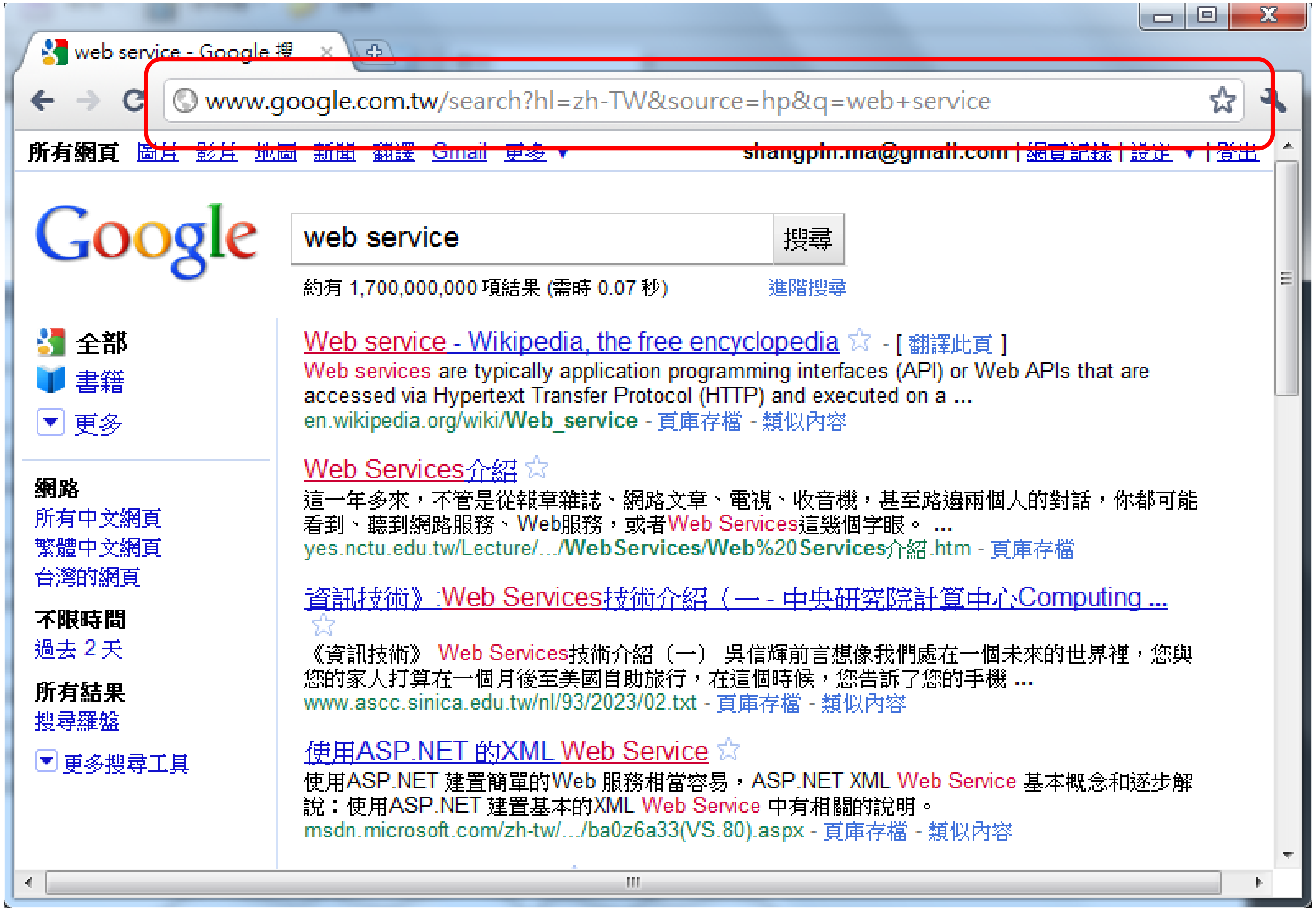
HTTP GET Example



www.google.com.tw/search?hl=zh-TW&source=hp&q=web+service

web service

約有 1,700,000,000 項結果 (需時 0.07 秒)

Web service - Wikipedia, the free encyclopedia ☆ - [翻譯此頁]
Web services are typically application programming interfaces (API) or Web APIs that are accessed via Hypertext Transfer Protocol (HTTP) and executed on a ...
en.wikipedia.org/wiki/Web_service - 頁庫存檔 - 類似內容

Web Services介紹 ☆
這一年多來，不管是從報章雜誌、網路文章、電視、收音機，甚至路邊兩個人的對話，你都可能看到、聽到網路服務、Web服務，或者Web Services這幾個字眼。 ...
yes.nctu.edu.tw/Lecture/.../WebServices/Web%20Services介紹.htm - 頁庫存檔

資訊技術》:Web Services技術介紹（一 - 中央研究院計算中心Computing ... ☆
《資訊技術》 Web Services技術介紹（一） 吳信輝前言想像我們處在一個未來的世界裡，您與您的家人打算在一個月後至美國自助旅行，在這個時候，您告訴了您的手機 ...
www.ascc.sinica.edu.tw/nl/93/2023/02.txt - 頁庫存檔 - 類似內容

使用ASP.NET 的XML Web Service ☆
使用ASP.NET 建置簡單的Web 服務相當容易，ASP.NET XML Web Service 基本概念和逐步解說：使用ASP.NET 建置基本的XML Web Service 中有相關的說明。
msdn.microsoft.com/zh-tw/.../ba0z6a33(VS.80).aspx - 頁庫存檔 - 類似內容

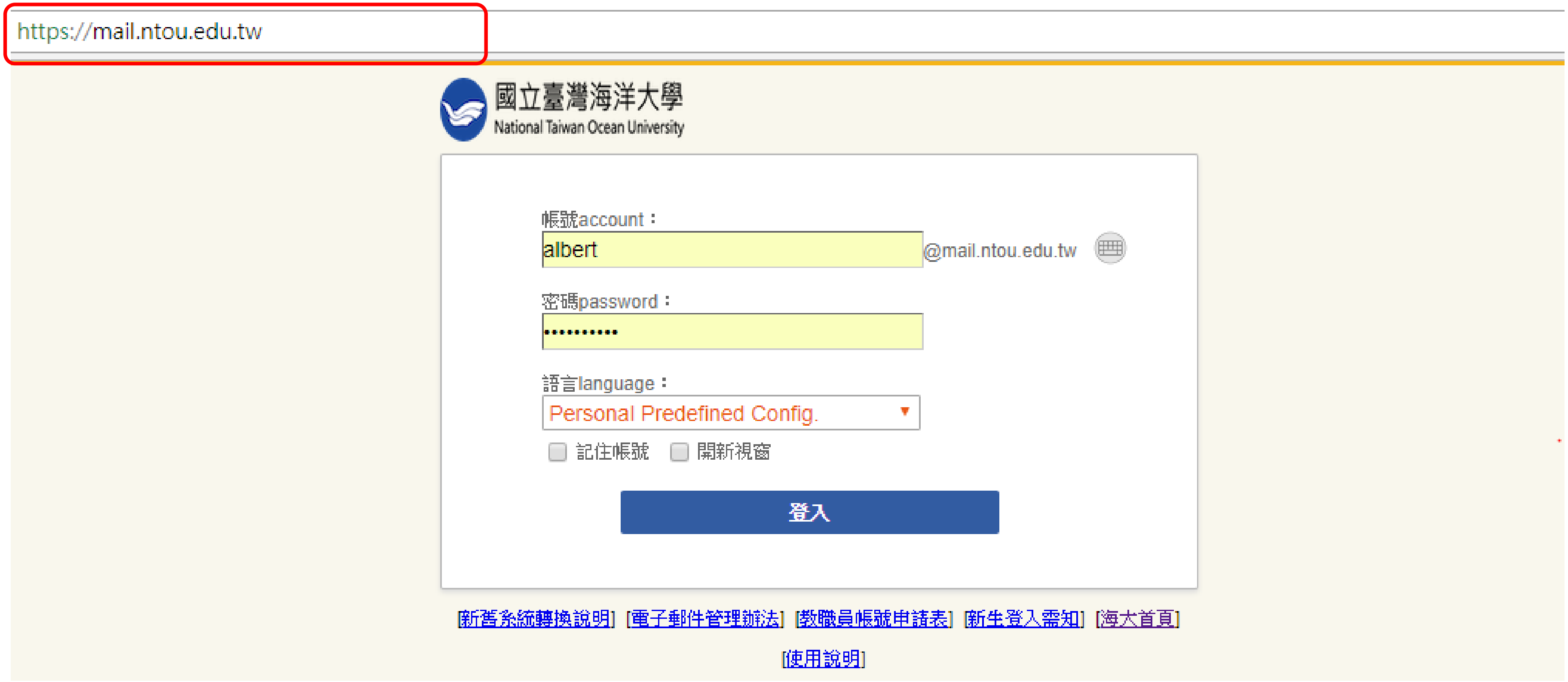
The “?” separates the path and the parameters.

The amount of data you can send along with the GET is limited.

It’s exposed up here in the browser bar for everyone to see.

Please try:
Chrome: [F12] → Network

HTTP POST Example



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國立臺灣海洋大學
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帳號account：
albert @mail.ntou.edu.tw

密碼password：
•••••••••••

語言language：
Personal Predefined Config.

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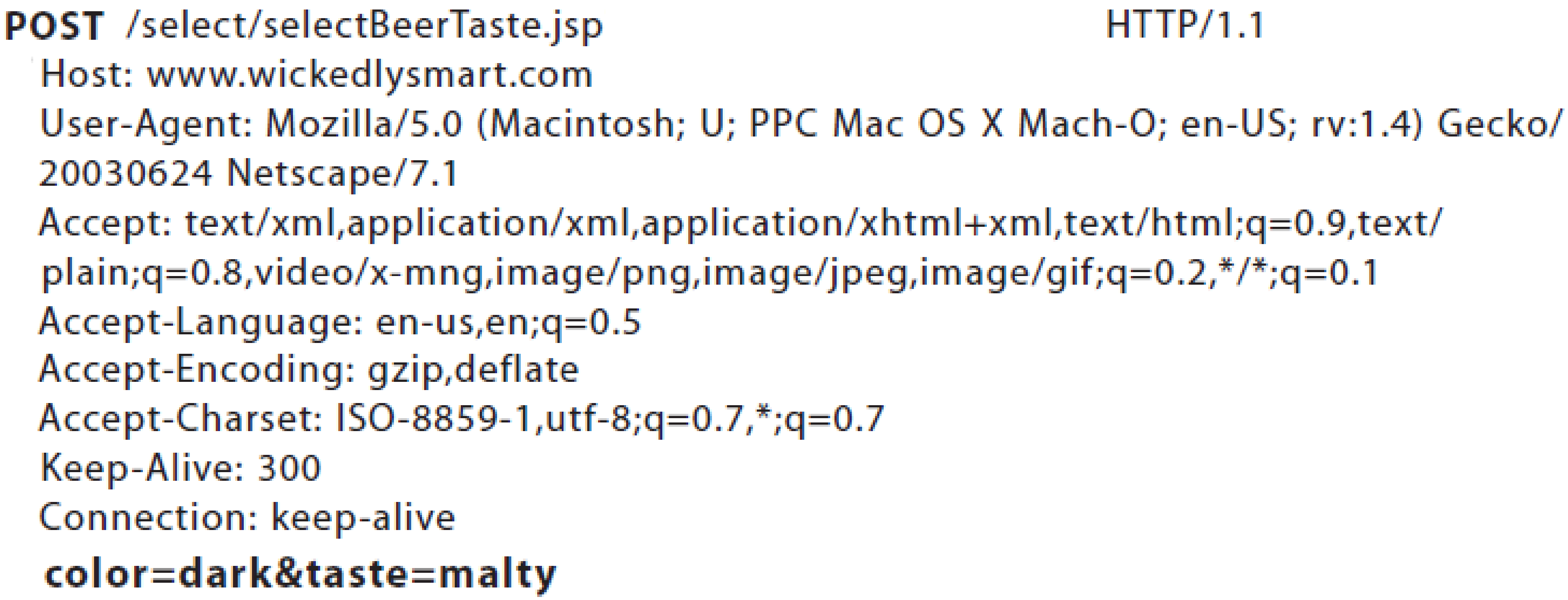
[使用說明]

https://mail.ntou.edu.tw/

HTTP Methods (Important for RESTful Services)

- □ GET: Asks to get the thing (resource / file) at the requested URL. (讀取)
- □ POST: Asks the server to accept the body info attached to the request, and give it to the thing at the requested URL. (新增)
- □ PUT: Says to put the enclosed info (the body) at the requested URL. (更新)
- □ DELETE: Says to delete the thing (resource / file) at the requested URL. (刪除)
- □ HEAD: Asks for only the header part of whatever a GET would return.
- □ TRACE: Asks for a loopback of the request message, so that the client can see what's being received on the other end. (測試用)
- □ OPTIONS: Asks for a list of the HTTP methods to which the thing at the requested URL can respond. (類似 /help)
- □ CONNECT: Says to connect for the purposes of tunneling.

The Difference between GET and POST



```
POST  /select/selectBeerTaste.jsp                        HTTP/1.1
 Host: www.wickedlysmart.com
 User-Agent: Mozilla/5.0 (Macintosh; U; PPC Mac OS X Mach-O; en-US; rv:1.4) Gecko/
 20030624 Netscape/7.1
 Accept: text/xml,application/xml,application/xhtml+xml,text/html;q=0.9,text/
 plain;q=0.8,video/x-mng,image/png,image/jpeg,image/gif;q=0.2,*/*;q=0.1
 Accept-Language: en-us,en;q=0.5
 Accept-Encoding: gzip,deflate
 Accept-Charset: ISO-8859-1,utf-8;q=0.7,*;q=0.7
 Keep-Alive: 300
 Connection: keep-alive
 color=dark&taste=malty
```

Difference between GET and POST

- With GET, the parameter data is limited to what you can stuff into the Request line. (GET參數資料量有限制)
- When you use GET, the parameter data shows up in the browser's input bar. (GET參數內容會出現在網址列)
- GET requests can be bookmarked; POST requests cannot. (GET可加入書籤)
- GET is meant to be used for getting things, whereas POST is meant to be used for sending data to be processed. (use the data from the POST body to change something on the server.)

jQuery: AJAX$_1$

- AJAX is the art of exchanging data with a server, and update parts of a web page - without reloading the whole page.

Method	Description
$.ajax()	Performs an async AJAX request
$.ajaxPrefilter()	Handle custom Ajax options or modify existing options before each request is sent and before they are processed by $.ajax()
$.ajaxSetup()	Sets the default values for future AJAX requests
$.ajaxTransport()	Creates an object that handles the actual transmission of Ajax data
$.get()	Loads data from a server using an AJAX HTTP GET request
$.getJSON()	Loads JSON-encoded data from a server using a HTTP GET request
$.parseJSON()	Deprecated in version 3.0, use JSON.parse() instead. Takes a well-formed JSON string and returns the resulting JavaScript value
$.getScript()	Loads (and executes) a JavaScript from a server using an AJAX HTTP GET request
$.param()	Creates a serialized representation of an array or object (can be used as URL query string for AJAX requests)
$.post()	Loads data from a server using an AJAX HTTP POST request

jQuery: AJAX2

- $.getJSON(): Loads JSON-encoded data from a server using a HTTP GET request (JSON會自動轉成JavaScript物件)

```
$.getJSON(url, func(data))
```

Parameter	Description

url	Specifies the url to send the request to.
	JSON檔案名稱(如果是自己撰寫的或下載回來的JSON)
	或路徑(如果要直接連結網路上的資源)

func(data)	Specifies the function to run if the request succeeds The parameter “*data*” contains the data returned from the server. 更新畫面之function

jQuery: AJAX$_3$

```
$(document).ready(function(){
    $("button").click(function(){
        $.getJSON("demo_ajax_json.js", function(result){
            $.each(result, function(i, field){
                $("div").append(field + " ");
            });
        });
    });
});
```

each: https://www.w3schools.com/jquery/misc_each.asp

getJSON: https://www.w3schools.com/jquery/tryit.asp?filename=tryjquery_ajax_getjson

jQuery: AJAX4

- CORS Problem
  - Cross-origin resource sharing (CORS) is a mechanism that allows restricted resources (e.g. fonts) on a web page to be requested from another domain outside the domain from which the first resource was served.
  - Chrome denied the access to local files using AJAX due to CORS
    - 但若正式發佈至web server則無此問題，只是無法以Chrome測試
  - Solution: using JSON hosting service, such as GitHub or JSONBIN.io.

Ajax Using Pure JavaScript$_2$

```
req.open("GET", url, true);
```

- **"Get":** The first parameter tells JavaScript whether to submit the request to the server using HTTP GET or HTTP POST.
- **url:** The second parameter is the URL we're passing to the server. We created that URL earlier in the method.
- **true:** The last parameter determines whether or not the call is asynchronous (非同步呼叫).
  - When this parameter is true, the request is sent asynchronously.
  - When designing Ajax applications, you always want to set the asynchronous flag to TRue; basically, it means "don't stop anything, just notify me when the data comes back."

Ajax Using Pure JavaScript3

```
req.onreadystatechange = function() {…};
```

- It tells the *req* object to call the callback function whenever a state transition occurs.
- What Is a Callback (回呼函式)?
  - A callback is any executable code that is passed as an argument to other code, which is expected to call back (execute) the argument at a given time.
  - The JavaScript code generates a request that is sent to a servlet.
  - When the server (servlet or JSP) returns with the information, the callback function is invoked; in turn, the callback function can display the new information to the user.

Ajax Using Pure JavaScript4

```
req.send();
```

- It sends the request.
- 以POST/PUT傳送時,這裡可以輸入字串(query string)、資料串流、XML或JSON資料等。
  - 一般都只會用query string的方式送資料。
  - 複雜的request可使用XML或JSON格式。

Fetch

- The Fetch API provides a JavaScript interface for accessing and manipulating parts of the **HTTP pipeline**, such as requests and responses. (From ES6)
- It provides a global **fetch()** method that provides an easy, logical way to fetch resources asynchronously across the network.
- This kind of functionality was previously achieved using XMLHttpRequest.

https://developer.mozilla.org/en-US/docs/Web/API/Fetch_API/Using_Fetch

jQuery and Fetch

- The fetch specification differs from jQuery.ajax():
  - The **Promise** returned from fetch() won’t reject on HTTP error status even if the response is an HTTP 404 or 500.
    - It will resolve normally (with ok status set to false), and it will only reject on network failure or if anything prevented the request from completing.
- fetch won't receive cross-site cookies.
- fetch won’t send cookies, unless you set the credentials init option.

What is Promise?

- The Promise object represents the eventual completion (or failure) of an asynchronous operation, and its resulting value.
- A Promise is in one of these states:
  - pending: initial state, neither fulfilled nor rejected.
  - fulfilled: meaning that the operation completed successfully.
  - rejected: meaning that the operation failed.

https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Promise

Promise Methods

- Promise.prototype.then()
  - Appends fulfillment and rejection handlers to the promise, and returns a new promise resolving to the return value of the called handler.
- Promise.prototype.catch()
  - Appends a rejection handler callback to the promise, and returns a new promise resolving to the return value of the callback if it is called.
- Promise.prototype.finally()
  - The handler is called when the promise is settled, whether fulfilled or rejected.

Basic Use of Fetch

- □ The simplest use of fetch() takes one argument — the path to the resource you want to fetch — and returns a promise containing the response (a Response object).

```
fetch(url)
     .then(res => res.json())
     .then(response => display(city, response.temperature))
     .catch(error => alert("Fail"));
```

Advanced Use of Fetch

- The fetch() method can optionally accept a second parameter, an init object that allows you to control a number of different settings.

```
function showTime2(url = '/time') {
    let data = { time: new Date() };

    fetch(url, {
            method: 'POST', // or 'PUT'
            body: JSON.stringify(data),
            headers: new Headers({
                'Content-Type': 'application/json'
            })
        })
        .then(res => res.json())
        .catch(error => alert("Fail"))
        .then(response => showAlert(response.time));
}
```

Async & Await[1]

- More recent additions to the JavaScript language are async functions and the await keyword, part of the so-called ECMAScript 2017 JavaScript edition.
  - These features basically act as syntactic sugar on top of promises, making asynchronous code easier to write and to read afterwards.

Async & Await[2]

- An **async** function is a function that knows how to expect the possibility of the await keyword being used to invoke asynchronous code.
- **await** can be put in front of any async promise-based function to pause your code on that line until the promise fulfills, then return the resulting value.

Removing “then” by async & await

```
fetch(url)
     .then(res => res.json())
     .then(response => display(city, response.temperature))
     .catch(error => alert("Fail"));
```

```
async function XXX {
   let res = await fetch(url);
   let response = await res.json();
   display(city, response.temperature);
```

DOM and CSS

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jQuery: Get Content and Attribute

- Get Content - text(), html(), and val()
  - Three simple, but useful, jQuery methods for DOM manipulation are:
    - text() - Sets or returns the text content of selected elements
    - html() - Sets or returns the content of selected elements (including HTML markup)
    - val() - Sets or returns the value of form fields
- Get Attributes - attr()
  - The jQuery attr() method is used to get attribute values.

http://www.w3schools.com/jquery/jquery_dom_get.asp

jQuery: Set Content

- Set Content – again text(), html(), and val()
- A Callback Function for text(), html(), and val()
  - The callback function has two parameters:
    - the index of the current element in the list of elements selected and
    - the original (old) value.

http://www.w3schools.com/jquery/jquery_dom_set.asp

jQuery: Set Attribute

- Set Attribute - attr()
  - The jQuery attr() method is also used to set/change attribute values.
- Example

```
$("button").click(function(){
   $("#w3s").attr("href","http://www.w3schools.com/jquery");
});
```

- A Callback Function for attr()
  - The callback function has two parameters:
    - the index of the current element in the list of elements selected
    - the original (old) attribute value

http://www.w3schools.com/jquery/jquery_dom_set.asp

jQuery Traversing Methods

- □ The children() method returns all direct children of the selected element.
- □ The parent() method returns the direct parent element of the selected element.
- □ The each() method specifies a function to run for each matched element.

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

jQuery: Get and Set CSS

- jQuery Manipulating CSS
  - jQuery has several methods for CSS manipulation.
    - addClass() - Adds one or more classes to the selected elements
    - removeClass() - Removes one or more classes from the selected elements
    - toggleClass() - Toggles between adding/removing classes from the selected elements
    - css() - Sets or returns the style attribute

Examples

```
.important
{
font-weight:bold;
font-size:xx-large;
}

.blue
{
color:blue;
}
```

jQuery addClass() Method

```
$("button").click(function(){
  $("h1,h2,p").addClass("blue");
  $("div").addClass("important");
});
```

jQuery removeClass() Method

```
$("button").click(function(){
  $("h1,h2,p").removeClass("blue");
});
```

jQuery toggleClass() Method

```
$("button").click(function(){
  $("h1,h2,p").toggleClass("blue");
});
```

http://www.w3schools.com/jquery/jquery_css_classes.asp

jQuery: CSS Method

- jQuery css() Method
  - The css() method sets or returns one or more style properties for the selected elements.
- To return the value of a specified CSS property, use the following syntax:

```
css("propertyname");
```

  - Example

```
$("p").css("background-color");
```

- To set a specified CSS property, use the following syntax:

```
css("propertyname","value");
```

  - Example

```
$("p").css("background-color","yellow");
```

http://www.w3schools.com/jquery/jquery_css.asp

jQuery scrollTop() Method

- The scrollTop() method sets or returns the vertical scrollbar position for the selected elements.
  - When the scrollbar is on the top, the position is 0.
  - When used to return the position:
    - This method returns the vertical position of the scrollbar for the FIRST matched element.
  - When used to set the position:
    - This method sets the vertical position of the scrollbar for ALL matched elements.

https://www.w3schools.com/code/tryit.asp?filename=FS1M7MM53QGN

Effects

SOSEL
Service-Oriented Software Engineering Lab

jQuery Effect: Hide and Show

- jQuery hide() and show()
  - With jQuery, you can hide and show HTML elements with the hide() and show() methods:

```
$("#hide").click(function(){
  $("p").hide();
});

$("#show").click(function(){
  $("p").show();
});
```

```
$("#hide").click(function(){
  $("p").hide(100);
});
```

http://www.w3schools.com/jquery/jquery_hide_show.asp

jQuery Effect: Toggle

- jQuery toggle()
  - With jQuery, you can toggle between the hide() and show() methods with the toggle() method.

```
$("#hide").click(function(){
  $("p").toggle();
});
```

https://www.w3schools.com/jquery/tryit.asp?filename=tryjquery_toggle

jQuery Effect: Fade

- jQuery fadeIn() Method (淡入)
  - The jQuery fadeIn() method is used to fade in a hidden element.
- jQuery fadeOut() Method (淡出)
  - The jQuery fadeOut() method is used to fade out a visible element.
- jQuery fadeToggle() Method
  - The jQuery fadeToggle() method toggles between the fadeIn() and fadeOut() methods.
- jQuery fadeTo() Method
  - The jQuery fadeTo() method allows fading to a given opacity (value between 0 and 1). (特別的淡出功能)

http://www.w3schools.com/jquery/jquery_fade.asp

jQuery Effect: Sliding

- jQuery slideDown() Method
  - The jQuery slideDown() method is used to slide down an element.
- jQuery slideUp() Method
  - The jQuery slideUp() method is used to slide up an element.
- jQuery slideToggle() Method
  - The jQuery slideToggle() method toggles between the slideDown() and slideUp() methods.

http://www.w3schools.com/jquery/jquery_slide.asp

jQuery Effect: Animation1

- The animate() Method
  - The jQuery animate() method is used to create custom animations.
- Syntax

```
$(selector).animate({params},speed,callback);
```

- Example

```
$("button").click(function(){
  $("div").animate({left:'250px'});
});
```

http://www.w3schools.com/jquery/jquery_animate.asp

jQuery Effect: Animation2

- Only numeric values can be animated (like "margin:30px").
- String values cannot be animated (like "background-color:red"), except for the strings "show", "hide" and "toggle".
  - These values allow hiding and showing the animated element.

jQuery Effect: Stop

- jQuery stop() Method
  - The jQuery stop() method is used to stop an animation or effect before it is finished.
  - The stop() method works for all jQuery effect functions, including sliding, fading and custom animations.
- Syntax

```
$(selector).stop(stopAll,goToEnd);
```

  - The optional stopAll parameter specifies whether also the animation queue should be cleared or not. Default is false.
  - The optional goToEnd parameter specifies whether or not to complete the current animation immediately. Default is false.

http://www.w3schools.com/jquery/jquery_stop.asp

jQuery Callback Function

- A callback function is executed after the current effect is 100% finished.
- Typical syntax:

```
$(selector).hide(speed,callback);
```

- Example

```
$("button").click(function(){
  $("p").hide("slow",function(){
        alert("The paragraph is now hidden");
  });
});
```

http://www.w3schools.com/jquery/jquery_callback.asp

jQuery Method Chaining

- □ With jQuery, you can chain together actions/methods.
- □ Chaining allows us to run multiple jQuery methods (on the same element) within a single statement.
- □ Example

```
$("#p1").css("color","red").slideUp(2000).slideDown(2000);
```

http://www.w3schools.com/jquery/jquery_chaining.asp

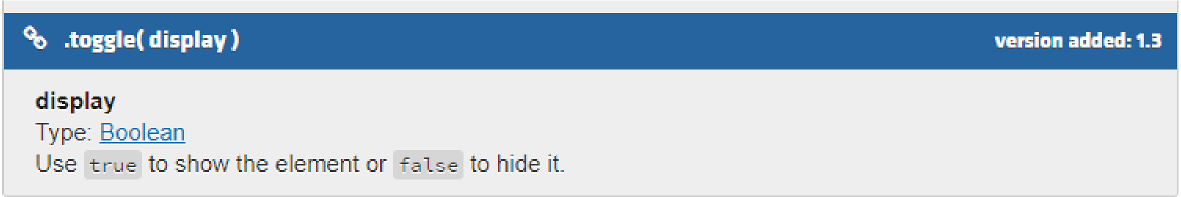
jQuery: Filters

- Use jQuery to filter/search for specific elements.

```
<script>
$(document).ready(function(){
  $("#myInput").on("keyup", function() {
    var value = $(this).val().toLowerCase();
    $("#myTable tr").filter(function() {
      $(this).toggle($(this).text().toLowerCase().indexOf(value) > -1)
    });
  });
});
</script>
```

https://www.w3schools.com/jquery/tryit.asp?filename=tryjquery_filters_table

http://api.jquery.com/toggle/



.toggle(display) version added: 1.3

display

Type: Boolean

Use `true` to show the element or `false` to hide it.

Case Study 1 - Image Viewer

□ An example of click() and attr().

```
//jquery-case-1-image-viewer
$(function () {
    // 點按小圖時
    $("a").click(function () {
        // 將a元素的href屬性值傳給大圖預覽器的src屬性
        $("figure img").attr("src", $(this).attr("href"));

        return false; //避免真的超連結
    });
});
```

https://www.w3schools.com/tags/tag_figure.asp

Case Study 2 – Dropdown Menu

- An example of children(), hover(), and slideToggle()

```
//jquery-case-2-menu
$(function(){
    // 滑鼠移入#navi下一層的li元素
    $("#navi").children("li").hover(function(){
        // 顯示下層選單
        $(this).children("ul").stop().slideToggle(100);
    });
});
```

Case Study 3 - Filter

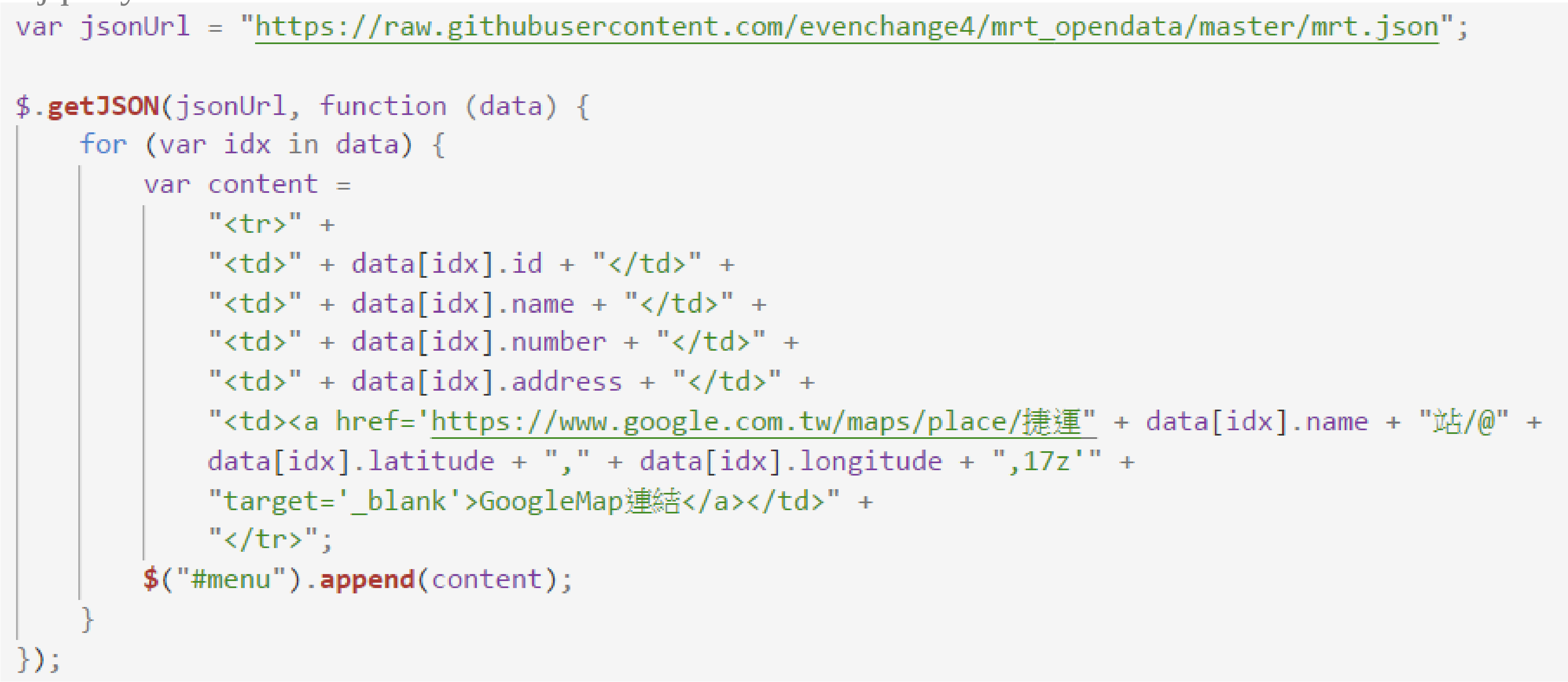
- An example of each(), hasClass(), and animate()

```
$("button").click(function () {//jquery-case-3-filter
    // 取得value屬性值
    var target = $(this).attr("value");

    // 比對所有li元素
    $("#list li").each(function () {
        // 將所有li元素隱藏不顯示
        $(this).animate({ "opacity": 0 }, 300, function () {
            $(this).hide();

            // 比對是否符合篩選條件
            if ($(this).hasClass(target) || target == "all") {
                // 顯示符合篩選條件的元素
                $(this).show();
                $(this).animate({ "opacity": 1 }, 300);
            }
        });
    });
});
```

Case Study 4 – MRT Viewer

- □ An example of getJSON() and append()

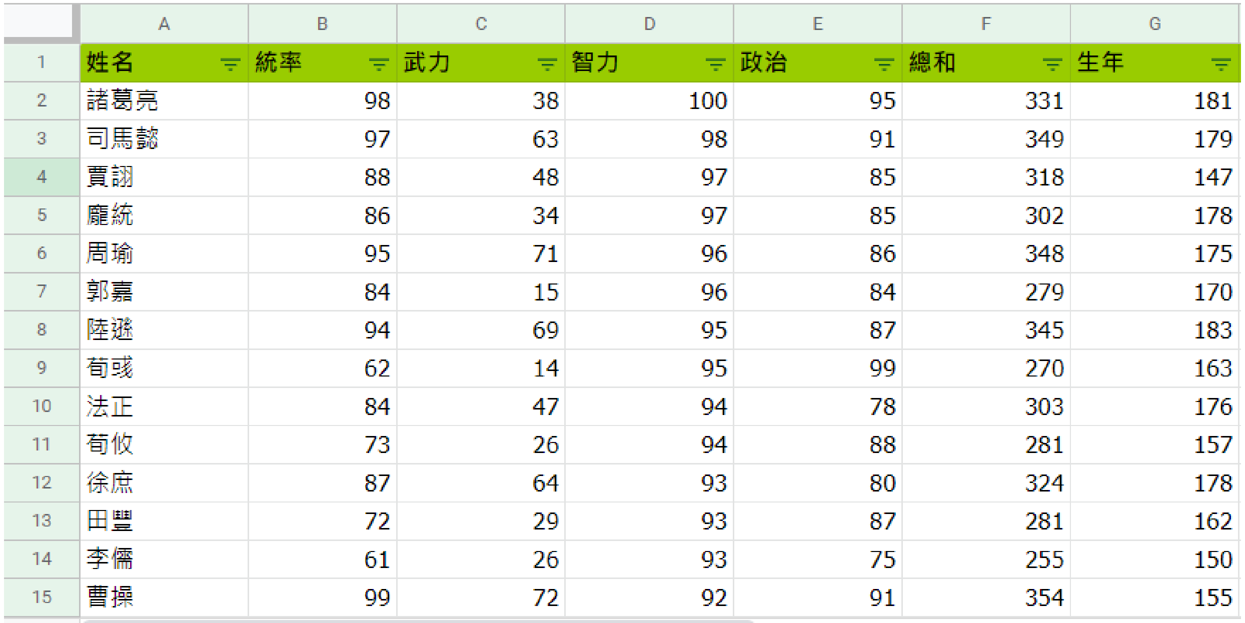
//jquery-case-4-mrt-viewer



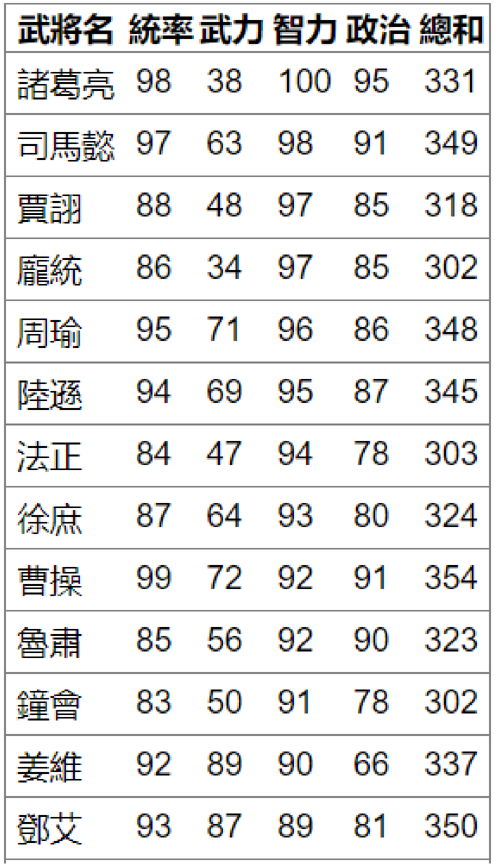
```
var jsonUrl = "https://raw.githubusercontent.com/evenchange4/mrt_opendata/master/mrt.json";

$.getJSON(jsonUrl, function (data) {
    for (var idx in data) {
        var content =
            "<tr>" +
            "<td>" + data[idx].id + "</td>" +
            "<td>" + data[idx].name + "</td>" +
            "<td>" + data[idx].number + "</td>" +
            "<td>" + data[idx].address + "</td>" +
            "<td><a href='https://www.google.com.tw/maps/place/捷運" + data[idx].name + "站/@" +
            data[idx].latitude + "," + data[idx].longitude + ",17z'" +
            "target='_blank'>GoogleMap連結</a></td>" +
            "</tr>";
        $("#menu").append(content);
    }
});
```

Supplemental:
Using Google Spreadsheet as the Backend

- 請參考google-spreadsheet.html



	A	B	C	D	E	F	G
1	姓名	統率	武力	智力	政治	總和	生年
2	諸葛亮	98	38	100	95	331	181
3	司馬懿	97	63	98	91	349	179
4	賈詡	88	48	97	85	318	147
5	龐統	86	34	97	85	302	178
6	周瑜	95	71	96	86	348	175
7	郭嘉	84	15	96	84	279	170
8	陸遜	94	69	95	87	345	183
9	荀彧	62	14	95	99	270	163
10	法正	84	47	94	78	303	176
11	荀攸	73	26	94	88	281	157
12	徐庶	87	64	93	80	324	178
13	田豐	72	29	93	87	281	162
14	李儒	61	26	93	75	255	150
15	曹操	99	72	92	91	354	155



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徐庶	87	64	93	80	324
曹操	99	72	92	91	354
魯肅	85	56	92	90	323
鍾會	83	50	91	78	302
姜維	92	89	90	66	337
鄧艾	93	87	89	81	350

Resources

- □ http://api.jquery.com/
- □ https://learn.jquery.com/
- □ http://try.jquery.com/
- □ http://www.w3schools.com/jquery/
- □ https://www.pluralsight.com/courses/code-school-try-jquery
- □ https://www.manning.com/books/jquery-in-action
- □ http://www.books.com.tw/products/0010738110
- □ https://www.openedu.tw/course.jsp?id=657

Any Question?