Web Programming Spring 2021 #9

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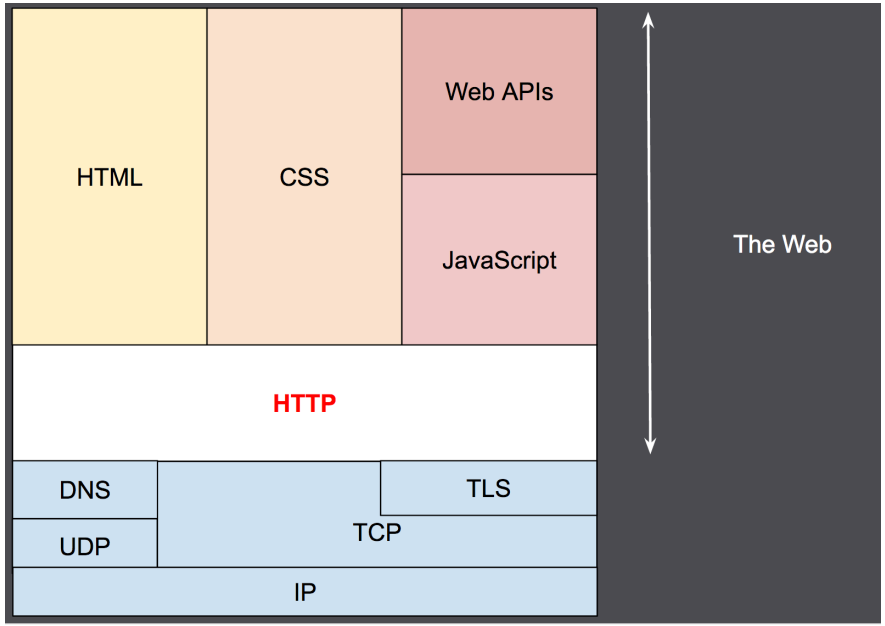
Topics

- The concepts of Web Services
- Web data protocols
  - HTTP, WebSocket, WebRTC
  - HTML, CSS
- **Web JavaScript programming**
- Cookies and sessions
- Web Frontend frameworks
- Web Backend frameworks
- RESTful API design

Web data protocols

- HTTP, HTTPS
- Web APIs
- HTML, HTML5
- CSS, CSS3
- **JavaScript**
- Conclusion



JavaScript

- Introduction
- Basics
- Document Object Model
- Browser Object Model
- jQuery & AJAX
- JavaScript ES6
- Google Analytics

jQuery

- jQuery Introduction
- jQuery BASIC
- jQuery EFFECTS
- jQuery MANIPULATION
- jQuery Ajax

jQuery

- jQuery是最受歡迎的JavaScript函式庫
- 主要簡化
  - document.getElementById()
  - document.getElementsByTagName()
  - document.getElementsByClassName()
  - 取用節點時麻煩操作
    - 元素的動畫

WHY

- ul li

- `document.getElementById()`
- `document.getElementsByTagName()`
- `document.getElementsByClassName()`

```
var ul_collect = document.getElementsByTagName("ul");
var li_arr = [];
for(var i = 0; i < ul_collect.length; i++){
   li_collect = ul_collect[i].getElementsByTagName("li");
   for(var j = 0; j < li_collect.length; j++){
      li_arr.push(li_collect[j]);
   }
}
```

jQuery Example

- ul li
- 只要一行 XD

- `document.getElementById()`
- `document.getElementsByTagName()`
- `document.getElementsByClassName()`

```
$("ul li");
```

Import jQuery by CDN

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Simple HTML Document</title>
    <script src="https://code.jquery.com/jquery-3.5.1.min.js"></script>
</head>
<body>
    <h1>Hello, World!</h1>
</body>
</html>
```

jQuery Syntax

- Starts with the dollar sign ($) and ends with a semicolon (;)

```
<script>
    $(document).ready(function(){
        // Some code to be executed...
        alert("Hello World!");
    });
</script>
```

jQuery Selectors

- Selecting Elements by ID

```
<script>
$(document).ready(function(){
    // Highlight element with id mark
    $("#mark").css("background", "yellow");
});
</script>
```

select and highlight an element having the ID attribute `id="mark"`

jQuery Selectors

- Selecting Elements by Class Name

```
<script>
$(document).ready(function(){
    // Highlight elements with class mark
    $(".mark").css("background", "yellow");
});
</script>
```

select and highlight the elements having the class attribute **class**="mark"

jQuery Selectors

- Selecting Elements by Name

```
<script>
$(document).ready(function(){
    // Highlight paragraph <p> elements
    $("p").css("background", "yellow");
});
</script>
```

select and highlight the the <p> elements

JQUERY MANIPULATION

- jQuery Getters & Setter
- jQuery Insert Content
- jQuery Remove
  - Elements & Attribute
  - CSS Classes
- jQuery Dimensions

jQuery Getters & Setter

```
<script>
$(document).ready(function(){
    // Get combined text contents of all paragraphs
    $(".btn-one").click(function(){
        var str = $("p").text();
        alert(str);
    });
    // Set text contents of the first paragraph
    $(".btn-two").click(function(){
        $("p").text("This is another demo text.");
    });
});
</script>
```

Getters

Setters

jQuery Insert New Content

```
<script>
$(document).ready(function(){
    // Append all paragraphs
    $("p").append(' <a href="#">read more...</a>');

    // Append an element with ID container
    $("button").click(function(){
       $("#container").append("This is demo text.");
    });
});
</script>
```

`prepend()`, `html()`, `text()`, `before()`, `after()`, `wrap()`

jQuery Remove

```
<script>
$(document).ready(function(){
    // Removes paragraphs with class "hint"
from DOM
    $("button").click(function(){
        $("p.hint").remove();
    });
});
</script>
```

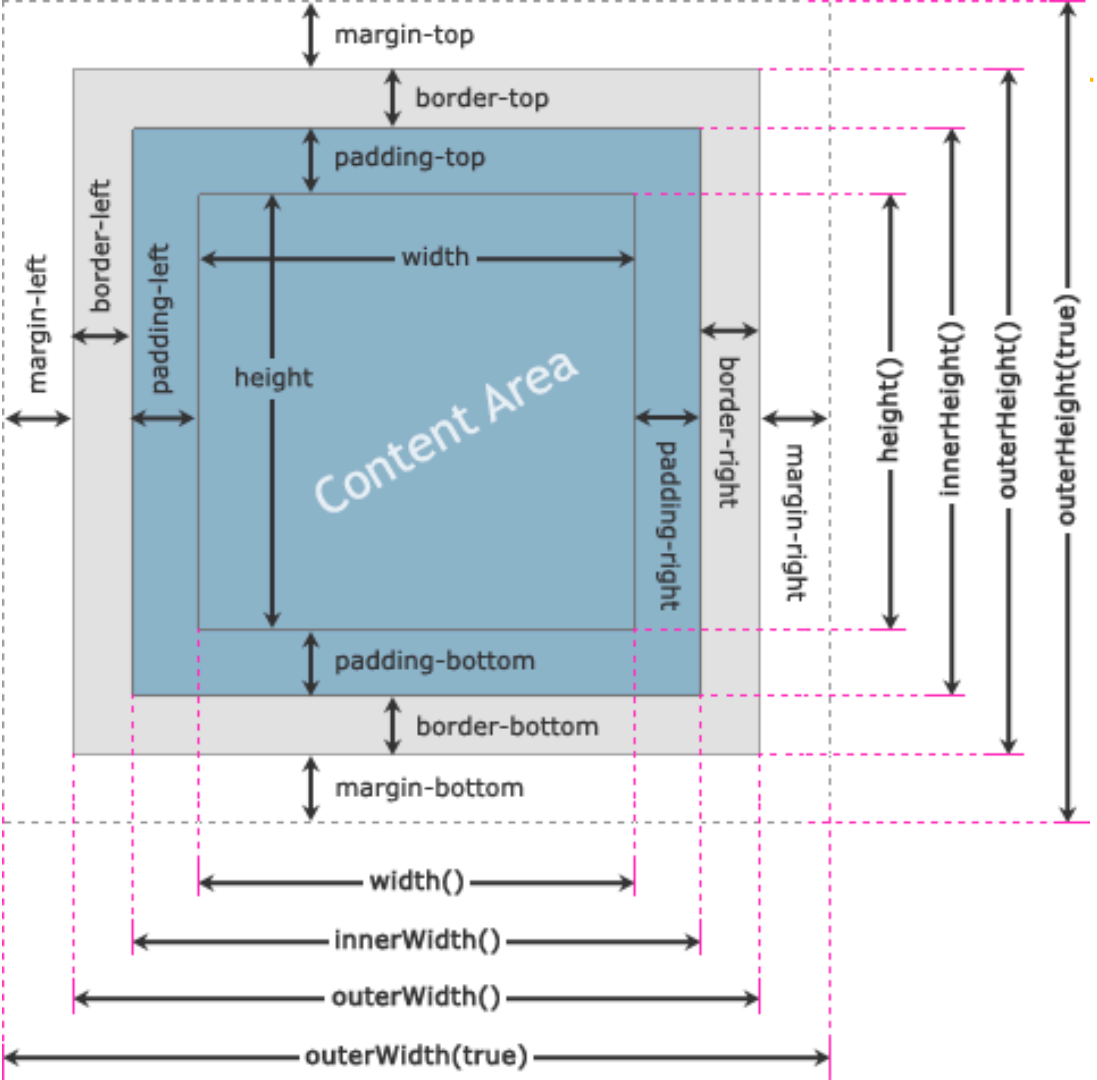
jQuery removeAttr

```
<script>
$(document).ready(function(){
    // Removes the hyperlink's href attribute
    $("button").click(function(){
        $("a").removeAttr("href");
    });
});
</script>
```

jQuery Add and Remove CSS Classes

- addClass() Method
- removeClass() Method
- toggleClass() Method (有就刪 沒有就加)

```
<script>
$(document).ready(function(){
    $("button").click(function(){
        $("h1").addClass("highlight");
    });
});
</script>
```



jQuery Dimensions

`height()`, `innerHeight()`, `outerHeight()`, `width()`, `innerWidth()` and `outerWidth()` to get and set the CSS dimensions for the elements

quiz#1

```
<html>
<head>
 <title>My Document</title>
 <script type="text/javascript">
 function change() {
  var header = document.getElementsByTagName("H1").item(0);
  header.innerHTML = "CSIE@CGU";

  var para = document.getElementsByTagName("P").item(0);
  para.innerHTML = "怎麼那麼棒！！.";
 }
 </script>
</head>
<body>
 <input type="button" value="Change this document." onclick="change()">
 <h1>CGU</h1>
 <p>好棒棒</p>
</body>
</head>
</html>
```

線上練習 quiz#1.3

https://codepen.io/pen/

1. document.getElementById 換成 **jQuery**
2. Commit **quiz1.html** and push to quiz repository

jQuery Events

- Mouse Events
  - click(), dblclick(), hover()
- Keyboard Events
  - keypress(), keydown(), keyup()
- Form Events
  - change(), submit()
- Document Events
  - ready(), resize(), scroll()

The click() Method

```
<script>
$(document).ready(function(){
    $("p").click(function(){
        $(this).slideUp();
    });
});
</script>
```

滑動方式隱藏被選元素

The submit() Method

```
<script>
$(document).ready(function(){
    $("form").submit(function(event){
        var regex = /^[a-zA-Z]+$/;
        var currentValue = $("#firstName").val();
        if(regex.test(currentValue) == false){
            $("#result").html('<p class="error">bug!</p>').show().fadeOut(1000);
            // Preventing form submission
            event.preventDefault(); // 防止跳轉
        }
    });
});
</script>
```

The scroll() Method

```
<script>
$(document).ready(function(){
    $(window).scroll(function() {
        $("p").show().fadeOut("slow");
    });
});
</script>
```

Scroll Happened!

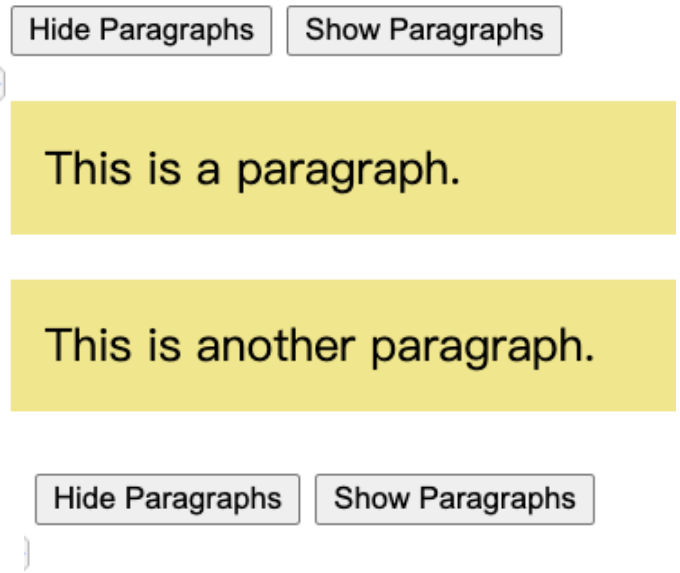
Scroll the viewport.

JQUERY EFFECTS

- jQuery Show/Hide
- jQuery Fade (淡出)
- jQuery Slide (收合)
- jQuery Animation
- jQuery Stop
- jQuery Chaining

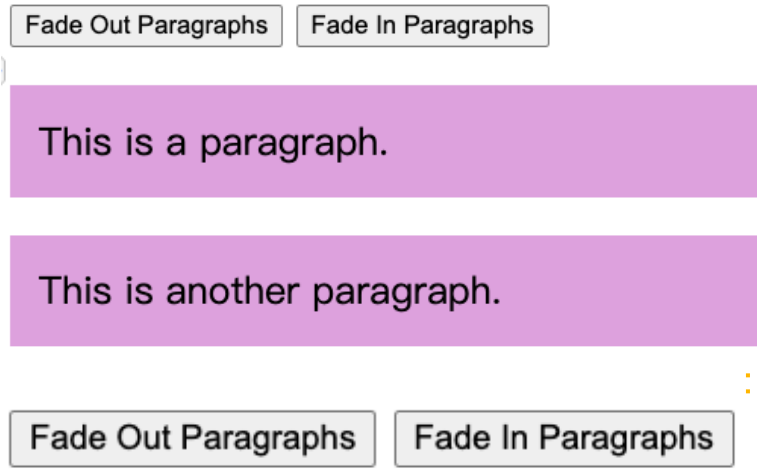
jQuery show() and hide() Methods

```
<script>
$(document).ready(function(){
    // Hide displayed paragraphs
    $(".hide-btn").click(function(){
        $("p").hide();
    });

    // Show hidden paragraphs
    $(".show-btn").click(function(){
        $("p").show();
    });
});
</script>
```



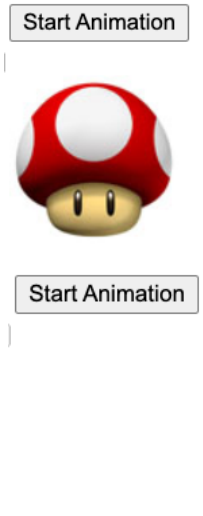
Fading Effects

```
<script>
$(document).ready(function(){
    // Fading out displayed paragraphs
    $(".out-btn").click(function(){
        $("p").fadeOut();
    });

    // Fading in hidden paragraphs
    $(".in-btn").click(function(){
        $("p").fadeIn();
    });
});
</script>
```



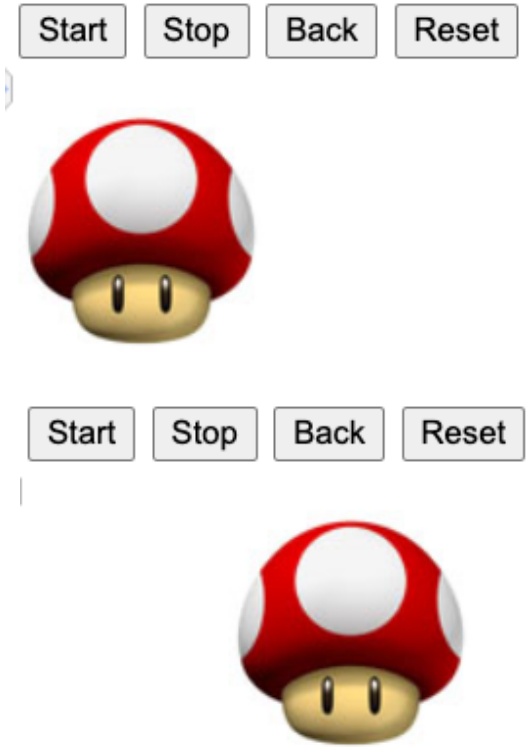
jQuery Animation Example

```
<script>
$(document).ready(function(){
    $("button").click(function(){
        $("img").animate({
            left: 300
        });
    });
});
</script>
```



jQuery Animation stop

```
<script>
$(document).ready(function(){
    // Start animation
    $(".start-btn").click(function(){
      $("img").animate({left: "+=150px"}, 2000);
    });

    // Stop running animation
    $(".stop-btn").click(function(){
      $("img").stop();
    });

    // Start animation in the opposite direction
    $(".back-btn").click(function(){
      $("img").animate({left: "-=150px"}, 2000);
    });

    // Reset to default
    $(".reset-btn").click(function(){
      $("img").animate({left: "0"}, "fast");
    });
});
</script>
```



jQuery Chaining

```
<script>
$(document).ready(function(){
    $("button").click(function(){
        $("p").animate({width: “100%”})
              .animate({fontSize: “46px"})
              .animate({borderWidth: 30});
    });
});
</script>
```

jQuery Chaining

Start Chaining Reset

Start Chaining Reset

Start Chaining Reset

jQuery callback function

- 事件被觸發 Event fired -> 處理事件 Event Handler

```
<script>
$(document).ready(function(){
    $("button").click(function(){
        $("p").slideToggle("slow", function(){
            // Code to be executed once effect is complete
            alert("The slide toggle effect has completed.");
        });
    });
});
</script>
```

callback

jQuery callback XD

```
<script>
doSomething1(function(result) {

  doSomething2(result, function(newResult) {

    doSomething3(newResult, function(finalResult) {

      console.log('Got the final result: ' + finalResult);

    }, failureCallback);

  }, failureCallback);

}, failureCallback);
</script>
```

jQuery callback hell

```
function hell(win) {
 // for listener purpose
 return function() {
   loadLink(win, REMOTE_SRC+'/assets/css/style.css', function() {
     loadLink(win, REMOTE_SRC+'/lib/async.js', function() {
       loadLink(win, REMOTE_SRC+'/lib/easyXDM.js', function() {
         loadLink(win, REMOTE_SRC+'/lib/json2.js', function() {
           loadLink(win, REMOTE_SRC+'/lib/underscode.min.js', function() {
             loadLink(win, REMOTE_SRC+'/lib/backbone.min.js', function() {
               loadLink(win, REMOTE_SRC+'/dev/base_dev.js', function() {
                 loadLink(win, REMOTE_SRC+'/assets/js/deps.js', function() {
                   loadLink(win, REMOTE_SRC+'/src/' + win.loader_path + '/loader.js', function() {
                     async.eachSeries(SCRIPTS, function(src, callback) {
                       loadScript(win, BASE_URL+src, callback);
                     });
                   });
                 });
               });
             });
           });
         });
       });
     });
   });
 };
}
```

AJAX
他來了!!

JavaScript ES6

- ECMAScript 2015
- New Features in ES6
  - let, const
  - Arrow Functions
  - For/Of Loop
  - Promises

Arrow Functions

```
// ES5
var x = function(x, y) {
   return x * y;
}

// ES6
const x = (x, y) => { return x * y };
```

For/Of Loop

```
var cars = ["BMW", "Volvo", "Mini"];
var x;

for (x of cars) {
  document.write(x + "<br >");
}
```

Looping over a String

```
var txt = "JavaScript";
var x;

for (x of txt) {
  document.write(x + "<br >");
}
```

Conclusion

- jQuery Introduction
- jQuery BASIC
- jQuery EFFECTS
- jQuery MANIPULATION
- jQuery Ajax
  - To be continued

Google Analytics

- 現在是網際網路上使用最廣泛的網路分析服務
  - https://analytics.google.com
- 基本版本供免費使用
- 記錄網站的流量狀況、瀏覽情形和商品購買

Google Analytics 安裝

申請設定GA

```
<!-- Global site tag (gtag.js) - Google Analytics -->
<script async src="https://www.googletagmanager.com/gtag/js?
id=GA_MEASUREMENT_ID"></script>
<script>
  window.dataLayer = window.dataLayer || [];
  function gtag(){dataLayer.push(arguments);}
  gtag('js', new Date());
  gtag('config', 'GA_MEASUREMENT_ID');
</script>
```

剪貼到網站

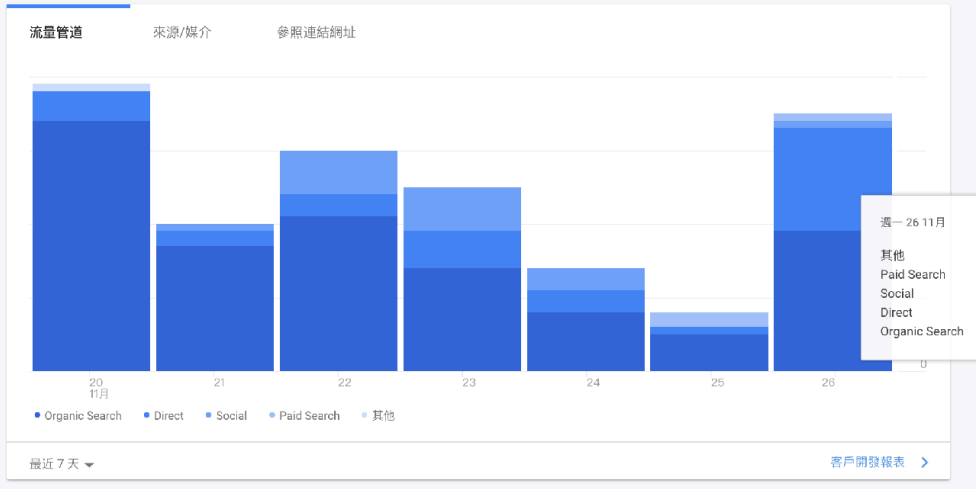
Google “Google Analytics 教學”

Google Analytics 功能

- 目標對象(Audience)
  - 訪客長什麼樣子
- 客戶開發(Acquisition)
  - 流量來源
- 行為(Behavior)
  - 訪客體驗
- 轉換(Conversion)
  - 電子商務

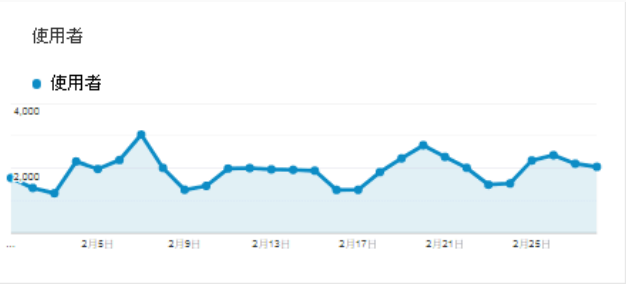
GA 流量管道

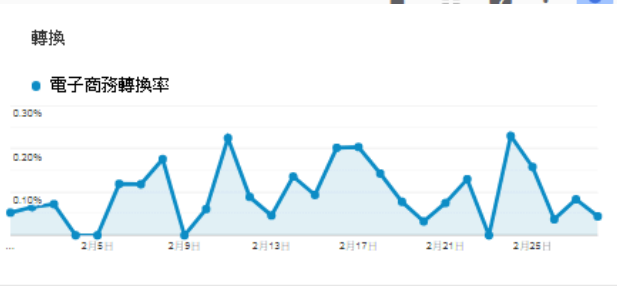
- 推薦(Referral)
- 直接(Direct)
- 隨機搜尋(Organic)
- 付費搜尋(Paid Search)
- 社群(Social)
- 其他(Other)
  - 電子郵件(Email), 多媒體(Display)



	媒介	來源		
1.	社交	YouTube	3	37.50%
2.	隨機	google	2	25.00%
3.	參照連結網址	baidu.com	1	12.50%
4.	社交	Facebook	1	12.50%
5.	email	newsletter	1	12.50%

搜尋報表和說明
首頁
自訂
報表
即時
目標對象
客戶開發
總覽
所有流量
Google Ads
Search Console
社交
廣告活動
行為
轉換
探索
管理





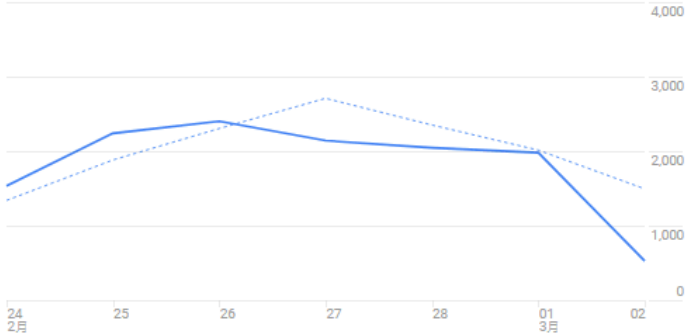
	客戶開發			行為			轉換		
	使用者	新使用者	工作階段	跳出率	單次工作階段頁數	平均工作階段時間長度	電子商務轉換率	交易次數	收益
	47,604	42,593	61,107	40.75%	4.38	00:02:54	0.09%	57	US$3,263.94
1 Organic Search	24,964			45.51%			0.09%		
2 Direct	8,501			30.82%			0.14%		
3 Referral	6,865			27.85%			0.00%		
4 Paid Search	2,945			37.34%			0.30%		
5 Social	2,509			58.25%			0.00%		
6 Affiliates	2,500			50.46%			0.07%		
7 Display	856			77.12%			0.00%		
8 (Other)	743			30.96%			0.12%		

搜尋報表和說明
首頁
自訂
報表
即時
目標對象
客戶開發
行為
轉換
探索
管理

Google Analytics (分析) 首頁

使用者	收益	轉換率	工作階段
1.2萬	$429.48	0.1%	1.5萬
↓9.8%	↓62.8%	↑10%	↓9.1%

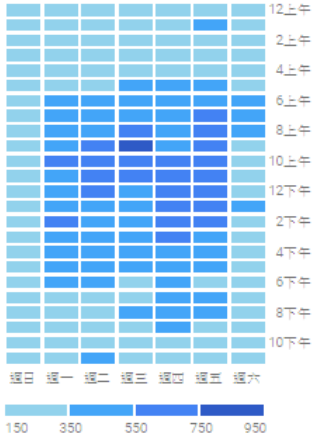
相較於過去 7 天



最近 7 天 目標對象總覽 >

您的使用者會在哪些時段造訪？

按時段劃分的使用者



最近 30 天

當下的活躍使用者

17

每分鐘瀏覽量

熱門活躍網頁	活躍使用者
/home	7
/google+redesi...+brand/youtube	3
/Google+Redesi...t+Stand+Black	1
/Google+Redesi...+Blue+2XL.axd	1
/Google+Redes...+Hoodie+Black	1

即時報表 >

您如何開發使用者？

流量管道 來源/媒介 參照連結網址

您的使用者位於哪些地區？

依國家/地區劃分的工作階段

Landing Page
Starting pages
16K sessions, 14K drop-offs
1st Interaction
2.08K sessions, 1.18K drop-offs
/
4.36K
/optin-popu...forms.html
1.09K
/7-awesome-...esses.html
785
/blog-post-...-tips.html
495
/50-filters...clean.html
392
...
8.92K
/
8K
/optin-popu...forms.html
1.09K
/7-awesome-...esses.html
794
/blog-post-...-tips.html
508
/50-filters...clean.html
393
(+81 more pages)
5.26K
/blog-post-...-tips.html
372
/choosing-b...iness.html
205
/
190
/portfolio
152
/create-pro...ntent.html
148
(+43 more pages)
1.02K

Site Speed

- Browser
- Country / Territory
- Page

	Browser	Avg. Page Load Time (sec)
1.	Firefox	15.17
2.	Chrome	19.27
3.	Internet Explorer	20.30
4.	Android Browser	83.62

view full report

Analytics (分析)
所有帳戶 > 電視線上看
所有網站資料
搜尋報表和說明
首頁
自訂
報表
即時
目標對象
客戶開發
行為
總覽
行為流程
網站內容
網站速度
站內搜尋
總覽
使用情況
搜尋字詞
搜尋網頁
事件
發布商
實驗
歸因 測試版
探索
管理
搜尋字詞
不重複搜尋總數
結果網頁瀏覽量/搜尋
搜尋離開 %
1.22
資料檢視平均值: 1.22 (0.00%)
23.83%
資料檢視平均值: 23.83% (0.00%)
1. 想見你 1.10 30.49%
2. 中視 1.45 19.65%
3. 綵來 1.13 23.94%
4. 炮仔聲 1.18 30.77%
5. 三立 1.45 45.16%
6. 日本 1.21 28.57%
7. 綵來日本 1.08 19.23%
8. 台視 1.12 24.00%
9. 民視 1.75 37.50%
10. 東森 1.61 34.78%
11. 綵來日本台 1.14 13.64%
12. 衛視 1.41 13.64%
13. 多情城市 1.20 5.00%
14. 想見 1.22 11.11%
15. 公視 1.88 11.76%
16. 紅白 1.06 35.29%
17. 苦力 1.12 35.29%
18. 華視 1.76 23.53%
19. Discovery 1.53 0.00%
20. 想见你 1.06 18.75%
21. 天堂的微笑 1.07 20.00%
22. tic 1.27 6.67%

Homework #2

- 個人網頁加入GA
  - 申請 Google Analytics 帳號
    - 用gmail帳號申請
  - 修改網站加入GA 功能
  - Commit and Push 到 GitHub
  - Deadline: 2021/3/31 12:00 PM
  - 繳交 GitHub repository link 喔

Thanks!

Open for any questions

CJ Wu

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