

智慧整合感控系統概論

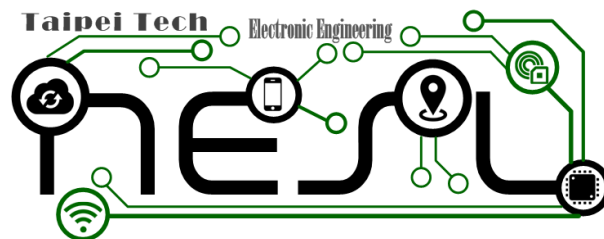
Introduction to Cyber-Physical Systems

LAB: Postman工具入門

國立臺北科技大學電子工程系
授課教師：李昭賢 副教授
電子郵件：chlee@ntut.edu.tw
校內分機：2288



行動寬頻尖端技術
跨校教學聯盟



<http://www.cc.ntut.edu.tw/~chlee/>



學習目標

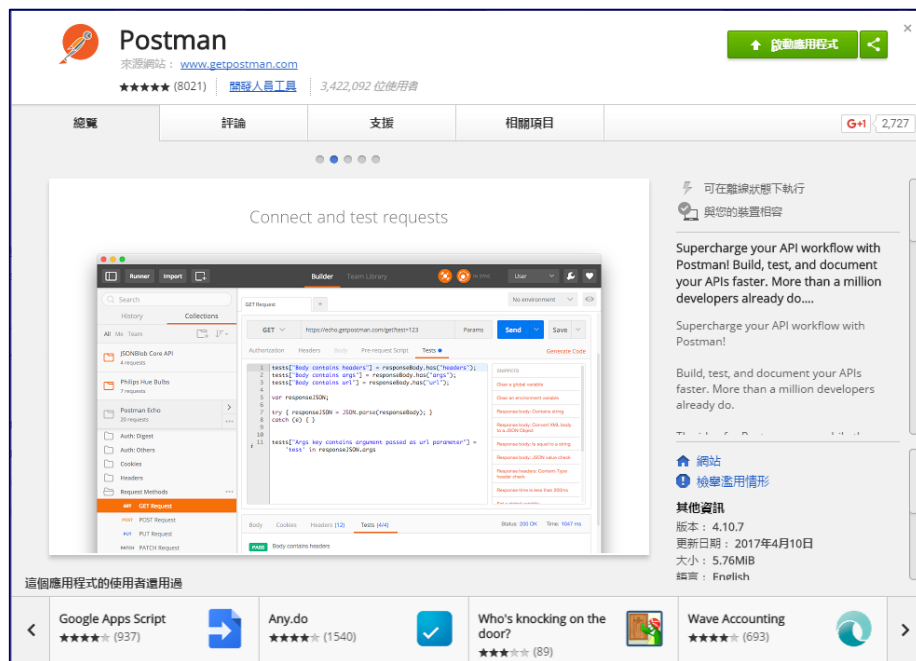
1

HTTP

2

Postman

Postman (<https://www.getpostman.com/>)



- ❖ 用來模擬HTTP requests
- ❖ 用來快速的測試web sever api，減少測試和開發API所需的時間
- ❖ 可選安裝可執行檔，或 Chrome 的擴充元件

Postman 安裝&執行(安裝可執行檔)

❖ 安裝

- 前往Postman官網
 - <https://www.getpostman.com/>
- 選擇Download the free Postman App
 - 下載完後執行安裝檔，進行安裝

❖ 執行

- 選擇Postman App



Postman 安裝&執行(安裝chrome套件)



❖ 安裝

- 前往Postman官網
 - <https://www.getpostman.com/>
- 選擇Download the free Postman App: chrome
 - 進行安裝

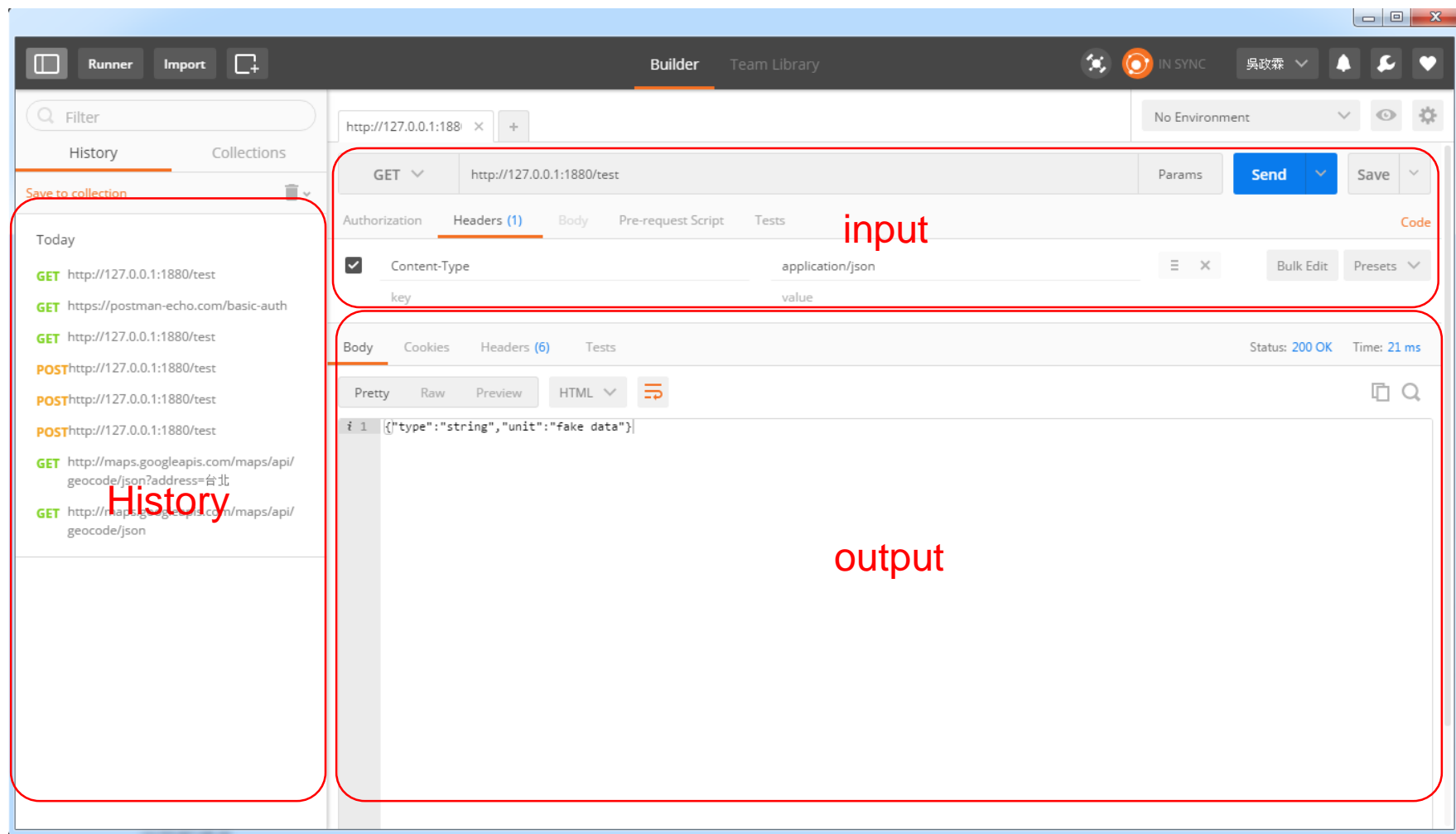
❖ 執行

- 輸入網址:
 - <chrome://apps/>
- 選擇Postman App

Postman (Checking Point 1)

❖ 安裝完成PostMan並執行

Postman 介面



Postman 練習1: GET

❖ 範例

- 利用HTTP requests(Get)取得Google首頁
- 以此測試基本GET命令

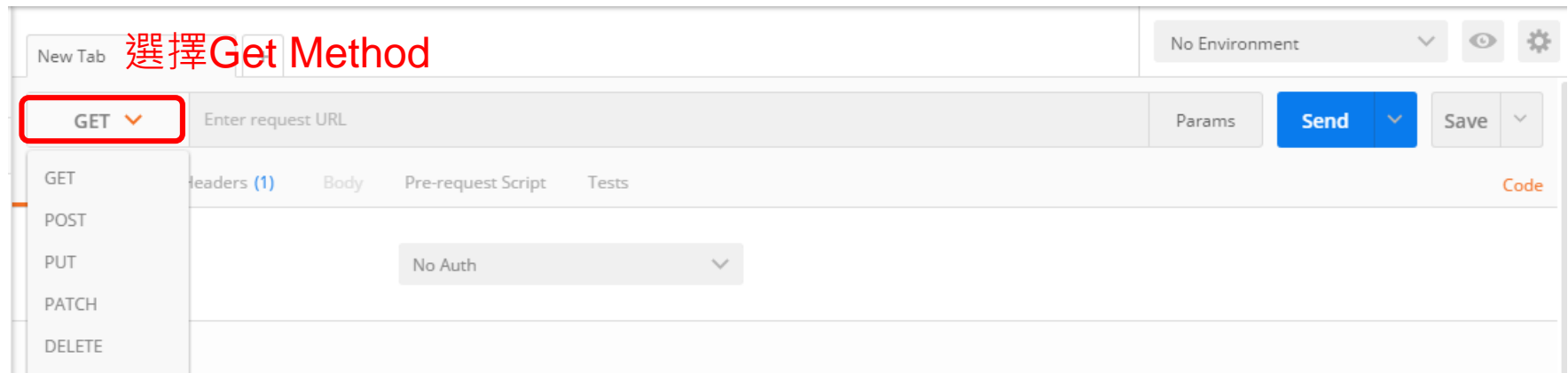
❖ 步驟

- 利用Postman傳送HTTP requests(Get)到
<http://www.google.com.tw>
- 確認HTTP response

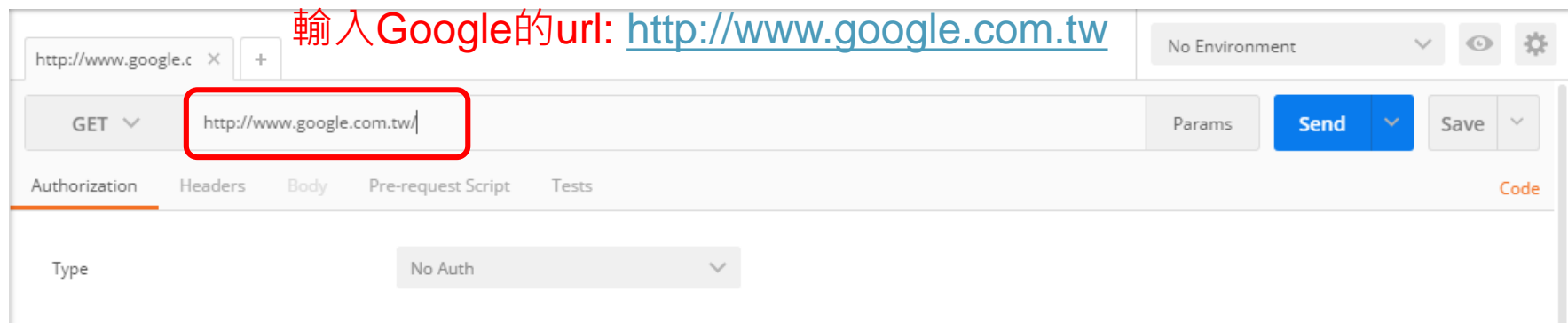
❖ HTTP、URL

- 詳細說明可參考wiki
- <https://zh.wikipedia.org/wiki/%E8%B6%85%E6%96%87%E6%9C%AC%E4%BC%A0%E8%BE%93%E5%8D%8F%E8%AE%AE>
- <https://zh.wikipedia.org/wiki/%E7%BB%9F%E4%B8%80%E8%B5%84%E6%BA%90%E5%AE%9A%E4%BD%8D%E7%AC%A6>

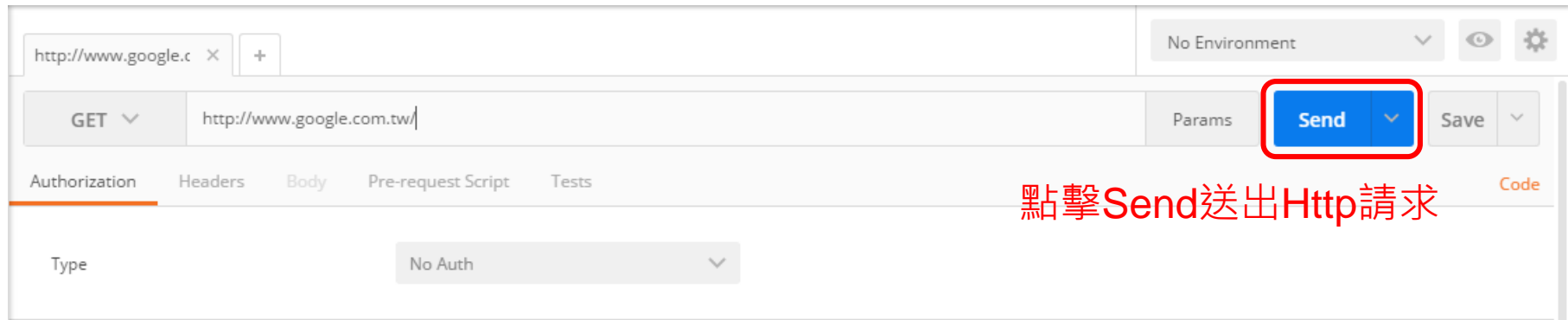
Postman 範例1: GET



Postman 範例1: GET



Postman 範例1: GET



點擊Send送出Http請求

Postman 範例1: GET

選擇Body

HTTP狀態碼、響應時間

Body Cookies Headers (10) Tests

Status: 200 OK Time: 360 ms

Pretty Raw Preview HTML

HTTP response (Body)

```
1 <!doctype html><html itemscope="" itemtype="http://schema.org/WebPage" lang="zh-TW"><head><meta content="/images/branding/google/1x
/googleleg_standard_color_128dp.png" itemprop="image"><link href="/images/branding/product/ico/google_lodp.ico" rel="shortcut icon"><meta content
="origin" id="mref" name="referrer"><title>Google</title><script>(function(){window.google={kEI:'bef8WIHxN4ja8QXqw4KwCA',kEXPI:'201761,1351176
,1352864,1352996,1353038,1353096,1353098,1353108,1353476,3700297,3700347,3700405,4029815,4031109,4032677,4036527,4038214,4038394,4039268,4041776
,4043492,4045096,4045293,4045841,4046904,4047140,4047454,4048347,4048980,4050750,4051887,4056126,4056682,4058016,4061666,4061980,4062724,4063220
,4064468,4064796,4065787,4069829,4071757,4072270,4072364,4072777,4073111,4076096,4076999,4078430,4078588,4079081,4079423,4080760,4081038,4081164
,4082131,4082230,4083044,4083458,4085336,4090550,4090553,4090806,4090877,4092934,4093314,4093497,4094252,4094544,4094837,4095558,4095910,4095998
,4096323,4097153,4097922,4097929,4098458,4098733,4098740,4098752,4100171,4100379,4100682,4100714,4100828,4101376,4101429,4101684,4101750,4102717
,4103469,4103475,4103849,4103999,4104202,4104723,4105085,4105317,4105470,4105556,4105649,4106605,4106949,4107424,4107428,4107437,4107450,4107454
,4107555,4107628,4107866,4107899,4107968,4107989,4108380,4108417,4108538,4108540,4108870,4108888,8300509,8503585,8508229,8508707,8508931,8509037
,8509373,10200083,10201957,10202317,16200026,19001732,19001735,19002007,19002038,41027342',authuser:0,j:{en:1,bv:24,u:'c9c918f0',qbp:0},kscs
:'c9c918f0_24'};google.kHL='zh-TW'}});(function(){google.lc=[];google.li=0;google.getEI=function(a){for(var b;a&&(!a.getAttribute)||!(b=a
.getAttribute("eid")));a=a.parentNode;return b||google.kEI};google.getLEI=function(a){for(var b=null;a&&(!a.getAttribute)||!(b=a.getAttribute("leid"
)));a=a.parentNode;return b};google.https=function(){return"https:"+window.location.protocol};google.ml=function(){return null};google.wl=function
(a,b){try{google.ml(Error(a),!1,b)}catch(c){}};google.time=function(){return(new Date).getTime();};google.log=function(a,b,c,d,g){a=google.logUrl(a,b
,c,d,g);if(!a){b=new Image;var e=google.lc,f=google.li;e[f]=b;b.onerror=b.onload=b.onabort=function(){delete e[f];};window.google&&window.google
.vl&&window.google.vl.lu&&window.google.vl.lu(a);b.src=a;google.li=f+1};google.logUrl=function(a,b,c,d,g){var e="",f=google.ls||"";c||-1!=b
.search("&ei=")||!(e="&ei="+google.getEI(d),-1==b.search("&ei=")&&(d=google.getLEI(d)&&(e+="&lei="+d));a=c||"/"+(g||"gen_204")+"?atyp=i&ict="+a
+"&cad="+b+e+f+"&zx="+google.time();/^http:\/i.test(a)&&google.https()&&(google.ml(Error("a"),!1,{src:a,gimm:1}),a="");return a};google.y=
function(a,b){google.y[a.id]=[a,b];return!1};google.lq=[];google.load=function(a,b,c){google.lq.push([a,b,c]);google.loadAll=function(a,b
){google.lq.push([a,b]);}).call(this);
2 google.j.b=(!location.hash&&!location.hash.match('[#&]([q|p)=|tbs=rim|tbs=simg|tbs=sbi)'))
3 ||(google.j.qbp==1);(function(){google.hs={h:true,pa:true,q:false}});(function(){google.c={c:{a:true,d:false,i:false,m:true,n:false}};google.sn
='webhp';(function(){var e=function(a,b,c){a.addEventListener?a.removeEventListener(b,c,!1):a.attachEvent&&a.detachEvent("on"+b,c)};g=function(a,b,c
){f.push([o:a,v:b,w:c]);a.addEventListener?a.addEventListener(b,c,!1):a.attachEvent&&a.attachEvent("on"+b,c)};f=[];google.timers={};google.startTick
=function(a,b){var c=b&&google.timers[b].t?google.timers[b].t.start:google.time();google.timers[a]={t:{start:c},e:{},it:{},m:{}};(c=window
.performance)&&c.now&&(google.timers[a].wsrt=Math.floor(c.now()));google.tick=function(a,b,c){google.timers[a]||google.startTick(a);c=c||google
.time();b instanceof Array||(b=[b]);for(var d=0;d<b.length;++d)google.timers[a].t[b[d]]=c;google.c.e=function(a,b,c){google.timers[a].e[b]=c}
```

Postman 範例1: GET

選擇Headers



Body Cookies **Headers (10)** Tests Status: 200 OK Time: 360 ms

alt-svc → quic=":443"; ma=2592000; v="37,36,35"

cache-control → private, max-age=0

content-encoding → gzip

content-type → text/html; charset=UTF-8 Body資料格式為html，編碼為utf-8

date → Sun, 23 Apr 2017 17:42:05 GMT

expires → -1

server → gws

status → 200 狀態碼為200(OK)

x-frame-options → SAMEORIGIN

x-xss-protection → 1; mode=block

HTTP response (Headers)

Postman (Checking Point 2)

❖ 請完成範例1。

Postman 範例2: GET(帶表單參數)

❖ 範例

- 利用HTTP requests(Get)附帶表單參數，向Google Maps API要求”Taipei”的地理座標（緯度與經度）

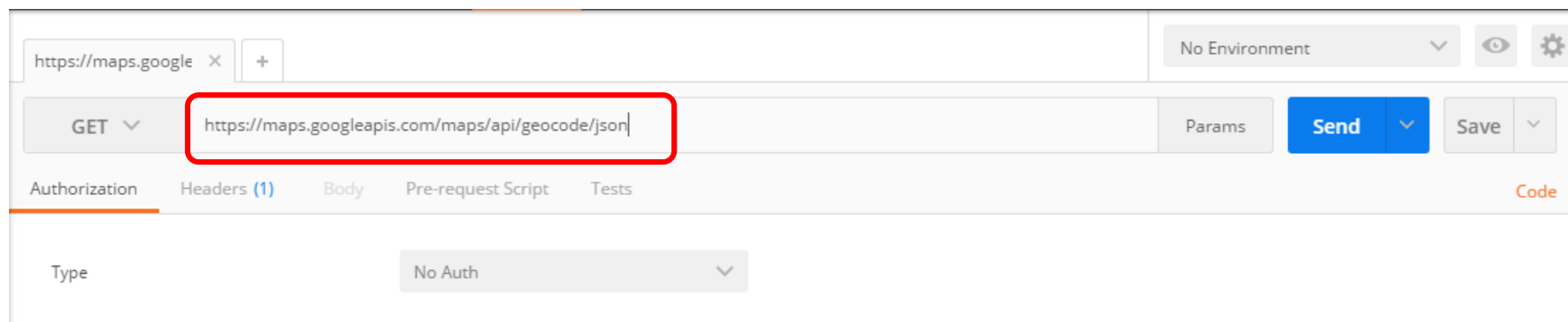
❖ 步驟

- 利用Postman傳送HTTP requests(Get)到Google Maps API Geocode Web Services
- 確認HTTP response

❖ Google Maps API Web Services 說明文件

- <https://developers.google.com/maps/web-services/overview?hl=zh-tw>

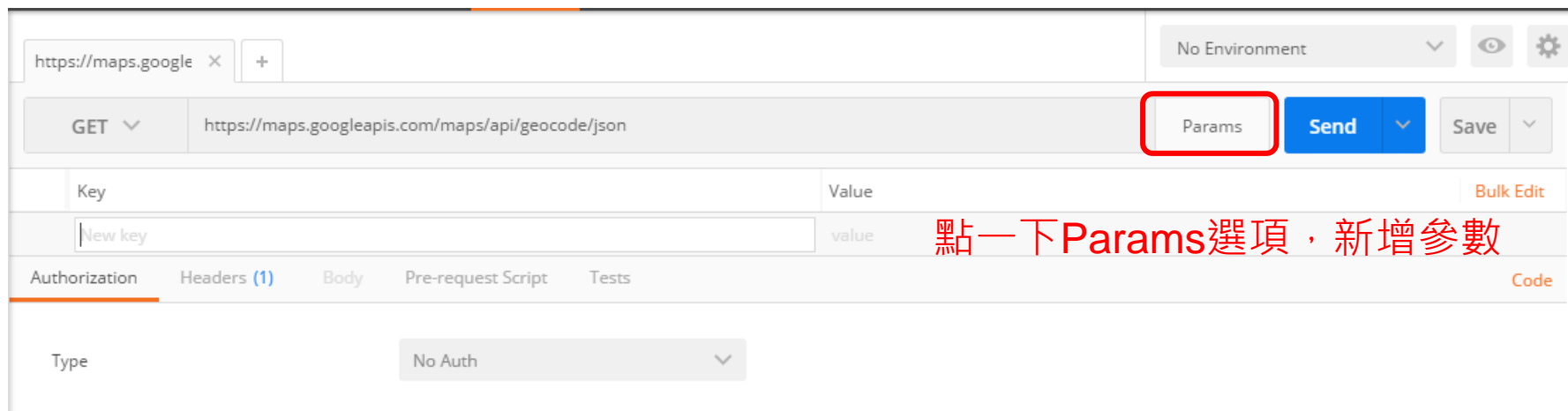
Postman 範例2: GET(帶表單參數)



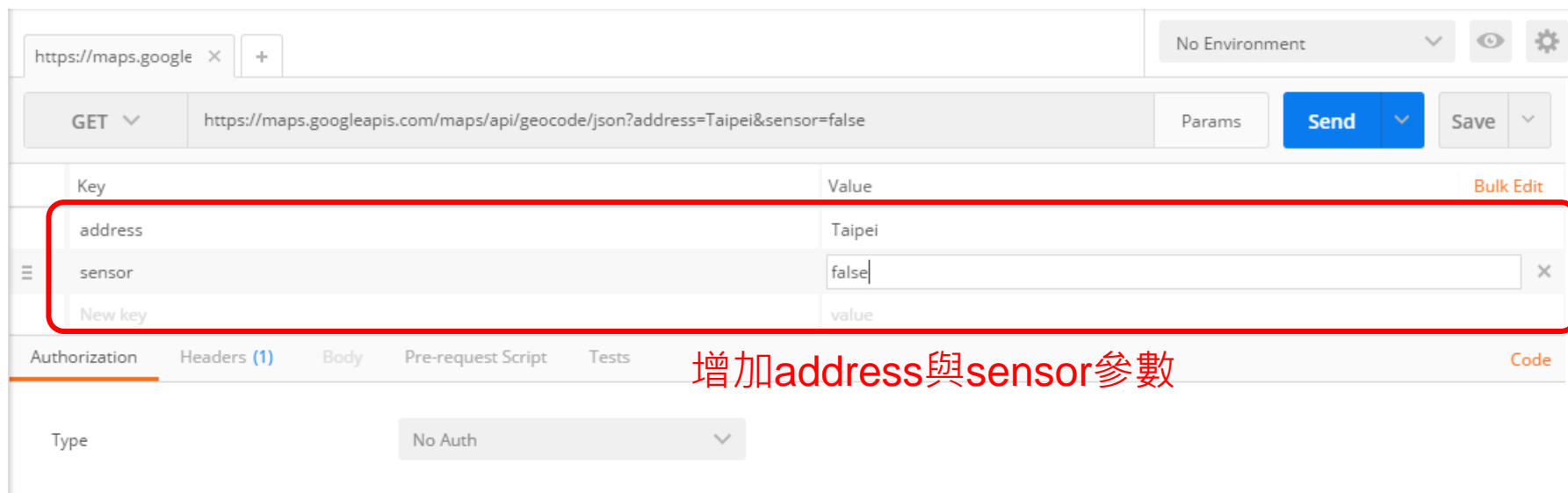
輸入url:

<https://maps.googleapis.com/maps/api/geocode/json>

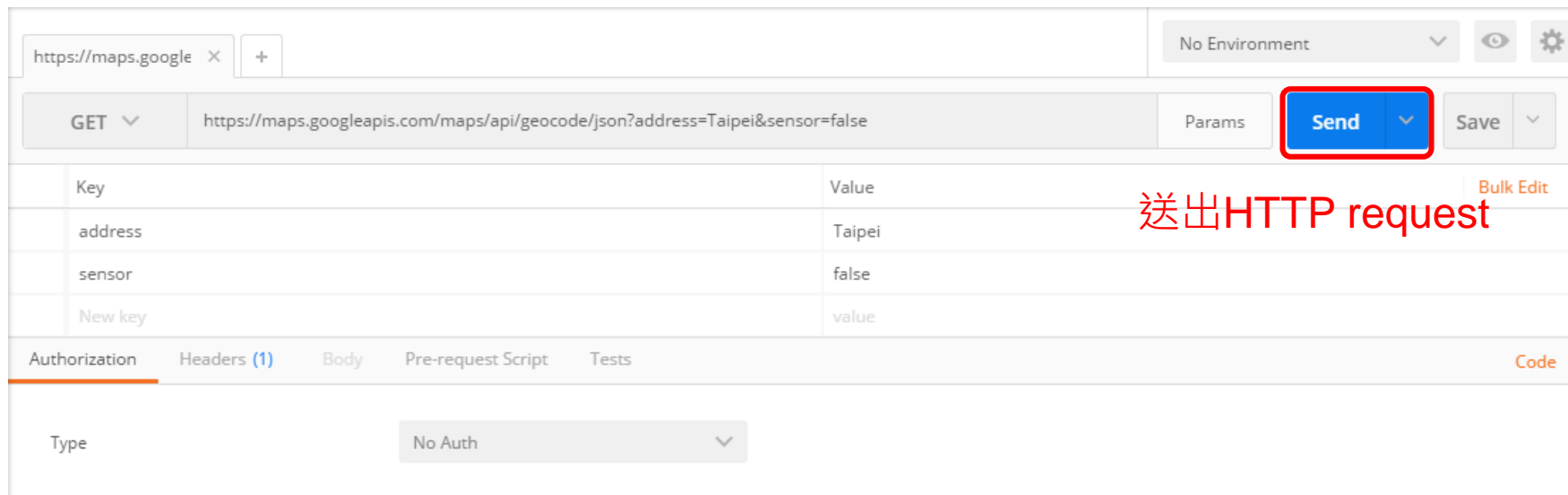
Postman 範例2: GET(帶表單參數)



Postman 範例2: GET(帶表單參數)



Postman 範例2: GET(帶表單參數)



Postman 範例2: GET(帶表單參數)

選擇Body

HTTP狀態碼、響應時間

The image shows the Postman application interface. At the top, the 'Body' tab is selected. In the top right corner, a red box highlights the status 'Status: 200 OK' and the response time 'Time: 65 ms'. The main area displays the JSON response body, which is also highlighted with a red box. The JSON data represents address components for Taipei, Keelung, and Taiwan. The 'HTTP response (Body)' label points to this JSON content.

```
1 {
2   "results": [
3     {
4       "address_components": [
5         {
6           "long_name": "台北",
7           "short_name": "台北",
8           "types": [
9             "colloquial_area",
10            "locality",
11            "political"
12          ]
13        },
14        {
15          "long_name": "基隆市",
16          "short_name": "基隆市",
17          "types": [
18            "administrative_area_level_2",
19            "political"
20          ]
21        },
22        {
23          "long_name": "台灣",
24          "short_name": "TW",
25          "types": [
26            "country",
27            "political"
28          ]
29        }
30      ],
31      "formatted_address": "台灣基隆市台北",
32      "geometry": {
33        "bounds": {
34          "northeast": {
35            "lat": 25.2443731,
```

Postman 範例2: GET(帶表單參數)

選擇Header

The screenshot shows the Postman interface with the 'Headers' tab selected. The response status is 200 OK and the time taken is 65 ms. The headers are listed on the left, and the body is on the right. A red box highlights the headers section, and a green box highlights the 'content-type' header. A green text annotation 'Body資料格式為JSON' points to the 'content-type' header. A green text annotation '狀態碼為200(OK)' points to the 'status' header. A red text annotation 'HTTP response (Header)' is on the right.

Body Cookies Headers (13) Tests Status: 200 OK Time: 65 ms

access-control-allow-origin → *

alt-svc → quic=":443"; ma=2592000; v="37,36,35"

cache-control → public, max-age=86400

content-encoding → gzip

content-length → 455

content-type → application/json; charset=UTF-8

date → Wed, 12 Apr 2017 18:55:42 GMT

expires → Thu, 13 Apr 2017 18:55:42 GMT

server → mafe

status → 200

vary → Accept-Language

x-frame-options → SAMEORIGIN

x-xss-protection → 1; mode=block

Body資料格式為JSON

狀態碼為200(OK)

HTTP response (Header)

Postman (Checking Point 3)

❖ 完成範例2。

啟動本地web service (安裝Node.js)



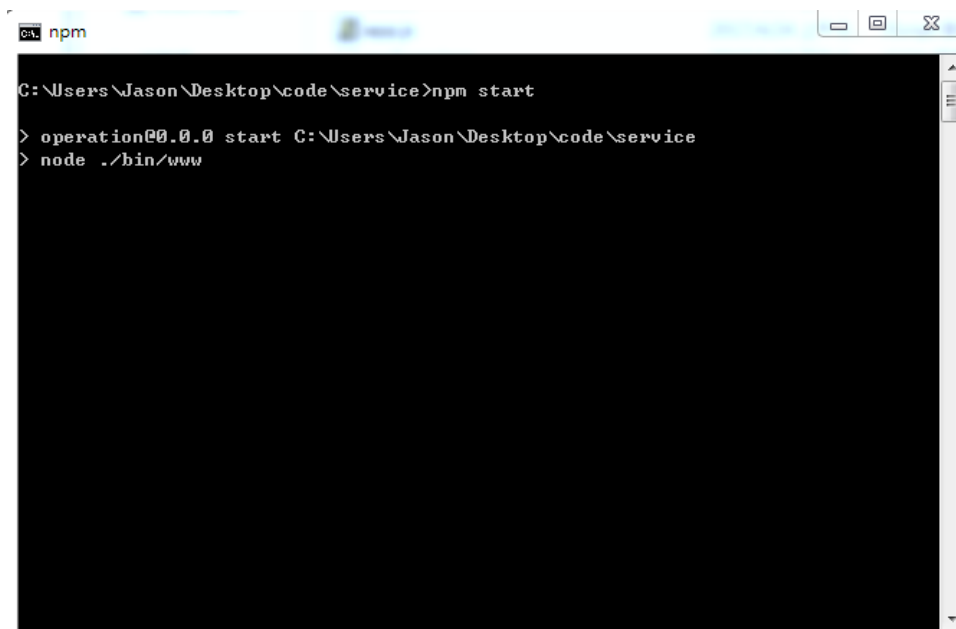
❖ 前往Node.js官網，安裝Node.js (LTS) version

■ <https://nodejs.org/en/>

❖ 確認是否安裝成功

■ 執行 `node -v`

啟動本地web service



```
C:\Users\Jason\Desktop\code\service>npm start

> operation@0.0.0 start C:\Users\Jason\Desktop\code\service
> node ./bin/www
```

- ❖ 解壓縮service.zip檔案
- ❖ 啟動cmd.exe
- ❖ 進入service資料夾
 - cd service
- ❖ 執行web service
 - npm start
- ❖ 如果出現錯誤，請依照下一頁手動安裝套件

手動安裝Node.js Express套件

```
C:\Windows\system32\cmd.exe

C:\Users\Jason\Desktop\code>npm install -g express
express@4.15.2 C:\Users\Jason\AppData\Roaming\npm\node_modules\express
├── escape-html@1.0.3
├── cookie-signature@1.0.6
├── utils-merge@1.0.0
├── encodeurl@1.0.1
├── methods@1.1.2
├── content-type@1.0.2
└── parseurl@1.3.1
```

```
C:\Windows\system32\cmd.exe

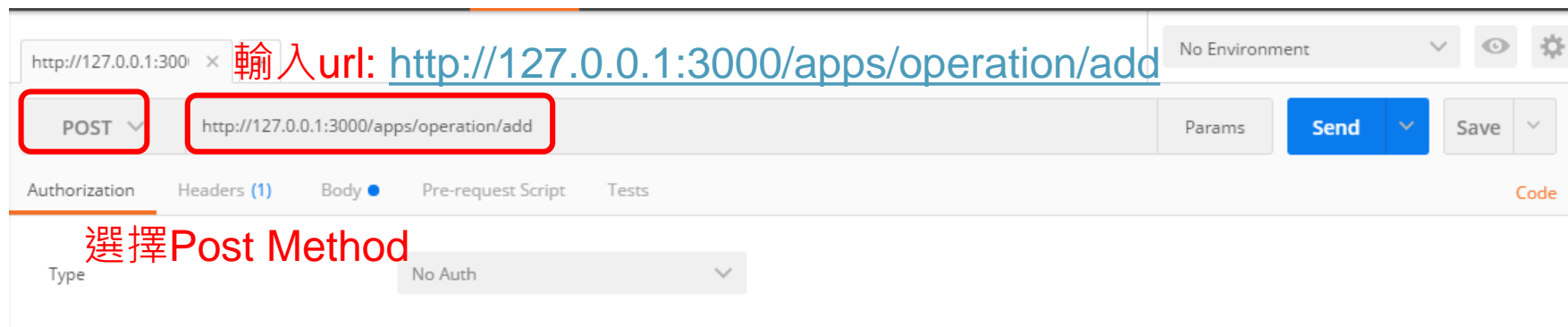
C:\Users\Jason\Desktop\code>npm install -g express-generator
C:\Users\Jason\AppData\Roaming\npm\express -> C:\Users\Jason\AppData\Roaming\npm\node_modules\express-generator\bin\express-cli.js
express-generator@4.15.0 C:\Users\Jason\AppData\Roaming\npm\node_modules\express-generator
├── sorted-object@2.0.1
├── ejs@2.5.6
├── mkdirp@0.5.1 <minimist@0.0.8>
└── commander@2.9.0 <graceful-readlink@1.0.1>
```

- ❖ 啟動cmd.exe
- ❖ 安裝express
 - npm install -g express
- ❖ 安裝express-generator
 - npm install -g express-generator
- ❖ 進入service資料夾
 - cd service
- ❖ 安裝其他module
 - npm install

啟動本地web service (web service API)

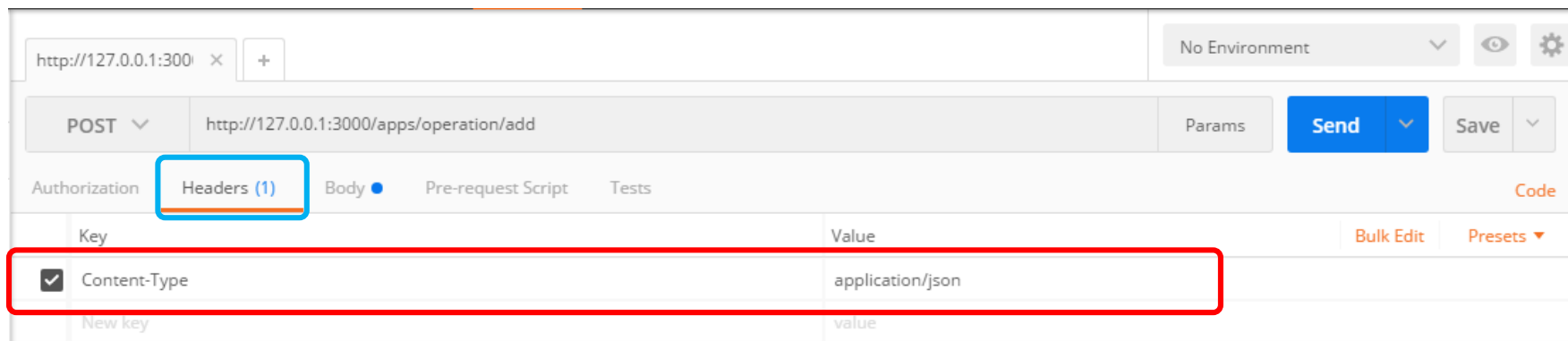
功能	methods	url	Headers	body
計算加法	POST	apps/operation/add	Content-Type: application/ json	{x, y}
計算減法	POST	apps/operation/sub		{x, y}
計算乘法	POST	apps/operation/mul		{x, y}
計算除法	POST	apps/operation/div		{x, y}

Postman 範例3: POST



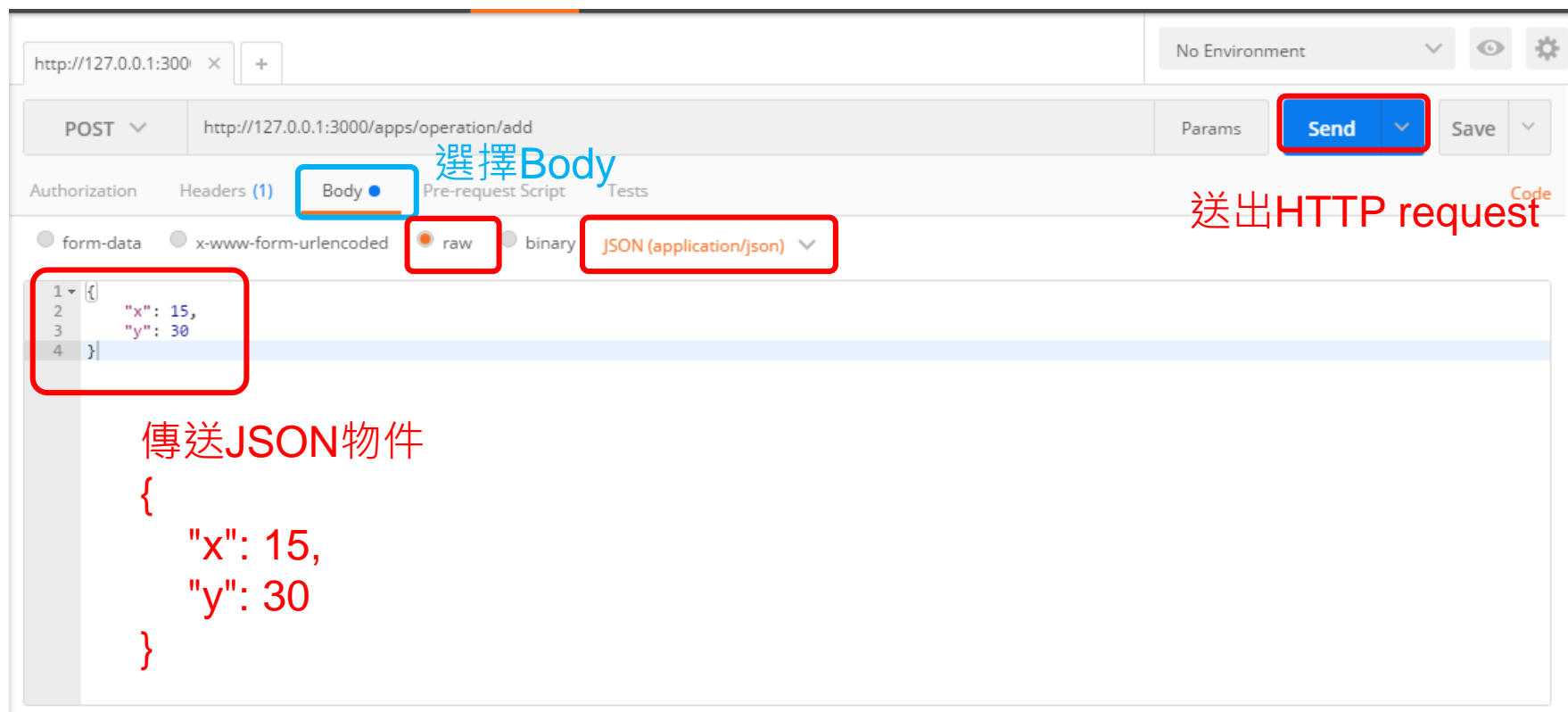
Postman 範例3: POST

選擇Header

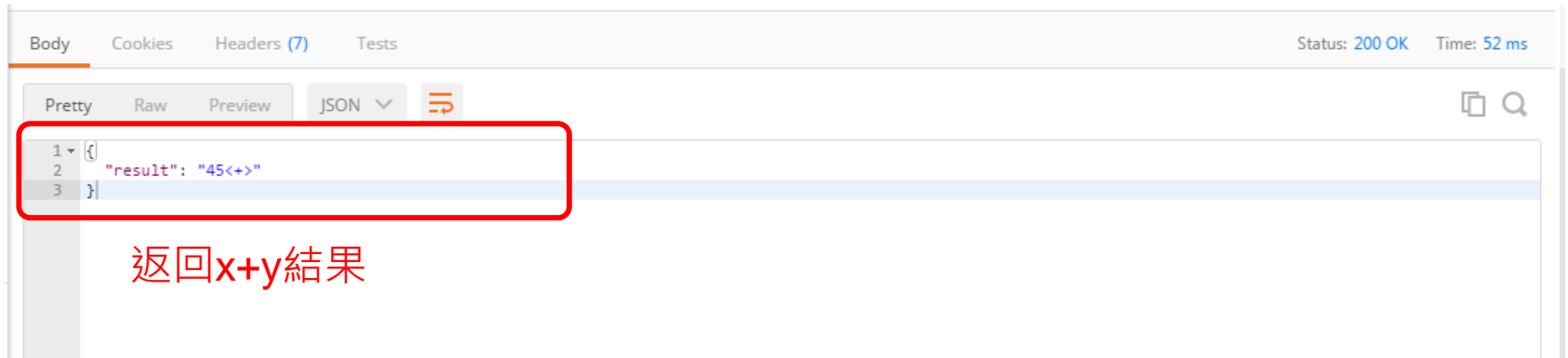


增加Content-Type欄位，值為application/json
表示傳送Body部分資料格式為JSON格式

Postman 範例3: POST

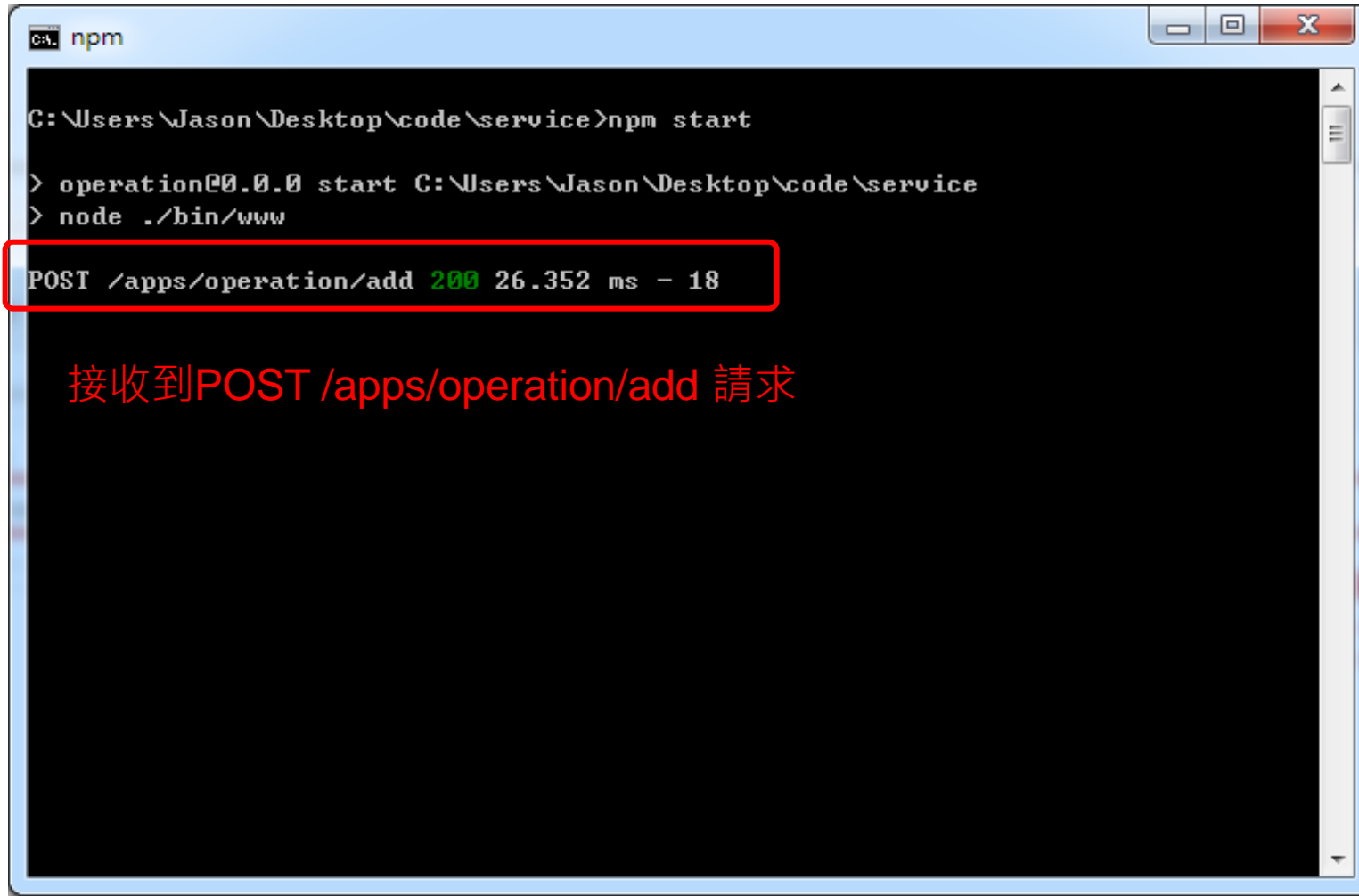


Postman 範例3: POST



返回x+y結果

Postman 範例3: POST



```
C:\Users\Jason\Desktop\code\service>npm start  
> operation@0.0.0 start C:\Users\Jason\Desktop\code\service  
> node ./bin/www  
POST /apps/operation/add 200 26.352 ms - 18
```

接收到POST /apps/operation/add 請求

Postman (Checking Point 4)

❖ 完成範例3，並測試

- <http://127.0.0.1:3000/apps/operation/sub>
- <http://127.0.0.1:3000/apps/operation/mul>
- <http://127.0.0.1:3000/apps/operation/div>

- ❖ Postman是一個可協助快速測試HTTP服務的工具。
 - 可選擇HTTP Method，例如：GET、POST...等
 - 可自訂傳輸資料
 - 可查看HTTP Response，包含：Header與Body