

Google Blockly積木撰寫

WBBIT教育版&BLOCKLYDUINO

講師：鳳山科技中心 傅仲儀主任

2020/8/19

自訂積木撰寫課程表

- 09:00-10:00 自訂積木安裝與架構說明
- 10:00-11:00 Blockly Developer Tools
- 11:00-12:00 多國語系製作與常用技巧
- 13:00-14:00 Webbit教育版自訂積木實作
- 14:00-15:00 BlocklyDuino自訂積木實作

Webbit教育版安裝

- 下載網址：Google搜尋 “WebBitSetup.exe”
離線版：<https://ota.webduino.io/WebBitInstaller/WebBitSetup.exe>
網頁版：<https://webbit.webduino.io/blockly/> (無法使用USB連線)
- 驅動程式：http://www.wch.cn/download/CH341SER_ZIP.html
(離線版安裝已內建驅動程式)
- 更新韌體：離線版接上Webbit後可自動偵測線上更新)

BlocklyDuino v3 Beta 5

下載網址：<https://github.com/MediaTek-Labs/BlocklyDuino-for-LinkIt/releases/tag/3.0.312b>

64位元 [blocklyduino-3.0.312b-win64-ide.zip](#)

32位元 [blocklyduino-3.0.312b-win32-ide.zip](#)

使用指南：<https://docs.labs.mediatek.com/linkit-7697-blocklyduino/linkit-7697-blocklyduino-12879411.html>

吉哥積木：<https://sites.google.com/jes.mlc.edu.tw/ljj/linkit7697/如何安裝吉哥自製積木>

ICSHOP：https://github.com/iCShopMgr/LinkIt7697_Bit_for_BlocklyDuino

法蘭斯積木：<https://github.com/fustyles/webduino/tree/master/LinkIt7697/FranceFu>

Webbit教育版新增自訂積木(法一)

- 研習資料：

https://github.com/fustyles/Workshop/2020.8.19_blockly.zip

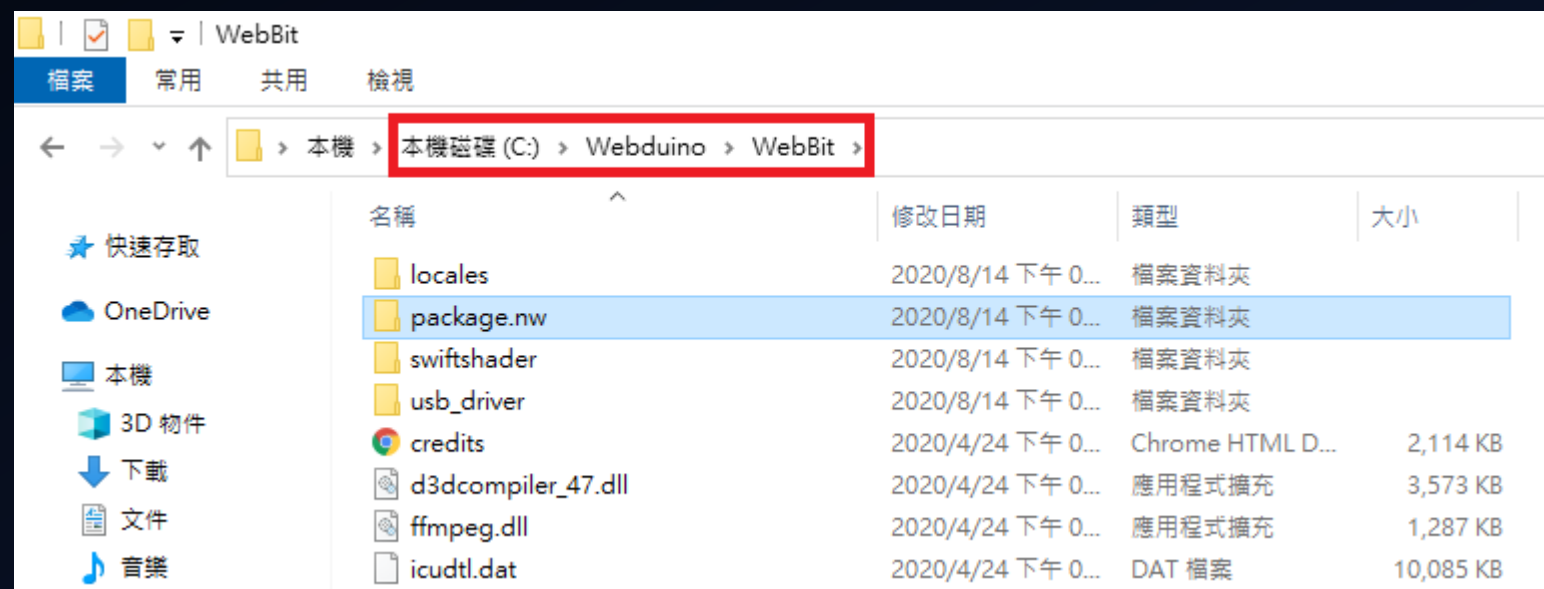
點選

Clone or download ▾

並解壓縮壓縮檔。

- 安裝外掛：解壓縮 2020.8.19_blockly.zip

目錄內package.nw資料夾覆蓋至C:\Webduino\WebBit\



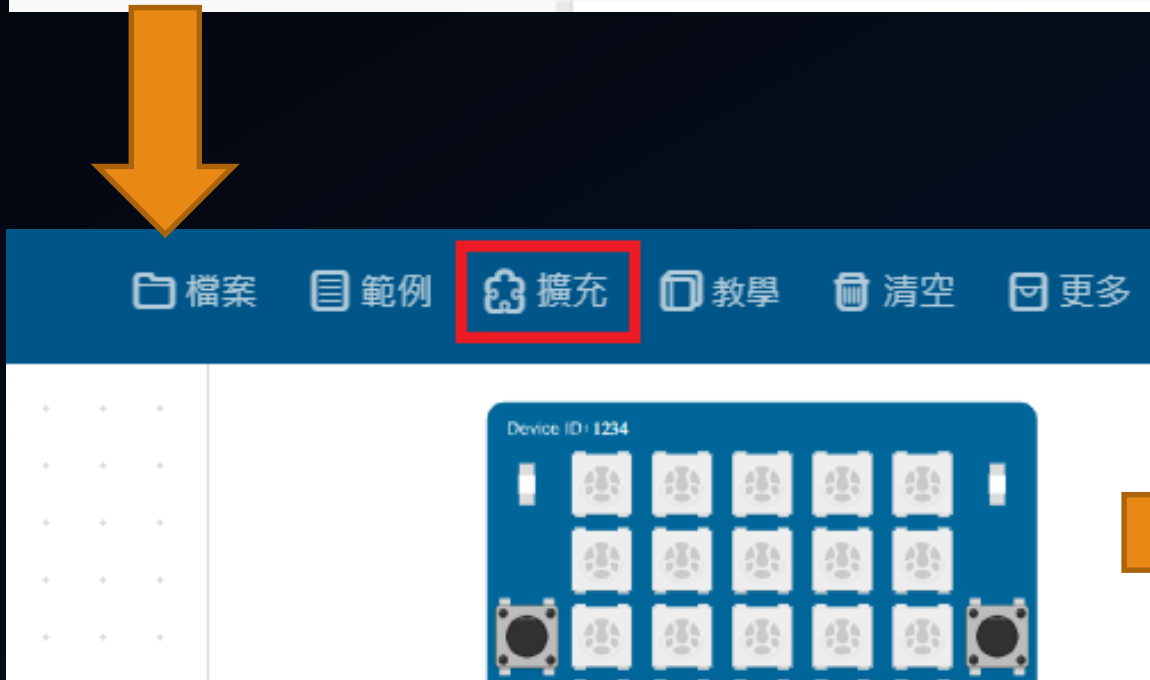
開啟目錄 C:\Webduino\WebBit\package.nw\blockly\toolbox\
以記事本開啟檔案 index.xml 新增「進階 catPlus」程式碼。
可將自訂積木設定掛載在此目錄下。

```
<category id="catPin" COLOUR="50">
  <block type="pin_read_digital"></block>
  <block type="pin_read_analog"></block>
  <block type="pin_write_analog">
    <value name="value_">
      <block type="math_number">
        <field name="NUM">0</field>
      </block>
    </value>
  </block>
  <block type="pin_write_digital">
    <value name="value_">
      <block type="math_number">
        <field name="NUM">0</field>
      </block>
    </value>
  </block>
</category>
</category>
<sep></sep>
<category id="catPlus" COLOUR="190" index="99"></category>
<category id="catEduExtension" COLOUR="290" index="99"></category>
</xml>
```

新增catPlus目錄

<category id="catPlus" COLOUR="190" index="99"> </category>

「以瀏覽器開啟」可利於自訂積木撰寫與除錯，AI影像辨識積木可正常執行。



顏色

函式

怪獸控制

偵測

語音 & 音效

Web:Bit -

開發板

矩陣 LED

按鈕開關

偵測光線 & 溫度

音樂 & 聲音

九軸體感偵測

I/O 引腳

擴充功能 -

Google 試算表

氣象資訊

網路廣播

LINE

基礎套件包

MoonCar 自走車

自訂積木

“ ”

▼

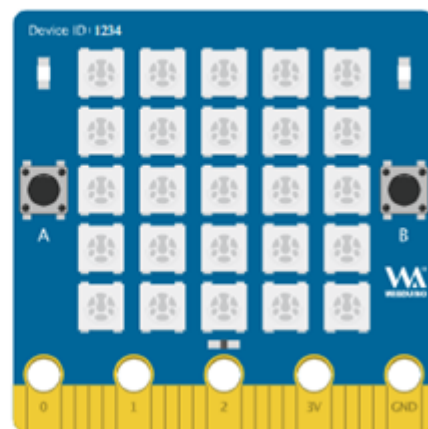
當紅外線 (腳位 1) 接收到訊號
執行

紅外線接收的代碼

紅外線發射 (腳位 2), 發射代碼 (十六進位) “ ”

超音波傳感器, Trig 3 Echo 9 所擷取的距離 (公分)

伺服馬達, 腳位 1 旋轉角度 (0-180) 90

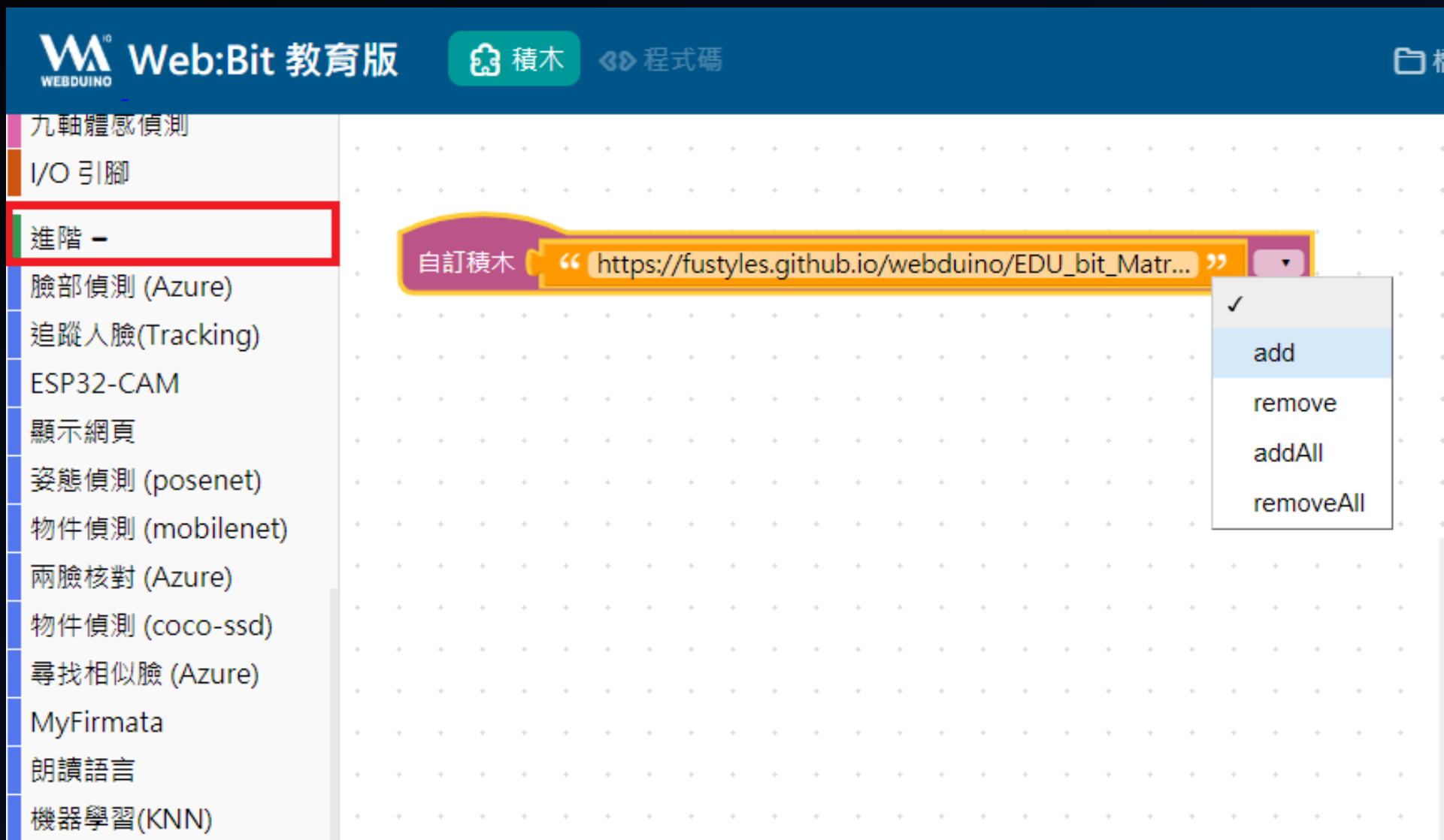


下午 11:04

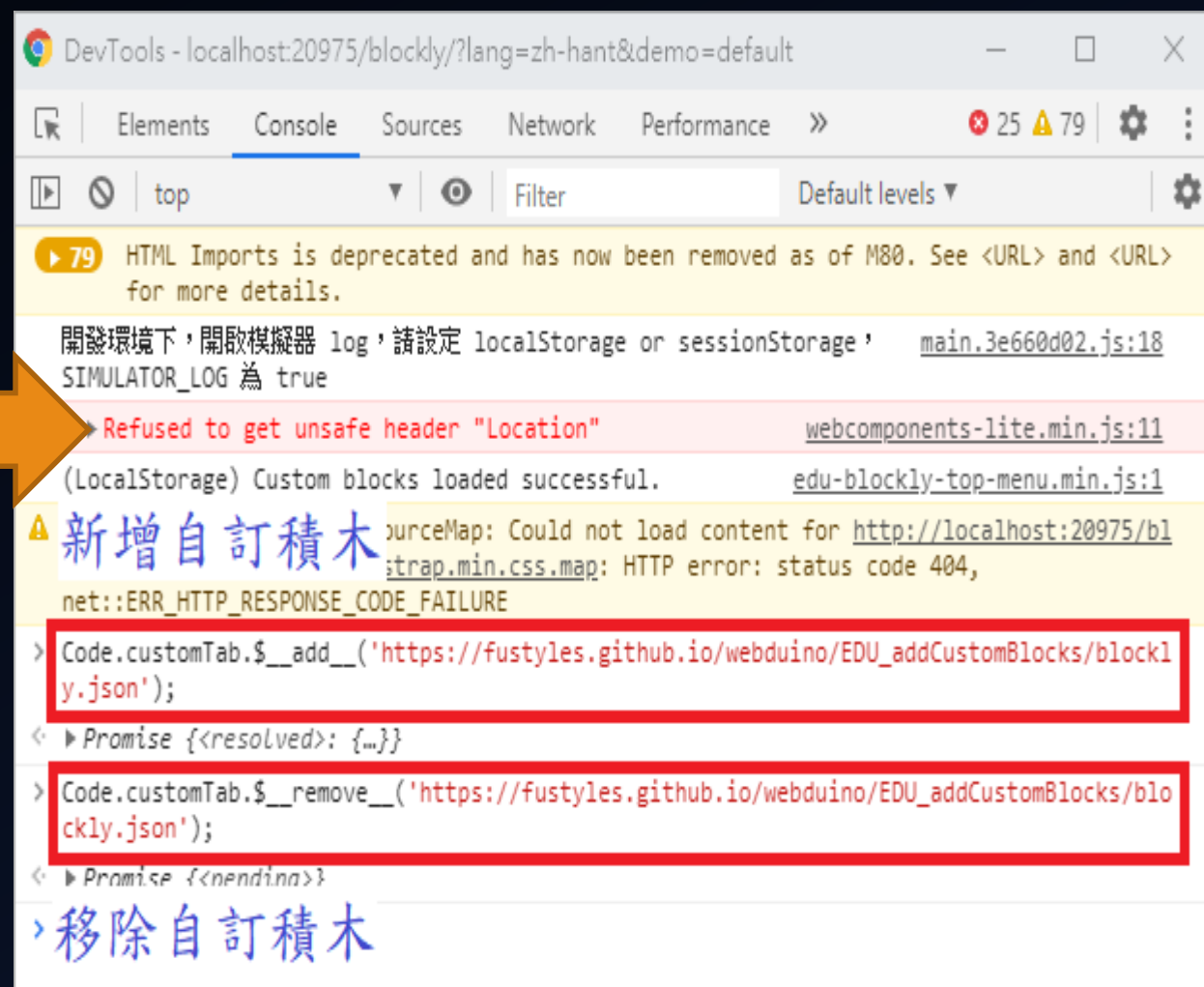
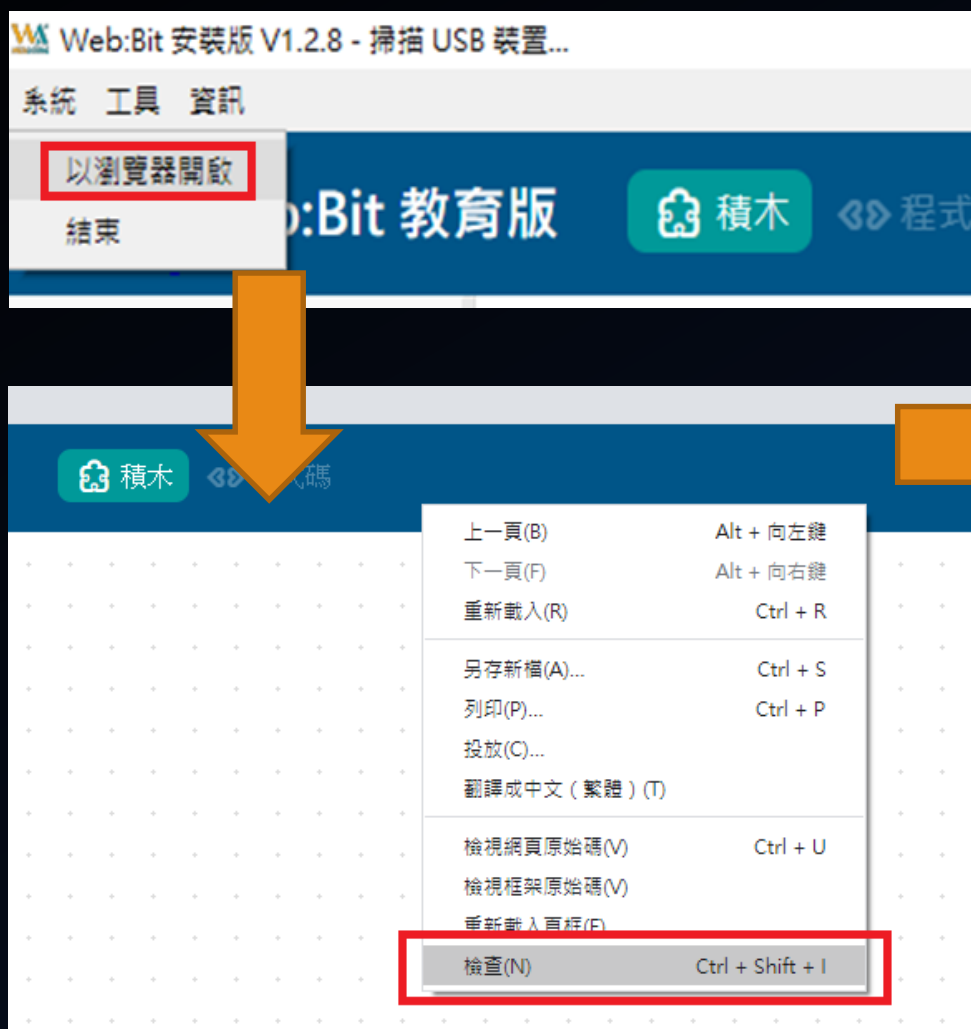
2019/11/12



填入自訂積木連結下拉選單點選add，或點選addAll新增所有自訂積木。
<https://github.com/fustyles/webduino/blob/master/CustomBlock.txt>



Webbit教育版新增自訂積木(法二)



指令參考：https://github.com/fustyles/webduino/blob/master/EDU_addCustomBlocks/blockly/blocks.js

自訂積木

變數

邏輯

重複

數學

文字

陣列

顏色

函式

怪獸控制

偵測

語音 & 音效

Web:Bit -

開發板

矩陣 LED

按鈕開關

偵測光線 & 溫度

音響 & 聲音

上一頁(B)

Alt + 向左鍵

下一頁(F)

Alt + 向右鍵

重新載入(R)

Ctrl + R

另存新檔(A)...

Ctrl + S

列印(P)...

Ctrl + P

投放(C)...

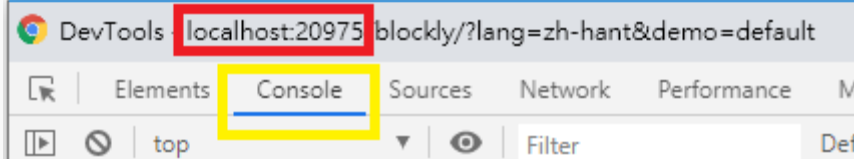
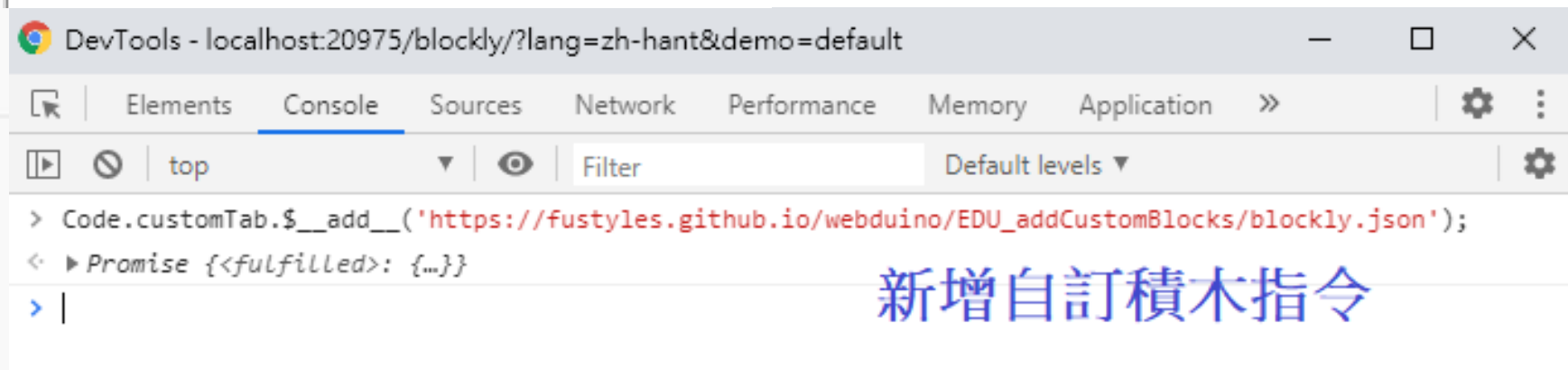
翻譯成中文(繁體)(T)

檢視網頁原始碼(V)

Ctrl + U

檢查(N)

Ctrl + Shift + I

首頁網址 <http://localhost:20975>

新增自訂積木指令

Webbit教育版新增自訂積木(法三)

檔案 常用 共用 檢視

← → ↕ ↑ C:\Users\fsm\Desktop\109.8.19自訂積木研習\package.nw\Webbit教育版自訂積木安裝

名稱	修改日期	類型	大小
blocks	2020/8/14 下午 02:40	JavaScript 指令檔	15 KB
javascript	2020/8/16 下午 05:32	JavaScript 指令檔	4 KB
toolbox	2020/8/16 下午 05:32	XML Document	1 KB
webbit_edu_addCustomBlock	2020/8/16 下午 05:33	Windows 批次檔案	1 KB

快速存取

- OneDrive
- 本機
- 3D 物件
- 下載
- 文件
- 音樂
- 桌面
- 圖片
- 影片
- 本機磁碟 (C:)
- 網路

類型: Windows 批次檔案
大小: 289 個位元組
修改日期: 2020/8/16 下午 05:33

點選批次檔執行檔案覆蓋至安裝目錄

[自訂積木 設定] “ ”

BlocklyDuino自訂積木安裝

The image shows two overlapping Windows File Explorer windows. The top window is titled 'Webbit_customBlocks' and shows a list of files and folders. The bottom window is titled 'BlocklyDuino3' and shows a list of folders and files. A yellow arrow points from the 'package.nw' file in the top window to the 'package.nw' file in the bottom window, with the text '覆蓋檔案' (Overwrite file) in red.

Top Window: Webbit_customBlocks

名稱	修改日期	類型	大小
package.nw	2020/8/16 下午 10:20	檔案資料夾	
Webbit教育版自訂積木批次檔安裝	2020/8/18 下午 03:42	檔案資料夾	
Webbit教育版新增自訂積木說明	2020/8/16 下午 10:44	文字文件	1 KB
下拉圖檔選單範例	2020/8/18 下午 07:41	文字文件	2 KB
官方自訂積木模組開發說明	2020/8/16 下午 05:02	Chrome HTML D...	4,975 KB

Bottom Window: BlocklyDuino3

名稱	修改日期
arduino-1.8.5	2020/8/14
example	2020/8/14
locales	2020/8/14
node_modules	2020/8/14
package.nw	2020/8/18
pnpm	2020/8/14

BlocklyDuino自訂積木手動程式碼安裝

109.8.19自訂積木研習 > LinkIt_customBlocks > package.nw > js

名稱	修改日期	類型	大小
init	2020/8/16 下午 09:16	JavaScript 指令檔	16 KB

init - 記事本

```
檔案(F) 編輯(E) 格式(O) 檢視(V) 說明
var javascript_path = "./myBlocks/javascript.js"; //載入自訂積木轉出程式碼檔
var toolbox_path = "./myBlocks/toolbox.xml"; //讀取自訂積木目錄檔
var en_path = "./myBlocks/en.js"; //載入自訂積木英文語系設定檔
var en_category_path = "./myBlocks/en_category.xml"; //載入自訂積木目錄英文語系設定檔
var zhant_path = "./myBlocks/zh-hant.js"; //載入自訂積木繁體語系設定檔(預設繁體語系)
var zhant_category_path = "./myBlocks/zh-hant_category.xml"; //載入自訂積木目錄繁體語系設定檔(預設繁體語系)

initial(blocks_path, javascript_path, toolbox_path);

function initial(blocks_path, javascript_path, toolbox_path) {
    addScript(blocks_path);
    addScript(javascript_path);
    var xml = $.ajax({url: toolbox_path, async: false}).responseXML;

    var len = new DOMParser().parseFromString(xmlValue, "text/xml").firstChild.childNodes.length;
    var xmlNewValue = '<xml id="toolbox">'+new XMLSerializer().serializeToString(xml.firstChild)+'<sep></sep>';
    if (len>0) {
        for (var i=0;i<len;i++)
            xmlNewValue+=new XMLSerializer().serializeToString(new DOMParser().parseFromString(xmlValue, "text/xml").firstChild.childNodes[i]);
    }
    xmlNewValue+=</xml>;
    xmlValue = xmlNewValue;

    if ((document.getElementById('select-lang-en').checked)) {
        addScript(en_path);
        var xml = $.ajax({url: en_category_path, async: false}).responseXML.firstChild;
        var xml = $.ajax({url: zhant_category_path, async: false}).responseXML.firstChild;
        var i = 0;
        while (i < xml.childNodes.length) {
            var rep = xml.childNodes[i].childNodes[1].firstChild.nodeValue;
            xmlValue = xmlValue.replace('name="'+ini+'"', 'name="'+rep+'");
            i++;
        }
    }
    catch (e){}
}

function addScript(url) {
    var s = document.createElement("script");
    s.type = "text/javascript";
    s.src = url;
    $("body").append(s);
}
```

將自訂積木程式碼插入在BlocklyDuino3\package.nw\js檔此行程式碼之前
Blockly.inject(document.getElementById('content_blocks'),{

1 個項目 | 已選取 1 個項目 15.2 KB | 第 1 列, 第 1 行 | 60% | Unix (LF)

Javascript 程式編輯

免費編輯軟體 Notepad++ 7.8.6

<https://www.azofreeware.com/2006/10/notepad-35.html>

Javascript 編輯器介紹

<https://kknews.cc/zh-tw/code/nanm2ng.html>

<https://www.temok.com/blog/top-20-javascript-ide-source-code-editors/>

JavaScript 教學文件

<https://www.w3schools.com/js/>

JavaScript Online Editor

https://www.w3schools.com/js/tryit.asp?filename=tryjs_myfirst

檔案(F)編輯(E)搜尋(S)檢視(V)編碼(N)語言(L)設定(T)工具(O)巨集(M)執行(R)外接(P)視窗(W)?

資料夾工作區

109.8.19自訂積木研習

LinkIt_customBlocks

package.nw

js

myBlocks

blocks.js

en.js

en_category.xml

javascript.js

toolbox.xml

zh-hant.js

zh-hant_category.xml

LinkIt7697新增自訂積木說明.txt

Webbit_customBlocks

package.nw

blockly

myBlocks

Webbit教育版自訂積木批次檔案安裝

Webbit教育版新增自訂積木說明.txt

下拉圖檔選單範例.txt

官方自訂積木模組開發說明.pdf

~\$傅仲儀教師-Webbit教育版&Blockduino自訂積木撰寫.pptx

blocklyjson.png

blocksjs.png

javascript1js.png

javascriptjs.png

library.xml

toolbox1xml.png

toolboxxml.png

傅仲儀教師-Webbit教育版&Blockduino自訂積木撰寫.pptx

blocks.js

```
1 Blockly.Blocks['digitalwrite'] = {
2   init: function() {
3     this.appendDummyInput ()
4     .appendField(Blockly.Msg.digitalWrite);
5     this.appendValueInput ("pin")
6     .setCheck ("Number")
7     .appendField (" ");
8     this.appendDummyInput ()
9     .appendField (" ");
10    .appendField(new Blockly.FieldDropdown([["HIGH","1"], ["LOW","0"]]), "mode")
11    .appendField (" ");
12    this.setInputsInline(true);
13    this.setPreviousStatement(true, null);
14    this.setNextStatement(true, null);
15    this.setColour(255);
16    this.setTooltip("digitalWrite(pin, value)");
17    this.setHelpUrl("https://www.arduino.cc/reference/en/language/functions/digital-io/digitalwrite/");
18  }
19 };
20
21 Blockly.Blocks['digitalread'] = {
22   init: function() {
23     this.appendDummyInput ()
24     .appendField(Blockly.Msg.digitalRead);
25     this.appendValueInput ("pin")
26     .setCheck ("Number")
27     .appendField (" ");
28     this.appendDummyInput ()
29     .appendField (" ");
30     this.setInputsInline(true);
31     this.setOutput(true, "Number");
32     this.setColour(60);
33     this.setTooltip("digitalRead(pin)");
34     this.setHelpUrl("https://www.arduino.cc/reference/en/language/functions/digital-io/digitalread/");
35   }
36 };
```

length: 1,201 lines: 36

Ln: 20 Col: 1 Sel: 0 | 0

Unix (LF)

UTF-8

INS

Google Blockly 學習資源

Blockly | Google Developers

<https://developers.google.com/blockly>

Blockly討論區

<https://groups.google.com/g/blockly>

Blockly函式庫

<https://developers.google.com/blockly/reference/overview>

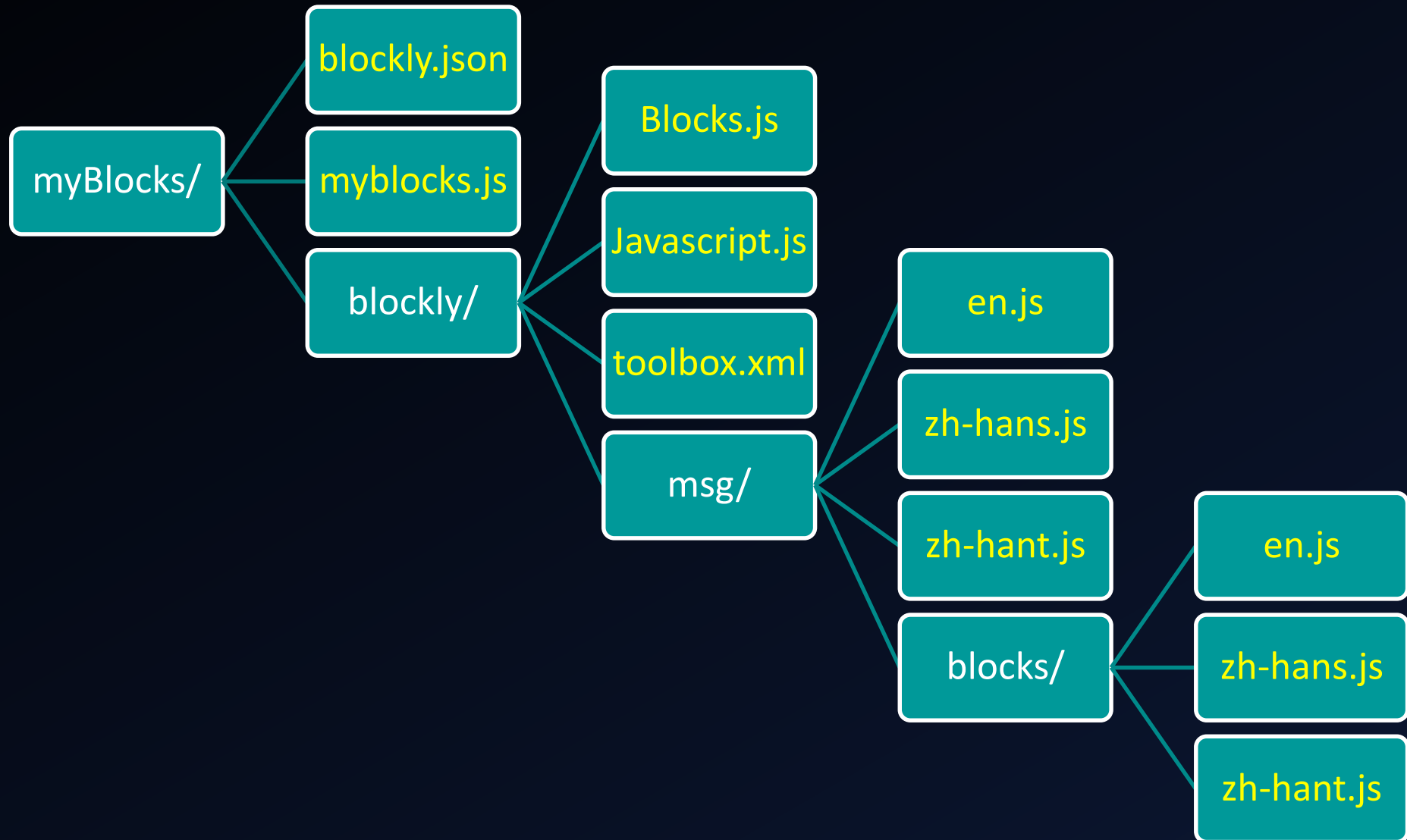
Blockly原始碼離線包

<https://github.com/google/blockly/zipball/master>

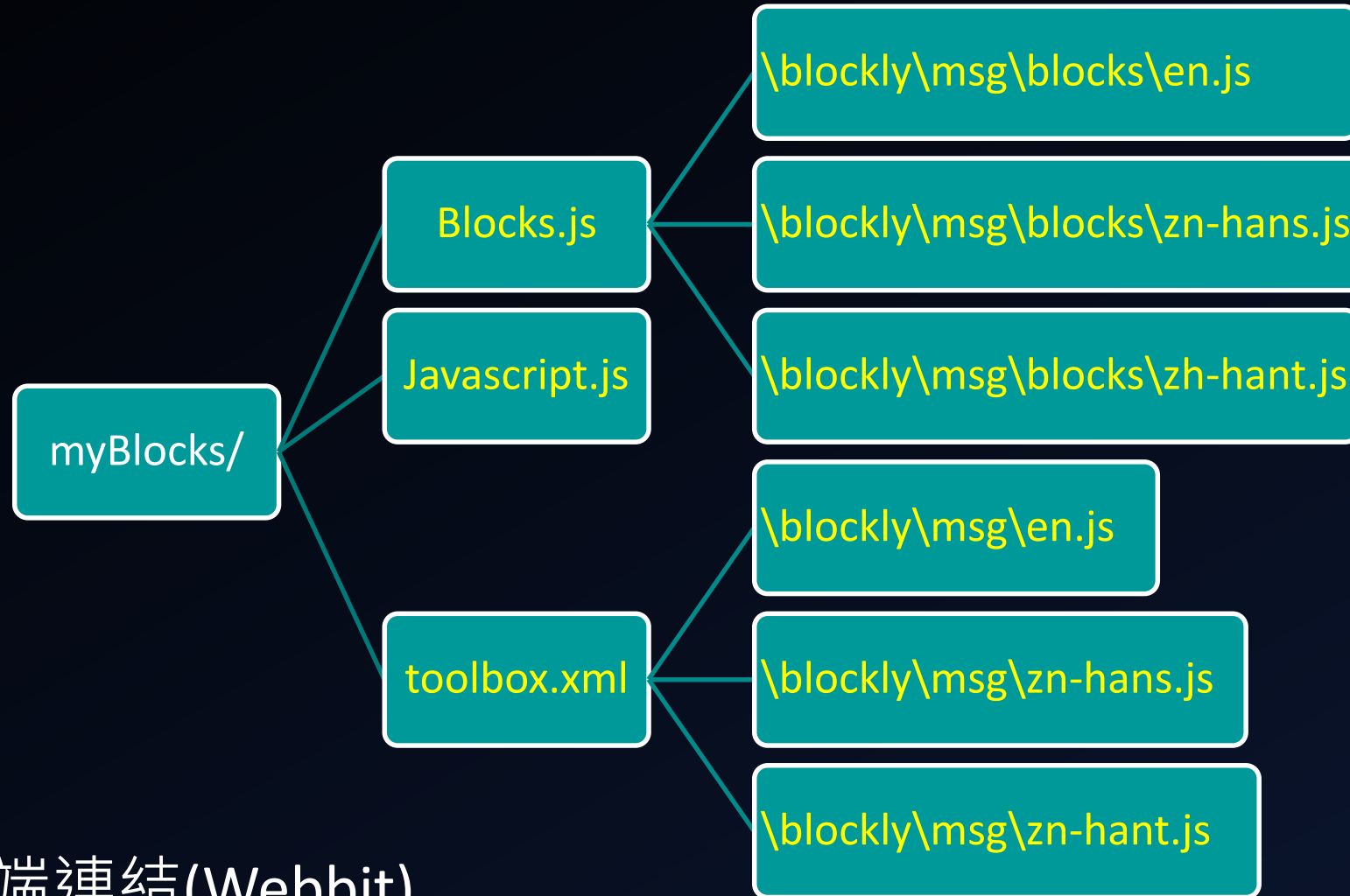
Webduino官方撰寫積木教學文件

<https://www.facebook.com/groups/webduino/permalink/1536223946446669/>

Webduino檔案架構(雲端平台、教育版、Kebbi)



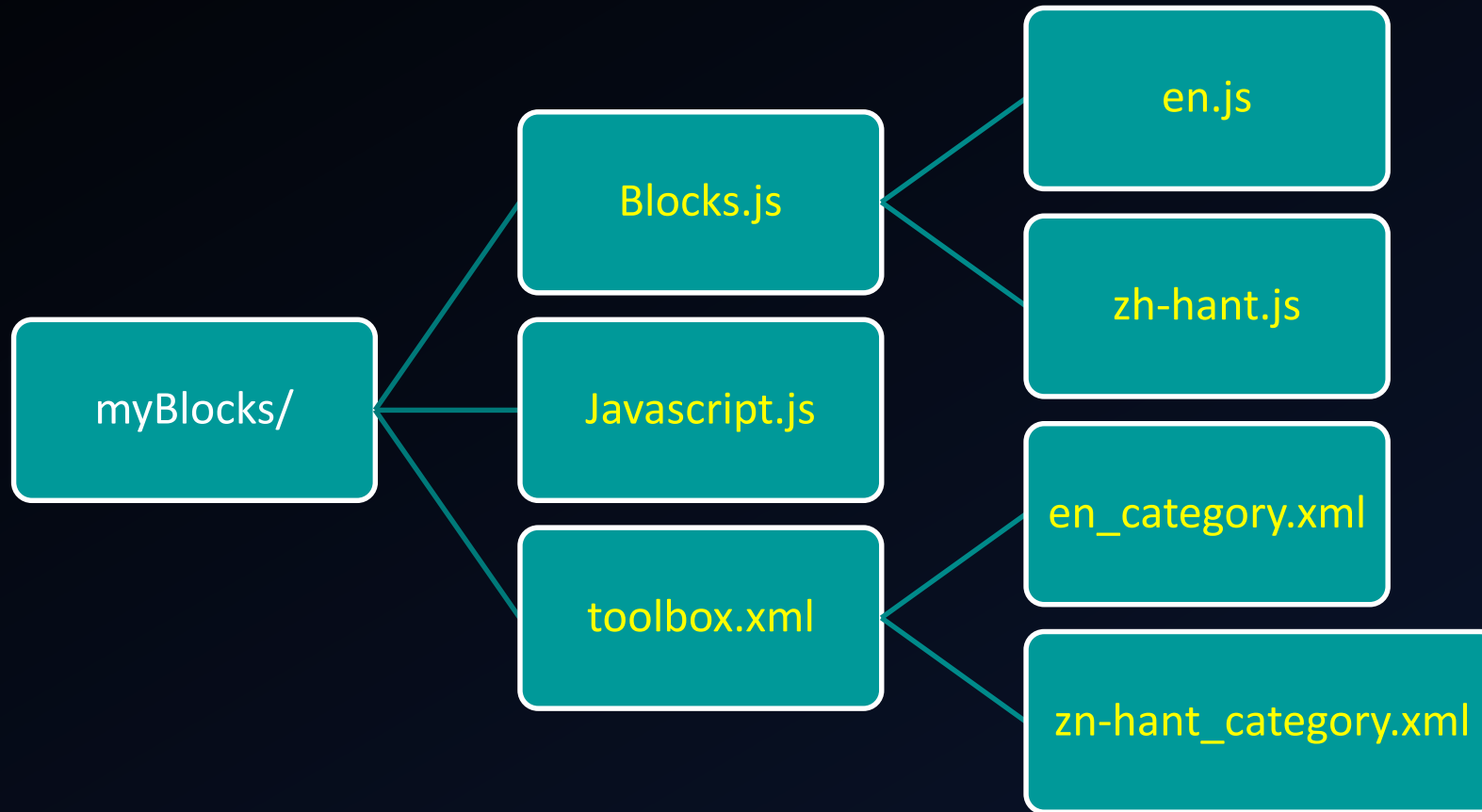
Webduino自訂積木架構



自訂積木遠端連結(Webbit)

<http://xxx.xxx.xxx.xxx/myBlocks/blockly.json>

BlocklyDuino自訂積木架構



自訂積木本機連結(BlocklyDuino)

[./myBlocks/blockly.json](#)

Blockly.json (Webbit) 自訂積木佈署檔

```
{  
  "types": ["digitalwrite", "digitalread"],  
  "category": "catPlus",  
  "scripts": [  
    "blockly/blocks.js",  
    "blockly/javascript.js"  
  ],  
  "dependencies": [  
    "myBlocks.js"  
  ],  
  "msg": "blockly/msg",  
  "blocksMsg": "blockly/msg/blocks",  
  "toolbox": "blockly/toolbox.xml"  
}
```

自訂積木id列表。執行程式前會檢查是否使用到列表中的積木則載入"dependencies"下的檔案。

自訂積木掛載主目錄id

自訂積木定義檔 (Blockly Developer Tools產出)

自訂積木產出原始碼變數檔 (Blockly Developer Tools產出)

執行程式時載入對應javascript.js產出的函式的自訂js函式庫

自訂積木目錄名稱語系檔en.js(英文), zh-hans.js(簡中), zh-hant.js(繁中)

自訂積木文字語系檔en.js(英文), zh-hans.js(簡中), zh-hant.js(繁中)

自訂積木目錄配置檔 (Blockly Developer Tools產出)

Blockly Developer Tools (Block Factory)

Blockly Developer Tools (匯出blocks.js, javascript.js, toolbox.xml)

<https://blockly-demo.appspot.com/static/demos/blockfactory/index.html>

使用教學

<https://developers.google.com/blockly/guides/create-custom-blocks/blockly-developer-tools>

教學影片

https://www.youtube.com/watch?time_continue=705&v=s2_xaEvcVI0&feature=emb_logo

Block Factory

Block Exporter

Workspace Factory

Block Library

Update "digitalwrite"

Delete "digitalwrite"



Clear Library

Import Block Library

Download Block Library

Preview: LTR ▾

digitalWrite ( , HIGH ▾)

Block Definition: JavaScript ▾

```
Blockly.Blocks['digitalwrite'] = {  
  init: function() {  
    this.appendDummyInput()  
      .appendField("digitalWrite");  
    this.appendValueInput("pin")  
      .setCheck("Number")  
      .appendField("(");  
    this.appendDummyInput()  
      .appendField(" ");
```

Generator stub: JavaScript ▾

```
Blockly.JavaScript['digitalwrite'] = function(block) {  
  var value_pin = Blockly.JavaScript.valueToCode(block, 'pin', Blockly.JavaScript.ORDER_ATOMIC);  
  var dropdown_mode = block.getFieldValue('mode');  
  // TODO: Assemble JavaScript into code variable.  
  var code = '...;\n';  
  return code;  
};
```

Input
Field
Type
Colour

name digitalWrite

inputs

dummy input

fields left ▾ text digitalWrite

value input pin

fields left ▾ text (

type Number

dummy input

fields left ▾ text ,

dropdown mode

- HIGH , 1
- LOW , 0

text)

inline ▾ inputs

↑ top+bottom connections ▾

tooltip

help url

top type

“ digitalWrite(pin, value) ”

“ <https://www.arduino.cc/reference/en/language/fun..> ”

Block Factory

Block Exporter

Workspace Factory

First, select blocks from your block library by clicking on them. Then, use the Export Settings form to download starter code for selected blocks.

Block Selector

Select

Clear Selected

digitalWrite (HIGH)

☒ digitalWrite

digitalRead ()

☒ digitalread

Export Settings

Currently Selected:

digitalwrite, digitalread

☒ Block Definition(s)

Format: JavaScript

File Name:

blocks

☒ Generator Stub(s)

Language: JavaScript

File Name:

javascript

Export

Export Preview

Block Definitions:

```
Blockly.Blocks['digitalwrite'] = {
  init: function() {
    this.appendDummyInput()
      .appendField("digitalWrite");
    this.appendValueInput("pin")
      .setCheck("Number")
      .appendField("");
    this.appendDummyInput()
      .appendField(",")
      .appendField(new Blockly.FieldDropdown([["HIGH", "1"], ["LOW", "0"]]), "mode");
  }
};
```

Generator Stubs: 若是BlocklyDuino須將程式碼中"Javascript"全部取代為"Arduino"

```
Blockly.JavaScript['digitalwrite'] = function(block) {
  var value_pin = Blockly.JavaScript.valueToCode(block, 'pin', Blockly.JavaScript.
  var dropdown_mode = block.getFieldValue('mode');
  // TODO: Assemble JavaScript into code variable.
  var code = '...;\n';
  return code;
};

Blockly.JavaScript['digitalread'] = function(block) {
  var value_pin = Blockly.JavaScript.valueToCode(block, 'pin', Blockly.JavaScript
```


Block Factory Block Exporter **Workspace Factory**

Import Custom Blocks Load to Edit **Export** Clear

Starter Code

Toolbox

Workspace Blocks

All

Edit

Drag blocks into the workspace to create your custom workspace.

Toolbox Workspace

Logic
Loops
Math
Text
Lists
Colour
Variables
Functions
Block Library

digitalWrite (2 , HIGH)

digitalRead (2)

You currently have no categories.

+

-

↑

↓

Edit Category...

Make Shadow

Preview

This is what your custom workspace will look like.

digitalWrite (2 , HIGH)

digitalRead (2)

myBlocks\blockly\blocks.js (WebBit)

myBlocks\blocks.js (BlocklyDuino)

```
Blockly.Blocks['digitalwrite'] = {  
  init: function() {  
    this.appendDummyInput() 動態語系文字  
      .appendField(Blockly.Msg.digitalWrite);  
    this.appendValueInput("pin") 自訂名稱  
      .setCheck("Number")  
      .appendField("("); 固定文字  
    this.appendDummyInput() 數值輸入  
      .appendField(","); 固定文字  
      .appendField(new Blockly.FieldDropdown([["HIGH", "1"], ["LOW", "0"]]), "mode") 下拉選單  
      .appendField(")"); 固定文字  
    this.setInputsInline(true); 不換行顯示  
    this.setPreviousStatement(true, null);  
    this.setNextStatement(true, null);  
    this.setColour(255); 積木顏色  
    this.setTooltip("digitalWrite(pin, value)");  
    this.setHelpUrl("https://www.arduino.cc/reference/en/language/functions/digital-io/digitalwrite/");  
  }  
};
```

myBlocks\blockly\msg\blocks\en.js

Blockly.Msg.digitalWrite = "Digital Write";

myBlocks\blockly\msg\blocks\zh-hant.js

Blockly.Msg.digitalWrite = "數位輸出";

輸出指令

數位輸出 (2 , HIGH)

digitalWrite(pin, value)

數位輸出 (2 , HIGH)

複製

教學

小工具

digitalWrite() - Arduino Reference

This page is also available in
2 other languages

English

輸出值

this.setOutput(true, "Number");

數位輸入 (2)

myBlocks\blockly\javascript.js (WebBit)

```
Blockly.JavaScript['digitalwrite'] = function(block) {  
  var value_pin = Blockly.JavaScript.valueToCode(block, 'pin', Blockly.JavaScript.ORDER_ATOMIC); 值輸入  
  var dropdown_mode = block.getFieldValue('mode'); 下拉選單  
  
  var code = 'digitalWrite('+value_pin+', '+dropdown_mode+')'; 換行  
  return code; 輸出指令  
};
```

程式碼變數 (尾端加 ;)

注意是否要加雙引號

""+dropdown_mode+""

myBlocks\myBlocks.js

```
function digitalWrite(pin, val) {  
  var url = "http://192.168.1.100/?digitalwrite="+pin+";"+val;  
  console.log(url);  
  fetch(url);  
}
```

數位輸出 (2 , HIGH)

digitalWrite(2, 1);

```
Blockly.JavaScript['digitalread'] = function(block) {  
  var value_pin = Blockly.JavaScript.valueToCode(block, 'pin', Blockly.JavaScript.ORDER_ATOMIC); 值輸入  
  
  var code = 'digitalRead('+value_pin+')'; 程式碼變數 (尾端不加 ;)  
  
  return [code, Blockly.JavaScript.ORDER_NONE]; 輸出值  
};
```

myBlocks\myBlocks.js

```
function digitalRead(pin) {  
  var url = "http://192.168.1.100/?digitalread="+pin;  
  console.log(url);  
  return url;  
}
```

數位輸入 (2)

digitalRead(2);

myBlocks\javascript.js (Blocklyduino)

```
Blockly.JavaScript['digitalwrite'] = function(block) {  
  var value_pin = Blockly.JavaScript.valueToCode(block, 'pin', Blockly.JavaScript.ORDER_ATOMIC);  
  var dropdown_mode = block.getFieldValue('mode');  
  
  var code = 'digitalWrite('+value_pin+', '+dropdown_mode+');\n';  
  return code;  
};
```



digitalWrite(2, 1);

Arduino函式庫

將Blockly Developer Tools 產生的程式碼所有"Javascript"取代為"Arduino"

```
Blockly.Arduino['digitalwrite'] = function(block) {  
  var value_pin = Blockly.Arduino.valueToCode(block, 'pin', Blockly.Arduino.ORDER_ATOMIC);  
  var dropdown_mode = block.getFieldValue('mode');  
  
  var code = 'digitalWrite('+value_pin+', '+dropdown_mode+');\n';  
  return code;  
};
```



digitalRead(2);

Arduino函式庫

myBlocks\blockly\toolbox.xml (Webbit) 對應id

<category id="myBlocks" name="myBlocks"> 主目錄

```
<category id="myCategory1" name="myCategory1">
  <block type="digitalwrite">
    <field name="mode">1</field>
    <value name="pin">
      <block type="math_number">
        <field name="NUM">2</field>
      </block>
    </value>
  </block>
  <block type="digitalread">
    <value name="pin">
      <block type="math_number">
        <field name="NUM">2</field>
      </block>
    </value>
  </block>
</category>
```

子目錄1

myBlocks\blockly\msg\en.js

```
MSG.myBlocks = "My Blocks";
MSG.myCategory1 = "Category 1";
MSG.myCategory2 = "Category 2";
```

目錄id

```
<category id="myCategory2" name="myCategory2">
  <block type="digitalread">
    <value name="pin">
      <block type="math_number">
        <field name="NUM">2</field>
      </block>
    </value>
  </block>
  <block type="digitalwrite">
    <field name="mode">1</field>
    <value name="pin">
      <block type="math_number">
        <field name="NUM">2</field>
      </block>
    </value>
  </block>
</category>
```

子目錄2

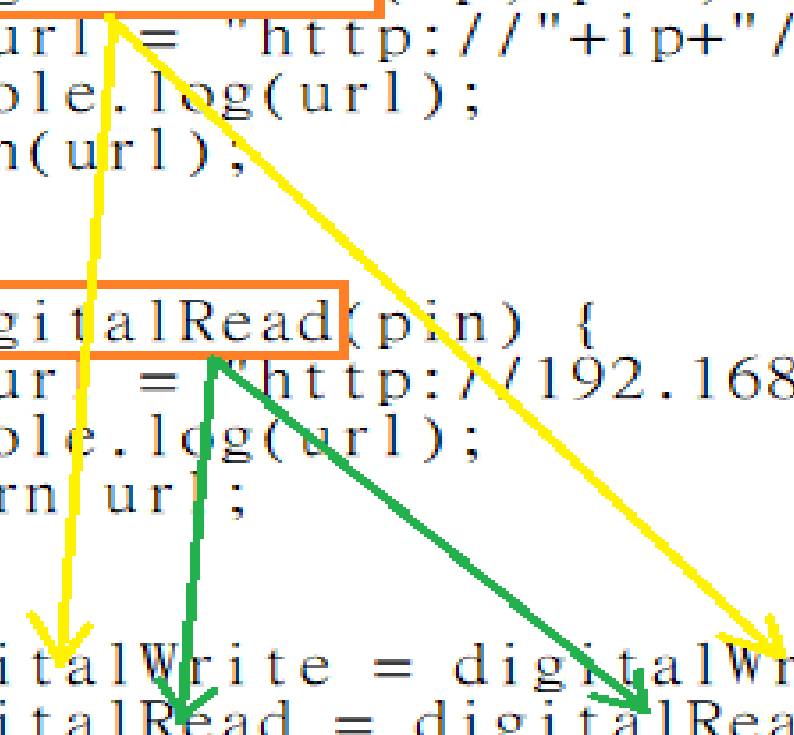
myBlocks\blockly\msg\zh-hant.js

```
MSG.myBlocks = "我的積木";
MSG.myCategory1 = "目錄 1";
MSG.myCategory2 = "目錄 2";
```

</category>

myBlocks.js (Webbit)

```
+(function (window, document) {  
    'use strict';  
  
    function digitalWrite(ip, pin, val) {  
        var url = "http://" + ip + "?digitalwrite=" + pin + ";" + val;  
        console.log(url);  
        fetch(url);  
    }  
  
    function digitalRead(pin) {  
        var url = "http://192.168.1.100/?digitalread=" + pin;  
        console.log(url);  
        return url;  
    }  
  
    window.digitalWrite = digitalWrite;  
    window.digitalRead = digitalRead;  
    新增函式要對應新增此行程式碼  
})(window, window.document));
```



The diagram consists of two yellow arrows and one green arrow. One yellow arrow originates from the `digitalWrite` function definition and points to the `window.digitalWrite` assignment. The other yellow arrow originates from the `digitalRead` function definition and points to the `window.digitalRead` assignment. A green arrow originates from the `return url;` statement in the `digitalRead` function and points to the `return url;` statement in the `digitalRead` function definition.

myBlocks\toolbox.xml (BlocklyDuino) 對應name

檔案en_category.xml、zh-hant_category.xml 內容不可換行排列，請參照範例檔內容。

<category id="myBlocks" name="myBlocks"> 主目錄

```
<category id="myCategory1" name="myCategory1">
  <block type="digitalwrite">
    <field name="mode">1</field>
    <value name="pin">
      <block type="math_number">
        <field name="NUM">2</field>
      </block>
    </value>
  </block>
  <block type="digitalread">
    <value name="pin">
      <block type="math_number">
        <field name="NUM">2</field>
      </block>
    </value>
  </block>
</category>
```

子目錄1

```
<category id="myCategory2" name="myCategory2">
  <block type="digitalread">
    <value name="pin">
      <block type="math_number">
        <field name="NUM">2</field>
      </block>
    </value>
  </block>
  <block type="digitalwrite">
    <field name="mode">1</field>
    <value name="pin">
      <block type="math_number">
        <field name="NUM">2</field>
      </block>
    </value>
  </block>
</category>
```

子目錄2

</category>

myBlocks\en_category.xml

```
<xml>
  <category>
    <name>myBlocks</name>
    <replace>My Blocks</replace>
  </category>
  <category>
    <name>myCategory1</name>
    <replace>Category 1</replace>
  </category>
  <category>
    <name>myCategory2</name>
    <replace>Category 2</replace>
  </category>
</xml>
```

myBlocks\en_category.xml

```
<xml>
  <category>
    <name>myBlocks</name>
    <replace>我的積木</replace>
  </category>
  <category>
    <name>myCategory1</name>
    <replace>目錄 1</replace>
  </category>
  <category>
    <name>myCategory2</name>
    <replace>目錄 2</replace>
  </category>
</xml>
```


下拉圖檔選單 (Webbit)

```
//圖檔位置 C:\Webduino\WebBit\package.nw\blockly\media  
var monsterList = [  
  ['{"src":"media/demo-edu-a1-s.png", "width":"30", "height":"42", "title":"HIGH", "showTitle":"true"}', '1'],  
  ['{"src":"media/demo-edu-a4-s.png", "width":"30", "height":"42", "title":"LOW", "showTitle":"true"}', '0']  
];
```

神奇的空格

```
Blockly.Blocks['digitalwrite'] = {  
  init: function() {  
    this.appendDummyInput()  
      .appendField(Blockly.Msg.digitalWrite);  
    this.appendValueInput("pin")  
      .setCheck("Number")  
      .appendField("(");  
    this.appendDummyInput()  
      .appendField(",")  
      .appendField(new Blockly.FieldDropdown(monsterList), "mode")  
      .appendField(")");  
    this.setInputsInline(true);  
    this.setPreviousStatement(true, null);  
    this.setNextStatement(true, null);  
    this.setColour(255);  
    this.setTooltip("digitalWrite(pin, value)");  
    this.setHelpUrl("https://www.arduino.cc/reference/en/language/functions/digital-io/digitalwrite/");  
  }  
};
```



Javascript.js常用技巧 (Webbit)

xmlHttp取得XML資料與AJAX取得跨網域資料

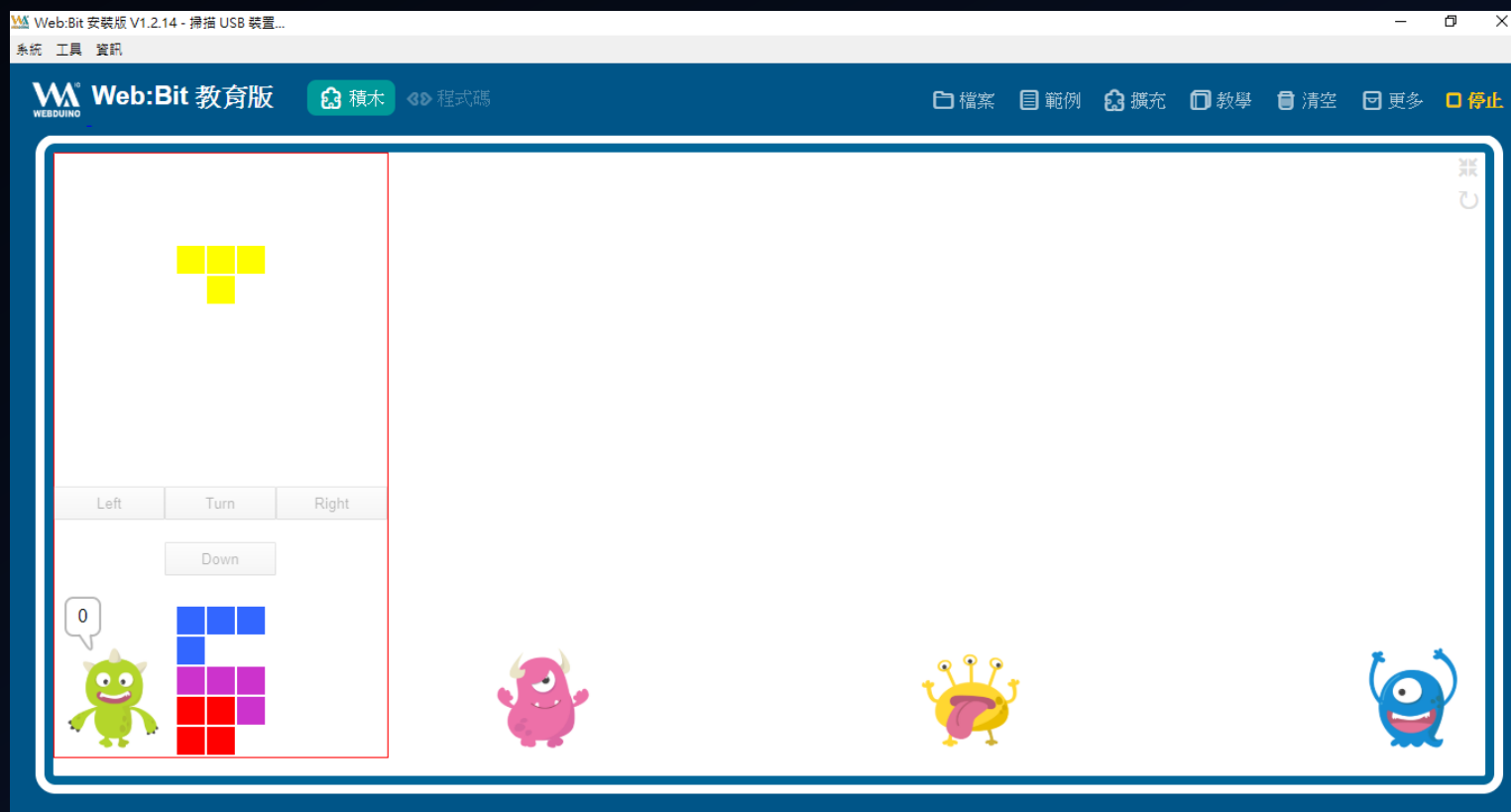
https://github.com/fustyles/webduino/blob/master/AirQuality_Taiwan_20180121/AirQualityTaiwan.js

遊戲元素自訂積木原始碼解說

https://github.com/fustyles/webduino/blob/master/GameElements_20190131/blockly/javascript.js

新增遊戲元素積木指令

https://github.com/fustyles/webduino/blob/master/EDU_addCustomBlocks/blockly/blocks.js



Javascript.js實用技巧 (BlocklyDuino)

置於程式碼最上方

```
Blockly.Arduino.definitions_['自訂名稱'] = '#include <函式庫名稱.h>';
```

取得目前Setup(){} 區塊內程式碼

```
var statements_setup = Blockly.Arduino.statementToCode(block, 'setup');
```

取得目前loop(){} 區塊內程式碼

```
var statements_loop = Blockly.Arduino.statementToCode(block, 'loop');
```

取得某statements_input區塊內程式碼

```
var statements_custom = Blockly.Arduino.statementToCode(block, 'NAME值');
```

插入程式碼置於Setup(){}區塊內最前方

```
Blockly.Arduino.setups_.manual_add = "pinMode(2, OUTPUT);\n" + statements_setup;
```

插入程式碼置於Setup(){}區塊內最後方

```
Blockly.Arduino.setups_.manual_add = statements_setup + "pinMode(2, OUTPUT);\n";
```

新增函式庫置放目錄(BlocklyDuino)

libraries

檔案 常用 共用 檢視

← → ↕ ↑

BlocklyDuino3 > arduino-1.8.5 > libraries

名稱	修改日期	類型	大小
Adafruit_Circuit_Playground	2020/8/14 下午 01:35	檔案資料夾	
Bridge	2020/8/14 下午 01:35	檔案資料夾	
Esplora	2020/8/14 下午 01:35	檔案資料夾	
Ethernet	2020/8/14 下午 01:35	檔案資料夾	
Firmata	2020/8/14 下午 01:35	檔案資料夾	
GSM	2020/8/14 下午 01:35	檔案資料夾	
Keyboard	2020/8/14 下午 01:35	檔案資料夾	
LiquidCrystal	2020/8/14 下午 01:35	檔案資料夾	
Mouse	2020/8/14 下午 01:35	檔案資料夾	
Robot_Control	2020/8/14 下午 01:35	檔案資料夾	
Robot_Motor	2020/8/14 下午 01:35	檔案資料夾	
RobotIRremote	2020/8/14 下午 01:35	檔案資料夾	
SD	2020/8/14 下午 01:35	檔案資料夾	
Servo	2020/8/14 下午 01:35	檔案資料夾	
SpacebrewYun	2020/8/14 下午 01:35	檔案資料夾	
Stepper	2020/8/14 下午 01:35	檔案資料夾	
Temboo	2020/8/14 下午 01:35	檔案資料夾	
TFT	2020/8/14 下午 01:35	檔案資料夾	
WiFi	2020/8/14 下午 01:35	檔案資料夾	

快速存取

- OneDrive
- 本機
 - 3D 物件
 - 下載
 - 文件
 - 音樂
 - 桌面
 - 圖片
 - 影片
 - 本機磁碟 (C:)
- 網路

自訂積木路徑設定 (BlocklyDuino)

開啟package.nw\js\init.js將本機路徑修改成遠端路徑

本機路徑

```
var blocks_path = "./myBlocks/blocks.js";  
var javascript_path = "./myBlocks/javascript.js";  
var toolbox_path = "./myBlocks/toolbox.xml";  
var en_path = "./myBlocks/en.js";  
var en_category_path = "./myBlocks/en_category.xml";  
var zhant_path = "./myBlocks/zh-hant.js";  
var zhant_category_path = "./myBlocks/zh-hant_category.xml";
```

遠端路徑

```
var blocks_path = "https://xxx.xxx.xxx.xxx/myBlocks/blocks.js";  
var javascript_path = "https://xxx.xxx.xxx.xxx/myBlocks/javascript.js";  
var toolbox_path = "https://xxx.xxx.xxx.xxx/myBlocks/toolbox.xml";  
var en_path = "https://xxx.xxx.xxx.xxx/myBlocks/en.js";  
var en_category_path = "https://xxx.xxx.xxx.xxx/myBlocks/en_category.xml";  
var zhant_path = "https://xxx.xxx.xxx.xxx/myBlocks/zh-hant.js";  
var zhant_category_path = "https://xxx.xxx.xxx.xxx/myBlocks/zh-hant_category.xml";
```

新增數個自訂積木 (BlocklyDuino)

法蘭斯自訂積木

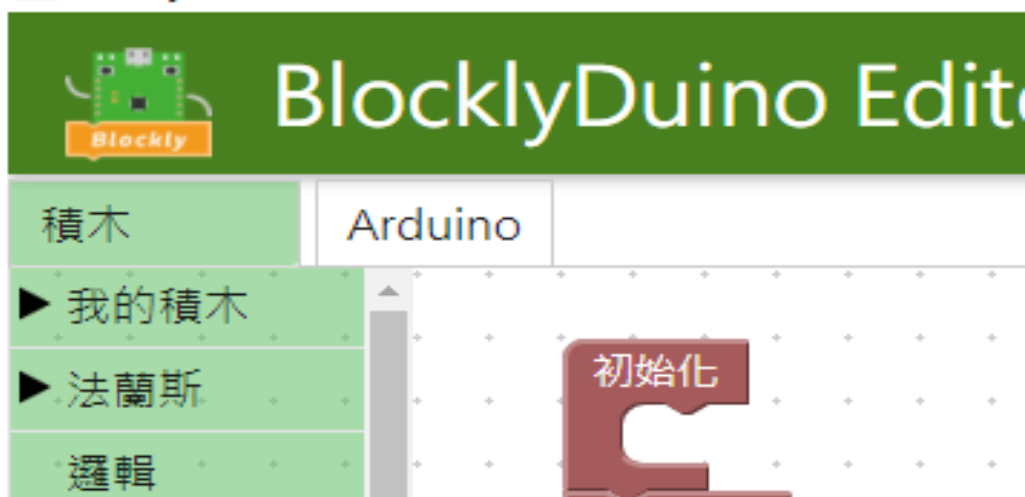
```
var blocks_path = "https://fustyles.github.io/webduino/LinkIt7697/FranceFu/blocks.js";  
var javascript_path = "https://fustyles.github.io/webduino/LinkIt7697/FranceFu/javascript.js";  
var toolbox_path = "https://fustyles.github.io/webduino/LinkIt7697/FranceFu/toolbox.xml";  
var en_path = "https://fustyles.github.io/webduino/LinkIt7697/FranceFu/en.js";  
var en_category_path = "https://fustyles.github.io/webduino/LinkIt7697/FranceFu/en_category.xml";  
var zh_hant_path = "https://fustyles.github.io/webduino/LinkIt7697/FranceFu/zh-hant.js";  
var zh_hant_category_path = "https://fustyles.github.io/webduino/LinkIt7697/FranceFu/zh-hant_category.xml";  
  
initial(blocks_path, javascript_path, toolbox_path);
```

可重複新增此區塊程式碼設定自訂積木路徑載入多個自訂積木

我的自訂積木

```
var blocks_path = "./myBlocks/blocks.js";  
var javascript_path = "./myBlocks/javascript.js";  
var toolbox_path = "./myBlocks/toolbox.xml";  
var en_path = "./myBlocks/en.js";  
var en_category_path = "./myBlocks/en_category.xml";  
var zh_hant_path = "./myBlocks/zh-hant.js";  
var zh_hant_category_path = "./myBlocks/zh-hant_category.xml";  
  
initial(blocks_path, javascript_path, toolbox_path);
```

BlocklyDuino



進階控制技巧

<https://blockly-demo.appspot.com/static/tests/playground.html?dir=ltr&toolbox=test-blocks>

法蘭斯自訂積木

法蘭斯點矩陣

https://fustyles.github.io/webduino/EDU_bit_MatrixLed_20190827/blockly.json

遊戲元素

https://fustyles.github.io/webduino/GameElements_20190131/blockly.json

Javascript 指令擴充

https://fustyles.github.io/webduino/Instruction_20181213/blockly.json

朗讀語言擴充

https://fustyles.github.io/webduino/EDU_speak_setting/blockly.json

監看程式碼 (首頁開啟開發人員工具 <http://localhost:20975/blockly/>)

https://fustyles.github.io/webduino/ShowCode_20181216/blockly.json

姿態辨識 (tfjs posenet)

https://fustyles.github.io/webduino/posenet_20190822/blockly.json

物件辨識(tfjs mobilenet)

https://fustyles.github.io/webduino/mobilenet_20190821/blockly.json

物件辨識(tfjs coco-ssd)

https://fustyles.github.io/webduino/coco-ssd_20190821/blockly.json

臉部偵測 (tfjs face-api.js)

https://fustyles.github.io/webduino/faceapi_20200124/blockly.json

臉部辨識 (tfjs face-api.js)

https://fustyles.github.io/webduino/faceapi_20200402/blockly.json

深度學習 (tfjs KNN-Classfier)

https://fustyles.github.io/webduino/knn-classfier_20190608/blockly.json

語音辨識

https://fustyles.github.io/webduino/SpeechRecognition_20191225/blockly.json

圖像分割 (tfjs deeplab)

https://fustyles.github.io/webduino/deeplab_20200125/blockly.json

身體偵測 (tfjs bodypix2)

https://fustyles.github.io/webduino/bodypix2_20200125/blockly.json

身體偵測 (tfjs bodypix1)

https://fustyles.github.io/webduino/bodypix1_20200125/blockly.json

人臉偵測 (Tracking.js)

https://fustyles.github.io/webduino/Tracking_20190917/blockly.json

顏色偵測 (Tracking.js)

https://fustyles.github.io/webduino/Tracking_20200625/blockly.json

手勢偵測 (tfjs handpose)

https://fustyles.github.io/webduino/handpose_20200614/blockly.json

臉部網格偵測 (tfjs facemesh)

https://fustyles.github.io/webduino/Facemesh_20200626/blockly.json

臉部偵測 (tfjs brazeface)

https://fustyles.github.io/webduino/Blazeface_20200627/blockly.json

機械學習 (tfjs Machine Learning)

https://fustyles.github.io/webduino/teachablemachine_20200729/blockly.json

文字偵測 (tesseract.js)

https://fustyles.github.io/webduino/tesseract.js_20200615/blockly.json

Line Bot

https://fustyles.github.io/webduino/LineBot_20181027/blockly.json

Telegram Bot

https://fustyles.github.io/webduino/Telegram_20200809/blockly.json

物件辨識(Microsoft Azure Custom Vision)

https://fustyles.github.io/webduino/Azure_ClassifyImage_20190901/blockly.json

物件辨識(Microsoft Azure Custom Vision + TFJS)

https://fustyles.github.io/webduino/Azure_customvision-tfjs_20200128/blockly.json

臉部辨識(Microsoft Azure Face API – Face Detect)

https://fustyles.github.io/webduino/Azure_FaceDetection_20190901/blockly.json

尋找相似臉(Microsoft Azure Face API - Find Similar Face)

https://fustyles.github.io/webduino/Azure_FaceFindSimilar_20191117/blockly.json

驗證同一人(Microsoft Azure Face API API – Verify Face To Face)

https://fustyles.github.io/webduino/Azure_FaceToFaceVerify_20191118/blockly.json

ESP32-CAM (雲端平台網址須由https改成http)

https://fustyles.github.io/webduino/ESP32-CAM_20191201/blockly.json

[韌體]

https://github.com/fustyles/Arduino/tree/master/ESP32-CAM_MyBlockly_JSON

WebBit (雲端平台網址須由https改成http)

https://fustyles.github.io/webduino/WebBit_20190225/blockly.json

[韌體]

https://github.com/fustyles/Arduino/blob/master/WebBit_ESP32_MyBlockly_JSON.ino

WiFiBoard (ESP32 、 LinkIt7697)

https://fustyles.github.io/webduino/ESP8266_20190128/blockly.json

[ESP32韌體]

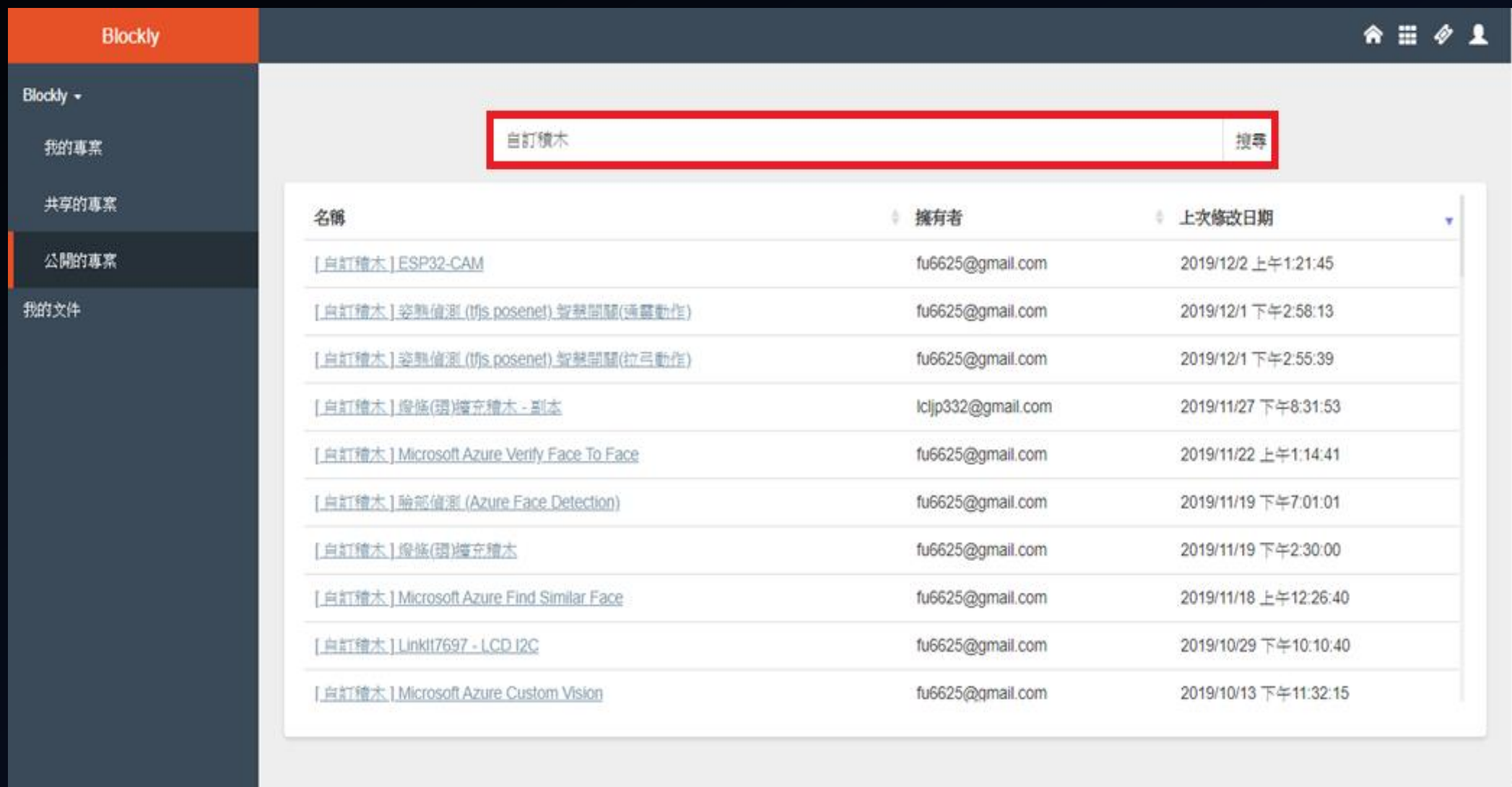
https://github.com/fustyles/Arduino/blob/master/ESP32_MyBlockly_JSON.ino

[LinkIt7697韌體]

https://github.com/fustyles/Arduino/blob/master/LinkIt7697_MyBlockly_JSON.ino

自訂積木範例 <https://github.com/fustyles/webduino>

雲端平台搜尋「自訂積木」



The screenshot shows the Blockly web interface. On the left is a sidebar with navigation options: '我的專案' (My Projects), '共享的專案' (Shared Projects), '公開的專案' (Public Projects), and '我的文件' (My Files). The main area displays a search bar with the text '自訂積木' (Custom Blocks) and a '搜尋' (Search) button. Below the search bar is a table of search results.

名稱	擁有者	上次修改日期
[自訂積木] ESP32-CAM	fu6625@gmail.com	2019/12/2 上午1:21:45
[自訂積木] 姿勢偵測 (tfjs posenet) 智慧開關(通電動作)	fu6625@gmail.com	2019/12/1 下午2:58:13
[自訂積木] 姿勢偵測 (tfjs posenet) 智慧開關(拉弓動作)	fu6625@gmail.com	2019/12/1 下午2:55:39
[自訂積木] 燈條(環)擴充積木 - 副本	lcljp332@gmail.com	2019/11/27 下午8:31:53
[自訂積木] Microsoft Azure Verify Face To Face	fu6625@gmail.com	2019/11/22 上午1:14:41
[自訂積木] 臉部偵測 (Azure Face Detection)	fu6625@gmail.com	2019/11/19 下午7:01:01
[自訂積木] 燈條(環)擴充積木	fu6625@gmail.com	2019/11/19 下午2:30:00
[自訂積木] Microsoft Azure Find Similar Face	fu6625@gmail.com	2019/11/18 上午12:26:40
[自訂積木] LinkIt7697 - LCD I2C	fu6625@gmail.com	2019/10/29 下午10:10:40
[自訂積木] Microsoft Azure Custom Vision	fu6625@gmail.com	2019/10/13 下午11:32:15