Mbed Lab 1 Report
Mbed Introduction

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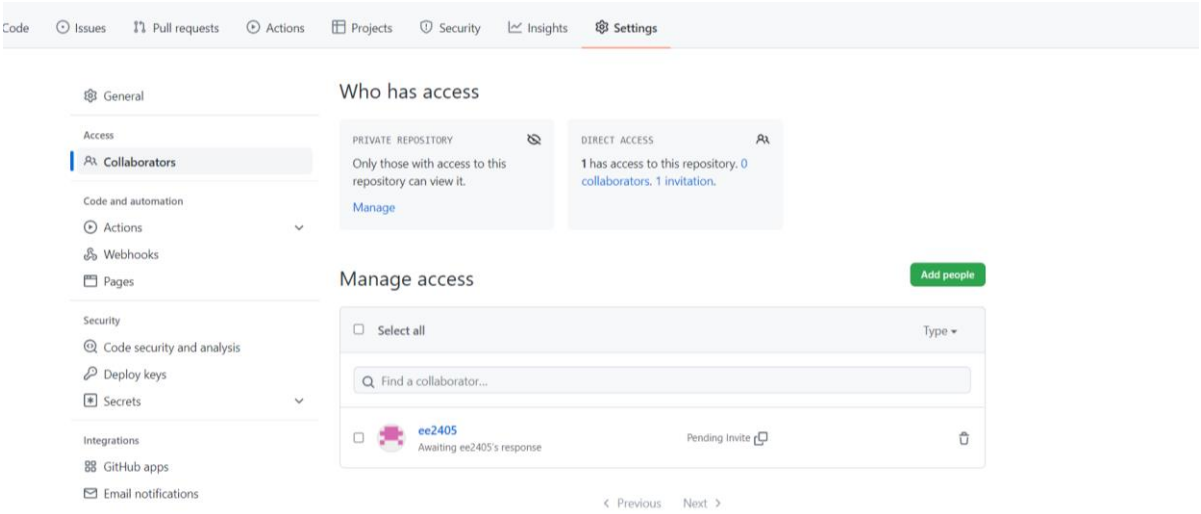
一、環境建置

1、Set Github

辦Github帳號，並設定Collaborators加入ee2405。



2、Set VScode

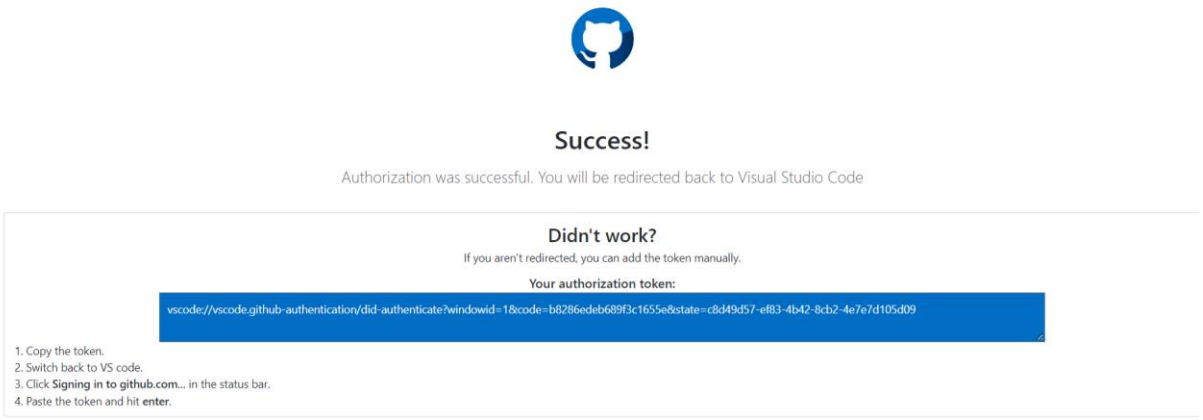
MSYS2 Download :載好MSYS2並測試成功

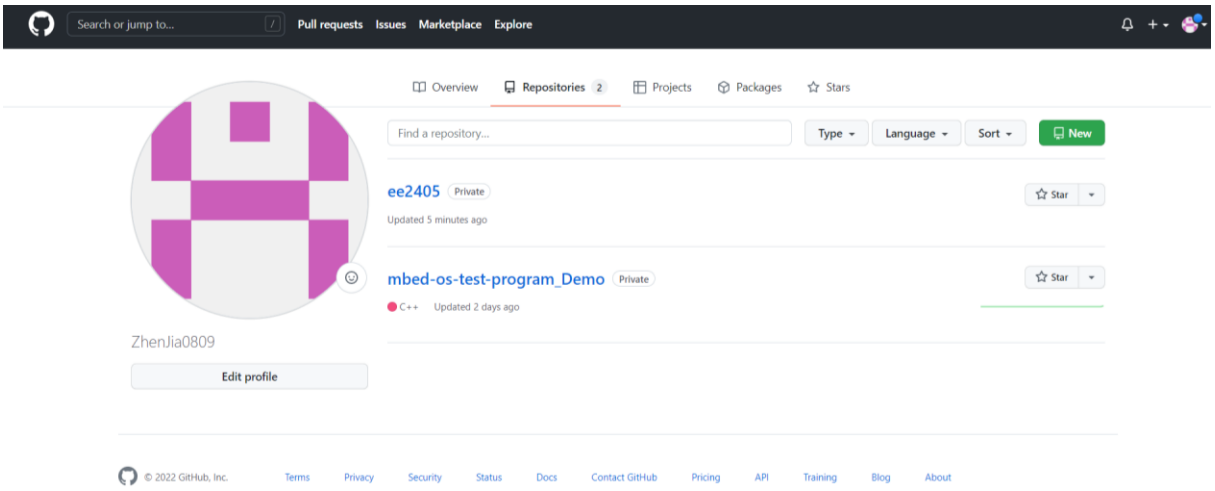
```
tomkitty512@LAPTOP-N7DHN3UH MINGW64 ~
$ g++ --version
g++.exe (Rev10, Built by MSYS2 project) 11.2.0
Copyright (C) 2021 Free Software Foundation, Inc.
This is free software; see the source for copying conditions.  There is NO
warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.


tomkitty512@LAPTOP-N7DHN3UH MINGW64 ~
GNU gdb (GDB) 11.2
Copyright (C) 2022 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.html>
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.

tomkitty512@LAPTOP-N7DHN3UH MINGW64 ~
$ gcc --version
gcc.exe (Rev10, Built by MSYS2 project) 11.2.0
Copyright (C) 2021 Free Software Foundation, Inc.
This is free software; see the source for copying conditions.  There is NO
warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.
```

Compile C++ :設定好Vscode編譯環境

一、環境建置

成功在 Vscode 中 Publish 到 github



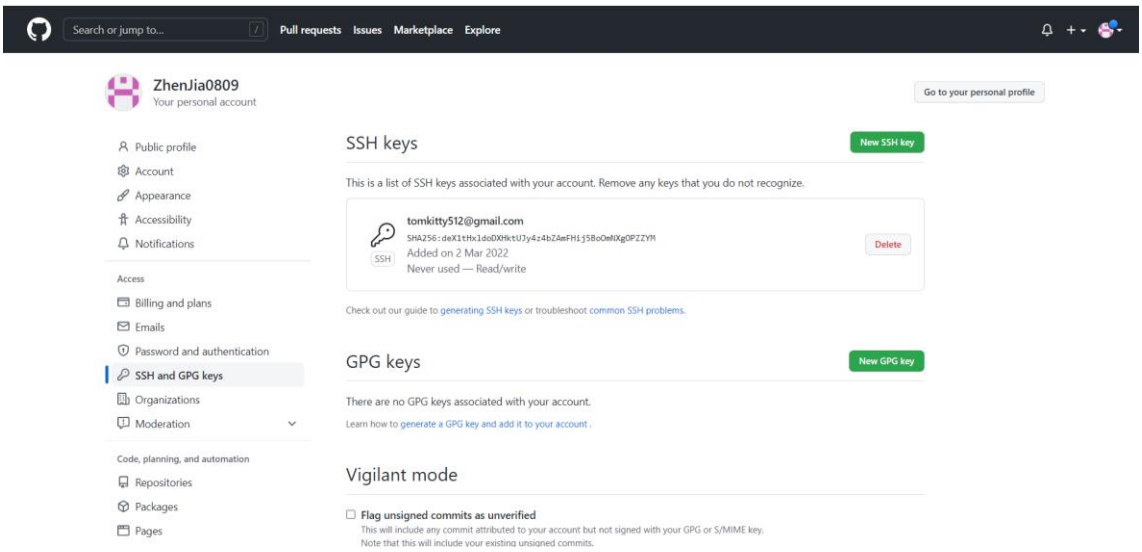


一、環境建置

3、Git Bash

```
tomkitty512@LAPTOP-N7DHN3UH MINGW64 ~
$ git --version
git version 2.35.1.windows.2

tomkitty512@LAPTOP-N7DHN3UH MINGW64 ~
$ git config --global user.name "ZhenJia"

tomkitty512@LAPTOP-N7DHN3UH MINGW64 ~
$ git config --global user.email "tomkitty512@gmail.com"
```

4、設定SSH



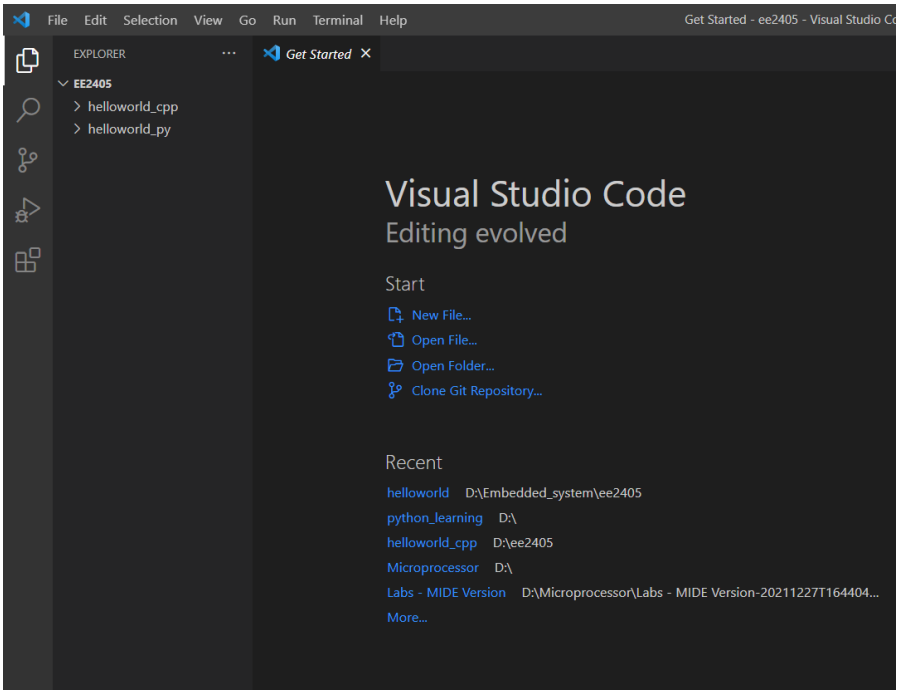
一、環境建置

5、建Workspace

在D槽新建helloworld_cpp、 helloworld _py資料夾

```
C:\>D:

D:\>cd Embedded_system

D:\Embedded_system>mkdir ee2405

D:\Embedded_system>cd ee2405

D:\Embedded_system\ee2405>mkdir helloworld_cpp

D:\Embedded_system\ee2405>code .

D:\Embedded_system\ee2405>mkdir helloworld_py

D:\Embedded_system\ee2405>code .

D:\Embedded_system\ee2405>
```

VScode開啟畫面



二、Create and Compile a mbed progrem

1、mbed-os-example-blinky

```
/* mbed Microcontroller Library
 * Copyright (c) 2019 ARM Limited
 * SPDX-License-Identifier: Apache-2.0
 */

#include "mbed.h"


// Blinking rate in milliseconds
#define BLINKING_RATE     500ms


int main()
{
    // Initialise the digital pin LED1 as an output
    DigitalOut led(LED1);

    while (true) {
        led = !led;
        ThisThread::sleep_for(BLINKING_RATE);
    }
}

```

說明：

新建Project，加入 mbed-os-example-blinky ，這是已經建好的code，會以 500ms 的頻率讓 LED1 閃爍 (500ms 亮、500ms 暗)，DigitalOut 指定Pin 腳 LED1 為數位訊號輸出，並命名為 led，利用迴圈及剛才設定的頻率使 LED1 閃爍。

二、Create and Compile a mbed progrem

2、mbed-os-test-program2

```
#include "mbed.h"

DigitalOut myLED(LED1);
DigitalOut myLED2(LED3);

void Led(DigitalOut &ledpin);

int main()
{
    myLED = 1;
    myLED2 = 1;
    while (true)
    {
        Led(myLED);
        Led(myLED2);
    }
}
```

```
#include "mbed.h"

void Led(DigitalOut &ledpin)
{
    for (int i = 0; i < 10; ++i)
    {                       //blink for 10 times
        ledpin = !ledpin; // toggle led
        ThisThread::sleep_for(100ms);
    }
}
```

說明：

新建Project，引入 mbed01，指定 Pin 腳 LED1 、 LED3 為數位訊號輸出，並命名為 myLED、 myLED2，利用迴圈及 LED function 使 LED1 閃爍。

LED function：取得腳位 LED1 、 LED3的位置，進行 100ms 一次閃爍、閃爍 10 次的指令。

二、Create and Compile a mbed progrem

3、mbed-os-test-program3

```
#include "mbed.h"


// Blinking rate in milliseconds
#define BLINKING_RATE     1000ms


int main()
{
    // Initialise the digital pin LED1 as an output
    DigitalOut led(LED1);

    for(int i=0; i<10; i++){
        led = !led;
        ThisThread::sleep_for(BLINKING_RATE);
        printf("%1.5f\n", 3.14159);
    }
}
```

Problems × Output × >_ DISCO-L4S5I (B-L4S5I-IOT01A) × Libr

```
%1.5f
%1.5f
%1.5f
%1.5f
%1.5f
%1.5f
%1.5f
%1.5f
%1.5f
%1.5f
```

說明：

新建Project，引入 mbed01， 會以 1000ms 的頻率讓 LED1 閃爍，DigitalOut 指定Pin 腳 LED1為數位訊號輸出，並命名為 led，利用迴圈及剛才設定的頻率使 LED1 閃爍，且每次閃爍都會 print 出字串。

二、Create and Compile a mbed progrem

3、mbed-os-test-program3

```c
#include "mbed.h"


// Blinking rate in milliseconds
#define BLINKING_RATE     1000ms


int main()
{
    // Initialise the digital pin LED1 as an output
    DigitalOut led(LED1);

    for(int i=0; i<10; i++){
        led = !led;
        ThisThread::sleep_for(BLINKING_RATE);
        printf("%1.5f\n", 3.14159);
    }
}
```

```
Problems  ×  Outp
%1.5f
%1.5f
%1.5f
%1.5f
%1.5f
%1.5f
%1.5f
%1.5f
%1.5f
%1.5f
```

```
"callback-nontrivial": {
    "help": "Enables support for non-trivial callable objects in Ca
    "value": true
"printf_lib": "std",
```

```
3.14159
3.14159
3.14159
3.14159
3.14159
3.14159
3.14159
3.14159
3.14159
```

說明：

設定更改 targets.json、mbed_lib.json，使 print 出值能夠印出 3.14159 (取小數後五位)。

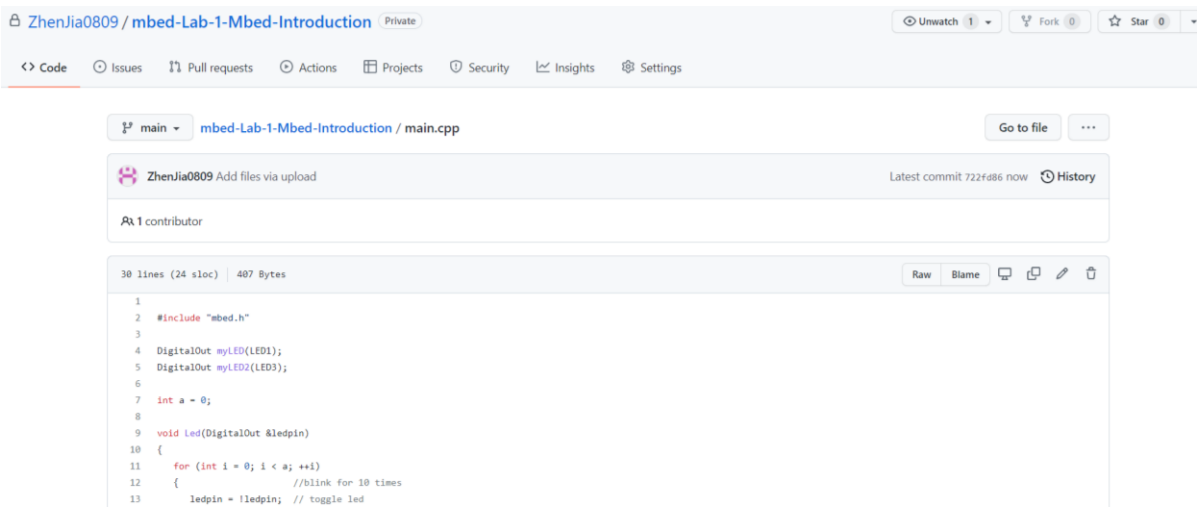
三、Demo Part

etting Started × main.cpp .../mbed-os-test-program3 × main.cpp .../mbed-os-test-Demo × target

```cpp

#include "mbed.h"

DigitalOut myLED(LED1);
DigitalOut myLED2(LED3);

int a = 0;

void Led(DigitalOut &ledpin)
{
    for (int i = 0; i < a; ++i)
    {                       //blink for 10 times
        ledpin = !ledpin;  // toggle led
        ThisThread::sleep_for(100ms);
    }
}

int main()
{
    myLED = 0;
    myLED2 = 0;
    while (true)
    {
        a = 6;
        Led(myLED);
        a = 4;
        Led(myLED2);

    }
}

```

說明：

利用之前program的LED funtion ，使 LED1 以 100ms 的頻率閃爍 3 次、LED3 閃爍 2 次，重複循環。



四、遇到的問體

裝載MSYS2時，一直無法開啟正確的檔案，所以重新安裝，過後就可以正常使用了。

五、討論

架設環境花了很長一段時間，因為對全新的介面不熟，所以處理了非常久，希望之後會越來越順利。