HW3 Environment Guide

Useful HW3/ Items in Setting

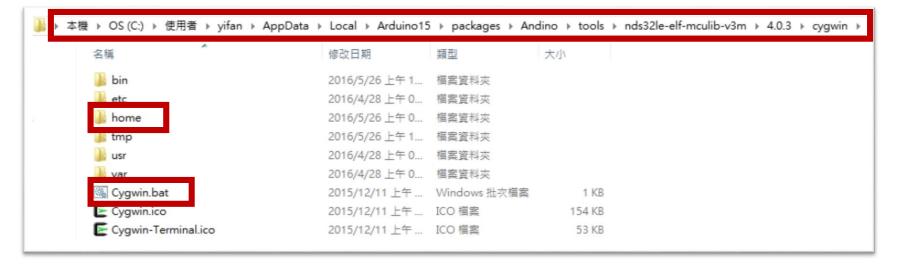
```
Tools and Referencess\
     - Assembly_Combiner\
      DemoBlink\
      Docs\
      sh.exe
Testcase1\
      Blink.s
      test.c
```

第一步驟:執行環境建立(1/7)

- 第一次使用cygwin,不會有home\目錄,請先執行Cygwin.bat, 產生home\目錄
 - 路徑

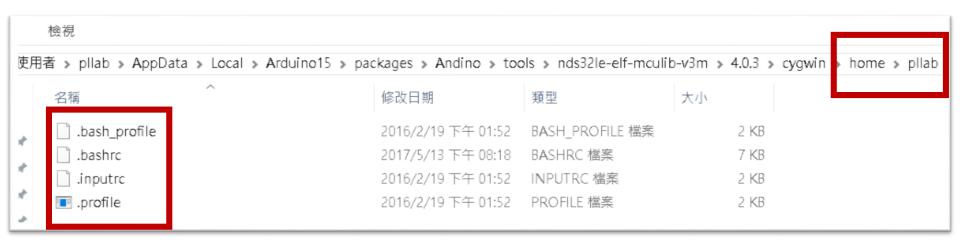
C:\Users\(自己的名稱)

 在路徑底下會發現Cygwin.bat, double click執行它,如此便會產生 home\(自己的名稱)\



第一步驟:執行環境建立(2/7)

• 紅框處為自動產生



第一步驟:執行環境建立(3/7)

• Cygwin命令模式黑視窗 (TA的畫面已更改視窗設定)

```
1 [main] bash 2496 find_fast_cwd: WARNING: Couldn't compute FAST_CWD pointer. Please report this problem to the public mailing list cygwin@cygwin.com
Your group is currently "mkpasswd". This indicates that your gid is not in /etc/group and your uid is not in /etc/passwd.

The /etc/passwd (and possibly /etc/group) files should be rebuilt.

See the man pages for mkpasswd and mkgroup then, for example, run

mkpasswd -1 [-d] > /etc/passwd

mkgroup -1 [-d] > /etc/group

Note that the -d switch is necessary for domain users.

pllab@PllabNB ~
$
```

第一步驟:執行環境建立(4/7)

- 先關閉原先已開啟的Cygwin視窗
- 把TA提供的HW3\Tools and References\DemoBlink 放到 電腦的home\(自己的名稱)\底下
 - 路徑

C:\Users\(自己的名稱)

\AppData\Local\Arduino15\packages\Andino\tools\nds32le-elf-mculib-v3m\4.0.3\Cygwin\home\(自己的名稱)\



第一步驟:執行環境建立(5/7)

- 將HW3\Testcase1\Blink.s放到電腦的 DemoBlink\Demo_Blink\裡面
 - 路徑

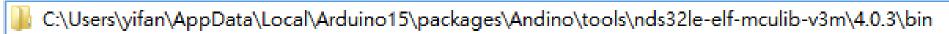
C:\Users\(自己的名稱)

\AppData\Local\Arduino15\packages\Andino\tools\nds32le-elf-mculib-v3m\4.0.3\Cygwin\home\(自己的名稱)**DemoBlink\Demo_Blink**



第一步驟:執行環境建立(6/7)

• 設置cygwin環境變數,先找出此路徑,複製起來



· 將上面路徑的開頭加入"/cygdrive/c"字眼,並改變斜線 方向

/cygdrive/c/Users/yifan/AppData/Local/Arduino15/packages/Andino/tools/nds32le-elf-mculib-v3m/4.0.3/bin

• 進一步完成環境變數的字串,並請確保路徑正確

export PATH="<mark>/cygdrive/c/Users/yifan/AppData/Local/Arduino15/packages/Andino/tools/nds32le-elf-mculib-v3m/4.0.3/bia</mark>":\$PATH

第一步驟:執行環境建立(7/7)

- 回到home\(自己的名稱\)路徑底下,找到.bashrc
 - 路徑

C:\Users\(自己的名稱)

\AppData\Local\Arduino15\packages\Andino\tools\nds32le-elf-mculib-v3m\4.0.3\Cygwin\home\(自己的名稱)\.bashrc



• 在.bashrc最下方加入此字串,存檔,離開

export PATH="/cygdrive/c/Users/yifan/AppData/Local/Arduino15/packages/Andino/tools/nds32le-elf-mculib-v3m/4.0.3/bin":\$PATH

• 最後,再啟動Cygwin.bat,完成環境變數設定

第二步驟:編譯組合語言(1/3)

- 指令與Linux環境相同
- \$ Is (會發現放入的DemoBlink/)
- \$ cd DemoBlink/
- \$ make clean (下圖畫面)
 - 無任何錯誤訊息

```
Haborilabns ~/Demosiink
 make clean
latform: M2C8001, mode:XIP, EX9:NO
cho ./cores/arduino/sys/m2c-arch/crtbegin.o ./cores/arduino/sys/m2c-arch/init-default.o ./cores/arduino/sys/m2c-arch/init-soc.o ./cores/arduino/sys/board/m2c8001 board
o ./cores/arduino/sys/driver/m2c8001 sys.o ./cores/arduino/sys/driver/m2c8001 gpio.o ./cores/arduino/sys/driver/m2c8001 int.o ./cores/arduino/sys/driver/m2c8001 timer.
 ./cores/arduino/sys/driver/m2c8001 uart.o ./cores/arduino/sys/driver/m2c8001 pwm.o ./cores/arduino/sys/driver/m2c8001 spi.o ./cores/arduino/sys/driver/m2c8001 i2c.o .
cores/arduino/sys/driver/m2c8001_adc.o ./cores/arduino/sys/m2c-arch/interrupt.o ./cores/arduino/avr/dtostrf.o ./cores/arduino/wiring_digital.o ./cores/arduino/viring.o
/cores/arduino/viring analog.o ./cores/arduino/viring pulse.o ./cores/arduino/viring shift.o ./cores/arduino/itoa.o ./cores/arduino/VInterrupts.o ./cores/arduino/sys/
2c-arch/crt0.o ./cores/arduino/main.o ./cores/arduino/Whath.o ./cores/arduino/Tone.o ./cores/arduino/Print.o ./cores/arduino/Strean.o ./cores/arduino/WString.o ./cores
arduino/HardvareSerial.o ./libraries/SPI/SPI.o ./libraries/Vire/Vire.o ./Demo Blink/Blink.o ./cores/arduino/sys/m2c-arch/crtend.o
/cores/arduino/sys/m2c-arch/crtbegin.o ./cores/arduino/sys/m2c-arch/init-default.o ./cores/arduino/sys/m2c-arch/init-soc.o ./cores/arduino/sys/board/m2c8001_board.o ./
pres/arduino/sys/driver/m2c8001_sys.o ./cores/arduino/sys/driver/m2c8001_gpio.o ./cores/arduino/sys/driver/m2c8001_int.o ./cores/arduino/sys/driver/m2c8001_timer.o ./c
res/arduino/sys/driver/m2c8001 uart.o ./cores/arduino/sys/driver/m2c8001 pwm.o ./cores/arduino/sys/driver/m2c8001 spi.o ./cores/arduino/sys/driver/m2c8001 i2c.o ./core
/arduino/sys/driver/m2c8001 adc.o ./cores/arduino/sys/m2c-arch/interrupt.o ./cores/arduino/avr/dtostrf.o ./cores/arduino/wiring digital.o ./cores/arduino/wiring.o ./cores/
es/arduino/viring analog.o ./cores/arduino/viring pulse.o ./cores/arduino/viring shift.o ./cores/arduino/itoa.o ./cores/arduino/WInterrupts.o ./cores/arduino/sys/m2c-a
ch/crt0.o ./cores/arduino/main.o ./cores/arduino/Whath.o ./cores/arduino/Tone.o ./cores/arduino/Print.o ./cores/arduino/Stream.o ./cores/arduino/WString.o ./cores/ardu
no/HardwareSerial.o ./libraries/SPI/SPI.o ./libraries/Vire/Vire.o ./Demo Blink/Blink.o ./cores/arduino/sys/m2c-arch/crtend.o
n -rf ./Demo Blink/arduino-Blink.* ./cores/arduino/sys/m2c-arch/crtbegin.o ./cores/arduino/sys/m2c-arch/init-default.o ./cores/arduino/sys/m2c-arch/init-soc.o ./cores/
rduino/sys/board/m2c8001 board.o ./cores/arduino/sys/driver/m2c8001 sys.o ./cores/arduino/sys/driver/m2c8001 gpio.o ./cores/arduino/sys/driver/m2c8001 int.o ./cores/ar
uino/sys/driver/m2c8001_timer.o ./cores/arduino/sys/driver/m2c8001_wart.o ./cores/arduino/sys/driver/m2c8001_pwm.o ./cores/arduino/sys/driver/m2c8001_spi.o ./co
ino/sys/driver/m2c8001 i2c.o ./cores/arduino/sys/driver/m2c8001 adc.o ./cores/arduino/sys/m2c-arch/interrupt.o ./cores/arduino/avr/dtostrf.o ./cores/arduino/yiring die
tal.o ./cores/arduino/wiring.o ./cores/arduino/wiring analog.o ./cores/arduino/wiring pulse.o ./cores/arduino/wiring shift.o ./cores/arduino/itoa.o ./cores/arduino/WIn
errupts.o ./cores/arduino/sys/m2c-arch/crt0.o ./cores/arduino/main.o ./cores/arduino/WMath.o ./cores/arduino/Tone.o ./cores/arduino/Print.o ./cores/arduino/Stream.o ./
ores/ardwino/WString.o./cores/ardwino/HardwareSerial.o./libraries/SPI/SPI.o./libraries/Wire/Wire.o./Demo Blink/Blink.o./cores/ardwino/sys/m2c-arch/crtend.o
```

第二步驟:編譯組合語言(2/3)

- \$ make
- \$ cd Demo_Blink
- \$ Is
 - 編譯Blink.s後會產牛一些檔案

```
~/DemoBlink/Demo Blink
ge -D_Andino_M1__ -DCONFIG_NO_NDS32_EXT_EX9_cores/arduino/HardwareSerial.cpp_-o_cores/arduino/HardwareSerial.o
nds32le-elf-g++ -S -00 -mno-16-bit -c -Wall -I./cores/arduino/sys/inc -I./cores/arduino -I./cores/arduino/sys/m2c-arch -I./libraries/Wire -I./libraries/SPI -mcmodel=lar
ge -D_Andino_M1_ -DCONFIG_NO_NDS32_EXT_EX9 cores/arduino/HardwareSerial.cpp -o cores/arduino/HardwareSerial.o.s
nds32le-elf-g++ -c -00 -mno-16-bit -c -Wall -I./cores/arduino/sys/inc -I./cores/arduino -I./cores/arduino/sys/m2c-arch -I./libraries/Wire -I./libraries/SPI -mcmodel=lar
ge -D__Andino_M1__ -DCONFIG_NO_NDS32_EXT_EX9 libraries/SPI/SPI.cpp -o libraries/SPI/SPI.o
nds32le-elf-g++ -S -00 -mno-16-bit -c -Wall -I./cores/arduino/sys/inc -I./cores/arduino -I./cores/arduino/sys/m2c-arch -I./libraries/Wire -I./libraries/SPI -mcmodel=lar
ge -D Andino M1 -DCONFIG NO NDS32 EXT EX9 libraries/SPI/SPI.cpp -o libraries/SPI/SPI.o.s
nds32le-elf-g++ -c -00 -mno-16-bit -c -Wall -I./cores/arduino/sys/inc -I./cores/arduino -I./cores/arduino/sys/m2c-arch -I./libraries/Wire -I./libraries/SPI -mcmodel=lar
ge -D Andino M1 -DCONFIG NO NDS32 EXT EX9 libraries/Wire/Wire.cpp -o libraries/Wire/Wire.o
nds32le-elf-g++ -S -00 -mno-16-bit -c -Wall -I./cores/arduino/sys/inc -I./cores/arduino -I./cores/arduino/sys/m2c-arch -I./libraries/Wire -I./libraries/SPI -mcmodel=lar
ge -D_Andino_M1__-DCONFIG_NO_NDS32_EXT_EX9_libraries/Wire/Wire.cpp_-o_libraries/Wire/Wire.o.s
nds32le-elf-gcc -c -00 -mno-16-bit -c -Wall -I./cores/arduino/sys/inc -I./cores/arduino -I./cores/arduino/sys/m2c-arch -I./libraries/Wire -I./libraries/SPI -mcmodel=la
rge -D_Andino_M1__ -DCONFIG_NO_NDS32_EXT_EX9    Demo_Blink/Blink.s -o Demo_Blink/Blink.o
nds32le-elf-gcc -c -00 -mno-16-bit -c -Wall -I./cores/arduino/sys/inc -I./cores/arduino -I./cores/arduino/sys/m2c-arch -I./libraries/Wire -I./libraries/SPI -mcmodel=la
rge -D_Andino_M1_ -DCONFIG_NO_NDS32_EXT_EX9 cores/arduino/sys/m2c-arch/crtend.c -o cores/arduino/sys/m2c-arch/crtend.o
nds32le-elf-g++ -Os -Wl.--start-group -lgloss -lgcc -lc -lstdc++ -lm -nostdlib -nostartfiles -static -T ./cores/arduino/sys/board/M2C8001.ld ./cores/arduino/sys/m2c-arc
h/crtbegin.o ./cores/arduino/sys/m2c-arch/init-default.o ./cores/arduino/sys/m2c-arch/init-soc.o ./cores/arduino/sys/board/m2c8001_board.o ./cores/arduino/sys/driver/m2
c8001_sys.o ./cores/arduino/sys/driver/m2c8001_gpio.o ./cores/arduino/sys/driver/m2c8001_int.o ./cores/arduino/sys/driver/m2c8001_timer.o ./cores/arduino/sys/driver/m2c
8001 uart.o ./cores/arduino/sys/driver/m2c8001 pwm.o ./cores/arduino/sys/driver/m2c8001 spi.o ./cores/arduino/sys/driver/m2c8001 i2c.o ./cores/arduino/sys/driver/m2c800
l_adc.o ./cores/arduino/sys/m2c-arch/interrupt.o ./cores/arduino/avr/dtostrf.o ./cores/arduino/wiring_digital.o ./cores/arduino/wiring.o ./cores/arduino/wiring_analog.o
 ./cores/arduino/wiring pulse.o ./cores/arduino/wiring shift.o ./cores/arduino/itoa.o ./cores/arduino/WInterrupts.o ./cores/arduino/sys/m2c-arch/crt0.o ./cores/arduino/
main.o ./cores/arduino/WMath.o ./cores/arduino/Tone.o ./cores/arduino/Print.o ./cores/arduino/Stream.o ./cores/arduino/WString.o ./cores/arduino/HardwareSerial.o ./libr
aries/SPI/SPI.o./libraries/Wire/Wire.o./Demo Blink/Blink.o./cores/arduino/sys/m2c-arch/crtend.o -o./Demo Blink/arduino-Blink.elf
nds32le-elf-objdump -D ./Demo Blink/arduino-Blink.elf > ./Demo Blink/arduino-Blink.s
nds32le-elf-objdump -s ./Demo_Blink/arduino-Blink.elf > ./Demo_Blink/arduino-Blink.dat
nds32le-elf-objcopy -O binary -R .note -R .comment -S ./Demo Blink/arduino-Blink.elf ./Demo Blink/arduino-Blink.bin
nds32le-elf-nm -B -n ./Demo_Blink/arduino-Blink.elf > ./Demo_Blink/arduino-Blink.map
nds32le-elf-readelf -a ./Demo Blink/arduino-Blink.elf > ./Demo Blink/arduino-Blink.txt
pllab@PllabNB ~/DemoBlink
$ cd Demo Blink/;ls
arduino-Blink.bin arduino-Blink.dat arduino-Blink.elf arduino-Blink.map arduino-Blink.s arduino-Blink.txt Blink.o Blink.s
pllab@PllabNB ~/DemoBlink/Demo Blink
微軟注音 半 :
```

第二步驟:編譯組合語言(3/3)

- 編譯錯誤狀況
 - 假使編譯過程出現紅色框訊息 /bin/sh: Command not found

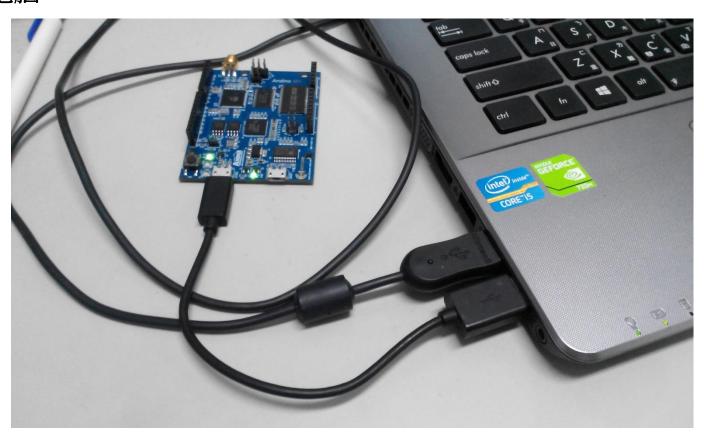
nake clean latform: M2C8001, mode:XIP, EX9:N0 ake: /bin/sh: Command not found cho./cores/arduino/sys/m2c-arch/crtbe in.o./cores/arduino/sys/m2c-arch/init-default.o./cores/arduino/sys/m2c-arch/init-soc.o./cores/arduino/sys/board/m2c800l_boar o ./cores/ardulmo/sys/driver/m2c8001_int.o ./cores/ardulmo/sys/driver/m2c8001_gpio.o ./cores/ardulmo/sys/driver/m2c8001_int.o ./cores/ardulmo/sys/driver/m2c8001_timer ./cores/arduino/sys/driver/n2c8001_uart.o./cores/arduino/sys/driver/n2c8001_pwn.o./cores/arduino/sys/driver/n2c8001_spi.o./cores/arduino/sys/driver/n2c8001_i2c.o cores/arduino/sys/driver/m2c8001_adc.o ./cores/arduino/sys/m2c-arch/interrupt.o ./cores/arduino/avr/dtostrf.o ./cores/arduino/wiring_digital.o ./cores/arduino/wiring. ./cores/arduino/wiring analog.o ./cores/arduino/wiring pulse.o ./cores/arduino/wiring shift.o ./cores/arduino/itoa.o ./cores/arduino/WInterrupts.o ./cores/arduino/sys 2c-arch/crt0.o ./cores/arduino/main.o ./cores/arduino/Whath.o ./cores/arduino/Tone.o ./cores/arduino/Print.o ./cores/arduino/Stream.o ./cores/arduino/WString.o ./cores arduino/HardwareSerial.o ./libraries/SPI/SPI.o ./libraries/Vire/Vire.o ./Demo_Blink/Blink.o ./cores/arduino/sys/m2c-arch/crtend.o /cores/arduino/sys/m2c-arch/crtbegin.o ./cores/arduino/sys/m2c-arch/init-default.o ./cores/arduino/sys/m2c-arch/init-soc.o ./cores/arduino/sys/board/m2c8001_board.o . ores/arduino/sys/driver/m2c8001_sys.o ./cores/arduino/sys/driver/m2c8001_timer.o ./cores/arduino/sys/driver/arduino/sys/driver/arduino/sys/driver/arduino/ res/arduino/sys/driver/m2c8001 uart.o ./cores/arduino/sys/driver/m2c8001 pwm.o ./cores/arduino/sys/driver/m2c8001 spi.o ./cores/arduino/sys/driver/m2c8001 i2c.o ./core /arduino/sys/driver/m2c8001_adc.o./cores/arduino/sys/m2c-arch/interrupt.o./cores/arduino/avr/dtostrf.o./cores/arduino/wiring_digital.o./cores/arduino/viring_o./cores/arduino/wiring_digital.o es/ardwino/wiring analog.o ./cores/ardwino/wiring pulse.o ./cores/ardwino/wiring shift.o ./cores/ardwino/itoa.o ./cores/ardwino/WInterrupts.o ./cores/ardwino/sys/m2c-: ch/crt0.o ./cores/arduino/main.o ./cores/arduino/WMath.o ./cores/arduino/Tone.o ./cores/arduino/Print.o ./cores/arduino/Stream.o ./cores/arduino/WString.o ./cores/arduino/WSt no/HardwareSerial.o ./libraries/SPI/SPI.o ./libraries/Wire/Wire.o ./Demo_Blink/Blink.o ./cores/arduino/sys/n2c-arch/crtend.o n -rf ./Demo Blink/arduino-Blink.* ./cores/arduino/sys/m2c-arch/crtbegin.o ./cores/arduino/sys/m2c-arch/init-default.o ./cores/arduino/sys/m2c-arch/init-soc.o ./cores rduino/sys/board/m2c8001 board.o ./cores/arduino/sys/driver/m2c8001 sys.o ./cores/arduino/sys/driver/m2c8001 gpio.o ./cores/arduino/sys/driver/m2c8001 int.o ./cores/a uino/sys/driver/m2c8001_timer.o ./cores/arduino/sys/driver/m2c8001_wart.o ./cores/arduino/sys/driver/m2c8001_pwm.o ./cores/arduino/sys/driver/m2c8001_spi.o ./cores/ar ino/sys/driver/n2c8001_i2c.o ./cores/arduino/sys/driver/n2c8001_adc.o ./cores/arduino/sys/n2c-arch/interrupt.o ./cores/arduino/avr/dtostrf.o ./cores/arduino/viring di; tal.o ./cores/arduino/wiring.o ./cores/arduino/wiring analog.o ./cores/arduino/wiring pulse.o ./cores/arduino/wiring_shift.o ./cores/arduino/itoa.o ./cores/arduino/VI: errupts.o ./cores/arduino/sys/n2c-arch/crt0.o ./cores/arduino/main.o ./cores/arduino/WMath.o ./cores/arduino/Tone.o ./cores/arduino/Print.o ./cores/arduino/Strean.o . ores/arduino/WString.o ./cores/arduino/HardwareSerial.o ./libraries/SPI/SPI.o ./libraries/Vire/Vire.o ./Demo_Blink/Blink.o ./cores/arduino/sys/m2c-arch/crtend.o ake: /bin/sh: Command not found akefile:157: recipe for target 'clean' failed ake: *** [clean] Error 127

• 請至HW3\Tools and References\,將"sh.exe"放進到下面的路徑裡面,再重新make clean即可

C:\Users\yifan\AppData\Local\Arduino15\packages\Andino\tools\nds32le-elf-mculib-v3m\4.0.3\cygwin\bin

第三步驟:燒錄進板子(1/5)

• 按照"2017_Andes Andino Environment Guide.pdf",確認板子連結到電腦



第三步驟:燒錄進板子(2/5)

- 回到windows環境下的Cygwin\目錄
- · 點擊Cygwin.bat,開啟新視窗(原先執行編譯的視窗可保留)
- 如下圖所示,這時會存在兩個視窗狀態

```
2 [main] bash 16808 find fast cwd: WARNING: Couldn't compute FAST CW ^
                                                                                       1 [main] bash 15116 find fast cwd: WARNING: Couldn't compute FAST CW
the public mailing list cygwin@cygwin.com
                                                                                 the public mailing list cygwin@cygwin.com
Your group is currently "mkpasswd". This indicates that your
                                                                              👭 Your group is currently "mkpasswd". This indicates that your
gid is not in /etc/group and your uid is not in /etc/passwd.
                                                                                 gid is not in /etc/group and your uid is not in /etc/passwd.
The /etc/passwd (and possibly /etc/group) files should be rebuilt.
                                                                             The /etc/passwd (and possibly /etc/group) files should be rebuilt.
See the man pages for mkpasswd and mkgroup then, for example, run
                                                                                 See the man pages for mkpasswd and mkgroup then, for example, run
mkpasswd -l [-d] > /etc/passwd
                                                                                 mkpasswd -l [-d] > /etc/passwd
mkgroup -l [-d] > /etc/group
                                                                                 mkgroup -l [-d] > /etc/group
Note that the -d switch is necessary for domain users.
                                                                                 Note that the -d switch is necessary for domain users.
bllab@PllabNB ∼
                                                                                 pllab@PllabNB ~
```

第三步驟:燒錄進板子(3/5)

• 先在第一個視窗輸入下面兩個指令啟動ICEman

cd "/cygdrive/c/Users/yifan/AppData/Local/Arduino15/packages/Andino/tools/m2c_burner/0.0.1"

./ICEman.exe -p 1234

```
n llah@PllahNR ∼
$ cd "/cygdrive/c/Users/yifan/AppData/Local/Arduino15/packages/Andino/too
ls/m2c_burner/0.0.1"
nllah@PllahNR_/cvgdrive/c/Users/yifan/AppData/Local/Arduino15/packages/And
$ ./ICEman.exe -p 1234
Andes ICEman vs.2.2 (OpenOCD) BUILD_ID: 2015082815
Burner listens on 2354
Telnet port: 4444
TCL port: 6666
Open On-Chip Debugger 0.8.0-dev-gla84463 (2015-08-28-15:34)
Licensed under GNU GPL v2
For bug reports, read
        http://openocd.sourceforge.net/doc/doxygen/bugs.html
Andes AICE-MINI v1.0.2
There is 1 core in target
Core #0: EDM version 0x1010
JTAG frequency 12 MHz
The core #0 listens on 1234.
ICEman is ready to use.
```

第三步驟:燒錄進板子(4/5)

• 第二個視窗輸入下面指令開始燒錄(可寫成script)

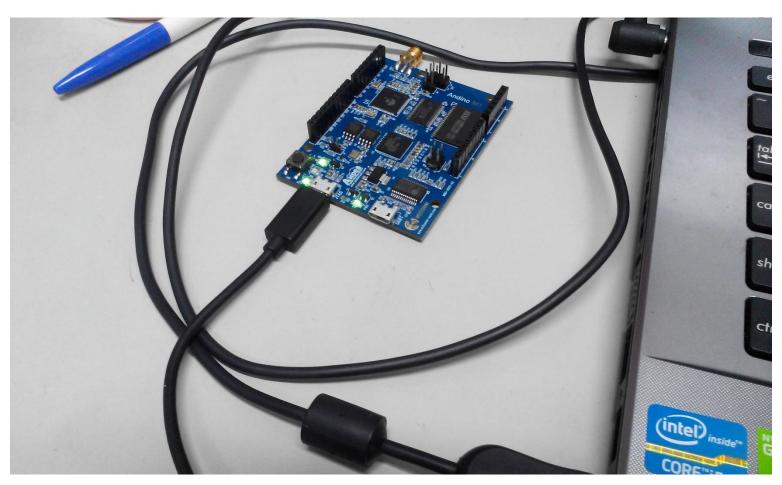
cd "/cygdrive/c/Users/yifan/AppData/Local/Ardmino15/packages/Andino/tools/m2c_burner/0.0.1"

 $./m2c_newton.exe --image=/cygdrive/c/Users/yifan/AppData/Local/Arduino15/packages/Andino/tools/nds32le-elf-nculib-v3m/4.0.3/cygwin/home/pllab/DemoBlink/Demo_Blink/arduino-Blink.bin$



第三步驟:燒錄進板子(5/5)

• 板子的LED開始閃爍



End