

Windows WSL Ubuntu

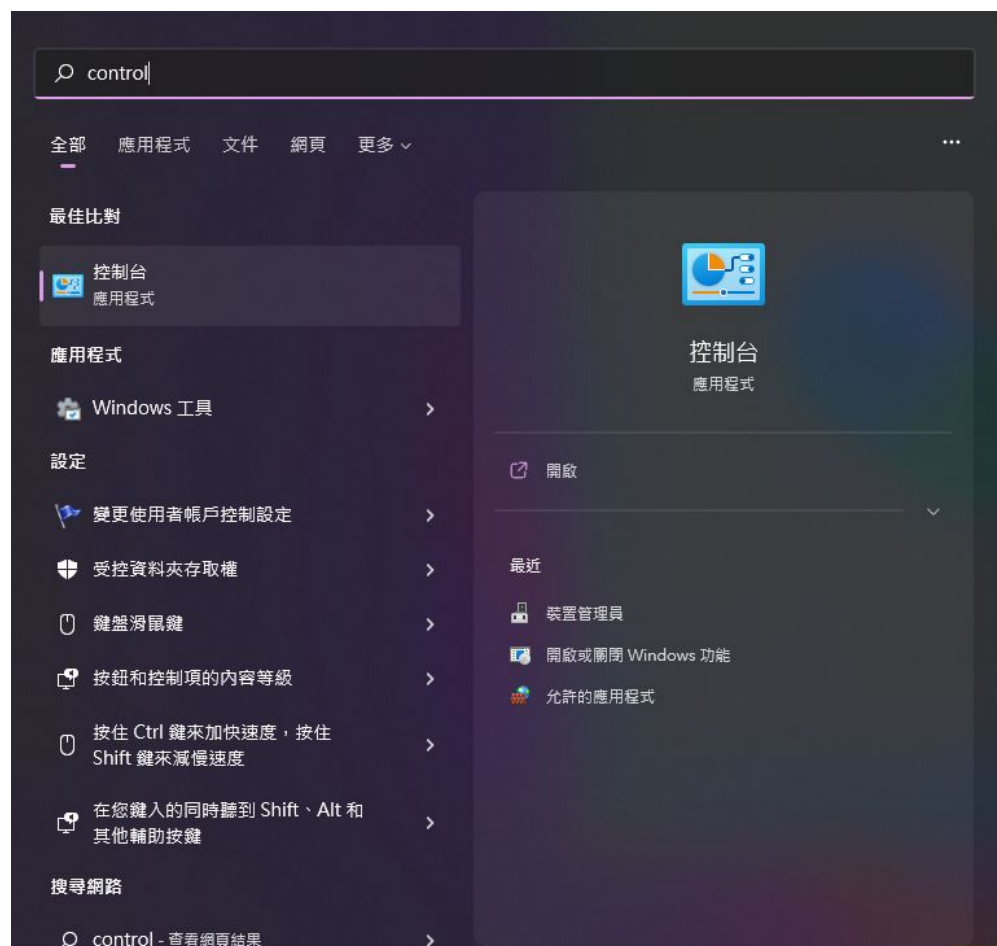
STEP BY STEP TUTORIAL

什麼是 WSL?

- WSL 是 [Windows Subsystem for Linux](#) 的縮寫，是微軟提供開發人員一個能直接在Windows上執行GNU/Linux環境的管道。
- [Linux](#) 則是一種開源的作業系統，除了提供作業系統基本功能外，也兼具安全性及穩定性。此外，由於是開源系統，大多數的應用程式都能免費獲取。
- 對於程式開發者來說，有許多協助開發程式的工具，都是在Linux系統上較方便取得。因此，我們推薦資訊系的學生，可以嘗試練習使用Linux系統來進行程式開發。
- 相比使用虛擬機上的Linux系統，WSL節省了更多的電腦資源，就能夠讓開發者學習使用Linux command-line及相關工具。

How to install WSL

Step1



從搜尋列找到控制台

Step2



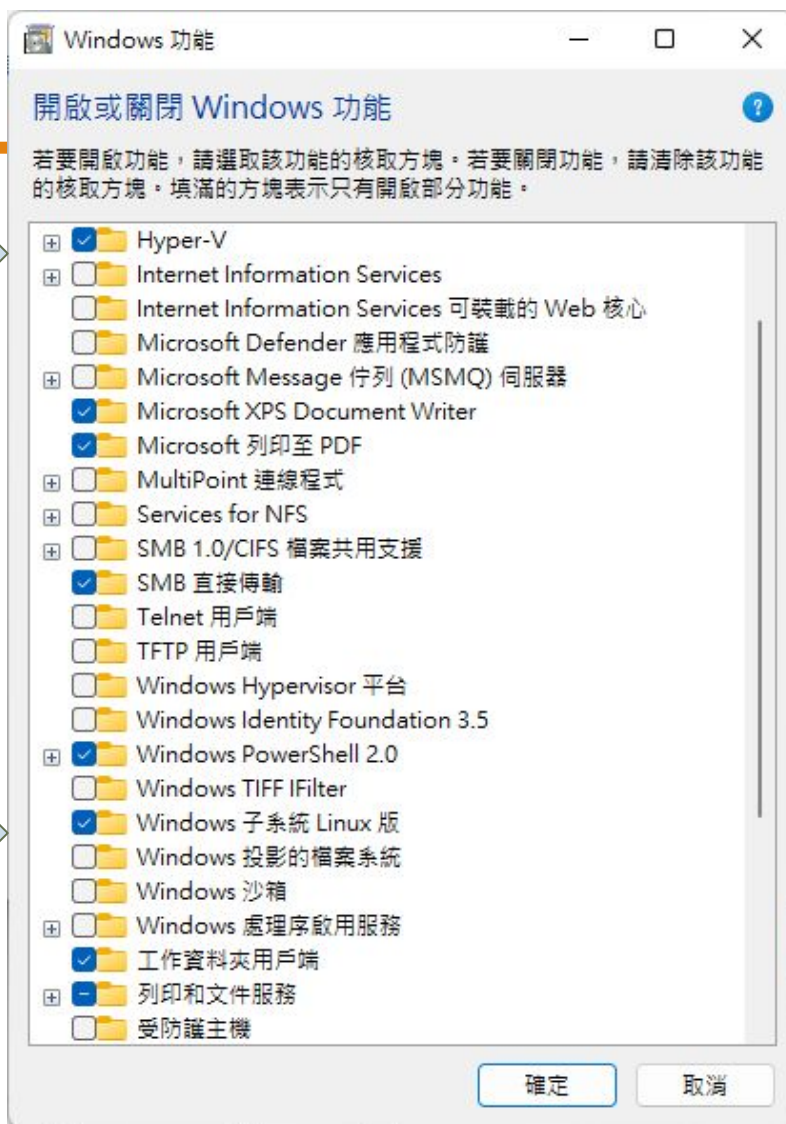
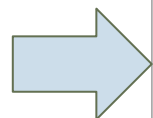
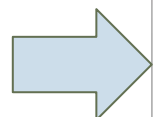
點選程式集

Step3



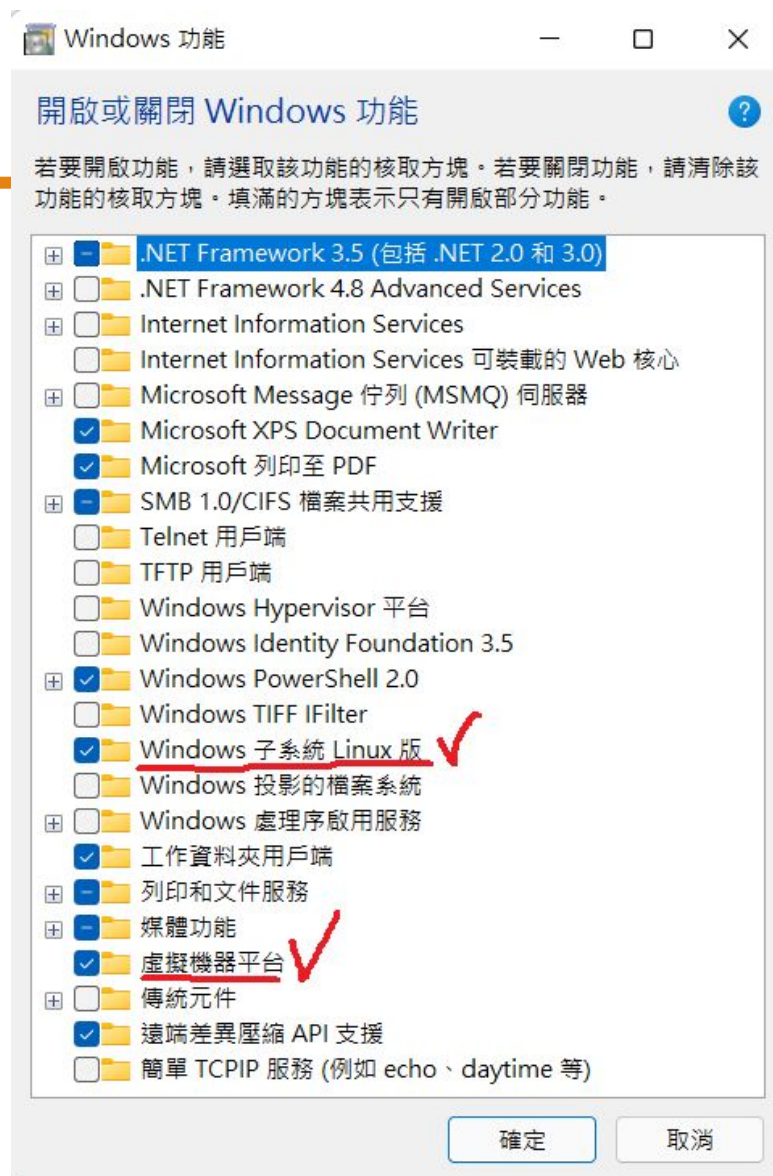
點選
開啟或關閉Windows
功能

Step4



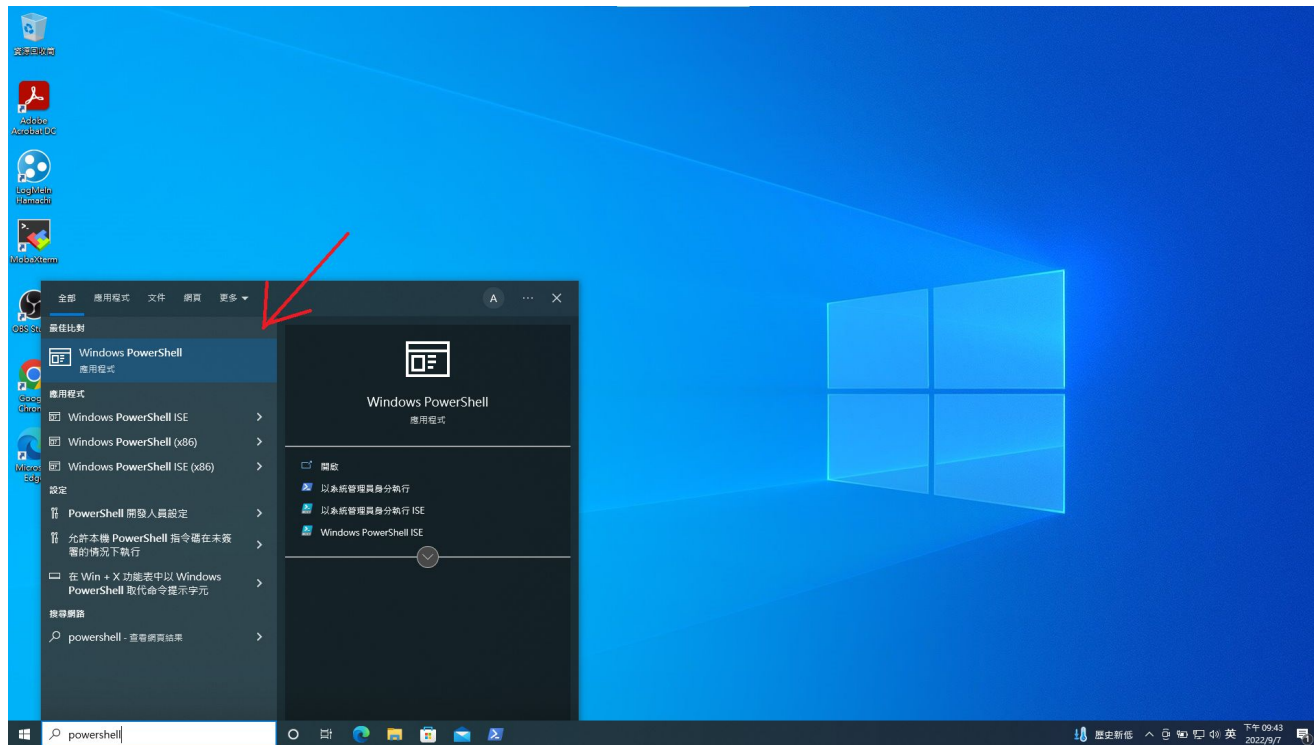
若為 Windows 10 作業系統
勾選 Hyper-V 跟
Windows 子系統 Linux 版
安裝完成過後按照指示重新開機

Step4



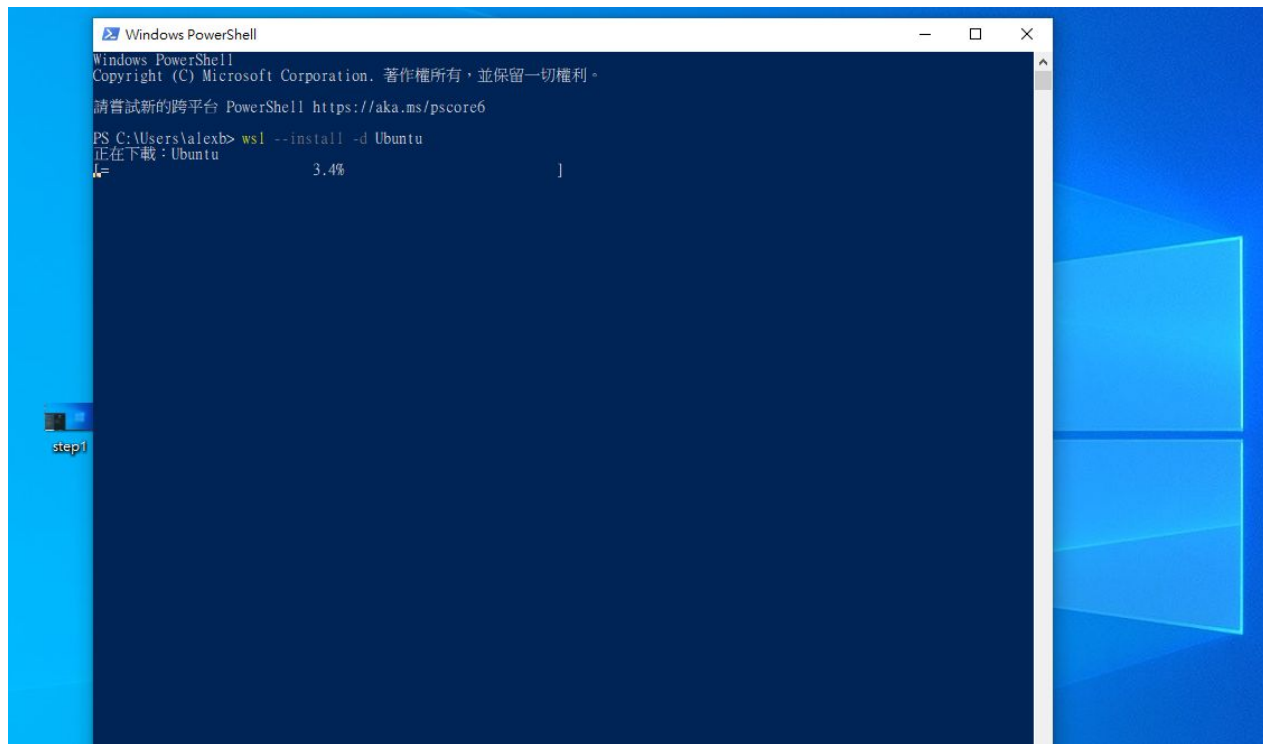
若為 Windows 11 作業系統
勾選 Windows 子系統 Linux 版 跟
虛擬機器平台
安裝完成過後按照指示重新開機

Step5



開啟Windows Powershell
(不是 Powershell ISE)

Step6

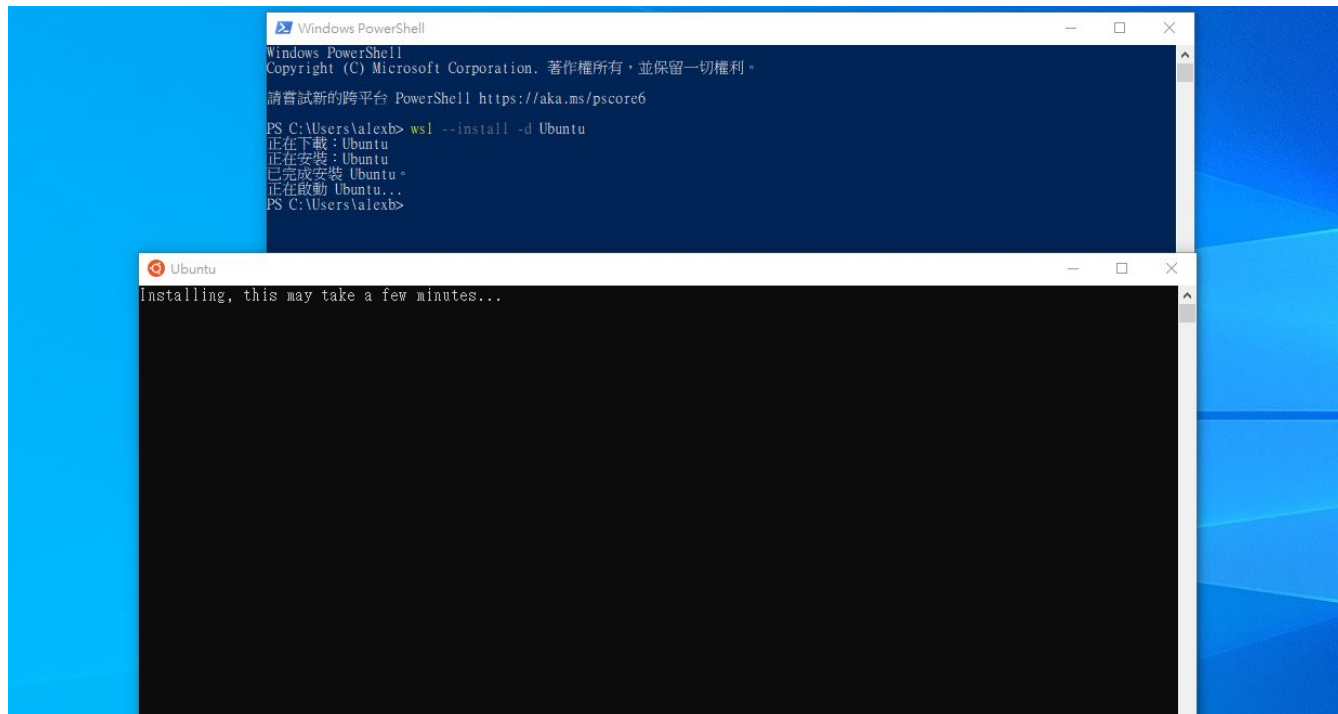


輸入

wsl --install -d Ubuntu

安裝 Ubuntu 發行版的 WSL

Step7

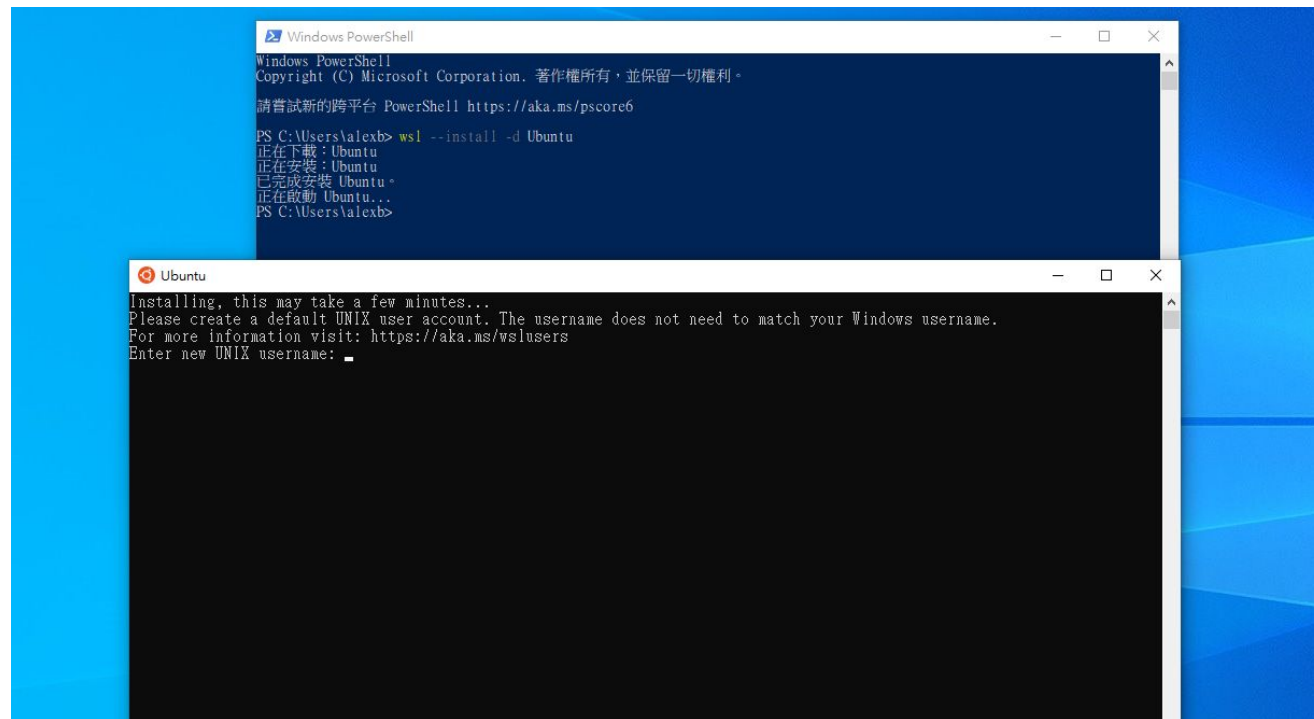


等待它安裝

若出現 Error 0x800701bc
可參考[此文件](#)更新kernel

若出現 Error 0x80370102
則可以參考[這篇](#)

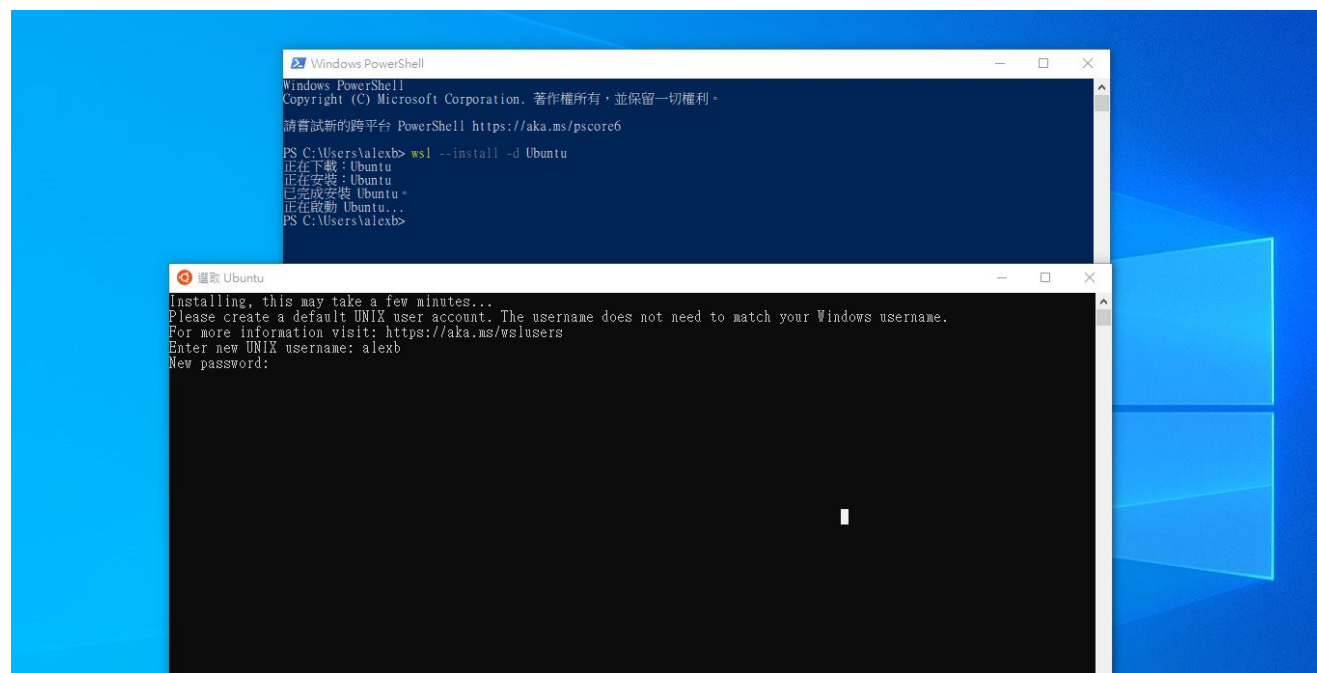
Step8



The screenshot shows two overlapping terminal windows on a blue background. The top window is titled 'Windows PowerShell' and displays the following text: 'Windows PowerShell', 'Copyright (C) Microsoft Corporation. 著作權所有，並保留一切權利。', '請嘗試新的跨平台 PowerShell <https://aka.ms/pscore6>', 'PS C:\Users\alexb> wsl --install -d Ubuntu', '正在下載: Ubuntu', '正在安裝: Ubuntu', '已完成安裝: Ubuntu', '正在啟動: Ubuntu...', and 'PS C:\Users\alexb>'. The bottom window is titled 'Ubuntu' and displays: 'Installing, this may take a few minutes...', 'Please create a default UNIX user account. The username does not need to match your Windows username.', 'For more information visit: <https://aka.ms/wslusers>', and 'Enter new UNIX username: _'.

設定使用者名稱

Step9



The screenshot shows two overlapping windows on a Windows desktop. The top window is titled 'Windows PowerShell' and displays the following text: 'Windows PowerShell', 'Copyright (C) Microsoft Corporation. 著作權所有，並保留一切權利。', '請嘗試新的跨平台 PowerShell <https://aka.ms/powershell>', and a command prompt 'PS C:\Users\alexb> wsl --install -d Ubuntu'. Below the command, it shows progress: '正在下載: Ubuntu', '正在安裝: Ubuntu', '已完成安裝: Ubuntu', and '正在啟動 Ubuntu...'. The bottom window is titled '選取 Ubuntu' and shows the WSL installation progress: 'Installing, this may take a few minutes...', 'Please create a default UNIX user account. The username does not need to match your Windows username.', 'For more information visit: <https://aka.ms/wslusers>', 'Enter new UNIX username: alexb', and 'New password:'. The password field is currently empty, with a cursor at the end.

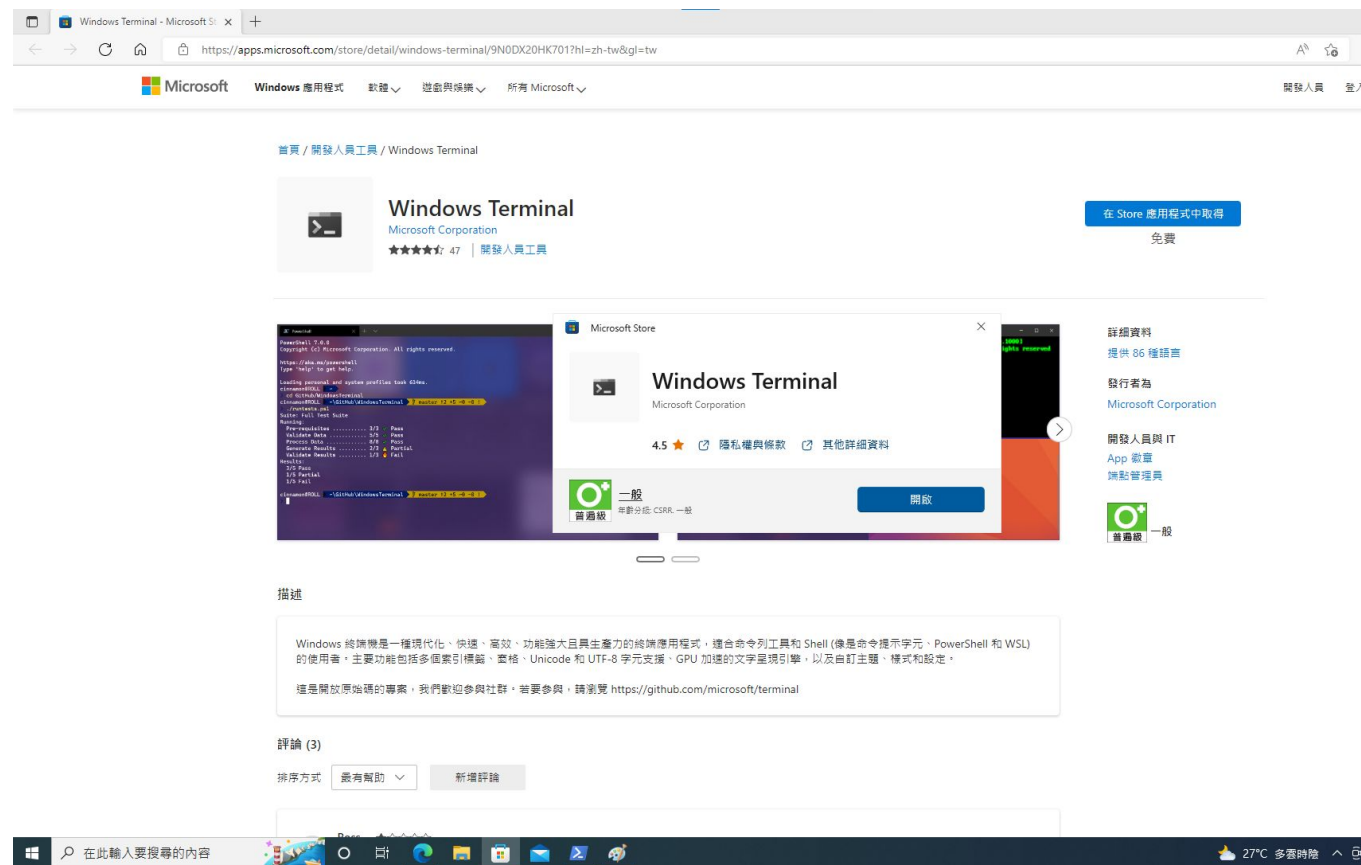
輸入使用者密碼
注意! Prompt不會顯示你打的字
(會有double check)

Step10

```
alex@LAPTOP-JB7NJCQ6: ~  
Retype new password:  
passwd: password updated successfully  
Installation successful!  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
Welcome to Ubuntu 20.04 LTS (GNU/Linux 4.4.0-19041-Microsoft x86_64)  
  
* Documentation:  https://help.ubuntu.com  
* Management:    https://landscape.canonical.com  
* Support:        https://ubuntu.com/advantage  
  
System information as of Wed Sep  7 21:52:19 CST 2022  
  
System load:   0.52      Processes:            7  
Usage of /home: unknown  Users logged in:      0  
Memory usage:  39%      IPv4 address for eth0: 192.168.66.113  
Swap usage:    0%       IPv4 address for eth1: 192.168.56.1  
  
0 updates can be installed immediately.  
0 of these updates are security updates.  
  
The list of available updates is more than a week old.  
To check for new updates run: sudo apt update
```

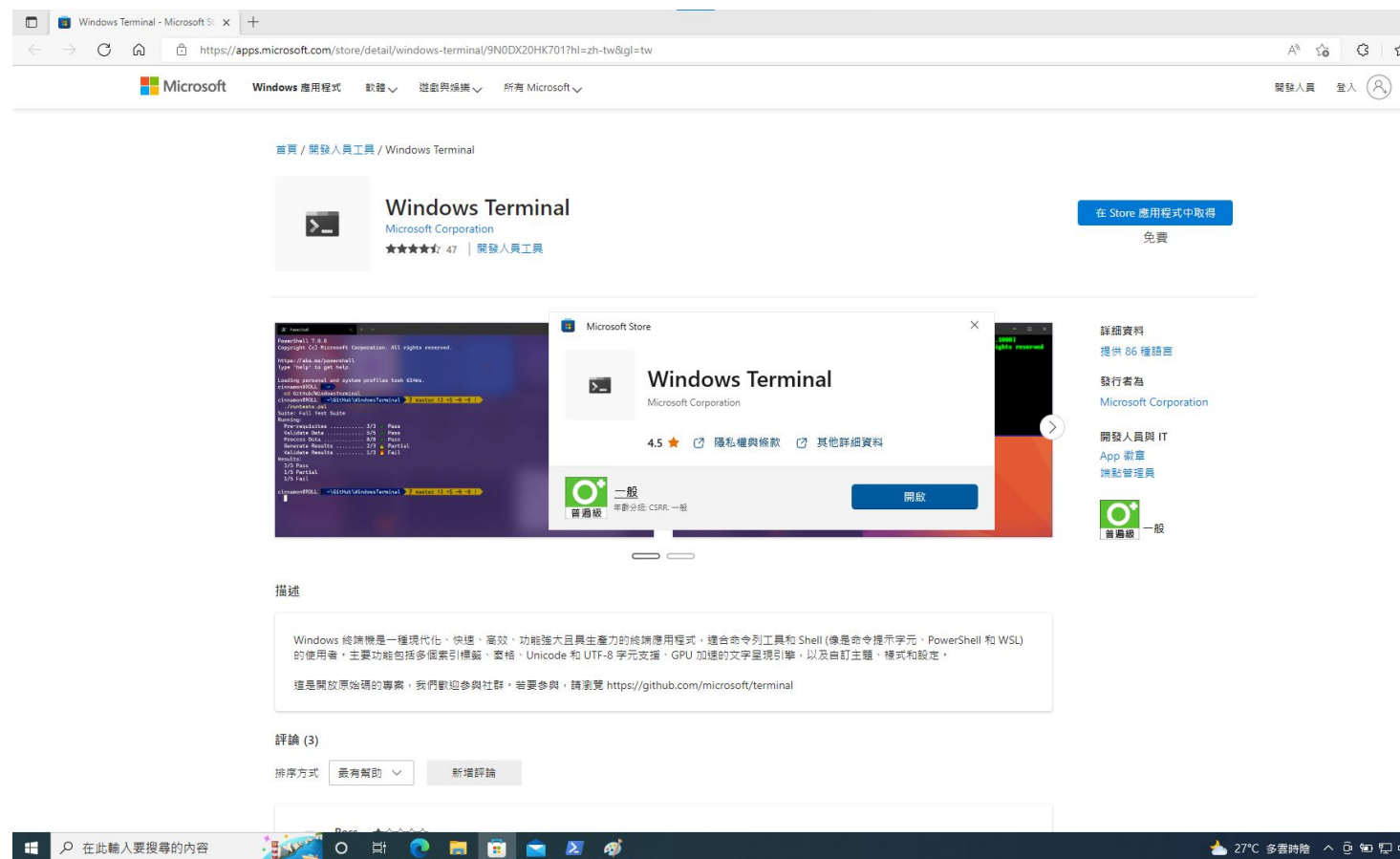
安裝成功!

Step11



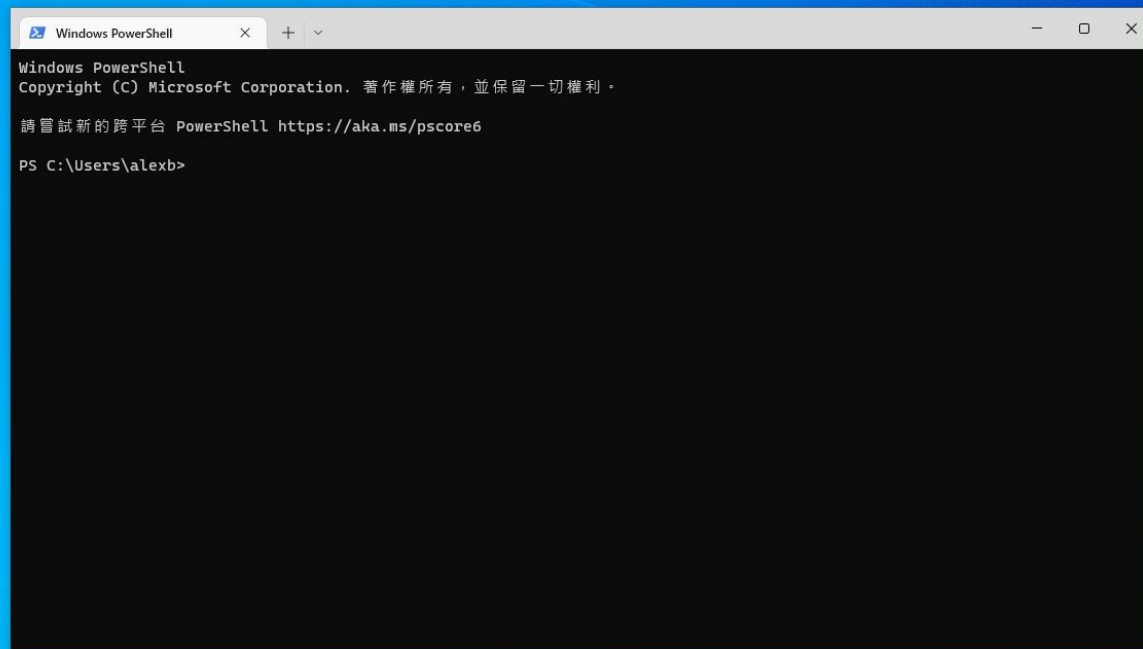
Recommended Step!
推薦安裝 Windows Terminal

Step12



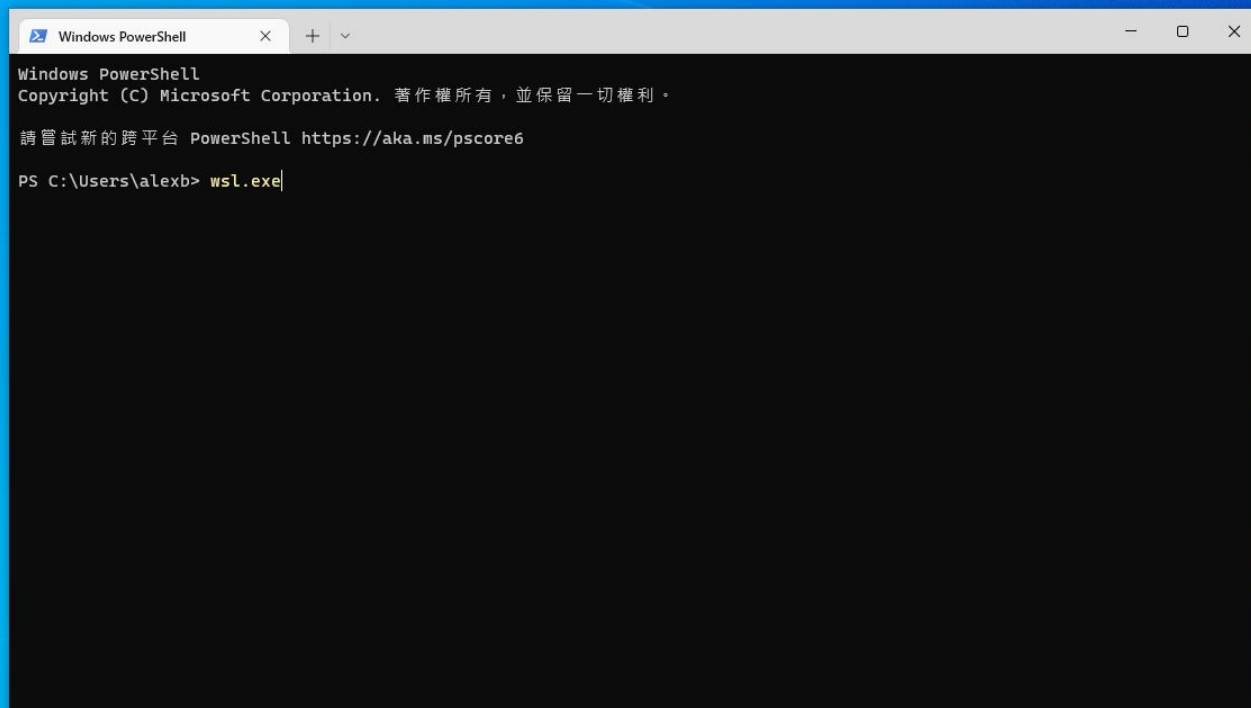
開啟Windows Terminal

Step13



介面會像左圖

Step14



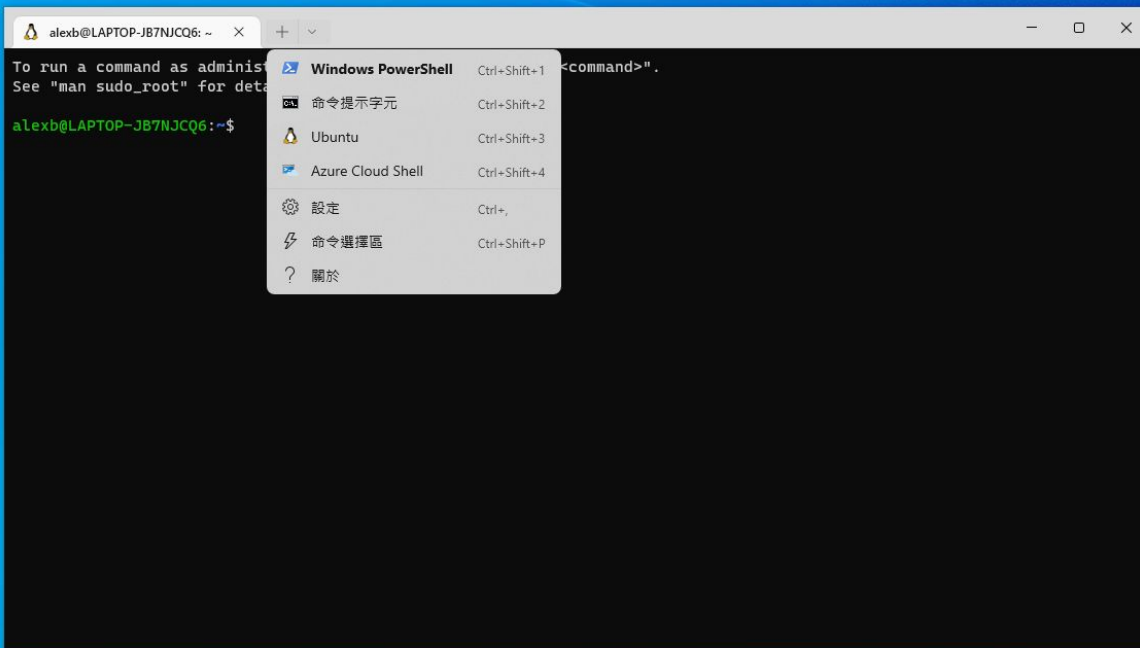
```
Windows PowerShell
Copyright (C) Microsoft Corporation. 著作權所有，並保留一切權利。

請嘗試新的跨平台 PowerShell https://aka.ms/pscore6

PS C:\Users\alexb> wsl.exe
```

輸入 wsl 來開啟

Step15



未來開啟時可以使用
上方標籤“+”選擇ubuntu

Step16

輸入 `ping google.com`

可以確認是否有連上網際網路

若出現 `ping: google.com: Temporary failure in name resolution`

表示網路沒有通

請輸入 `sudo vim /etc/resolv.conf`

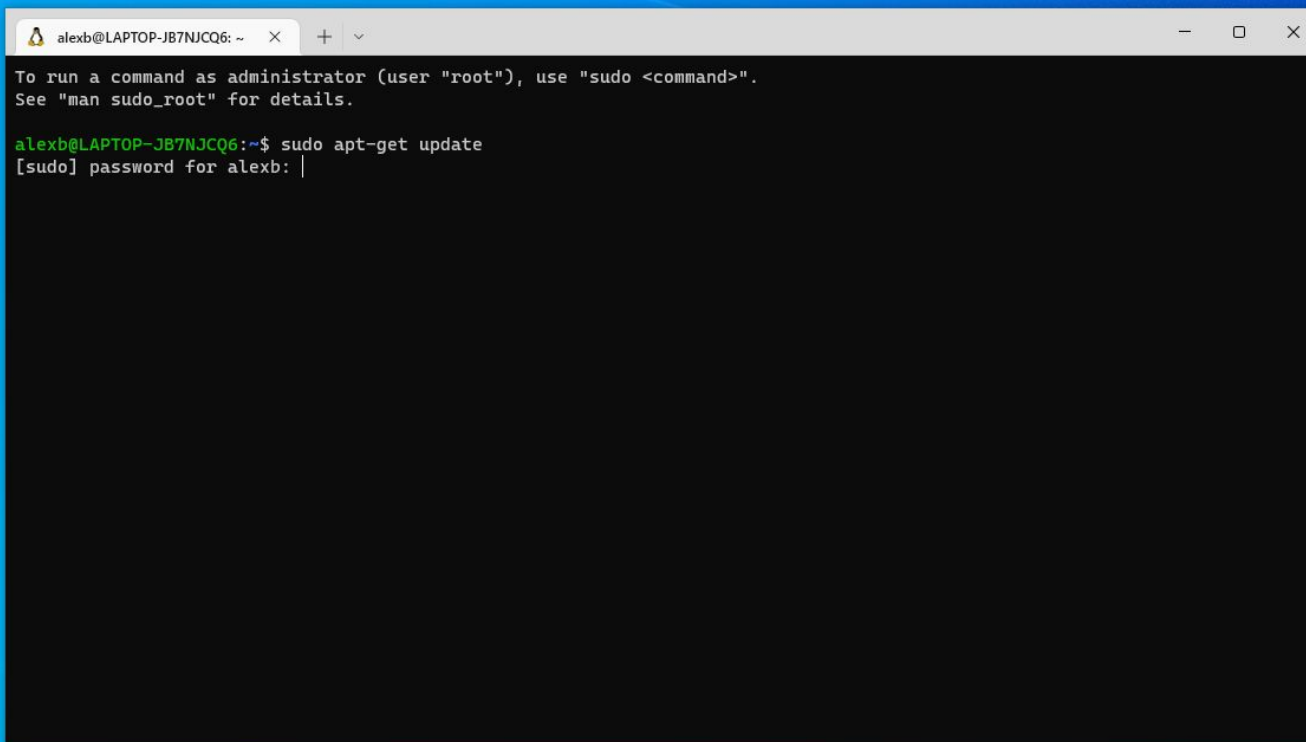
將 `nameserver` 欄位改為 `8.8.8.8`

存檔後應該就會有網路

(註: 使用 `sudo` 前綴時
系統會要求你輸入密碼)

```
kinoe@LAPTOP-EBC4S8T4: ~  
kinoe@LAPTOP-EBC4S8T4:~$ ping google.com  
ping: google.com: Temporary failure in name resolution  
kinoe@LAPTOP-EBC4S8T4:~$ cat /etc/resolv.conf  
# This file was automatically generated by WSL. To stop automat  
ic generation of this file, add the following entry to /etc/wsl  
.conf:  
# [network]  
# generateResolvConf = false  
nameserver 172.28.16.1  
kinoe@LAPTOP-EBC4S8T4:~$ sudo vim /etc/resolv.conf  
[sudo] password for kinoe:  
kinoe@LAPTOP-EBC4S8T4:~$ cat /etc/resolv.conf  
# This file was automatically generated by WSL. To stop automat  
ic generation of this file, add the following entry to /etc/wsl  
.conf:  
# [network]  
# generateResolvConf = false  
nameserver 8.8.8.8  
kinoe@LAPTOP-EBC4S8T4:~$ ping google.com  
PING google.com (172.217.160.110) 56(84) bytes of data.  
64 bytes from tsa03s06-in-f14.1e100.net (172.217.160.110): icmp  
_seq=1 ttl=116 time=10.4 ms  
64 bytes from tsa03s06-in-f14.1e100.net (172.217.160.110): icmp  
_seq=2 ttl=116 time=24.4 ms  
^C  
--- google.com ping statistics ---
```

Step17



```
alex@LAPTOP-JB7NJCQ6: ~  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
alex@LAPTOP-JB7NJCQ6:~$ sudo apt-get update  
[sudo] password for alex: |
```

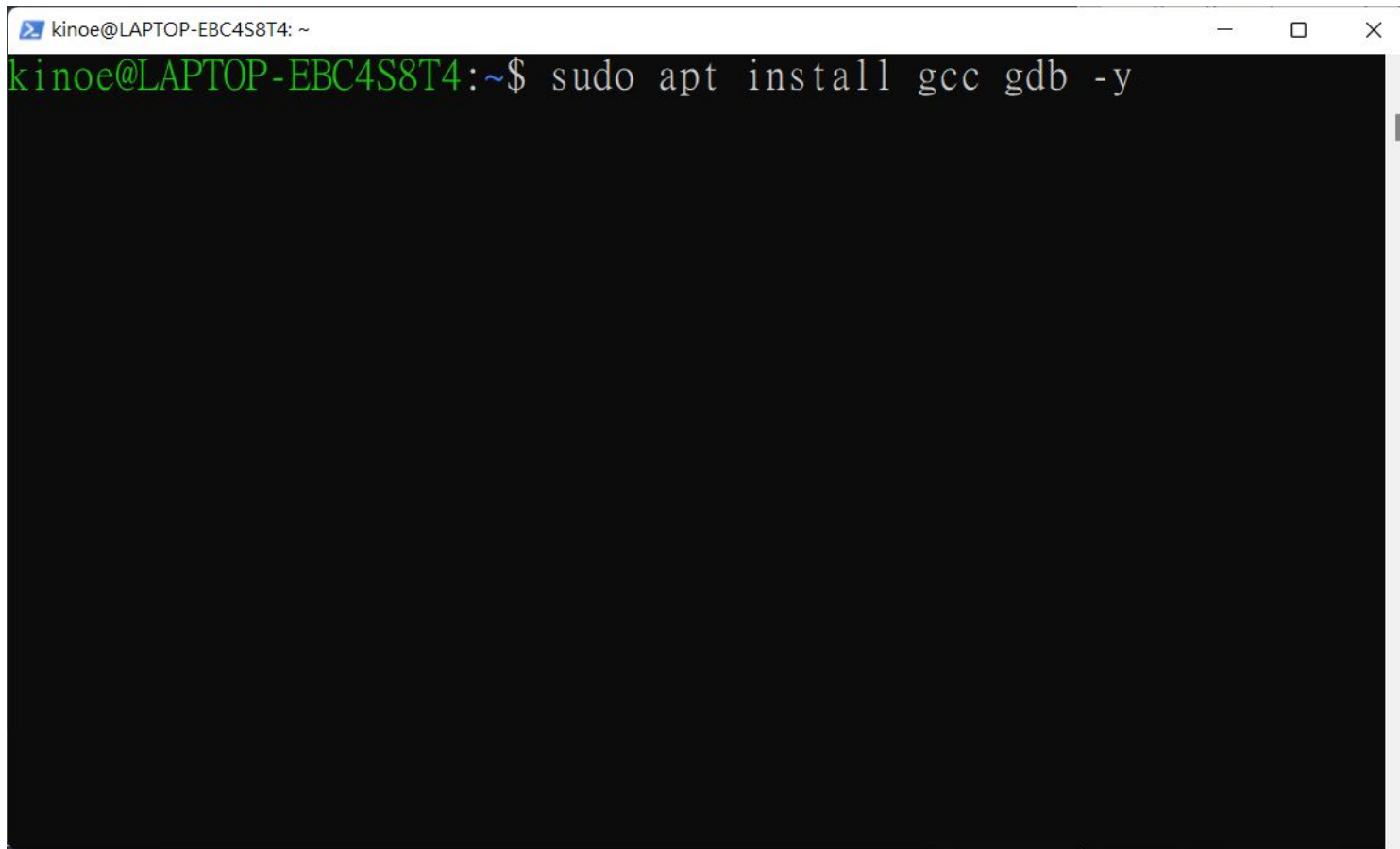
有網路之後
輸入 `sudo apt update`
更新系統軟體清單

Step18

```
alex@LAPTOP-JB7NJQC6: ~  
Get:19 http://security.ubuntu.com/ubuntu focal-security/multiverse Translation-en [5376 B]  
Get:20 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 c-n-f Metadata [508 B]  
Get:21 http://archive.ubuntu.com/ubuntu focal/universe Translation-en [5124 kB]  
Get:22 http://archive.ubuntu.com/ubuntu focal/universe amd64 c-n-f Metadata [265 kB]  
Get:23 http://archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [144 kB]  
Get:24 http://archive.ubuntu.com/ubuntu focal/multiverse Translation-en [104 kB]  
Get:25 http://archive.ubuntu.com/ubuntu focal/multiverse amd64 c-n-f Metadata [9136 B]  
Get:26 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [2077 kB]  
Get:27 http://archive.ubuntu.com/ubuntu focal-updates/main Translation-en [369 kB]  
Get:28 http://archive.ubuntu.com/ubuntu focal-updates/main amd64 c-n-f Metadata [15.9 kB]  
Get:29 http://archive.ubuntu.com/ubuntu focal-updates/restricted amd64 Packages [1256 kB]  
Get:30 http://archive.ubuntu.com/ubuntu focal-updates/restricted Translation-en [178 kB]  
Get:31 http://archive.ubuntu.com/ubuntu focal-updates/restricted amd64 c-n-f Metadata [584 B]  
Get:32 http://archive.ubuntu.com/ubuntu focal-updates/universe amd64 Packages [949 kB]  
Get:33 http://archive.ubuntu.com/ubuntu focal-updates/universe Translation-en [216 kB]  
Get:34 http://archive.ubuntu.com/ubuntu focal-updates/universe amd64 c-n-f Metadata [21.4 kB]  
Get:35 http://archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 Packages [24.4 kB]  
Get:36 http://archive.ubuntu.com/ubuntu focal-updates/multiverse Translation-en [7336 B]  
Get:37 http://archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 c-n-f Metadata [588 B]  
Get:38 http://archive.ubuntu.com/ubuntu focal-backports/main amd64 Packages [45.6 kB]  
Get:39 http://archive.ubuntu.com/ubuntu focal-backports/main Translation-en [16.3 kB]  
Get:40 http://archive.ubuntu.com/ubuntu focal-backports/main amd64 c-n-f Metadata [1420 B]  
Get:41 http://archive.ubuntu.com/ubuntu focal-backports/restricted amd64 c-n-f Metadata [116 B]  
Get:42 http://archive.ubuntu.com/ubuntu focal-backports/universe amd64 Packages [23.9 kB]  
Get:43 http://archive.ubuntu.com/ubuntu focal-backports/universe Translation-en [16.0 kB]  
Get:44 http://archive.ubuntu.com/ubuntu focal-backports/universe amd64 c-n-f Metadata [860 B]  
Get:45 http://archive.ubuntu.com/ubuntu focal-backports/multiverse amd64 c-n-f Metadata [116 B]  
Fetched 25.8 MB in 10s (2461 kB/s)  
Reading package lists... Done  
alex@LAPTOP-JB7NJQC6:~$ sudo apt-get upgrade
```

再輸入 `sudo apt upgrade -y`
安裝更新後的系統軟體

Step19

A terminal window with a black background and white text. The window title bar shows 'kinoe@LAPTOP-EBC4S8T4: ~'. The command 'sudo apt install gcc gdb -y' is entered at the prompt. The prompt itself is green text on a black background.

```
kinoe@LAPTOP-EBC4S8T4: ~  
kinoe@LAPTOP-EBC4S8T4:~$ sudo apt install gcc gdb -y
```

完成系統更新後
就可以安裝編譯器
`sudo apt install gcc gdb -y`

Step20

```
otteryc@DESKTOP-RL3R8PI: ~$ gcc --version
gcc (Debian 10.2.1-6) 10.2.1 20210110
Copyright (C) 2020 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.

otteryc@DESKTOP-RL3R8PI:~$ gdb --version
GNU gdb (Debian 10.1-1.7) 10.1.90.20210103-git
Copyright (C) 2021 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.
otteryc@DESKTOP-RL3R8PI:~$ vim --version
VIM - Vi IMproved 8.2 (2019 Dec 12, compiled Oct 01 2021 01:51:08)
Included patches: 1-2434
Extra patches: 8.2.3402, 8.2.3403, 8.2.3409, 8.2.3428
Modified by team+vim@tracker.debian.org
Compiled by team+vim@tracker.debian.org
Huge version without GUI.  Features included (+) or not (-):
+acl               -farsi             +mouse_sgr         +tag_binary
+arabic            +file_in_path      -mouse_sysmouse    -tag_old_static
+autocmd           +find_in_path      +mouse_urxvt       -tag_any_white
+autochdir         +float             +mouse_xterm       -tcl
-autoservername    +folding           +multi_byte        +termguicolors
-balloon_eval      -footer            +multi_lang        +terminal
+balloon_eval_term +fork()            -mzscheme          +terminfo
-browse            +gettext           +netbeans_intg     +termresponse
++builtin_terms    -hangul_input      +num64             +textobjects
+byte_offset       +iconv             +packages          +textprop
+channel           +insert_expand     +path_extra        +timers
+cindent           +ipv6              -perl              +title
```

確認 gdb, gcc 跟 vim

Reference

Windows Terminal - Microsoft Store 應用程式

安裝 WSL | Microsoft Docs