

嵌入式系統

Lab 03: RPi 伺服器管理

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建立Web Server網站

架設網站伺服器

建立Web Server網站(1/10)

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```
$ sudo apt-get install ca-certificates
$ sudo apt-get install git-core
$ sudo wget http://goo.gl/1B0fJ -O /usr/bin/rpi-update && sudo chmod
+x /usr/bin/rpi-update
$ sudo rpi-update
$ sudo shutdown -r now
```

▶ Setp2 更新apt-get

```
$sudo apt-get update
$sudo apt-get upgrade
```

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• Setp2 結果：

```
pi@raspberrypi ~ $ sudo apt-get update
Hit http://repository.wolfram.com stable Release.gpg
Hit http://raspberrypi.collabora.com wheezy Release.gpg
Hit http://repository.wolfram.com stable Release
Hit http://archive.raspberrypi.org wheezy Release.gpg
Get:1 http://mirrordirector.raspbian.org wheezy Release.gpg [498 B]
Hit http://raspberrypi.collabora.com wheezy Release
Hit http://archive.raspberrypi.org wheezy Release
Hit http://repository.wolfram.com stable/non-free armhf Packages
Get:2 http://mirrordirector.raspbian.org wheezy Release [14.4 kB]
Ign http://mirrordirector.raspbian.org wheezy Release
Hit http://raspberrypi.collabora.com wheezy/rpi armhf Packages
Hit http://archive.raspberrypi.org wheezy/main armhf Packages
Ign http://repository.wolfram.com stable/non-free Translation-en_GB
Ign http://repository.wolfram.com stable/non-free Translation-en
Ign http://raspberrypi.collabora.com wheezy/rpi Translation-en_GB
Ign http://archive.raspberrypi.org wheezy/main Translation-en_GB
Ign http://raspberrypi.collabora.com wheezy/rpi Translation-en
Ign http://archive.raspberrypi.org wheezy/main Translation-en
```

建立Web Server網站(3/10)

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```
$ sudo apt-get install apache2
```

```
pi@raspberrypi ~$ sudo apt-get install apache2
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following extra packages will be installed:
apache2-mpm-worker apache2-utils apache2.2-bin apache2.2-common libaprutil1-dbd-sqlite3
libaprutil1-ldap ssl-cert
Suggested packages:
```

▶ Setp4 安裝PHP程式語言

```
$ sudo apt-get install php5 libapache2-mod-php5
```

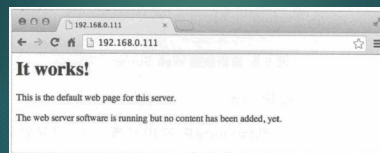
```
raspberrypi ~$ sudo apt-get install php5 libapache2-mod-php5
Reading package lists... Done
Building dependency tree
Reading state information... Done
apache2-mod-php5 is already the newest version.
```

建立Web Server網站(6/10)

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▶ Setp7 透過網路瀏覽來測試

▶ 輸入IP位置看看是否有反應，若一切順利會出現下圖：



▶ 若無反應，請使用下方其中一個指令：

```
$ ping IP位置
```

```
$ ping www.google.com
```

建立Web Server網站(4/10)

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▶ Setp5 重新啟動Web Server

```
$ sudo service apache2 restart
```

```
pi@raspberrypi ~$ sudo service apache2 restart
[....] Restarting web server: apache2apache2: Could not reliably determine the server's fully
qualified domain name, using 127.0.1.1 for ServerName
... waiting apache2: Could not reliably determine the server's fully qualified domain name,
using 127.0.1.1 for ServerName
^C
```

▶ Setp6 確認Raspberry Pi的IP位置

▶ 稍後要透過瀏覽器來連結網頁伺服器，所以必須知道IP位置

```
$ ifconfig
```

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▶ Setp8 設定apache2網頁伺服器軟體

▶ 為了稍後設定工作檔案路徑的使用者權限，讓所有使用者都可以使用該路徑：

```
$ sudo nano /etc/apache2/sites-enabled/000-default
```

▶ 透過文字編輯器，搜尋以下文字：

```
AllowOverride None
```

▶ 將其改成：

```
AllowOverride ALL
```

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```
pi@raspberrypi ~$ ifconfig
eth0      Link encap:Ethernet  HWaddr b8:27:eb:2f:d2:ca
          UP BROADCAST MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:0 (0.0 B)  TX bytes:0 (0.0 B)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          UP LOOPBACK RUNNING  MTU:65536  Metric:1
          RX packets:96 errors:0 dropped:0 overruns:0 frame:0
          TX packets:96 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:7260 (7.0 KiB)  TX bytes:7260 (7.0 KiB)

wlan0     Link encap:Ethernet  HWaddr 88:1f:02:d3:8a:40
          inet addr:192.168.0.111  Bcast:192.168.0.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:57260 errors:0 dropped:3244 overruns:0 frame:0
          TX packets:12171 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:80769893 (84.6 MiB)  TX bytes:1363648 (1.3 MiB)
```

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▶ Setp8 結果：

```
GNU nano 2.2.6 File: /etc/apache2/sites-enabled/000-default

#VirtualHost *:80#
ServerAdmin webmaster@localhost

DocumentRoot /var/www
<Directory />
    Options FollowSymLinks
    AllowOverride all
</Directory>
<Directory /var/www/>
    Options Indexes FollowSymLinks MultiViews
    AllowOverride all
    Order allow,deny
    allow from all
</Directory>
ScriptAlias /cgi-bin/ /usr/lib/cgi-bin/
<Directory /usr/lib/cgi-bin>
    AllowOverride all
    Options +ExecCGI -MultiViews +SymLinksIfOwnerMatch
    Order allow,deny
    Allow from all
</Directory>
ProxyRequests Off
```

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▶ 接續 Step8

- ▶ 按下Ctrl + O儲存，並按下Ctrl + X 離開文字編輯軟體
- ▶ 執行一次，啟動apache2網頁伺服器

```
$ sudo service apache2 restart
```

▶ Step9 撰寫簡單的PHP程式

- ▶ 透過文字編輯軟體寫簡單的PHP程式

```
$ sudo nano /var/www/my.php
```

```
1. <h1>hello PHP, powenko.com </h1>
2. <?php
3. phpinfo();
4. ?>
```

建立MySQL資料庫伺服器 (1/7)

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Step1 安裝MySQL資料庫工具

```
$ sudo apt-get install mysql-server mysql-client php5-mysql
```

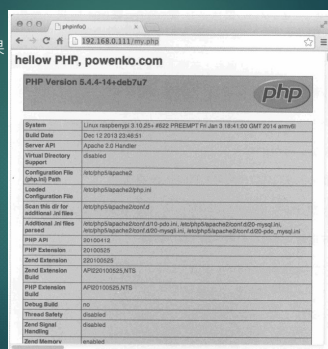
- ▶ php5-mysql模組是提供PHP連結MySQL資料庫相關的函數與模組。

```
pi@raspberrypi ~ $ sudo apt-get install mysql-server mysql-client php5-mysql
Reading package lists... Done
Building dependency tree
Reading state information... Done
php5-mysql is already the newest version.
The following extra packages will be installed:
heirloom-mailx libaio1 libdbd-mysql-perl libdbi-perl libhtml-template-perl
libmysqlclient16 libnet-daemon-perl liblprc-perl mysql-client-5.5 mysql-server-5.5
mysql-server-core-5.5
Suggested packages:
```

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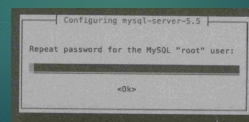
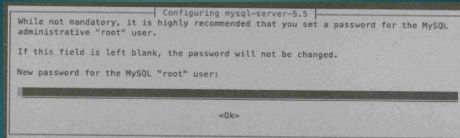
▶ Step9 結果



建立MySQL資料庫伺服器(2/7)

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▶ Step2 設定MySQL的帳號和密碼



建立MySQL資料庫伺服器

建立MySQL資料庫伺服器 (3/7)

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▶ Step3 下載管理軟體phpMyAdmin

- ▶ 首先安裝PHP5的模組

```
$ sudo apt-get install php5-mcrypt
```

- ▶ 切換到管理者的權限，並移動到網頁檔案路徑

```
$ sudo su
$ cd /var/www
```

```
pi@raspberrypi ~ $ sudo su
root@raspberrypi:/home/pi# cd /var/www
```


建立MySQL資料庫伺服器

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在Raspberry Pi透過瀏覽器下載phpMyAdmin比較麻煩，請到官方下載頁：
http://www.phpmyadmin.net/home_page/downloads.php，找最新的版本，以最新的版本透過wget下載

```
$wget https://files.phpmyadmin.net/phpMyAdmin/4.5.2/phpMyAdmin-4.5.2-all-languages.tar.bz2
```

```
root@raspberrypi:/var/www# wget http://www.sourceforge.net/projects/phpmyadmin/files/phpMyAdmin/4.0.3/phpMyAdmin-4.0.3-all-languages.tar.bz2
--2014-02-13 01:03:57-- http://www.sourceforge.net/projects/phpmyadmin/files/phpMyAdmin/4.0.3/phpMyAdmin-4.0.3-all-languages.tar.bz2
Resolving www.sourceforge.net (www.sourceforge.net)... 216.34.181.63
Connecting to www.sourceforge.net (www.sourceforge.net)[216.34.181.63]:80... connected.
```

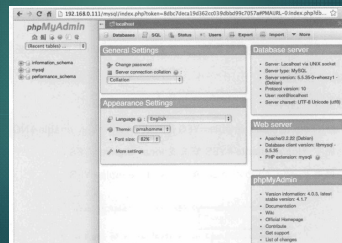
建立MySQL資料庫伺服器(7/7)

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- ▶ 如果不小心忘記帳號和密碼，可透過以下指令修改

```
$mysqladmin -u root -p'oldpassword' password 'newpass'
```

- ▶ 順利的話可以看到以下畫面



建立MySQL資料庫伺服器(5/7)

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- ▶ 解開檔案

```
$tar -jxf phpMyAdmin-4.5.2-all-languages.tar.bz2
```

```
root@raspberrypi:/var/www# tar -jxf phpMyAdmin-4.0.3-all-languages.tar.bz2
root@raspberrypi:/var/www# ls
index.html  phpMyAdmin-4.0.3-all-languages.tar.bz2
my.php      phpMyAdmin-4.1.7-all-languages.zip
phpMyAdmin-4.0.3-all-languages
```

- ▶ 改名，方便在瀏覽器上執行

```
$mv phpMyAdmin-4.5.2-all-languages.tar.bz2 mysql
```

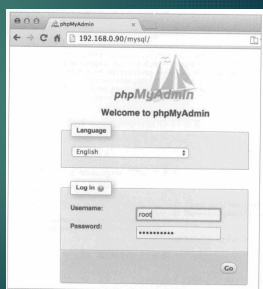
```
root@raspberrypi:/var/www# mv phpMyAdmin-4.0.3-all-languages mysql
root@raspberrypi:/var/www# ls
index.html  phpMyAdmin-4.0.3-all-languages.tar.bz2
my.php      phpMyAdmin-4.1.7-all-languages.zip
mysql
```

建立FTP伺服器

建立MySQL資料庫伺服器(6/7)

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- ▶ 打開瀏覽器，輸入網址和mysql的路徑，就可以進入phpMyAdmin
- ▶ 帳號和密碼為安裝時設定的帳號和密碼



建立FTP伺服器(1/6)

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- ▶ Step1 安裝FTP伺服器

- ▶ 首先確定FTP存放檔案的路徑，這裡用/var/www來做為檔案路徑

```
$sudo chown -R pi /var/www
```

```
$sudo apt-get install vsftpd
```

```
pi@raspberrypi ~ $ sudo chown -R pi /var/www
pi@raspberrypi ~ $ sudo apt-get install vsftpd
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
vsftpd
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 149 kB of archives.
```

建立FTP伺服器(2/6)

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▶ Step2 修改設定

- ▶ 透過nano文字編輯軟體打開/etc/vsftpd.conf

```
$sudo nano /etc/vsftpd.conf
```

▶ 修改以下設定

- ▶ 原本anonymous_enable=YES改成anonymous_enable=NO
- ▶ 原本#local_enable=YES改成#local_enable=NO
- ▶ 原本#write_enable=YES改成#write_enable=NO

```
# Allow anonymous FTP? (Beware - allowed by default)
anonymous_enable=NO

# Uncomment this to allow local users to log in.
local_enable=YES

# Uncomment this to enable any form of FTP write
write_enable=YES
```

建立FTP伺服器(5/6)

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▶ Step5 建立使用者的路徑

- ▶ 透過mkdir的方法建立一個新路徑，或者把它指定到www網頁的跟目錄/var/www，透過以下指令，把剛剛所建立的帳號登入指到/var/www

```
$ sudo usermod -d /var/www powen1
```

▶ 重新啟動FTP

```
$ sudo service vsftpd restart
```

建立FTP伺服器(3/6)

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▶ Step2 修改設定 (續)

- ▶ 並在檔案的最後加上這一行

```
# access.
secure_chroot_dir=/var/run/vsftpd/empty
#
# This string is the name of the PAM service vsf
pam_service_name=vsftpd
#
# This option specifies the location of the RSA
# encrypted connections.
rsa_cert_file=/etc/ssl/private/vsftpd.pem
force_dot_files=YES
```

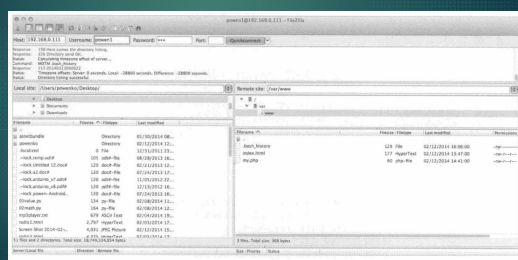
- ▶ 按下Ctrl + O儲存，並按下Ctrl + X 離開文字編輯軟體

建立FTP伺服器(6/6)

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▶ Step6 透過FileZilla登入FTP

- ▶ 透過IP位置與剛剛建立的帳號密碼



建立FTP伺服器(4/6)

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▶ Step3 啟動FTP伺服器

```
$sudo service vsftpd restart
```

▶ Step4 建立使用者帳號

- ▶ 例：

```
pi@raspberrypi:~$ sudo useradd powen1
pi@raspberrypi:~$ sudo passwd powen1
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
pi@raspberrypi:~$
```

END

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