

RPI建置過程

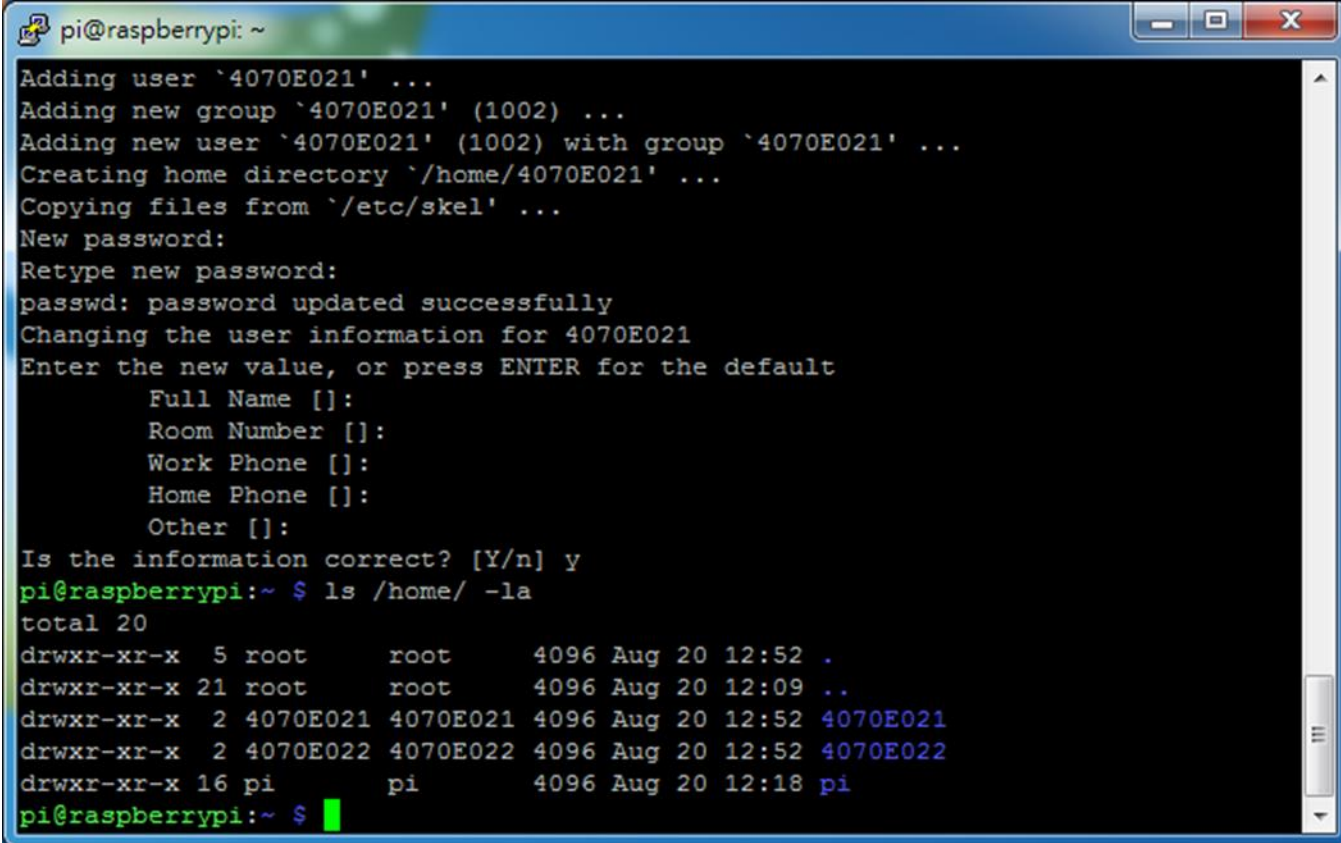
班級：資工三A

學號：4070E022

姓名：沈明楷

指導老師：周志學

1. 學號 (4070E022)

A terminal window titled 'pi@raspberrypi: ~' with standard window controls. The terminal output shows the process of adding a new user '4070E021'. It includes adding a group, creating a home directory, and setting a password. After confirming the user information, the user runs 'ls /home/ -la', which displays a list of files and directories in the /home directory, including the newly created user's directory.

```
pi@raspberrypi: ~  
Adding user `4070E021' ...  
Adding new group `4070E021' (1002) ...  
Adding new user `4070E021' (1002) with group `4070E021' ...  
Creating home directory `/home/4070E021' ...  
Copying files from `/etc/skel' ...  
New password:  
Retype new password:  
passwd: password updated successfully  
Changing the user information for 4070E021  
Enter the new value, or press ENTER for the default  
    Full Name []:  
    Room Number []:  
    Work Phone []:  
    Home Phone []:  
    Other []:  
Is the information correct? [Y/n] y  
pi@raspberrypi:~ $ ls /home/ -la  
total 20  
drwxr-xr-x  5 root      root      4096 Aug 20 12:52 .  
drwxr-xr-x 21 root      root      4096 Aug 20 12:09 ..  
drwxr-xr-x  2 4070E021 4070E021 4096 Aug 20 12:52 4070E021  
drwxr-xr-x  2 4070E022 4070E022 4096 Aug 20 12:52 4070E022  
drwxr-xr-x 16 pi        pi        4096 Aug 20 12:18 pi  
pi@raspberrypi:~ $
```

2. 安裝apache2套件

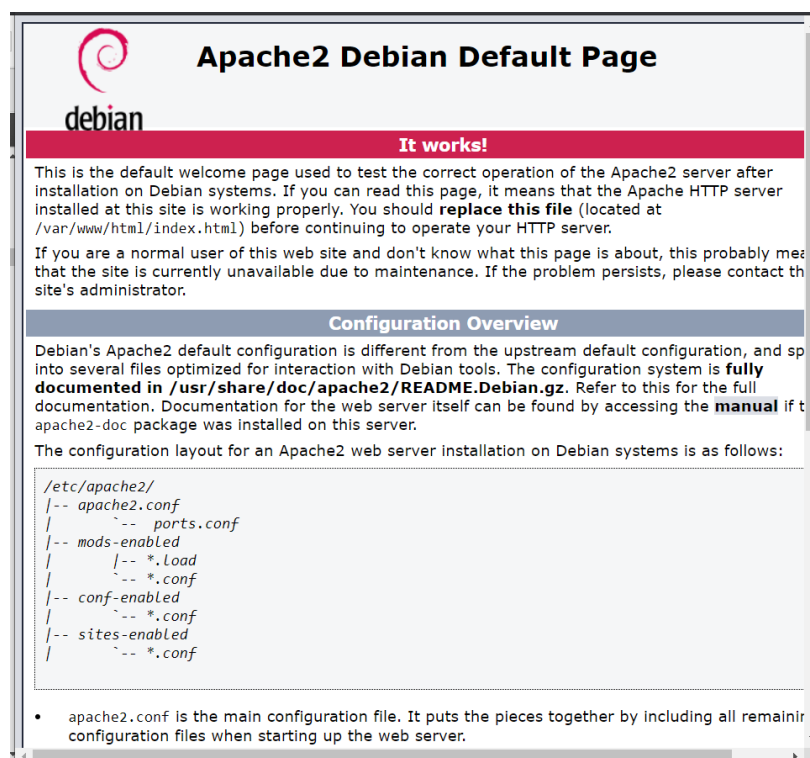
```
pi@raspberrypi: ~  
login as: pi  
pi@192.168.3.2's password:  
Linux raspberrypi 5.4.51-v7+ #1333 SMP Mon Aug 10 16:45:19 BST 2020 armv7l  
  
The programs included with the Debian GNU/Linux system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*/copyright.  
  
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent  
permitted by applicable law.  
Last login: Tue Dec 1 13:39:36 2020  
  
SSH is enabled and the default password for the 'pi' user has not been changed.  
This is a security risk - please login as the 'pi' user and type 'passwd' to set  
a new password.  
  
pi@raspberrypi:~ $ sudo apt-get install apache2 -y  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
apache2 is already the newest version (2.4.38-3+deb10u4).  
0 upgraded, 0 newly installed, 0 to remove and 132 not upgraded.  
pi@raspberrypi:~ $
```

```
pi@raspberrypi:/home/4070E022 $ sudo su  
root@raspberrypi:/home/4070E022# sudo apt-get install apache2 -y  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
apache2 is already the newest version (2.4.38-3+deb10u4).  
0 upgraded, 0 newly installed, 0 to remove and 132 not upgraded.  
root@raspberrypi:/home/4070E022#
```


3. 啟動apache2

```
pi@raspberrypi:~ $ sudo systemctl enable apache2
Synchronizing state of apache2.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable apache2
pi@raspberrypi:~ $ sudo systemctl start apache2
```

4. 測試網頁伺服器



The screenshot shows the Apache2 Debian Default Page. At the top left is the Debian logo. The title is "Apache2 Debian Default Page". Below the title is a red banner with the text "It works!". The main content area contains two paragraphs of text. The first paragraph explains that this is the default welcome page used to test the correct operation of the Apache2 server after installation on Debian systems. It states that if the user can read this page, it means that the Apache HTTP server installed at this site is working properly. It advises the user to replace this file (located at /var/www/html/index.html) before continuing to operate their HTTP server. The second paragraph explains that if the user is a normal user of this web site and doesn't know what this page is about, this probably means that the site is currently unavailable due to maintenance. It advises the user to contact the site's administrator if the problem persists. Below the text is a section titled "Configuration Overview". This section explains that Debian's Apache2 default configuration is different from the upstream default configuration, and it is split into several files optimized for interaction with Debian tools. It states that the configuration system is fully documented in /usr/share/doc/apache2/README.Debian.gz. It refers to this for the full documentation. It also states that documentation for the web server itself can be found by accessing the manual if the apache2-doc package was installed on this server. Below the text is a code block showing the configuration layout for an Apache2 web server installation on Debian systems. The code is a tree structure showing the hierarchy of configuration files. At the bottom of the page is a bullet point stating that apache2.conf is the main configuration file. It puts the pieces together by including all remaining configuration files when starting up the web server.

 **Apache2 Debian Default Page**

It works!

This is the default welcome page used to test the correct operation of the Apache2 server after installation on Debian systems. If you can read this page, it means that the Apache HTTP server installed at this site is working properly. You should **replace this file** (located at /var/www/html/index.html) before continuing to operate your HTTP server.

If you are a normal user of this web site and don't know what this page is about, this probably means that the site is currently unavailable due to maintenance. If the problem persists, please contact the site's administrator.

Configuration Overview

Debian's Apache2 default configuration is different from the upstream default configuration, and split into several files optimized for interaction with Debian tools. The configuration system is **fully documented in /usr/share/doc/apache2/README.Debian.gz**. Refer to this for the full documentation. Documentation for the web server itself can be found by accessing the **manual** if the apache2-doc package was installed on this server.

The configuration layout for an Apache2 web server installation on Debian systems is as follows:

```
/etc/apache2/
|-- apache2.conf
|   |-- ports.conf
|   |-- mods-enabled
|       |-- *.load
|       |-- *.conf
|   |-- conf-enabled
|       |-- *.conf
|   |-- sites-enabled
|       |-- *.conf
```

- apache2.conf is the main configuration file. It puts the pieces together by including all remaining configuration files when starting up the web server.

5. 安裝php與apache2的php模組

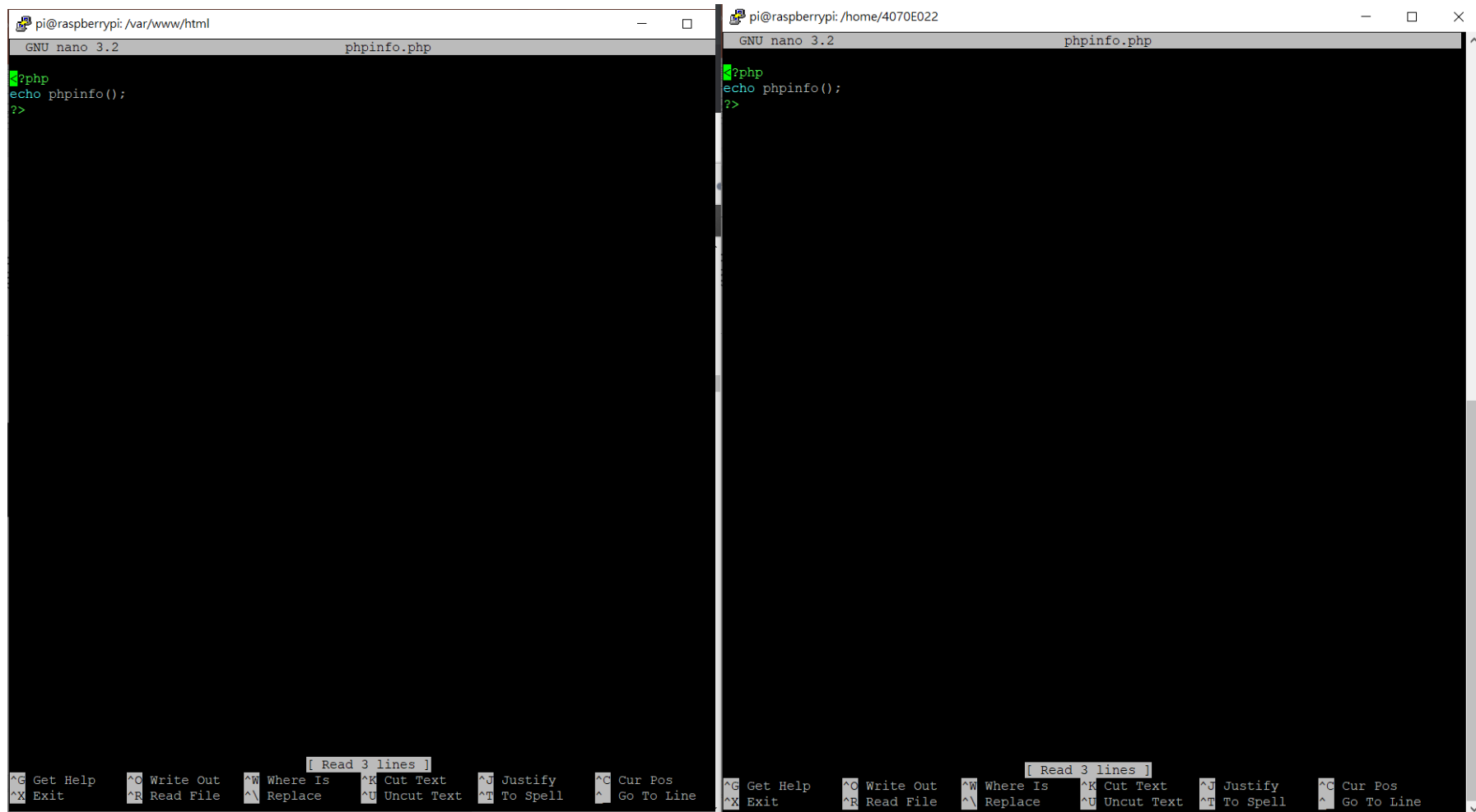
```
pi@raspberrypi:~ $ sudo apt-get install php libapache2-mod-php -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
libapache2-mod-php is already the newest version (2:7.3+69).
php is already the newest version (2:7.3+69).
0 upgraded, 0 newly installed, 0 to remove and 132 not upgraded.
pi@raspberrypi:~ $
```

```
root@raspberrypi:/home/4070E022# sudo apt-get install php libapache2-mod-php -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
libapache2-mod-php is already the newest version (2:7.3+69).
php is already the newest version (2:7.3+69).
0 upgraded, 0 newly installed, 0 to remove and 132 not upgraded.
root@raspberrypi:/home/4070E022#
```

6. 進入網頁根目錄新增測試網頁

```
pi@raspberrypi:~ $ cd /var/www/html/  
pi@raspberrypi:/var/www/html $ sudo nano phpinfo.php
```

7. 撰寫php網頁



The image displays two side-by-side terminal windows, each running the GNU nano 3.2 text editor. Both windows are editing a file named `phpinfo.php`. The left window's title bar indicates the file path is `/var/www/html`, while the right window's title bar indicates the path is `/home/4070E022`. The terminal prompt is `pi@raspberrypi`. The code visible in both editors is:

```
?php
echo phpinfo();
?>
```

The bottom status bar of each window shows the following keyboard shortcuts: `^G Get Help`, `^O Write Out`, `^W Where Is`, `^K Cut Text`, `^J Justify`, `^C Cur Pos`, `^X Exit`, `^R Read File`, `^_ Replace`, `^U Uncut Text`, `^T To Spell`, and `^_ Go To Line`. A status indicator `[Read 3 lines]` is also present in the center of the status bar.

8. php測試網頁

PHP Version 7.3.19-1~deb10u1	
System	Linux raspberrypi 5.4.51-v7+ #1333 SMP Mon Aug 10 16:45:19 BST 2020 armv7
Build Date	Jul 5 2020 06:46:45
Server API	Apache 2.0 Handler
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc/php/7.3/apache2
Loaded Configuration File	/etc/php/7.3/apache2/php.ini
Scan this dir for additional .ini files	/etc/php/7.3/apache2/conf.d
Additional .ini files parsed	/etc/php/7.3/apache2/conf.d/10-opcache.ini, /etc/php/7.3/apache2/conf.d/10-pdo, /etc/php/7.3/apache2/conf.d/20-calendar.ini, /etc/php/7.3/apache2/conf.d/20-ctype, /etc/php/7.3/apache2/conf.d/20-exif.ini, /etc/php/7.3/apache2/conf.d/20-fileinfo.ini, /etc/php/7.3/apache2/conf.d/20-gettext.ini, /etc/php/7.3/apache2/conf.d/20-iconv, /etc/php/7.3/apache2/conf.d/20-imagick, /etc/php/7.3/apache2/conf.d/20-imagick.ini, /etc/php/7.3/apache2/conf.d/20-ldap, /etc/php/7.3/apache2/conf.d/20-ldap.ini, /etc/php/7.3/apache2/conf.d/20-mbstring, /etc/php/7.3/apache2/conf.d/20-mcrypt, /etc/php/7.3/apache2/conf.d/20-mcrypt.ini, /etc/php/7.3/apache2/conf.d/20-mysql, /etc/php/7.3/apache2/conf.d/20-mysql.ini, /etc/php/7.3/apache2/conf.d/20-odbc, /etc/php/7.3/apache2/conf.d/20-odbc.ini, /etc/php/7.3/apache2/conf.d/20-odbc.ini, /etc/php/7.3/apache2/conf.d/20-openssl, /etc/php/7.3/apache2/conf.d/20-openssl.ini, /etc/php/7.3/apache2/conf.d/20-pgsql, /etc/php/7.3/apache2/conf.d/20-pgsql.ini, /etc/php/7.3/apache2/conf.d/20-shmop, /etc/php/7.3/apache2/conf.d/20-sysvsem, /etc/php/7.3/apache2/conf.d/20-sysvshm, /etc/php/7.3/apache2/conf.d/20-tokenizer.ini
PHP API	20180731
PHP Extension	20180731
Zend Extension	320180731
Zend Extension Build	API320180731,NTS
PHP Extension Build	API20180731,NTS
Debug Build	no
Thread Safety	disabled
Zend Signal Handling	enabled
Zend Memory Manager	enabled
Zend Multibyte Support	disabled
IPv6 Support	enabled
DTrace Support	available, disabled
Registered PHP Streams	https, ftps, compress.zlib, php, file, glob, data, http, ftp, phar
Registered Stream Socket Transports	tcp, udp, unix, udg, ssl, tls, tlsv1.0, tlsv1.1, tlsv1.2