How to build a local database server?

1. Open **terminal**. Make sure your Raspberry Pi is fully updated by entering the following command.

```
sudo apt-get update

sudo apt-get upgrade
```

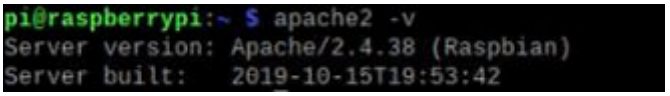
2. Install Apache, PHP and package needed.

```
sudo apt-get install apache2

sudo apt-get install libapache2-mod-php

sudo apt-get install php
```

Check if Apache is installed.

```
apache2 -v
```

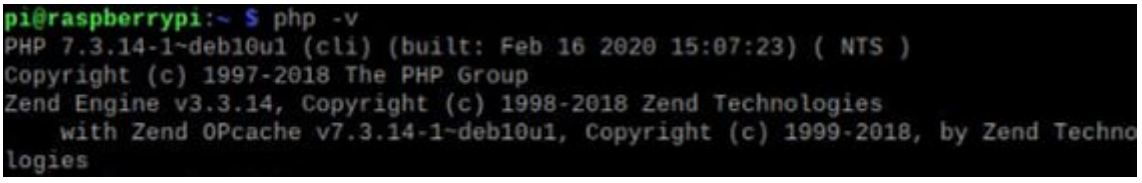
You should be able to see the following:



Check if PHP is installed.

```
php -v
```

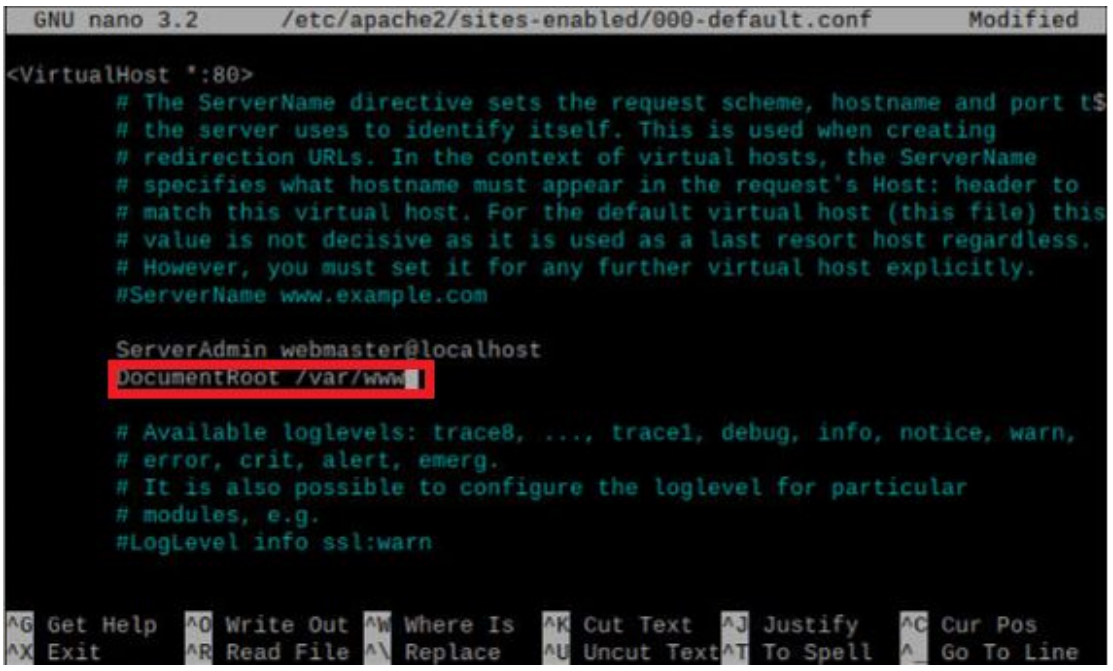
You should be able to see the following:



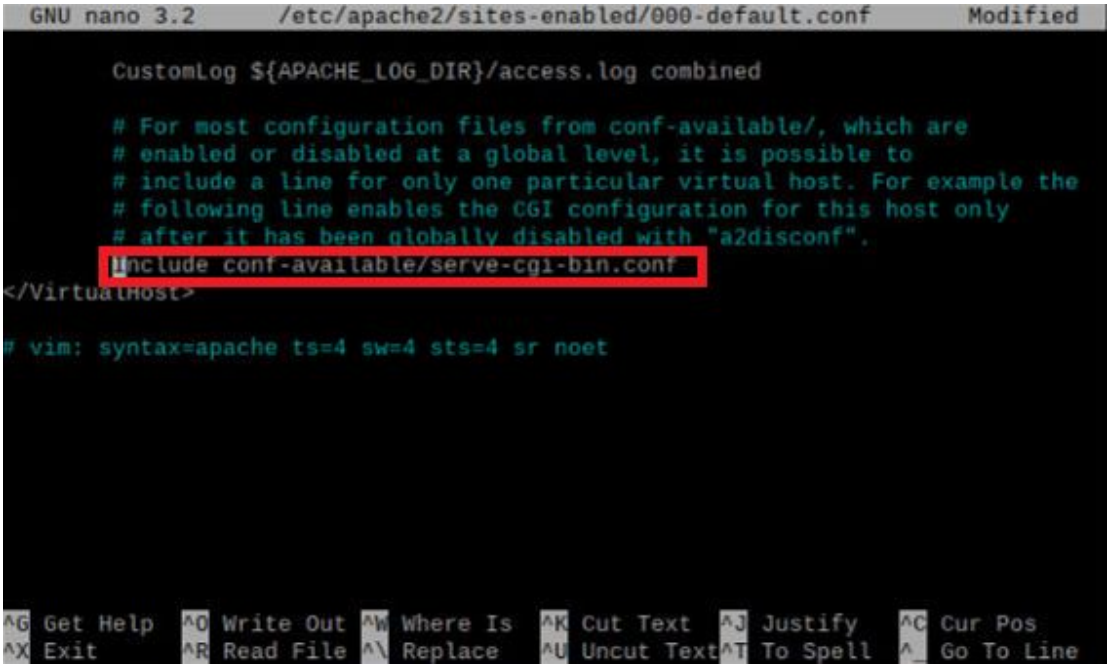
3. Edit the file.

```
sudo nano /etc/apache2/sites-enabled/000-default.conf
```

4. Find the line `DocumentRoot /var/www/html` and change to `DocumentRoot /var/www`.



Also, find the line `#Include conf-available/serve-cgi-bin.conf`, delete the `#`.

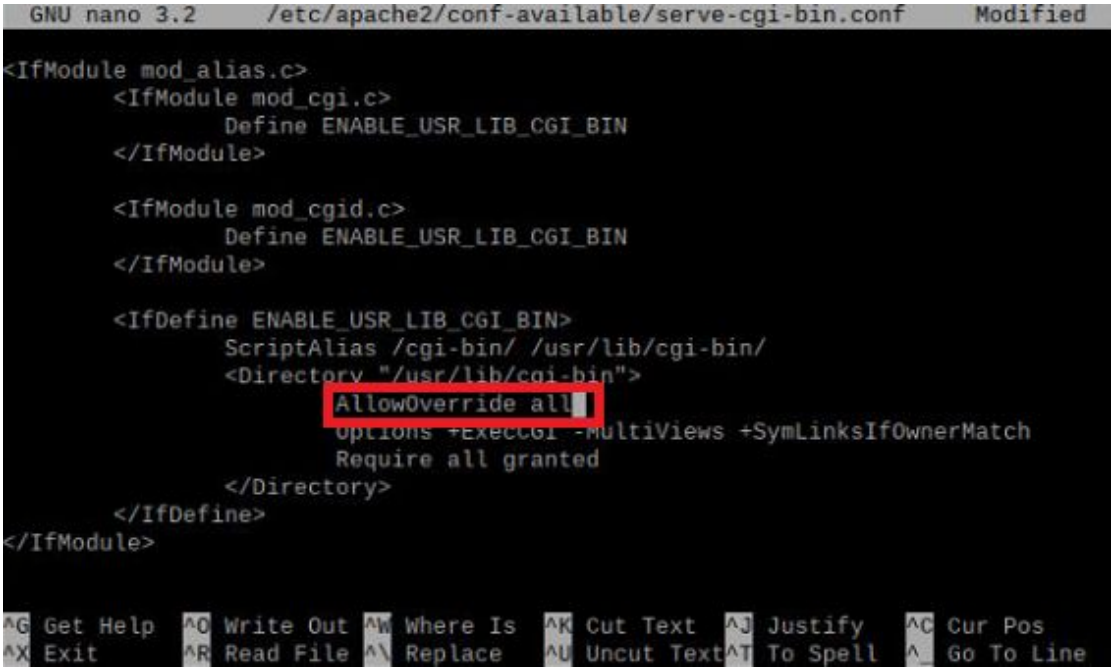


To exit the text editor and save the file, press **Ctrl + X → Y → Enter**.

5. Edit the file.

```
sudo nano /etc/apache2/conf-available/serve-cgi-bin.conf
```

6. Find the line `Alloowoverride None` and change to `Allowoverride all`.



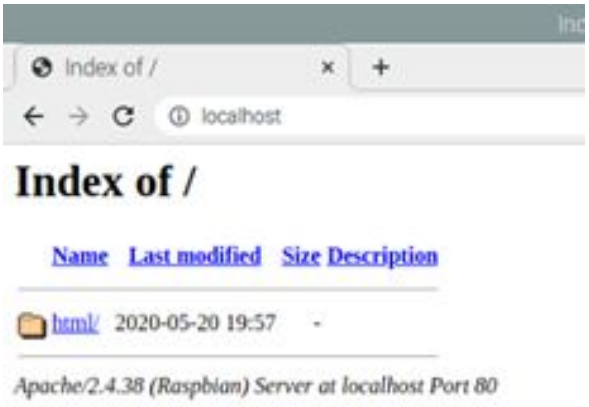
To exit the text editor and save the file, press **Ctrl + X → Y → Enter**.

7. Restart Apache service.

```
sudo service apache2 restart
```

8. Click the **web browser icon** at the top menu bar and enter "**localhost**" in the URL bar.

You should be able to see the following:



Noted that you can use **your IP address** or the word "**localhost**" or **127.0.0.1** to visit this web page.

9. Install MySQL, Mariadb and the package needed.

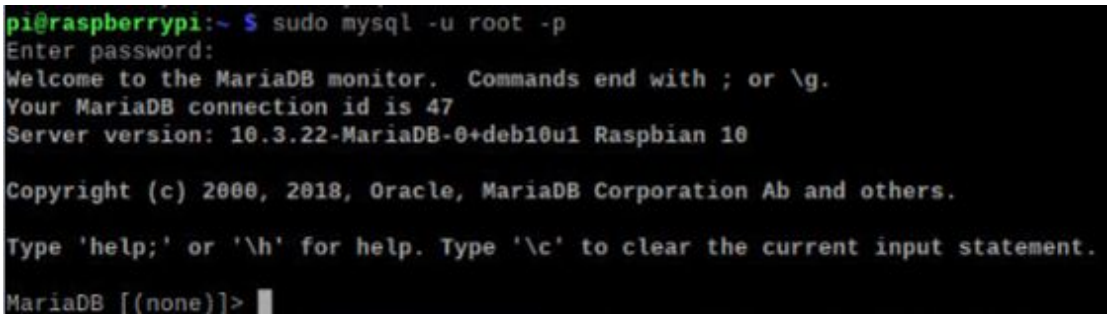
```
sudo apt install mariadb-server

sudo apt-get install python3-dev
**default-libmysqlclient-dev**

sudo pip3 install mysqlclient
```

10. After install the MySQL, try to login.

```
sudo mysql -u root -p
```

The default password is **no password**, so simply click "**Enter**" when you are asked.

You should be able to see the following if you are login successfully.



11. Grant all the privileges to the root user, allowing root has full control over a whole database.

```
GRANT ALL PRIVILEGES ON *.* TO 'root'@'localhost'
IDENTIFIED BY '' WITH GRANT OPTION;
```

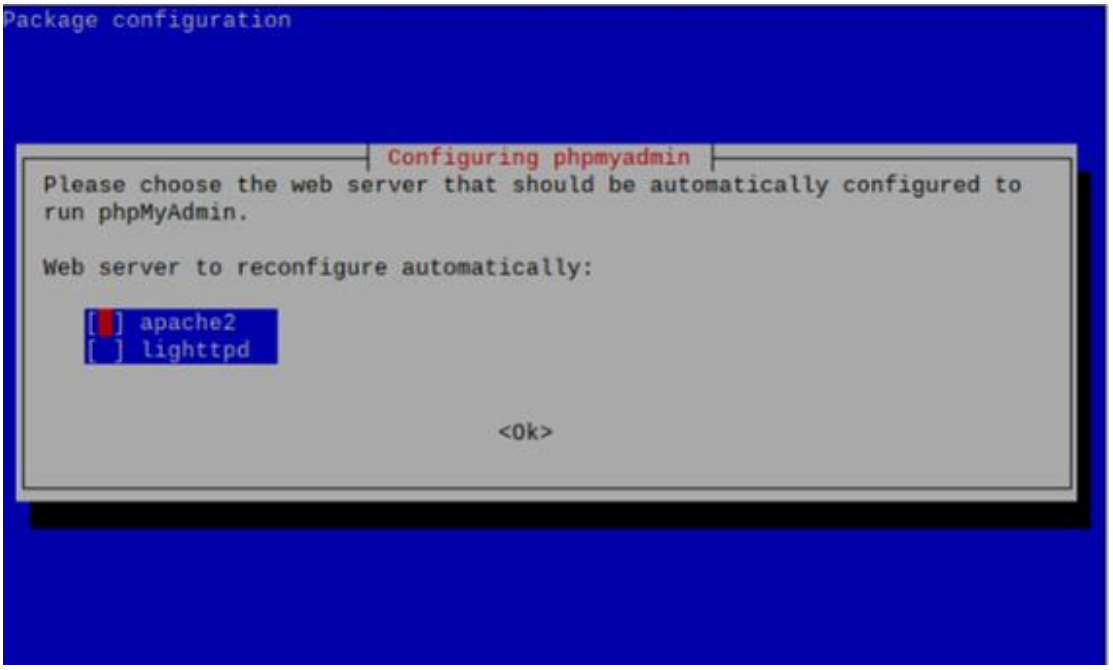
Exit the MySQL.

```
exit
```

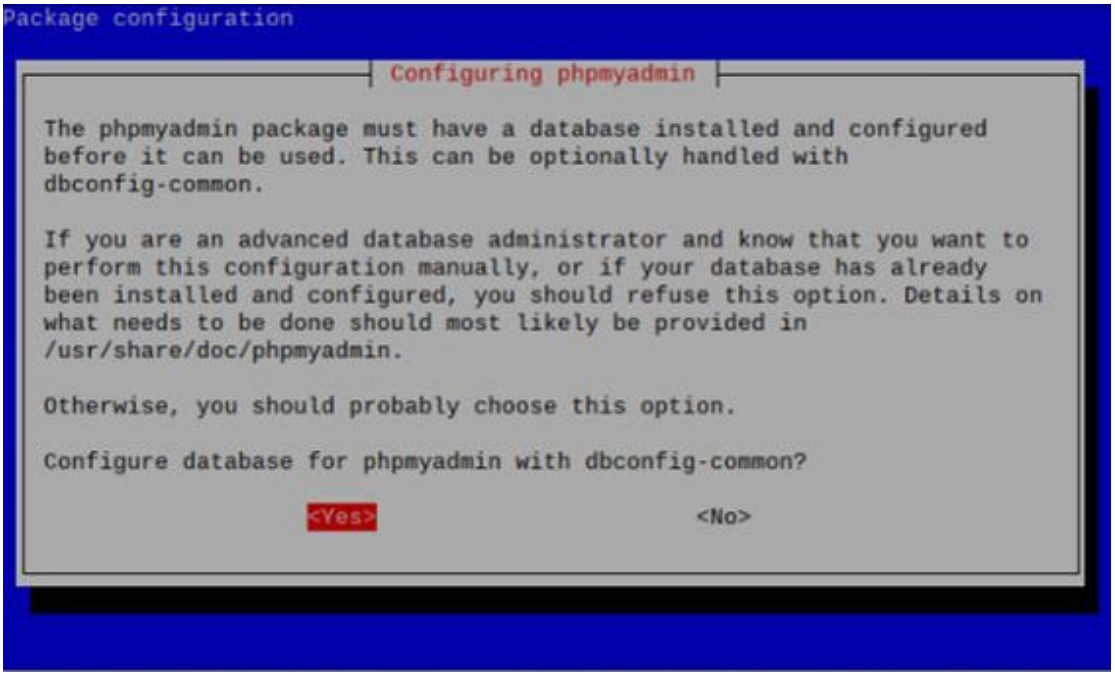
12. Install phpmyadmin.

```
sudo apt-get install phpmyadmin
```

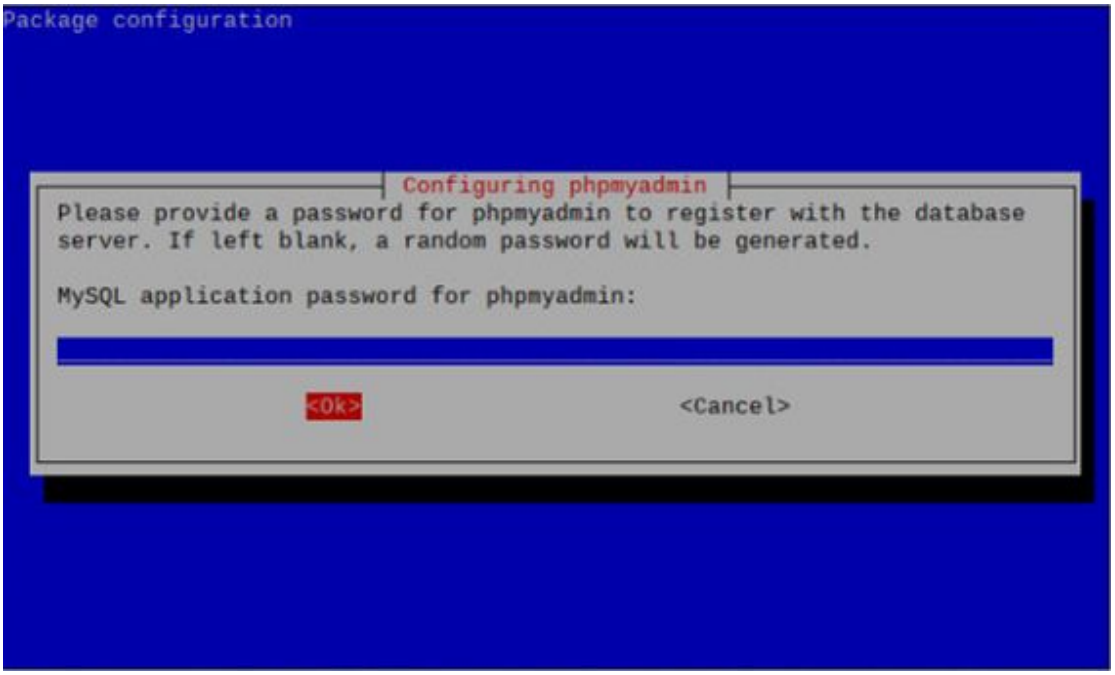
13. Choose “**apache2**” by hitting **space bar**, then “**Enter**”.



Choose “**Yes**”.



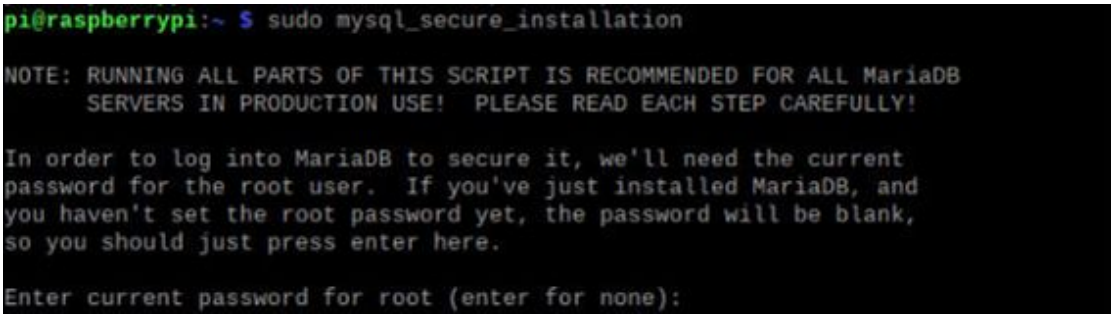
Click “**OK**”.



14. Change the security setting of MySQL.

```
sudo mysql_secure_installation
```

You should be able to see the following:



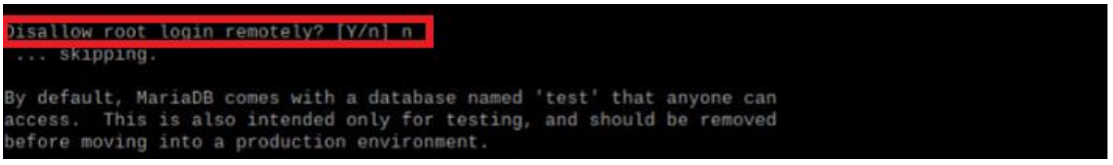
“**Enter**” for no current password.

“**Y**” for set password. Enter a password, for simplicity, please use “**raspberry**”. Then, “**Enter**” → “**raspberry”** → “**Enter**”.

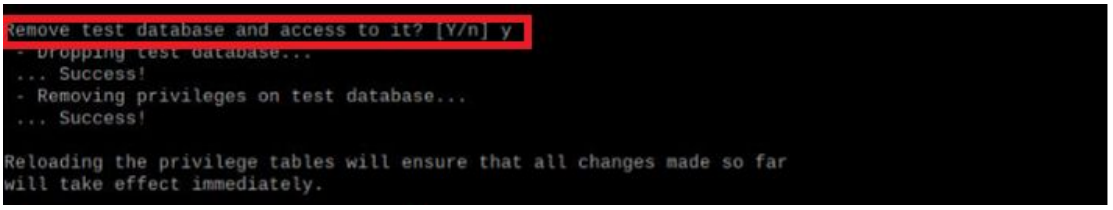
Noted that when you type a password in terminal it is **not echoed** to the screen. Just keep typing in the password and press Enter.

“**N**” → “**Enter**”.

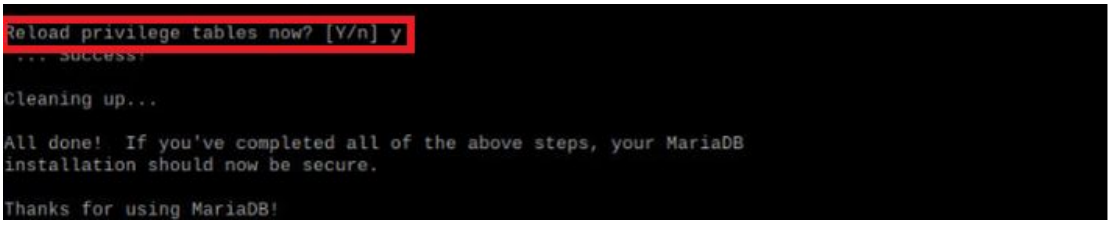
“**N**”→ “**Enter**”.



“**Y**” → “**Enter**”.



“**Y**” → “**Enter**”.

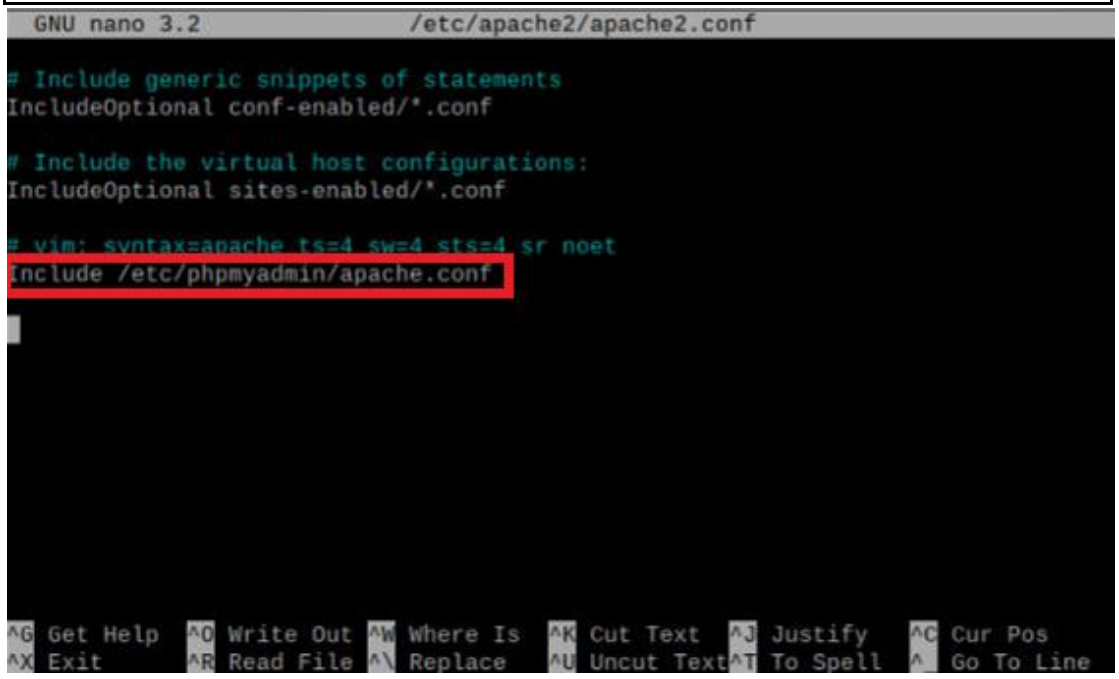


15. Edit the file.

```
sudo nano /etc/apache2/apache2.conf
```

Add the following at the end of the file.

```
Include /etc/phpmyadmin/apache.conf
```

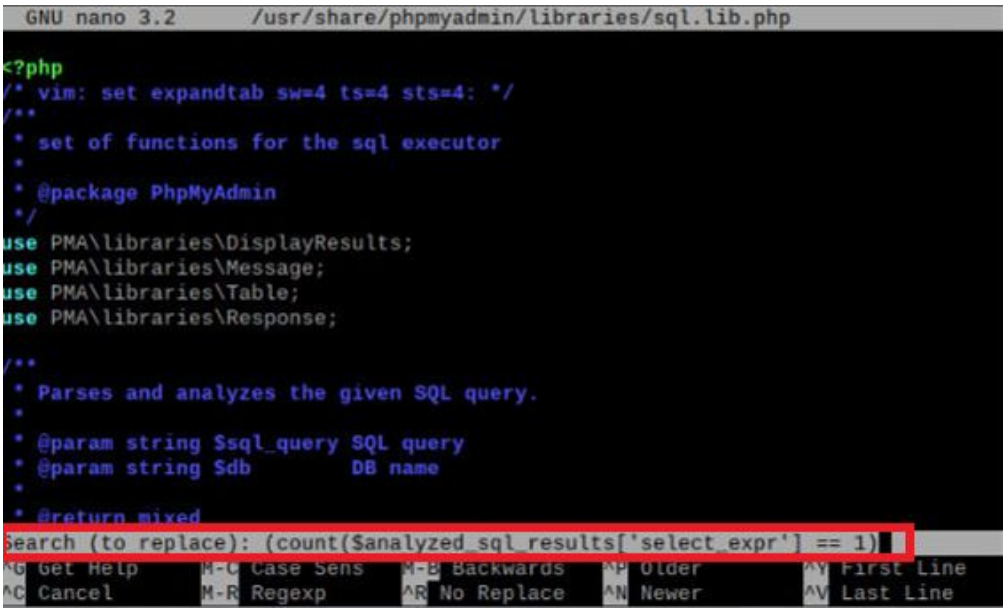


To exit the text editor and save the file, press **Ctrl + X → Y → Enter**.

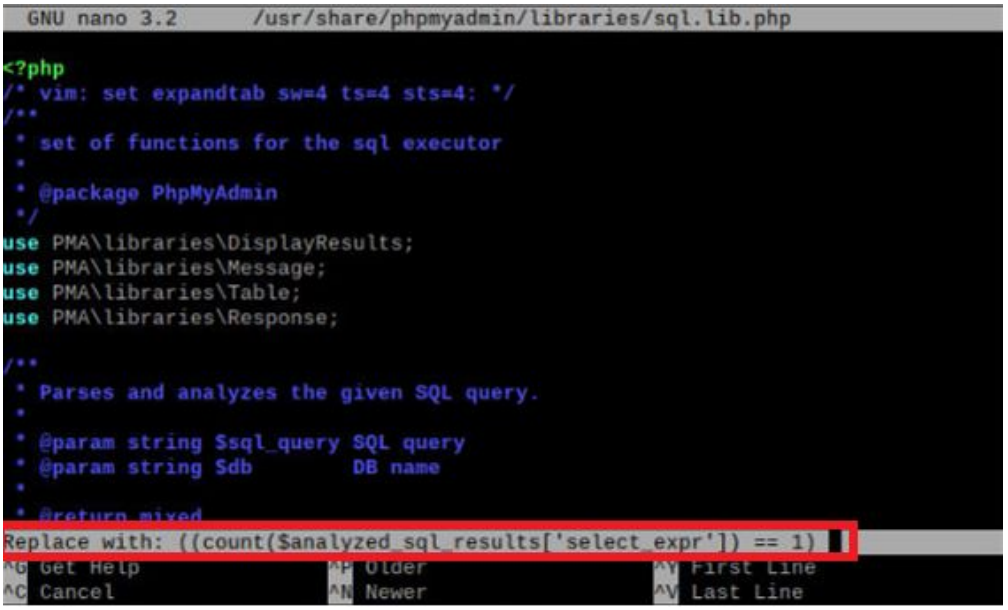
16. Edit the file.

```
sudo pico /usr/share/phpmyadmin/libraries/sql.lib.php
```

Ctrl + \ → paste this command `(count($analyzed_sql_results['select_expr'] == 1)` on the search bar as shown below:



"**Enter**" → paste this command `((count($analyzed_sql_results['select_expr']) == 1)` on the the bar as shown below:



"**Enter**" → "**Y**" to confirm the change. To exit the text editor and save the file, press **Ctrl** + **X** → **Y** → **Enter**.

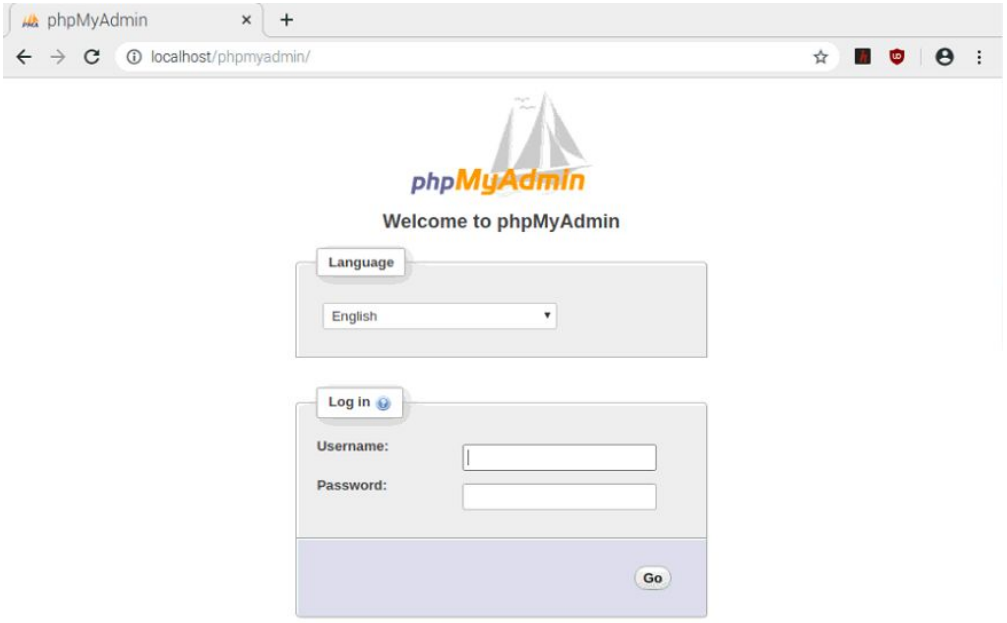
17. Restart the Apache.

```
sudo /etc/init.d/apache2 restart
```

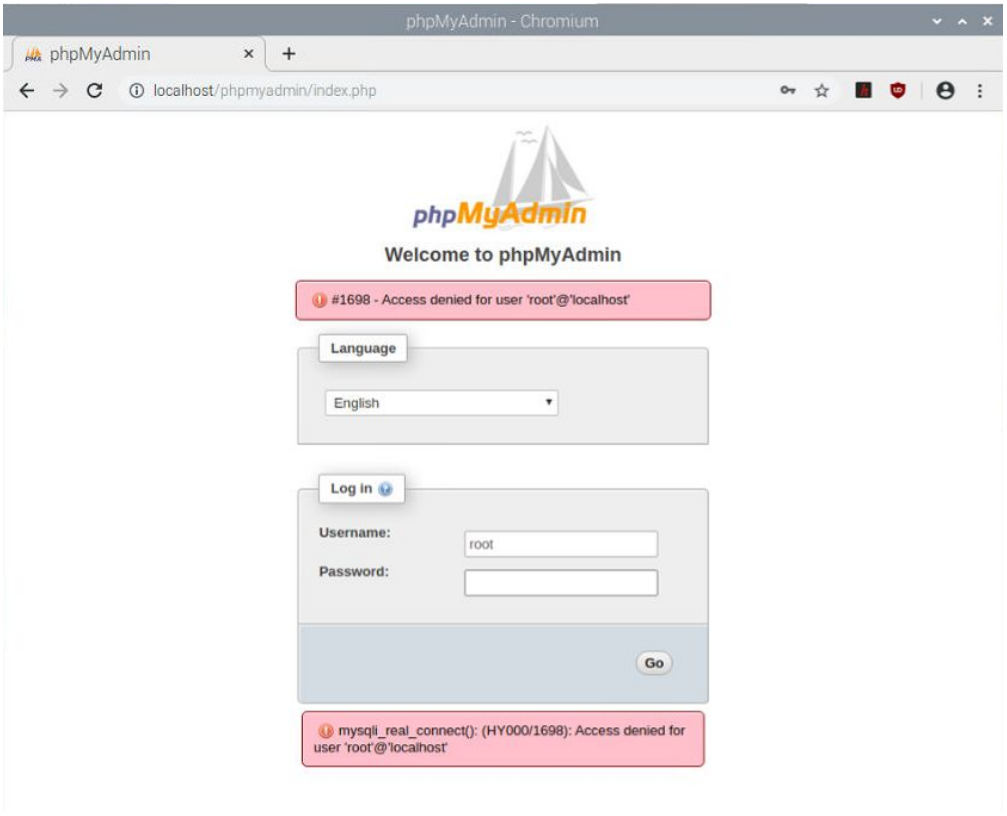
You should be able to see the following:

```
pi@raspberrypi:~ $ sudo /etc/init.d/apache2 restart
[ ok ] Restarting apache2 (via systemctl): apache2.service.
```

18. After completed all the steps above, test your server. Open the **web browser** of Raspberry Pi and enter "**localhost/phpmyadmin**". It should show the following.



19. You can login with the username "**root**" and the password "**raspberry**". You may find the following happen.



In this case, you need to perform the following **step 20-23**.

20. Back to terminal and login to MySQL with the password you set before.

```
sudo mysql -u root -p
```

Enter the following:

```
SET PASSWORD FOR root@localhost=PASSWORD('');
```

```
MariaDB [(none)]> SET PASSWORD FOR root@localhost=PASSWORD('');
Query OK, 0 rows affected, 1 warning (0.001 sec)
```

```
exit
```

```
MariaDB [(none)]> exit
Bye
```

21. Re-install phpmyadmin.

```
sudo dpkg-reconfigure phpmyadmin
```

"**OK**" → "**YES**" → "**TCP/IP**" → "**localhost**" → **Enter** → **Enter** → "**OK**" → **Enter** → **Enter** → **Enter** → "**OK**" → **Enter** → **Enter** → "**apache2**" → **Enter**

Noted that if you are unable to press "Enter" and go to next step, try to click **rightwards arrow** then click **Enter**.

22. Redo the security setting of MySQL.

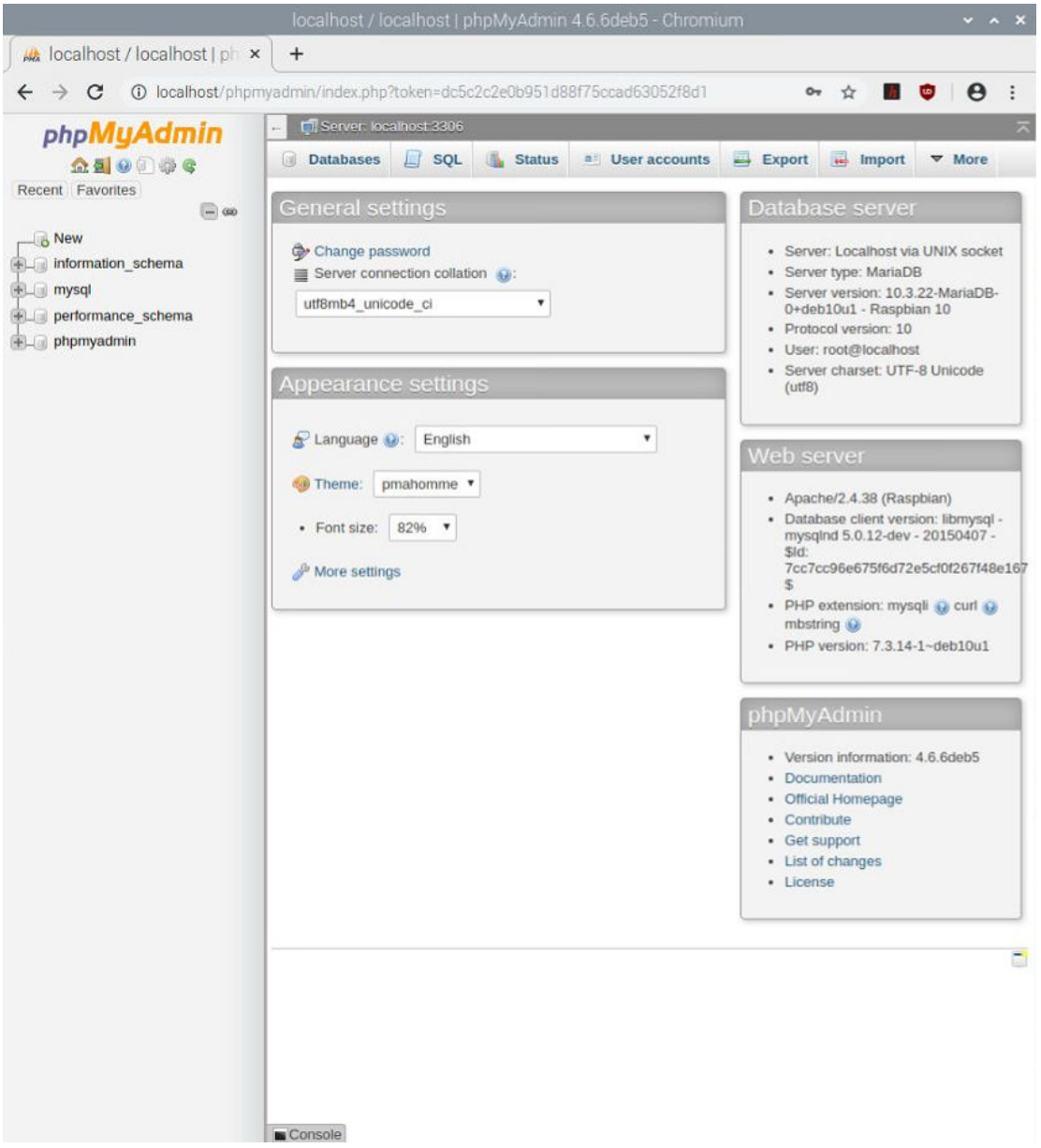
```
sudo mysql_secure_installation
```

Enter → **Y** → **raspberry** → **raspberry** → **N** → **N** → **Y** → **Y**

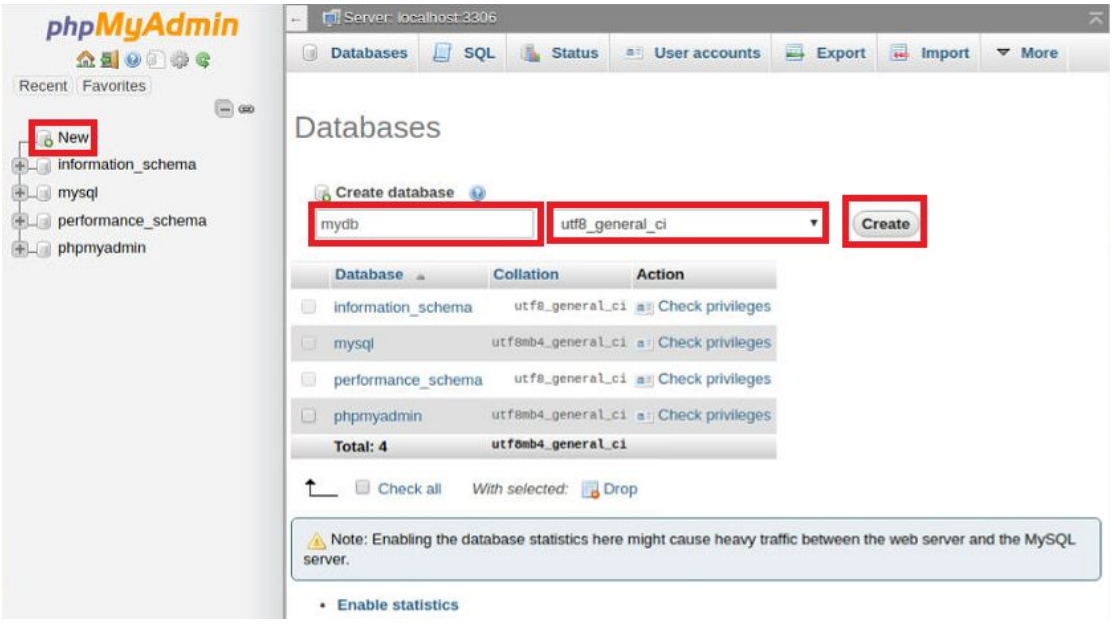
23. Restart the Apache.

```
sudo /etc/init.d/apache2 restart
```

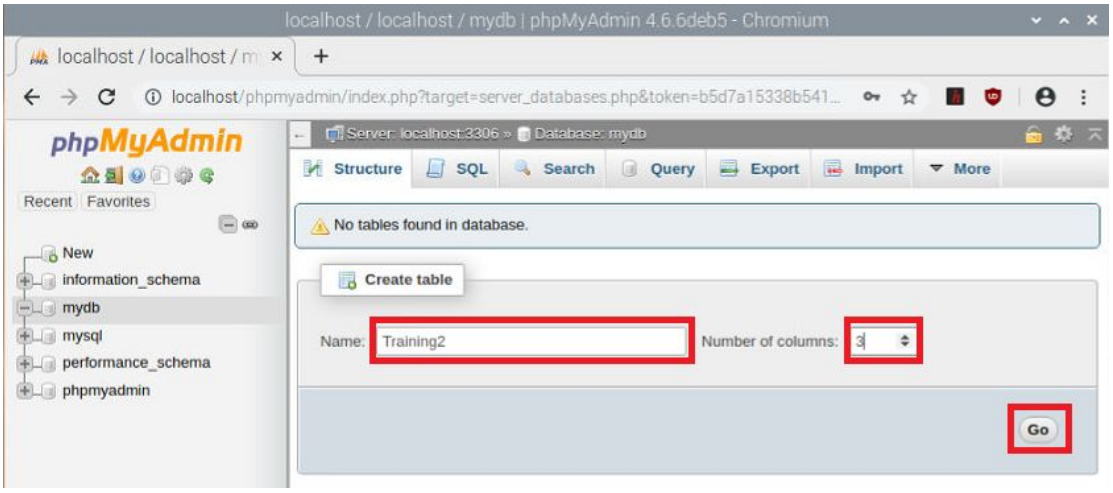
24. Open the **web browser** of Raspberry Pi and enter "**localhost/phpmyadmin**". Login with "**root**" and "**raspberry**". This time you should be able to login.



25. Create a new database name “**mydb**”. Select “**utf8_general_ci**” for Collation. Then click “**Create**”.

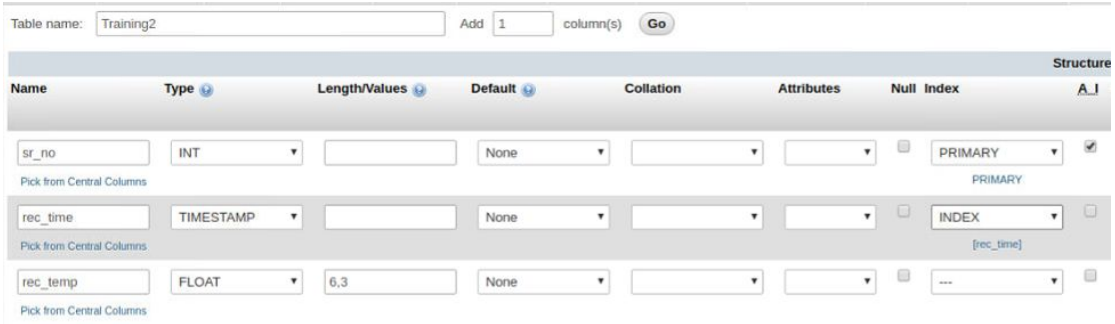


26. Create table name “**Training2**”. Number of column is “**3**” then “**Go**”.



27. Try to make a Temperature Recorder. Enter the structure according to the following table:

Name	Type	Length/Value	Index	A_I
sr_no	INT		PRIMARY	✔
rec_time	TIMESTAMP		INDEX	
rec_temp	FLOAT	6,3	---	



Noted that A_I stands for **Auto-increment**, allows a unique number to be generated automatically when a new record is inserted into a table.

Click "**Save**". You should be able to see the following: