

Realizar la instalación y puesta en marcha de un servidor web Apache, con soporte para bases de datos MySQL y lenguaje del lado del servidor PHP.

Para entregar esta tarea es necesario entregar las capturas de imagen de los principales pasos realizados, explicando en una o dos líneas las decisiones tomadas. Es necesaria una captura final que muestre que el servicio está en funcionamiento.

The installations will be done in a Virtual Machine. The Operative System of the virtual machine is Ubuntu 16.04 LTS 64 Bits.

The installed components and versions are:

- *Apache/2.4.18 (Ubuntu)*
- *MySQL Server 5.7.16-0ubuntu0.16.04.1*
- *PHP Version 7.0.8-0ubuntu0.16.04.3*
- *phpmyadmin 4.5.4.1deb2ubuntu2 (all languages)*

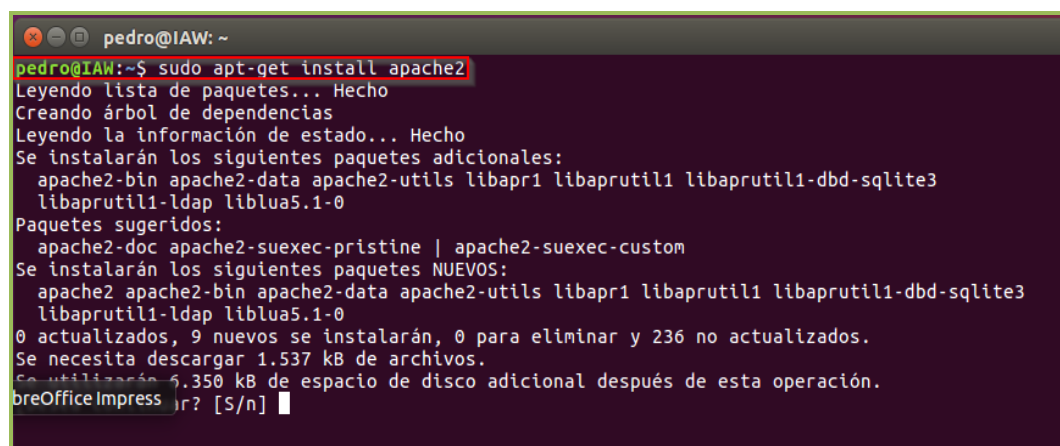
1.- Apache installation

We can install Apache easily using Ubuntu's package manager, apt. A package manager allows us to install most software pain-free from a repository maintained by Ubuntu.

For our purposes, we can get started by typing these commands:

\$sudo apt-get update

\$sudo apt-get install apache2



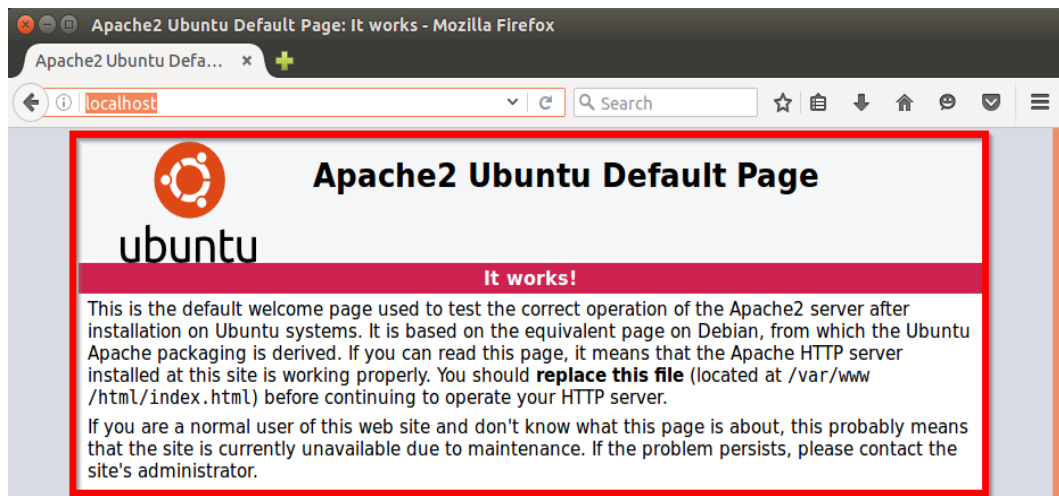
```
pedro@IAW: ~  
pedro@IAW:~$ sudo apt-get install apache2  
Leyendo lista de paquetes... Hecho  
Creando árbol de dependencias  
Leyendo la información de estado... Hecho  
Se instalarán los siguientes paquetes adicionales:  
  apache2-bin apache2-data apache2-utils libapr1 libaprutil1 libaprutil1-dbd-sqlite3  
  libaprutil1-ldap liblua5.1-0  
Paquetes sugeridos:  
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom  
Se instalarán los siguientes paquetes NUEVOS:  
  apache2 apache2-bin apache2-data apache2-utils libapr1 libaprutil1 libaprutil1-dbd-sqlite3  
  libaprutil1-ldap liblua5.1-0  
0 actualizados, 9 nuevos se instalarán, 0 para eliminar y 236 no actualizados.  
Se necesita descargar 1.537 kB de archivos.  
Se utilizarán 6.350 kB de espacio de disco adicional después de esta operación.  
¿Se quiere continuar? [S/n]
```

*Since we are using a **sudo command**, these operations get executed with root privileges. We will ask the password for the administrator password.*

Tarea para IAW01
Por Pedro Antonio Ruiz Martínez

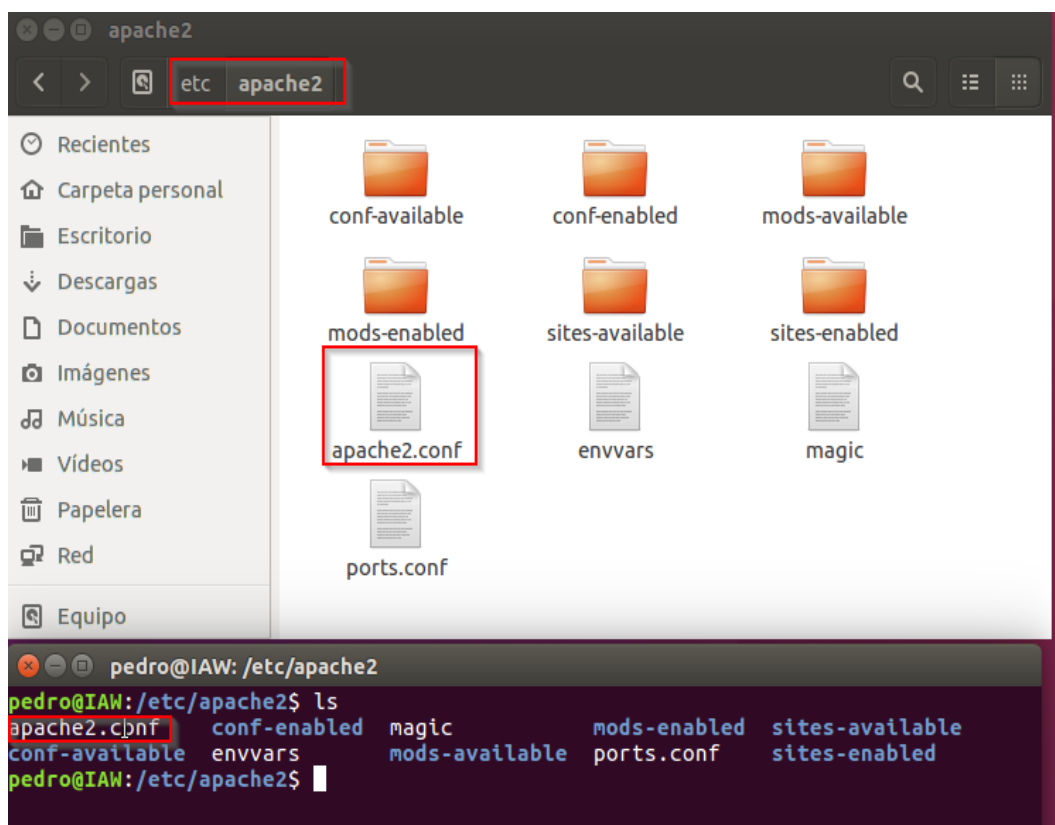
Once we've entered our password, apt will tell us which packages it plans to install and how much extra disk space they'll take up. Press "S" and hit Enter to continue, and the installation will proceed.

Now We go to the navigator and put the "localhost" in the bar of navigation to check that the installation was successful:



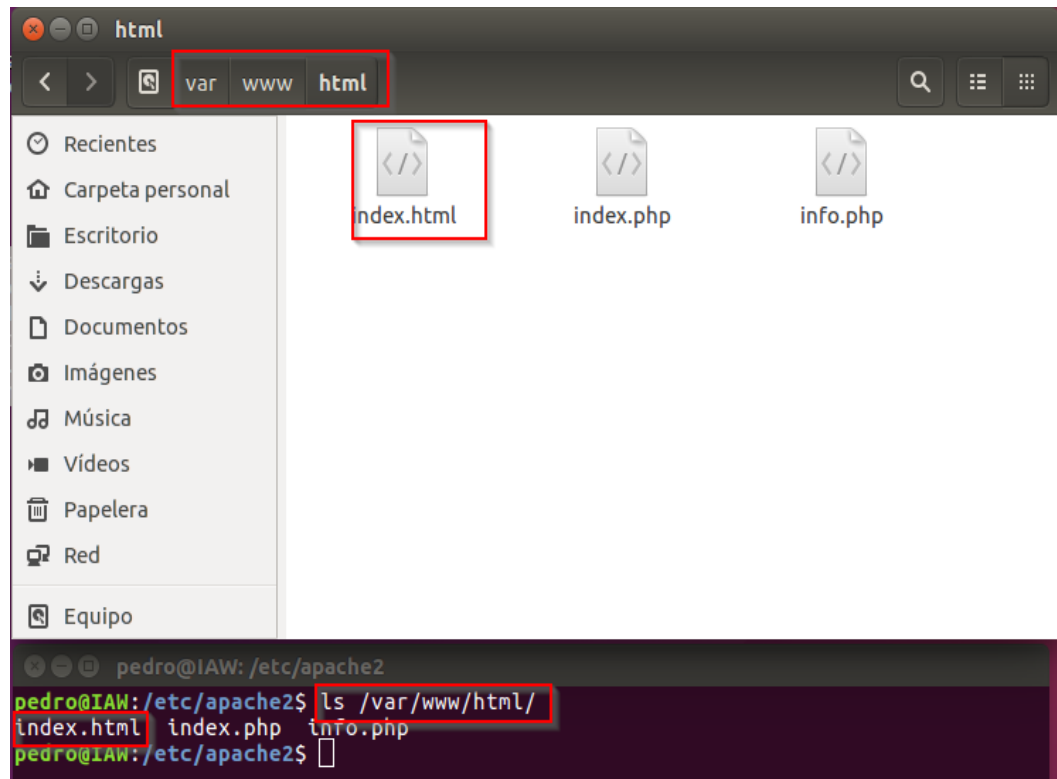
Directory where the apache configuration file is located:

/etc/apache2



In the `"/var/www/html"` directory is where the files that the web server displays are stored. The website is saved here.

This is the default file that the web server shows us to prove its good operation .



2.- MySQL installation

Now that we have our web server up and running, it is time to install MySQL. MySQL is a database management system. Basically, it will organize and provide access to databases where our site can store information.

Again, we can use apt to acquire and install our software. This time, we'll also install some other "helper" packages that will assist us in getting our components to communicate with each other:

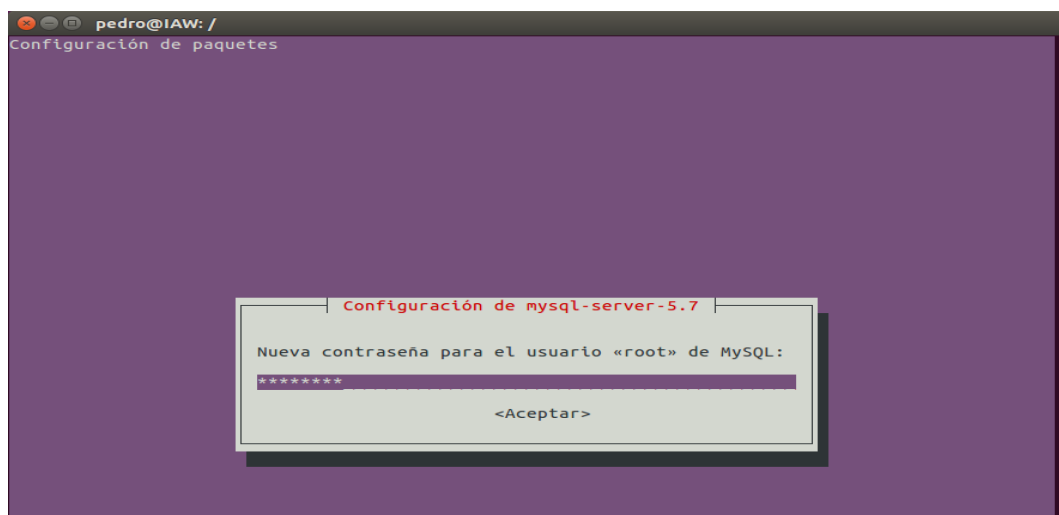
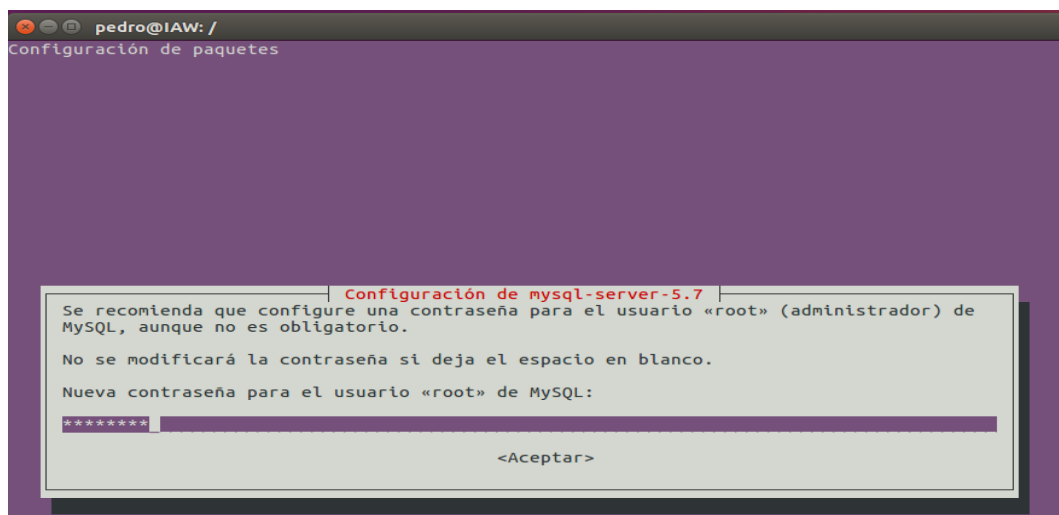
```
$ sudo apt-get install mysql-server mysql-common mysql-client
```

Tarea para IAW01
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```
pedro@IAW: /  
pedro@IAW:/$ sudo apt-get install mysql-server mysql-common mysql-client  
[sudo] password for pedro:  
Leyendo lista de paquetes... Hecho  
Creando árbol de dependencias  
Leyendo la información de estado... Hecho  
Se instalarán los siguientes paquetes adicionales:  
  libaio1 libevent-core-2.0-5 libhtml-template-perl mysql-client-5.7 mysql-client-core-5.7  
  mysql-server-5.7 mysql-server-core-5.7  
Paquetes sugeridos:  
  libipc-sharedcache-perl mailx tinycat  
Se instalarán los siguientes paquetes NUEVOS:  
  libaio1 libevent-core-2.0-5 libhtml-template-perl mysql-client mysql-client-5.7  
  mysql-client-core-5.7 mysql-common mysql-server mysql-server-5.7 mysql-server-core-5.7  
0 actualizados, 10 nuevos se instalarán, 0 para eliminar y 236 no actualizados.  
Se necesita descargar 18,3 MB de archivos.  
Se utilizarán 161 MB de espacio de disco adicional después de esta operación.  
¿Desea continuar? [S/n]
```

Again, we will be shown a list of the packages that will be installed, along with the amount of disk space they'll take up. Enter "S" to continue.

During the installation, our server will ask us to select and confirm a password for the MySQL "root" user.



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Now we go to check that MySQL is online. For this we open a terminal and put the following:

\$sudo service mysql status

```
pedro@IAW: ~  
pedro@IAW:~$ sudo service mysql status  
[sudo] password for pedro:  
● mysql.service - MySQL Community Server  
   Loaded: loaded (/lib/systemd/system/mysql.service; enabled; vendor preset: en  
   Active: active (running) since vie 2016-11-18 11:01:55 CET; 2h 4min ago  
   Main PID: 1632 (mysqld)  
     CGroup: /system.slice/mysql.service  
             └─1632 /usr/sbin/mysqld  
  
nov 18 11:01:53 IAW systemd[1]: Starting MySQL Community Server...  
nov 18 11:01:55 IAW systemd[1]: Started MySQL Community Server.  
lines 1-9/9 (END)  
pedro@IAW:~$
```

For to enter console mysql:

\$ mysql -u root -p

```
pedro@IAW: /etc/apache2  
pedro@IAW:/etc/apache2$ mysql -u root -p  
Enter password:  
Welcome to the MySQL monitor.  Commands end with ; or \g.  
Your MySQL connection id is 18  
Server version: 5.7.16-0ubuntu0.16.04.1 (Ubuntu)  
  
Copyright (c) 2000, 2016, Oracle and/or its affiliates. All rights reserved.  
  
Oracle is a registered trademark of Oracle Corporation and/or its  
affiliates. Other names may be trademarks of their respective  
owners.  
  
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.  
mysql>
```

3.- PHP installation

PHP is the component of our setup that will process code to display dynamic content. It can run scripts, connect to our **MySQL** databases to get information, and hand the processed content over to our web server to display.

We can once again leverage the apt system to install our components.

We open a terminal and put the next:

\$ sudo apt-get install php libapache2-mod-php php-mcrypt php-mysql

```
pedro@IAW: /  
pedro@IAW:/$ sudo apt-get install php libapache2-mod-php php-mcrypt php-mysql  
Leyendo lista de paquetes... Hecho  
Creando árbol de dependencias  
Leyendo la información de estado... Hecho  
Se instalarán los siguientes paquetes adicionales:  
  libapache2-mod-php7.0 libmcrypt4 php-common php7.0-cli php7.0-common php7.0-json  
  php7.0-mcrypt php7.0-mysql php7.0-opcache php7.0-readline  
Paquetes sugeridos:  
  php-pear libmcrypt-dev mcrypt  
Se instalarán los siguientes paquetes NUEVOS:  
  libapache2-mod-php libapache2-mod-php7.0 libmcrypt4 php php-common php-mcrypt php-mysql  
  php7.0 php7.0-cli php7.0-common php7.0-json php7.0-mcrypt php7.0-mysql php7.0-opcache  
  php7.0-readline  
0 actualizados, 15 nuevos se instalarán, 0 para eliminar y 236 no actualizados.  
Se necesita descargar 3.655 kB de archivos.  
Se utilizarán 14,7 MB de espacio de disco adicional después de esta operación.  
¿Desea continuar? [S/n]  Enter "S" to continue
```

We will want to modify the way that Apache serves files when a directory is requested. Currently, if a user requests a directory from the server, Apache will first look for a file called `index.html`. We want to tell our web server to prefer PHP files, so we'll make Apache look for an `index.php` file first.

To do this, type this command to open the **dir.conf** file in a text editor with root privileges:

\$ sudo nano /etc/apache2/mods-enabled/dir.conf

It will look like this:

```
pedro@IAW: /etc/apache2  
GNU nano 2.5.3 Archivo: /etc/apache2/mods-enabled/dir.conf Modificado  
<IfModule mod_dir.c>  
  DirectoryIndex index.html index.cgi index.pl index.php index.php index$  
</IfModule>  
  
# vim: syntax=apache ts=4 sw=4 sts=4 sr noet
```

We want to move the PHP index file highlighted above to the first position after the **DirectoryIndex** specification, like this:

```
pedro@IAW: /etc/apache2  
GNU nano 2.5.3 Archivo: /etc/apache2/mods-enabled/dir.conf  
<IfModule mod_dir.c>  
  DirectoryIndex index.php index.html index.cgi index.pl index.php index.$  
</IfModule>  
  
# vim: syntax=apache ts=4 sw=4 sts=4 sr noet
```

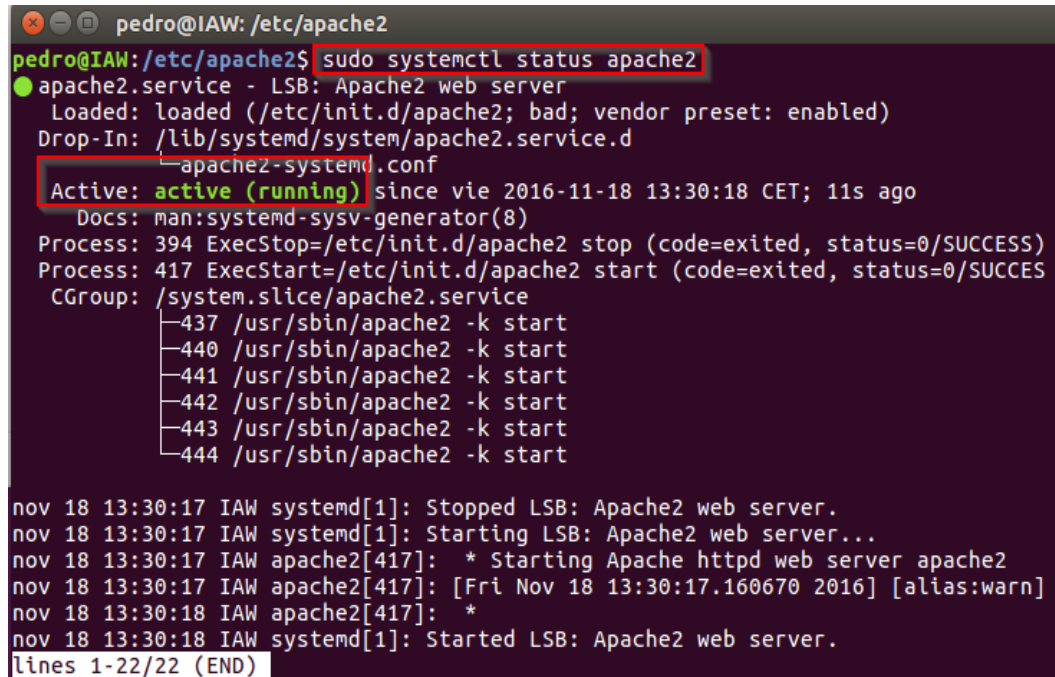
Save the changes and exit...

After this, we need restart the Apache web server in order for our changes to be recognized. For it we open a terminal and put the following:

```
$ sudo systemctl restart apache2
```

Now we check that the server is on:

```
$ sudo systemctl status apache2
```

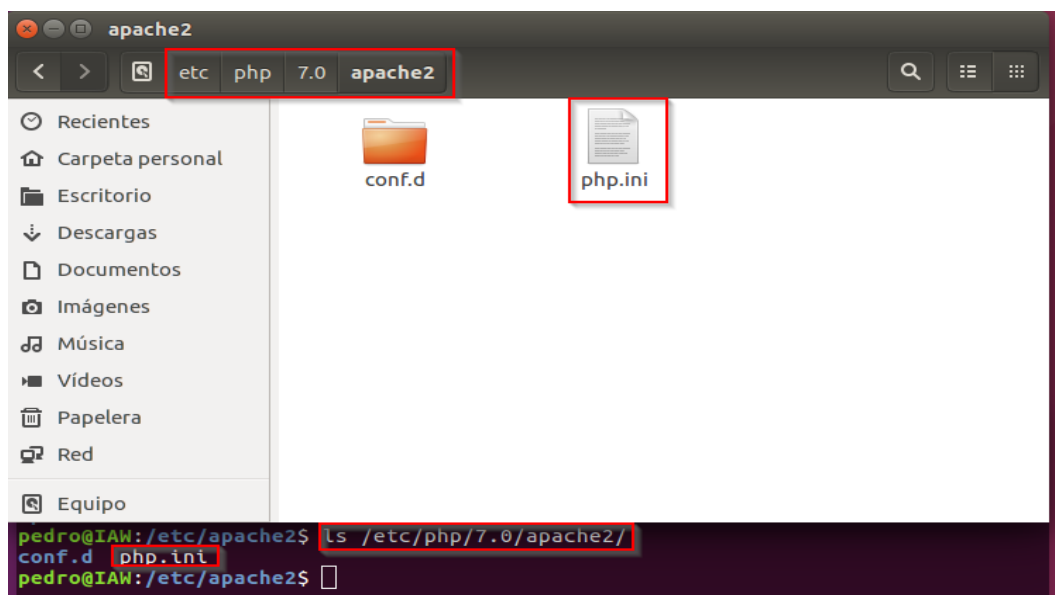


```
pedro@IAW: /etc/apache2
pedro@IAW:/etc/apache2$ sudo systemctl status apache2
● apache2.service - LSB: Apache2 web server
   Loaded: loaded (/etc/init.d/apache2; bad; vendor preset: enabled)
   Drop-In: /lib/systemd/system/apache2.service.d
            └─apache2-systemd.conf
   Active: active (running) since vie 2016-11-18 13:30:18 CET; 11s ago
     Docs: man:systemd-sysv-generator(8)
  Process: 394 ExecStop=/etc/init.d/apache2 stop (code=exited, status=0/SUCCESS)
  Process: 417 ExecStart=/etc/init.d/apache2 start (code=exited, status=0/SUCCESS)
   CGroup: /system.slice/apache2.service
           └─437 /usr/sbin/apache2 -k start
             440 /usr/sbin/apache2 -k start
             441 /usr/sbin/apache2 -k start
             442 /usr/sbin/apache2 -k start
             443 /usr/sbin/apache2 -k start
             444 /usr/sbin/apache2 -k start

nov 18 13:30:17 IAW systemd[1]: Stopped LSB: Apache2 web server.
nov 18 13:30:17 IAW systemd[1]: Starting LSB: Apache2 web server...
nov 18 13:30:17 IAW apache2[417]: * Starting Apache httpd web server apache2
nov 18 13:30:17 IAW apache2[417]: [Fri Nov 18 13:30:17.160670 2016] [alias:warn]
nov 18 13:30:18 IAW apache2[417]: *
nov 18 13:30:18 IAW systemd[1]: Started LSB: Apache2 web server.
lines 1-22/22 (END)
```

In the following directory we can to see the configuration file PHP:

etc/php/7.0/apache2




```
pedro@IAW: /etc/apache2$ ls /etc/php/7.0/apache2/
conf.d  php.ini
pedro@IAW:/etc/apache2$
```

In order to test that our system is configured properly for PHP, we can create a very basic PHP script.

We will call this script index.php. In order for Apache to find the file and serve it correctly, it must be saved to a very specific directory, which is called the "**web root**".

This directory is located at `/var/www/html/`. We can create the file at that location by typing:

```
$ sudo nano /var/www/html/index.php
```



The first screenshot shows a terminal window where the command `sudo nano /var/www/html/index.php` is entered. The second screenshot shows the nano editor with the following content:

```
<title>Probando PHP</title>
<h1>Funciona!</h1>
<p>Página pagina modificada por Pedro Antonio Ruiz Martínez</p>

<?php
phpinfo();
```

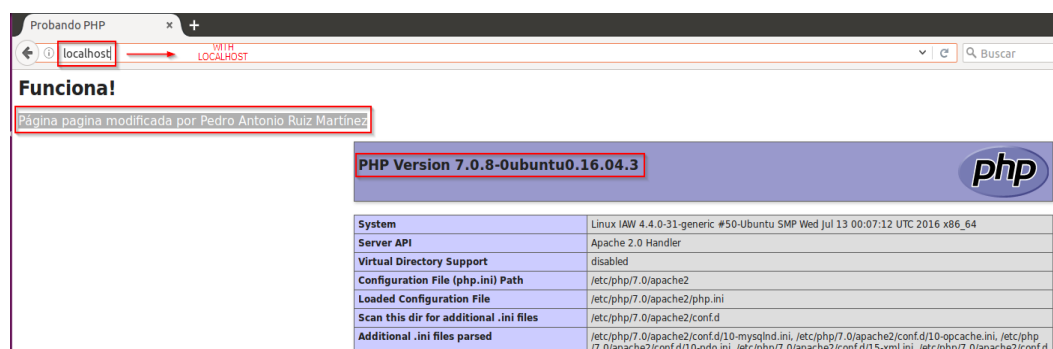
Annotations in the second screenshot include a red box around the HTML content with an arrow pointing to the word "OPTIONAL", and another red box around the PHP code with an arrow pointing to the text "It is necessary for to show us the information".

When we are finished, we save and close the file.

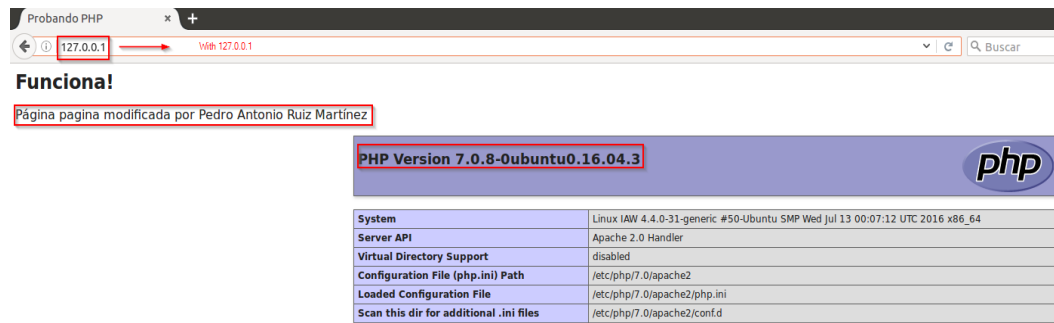
Now we can test whether our web server can correctly display content generated by a PHP script. To try this out, we just have to visit this page in our web browser: 127.0.0.1 or localhost.

http://your_server_IP_address/index.php

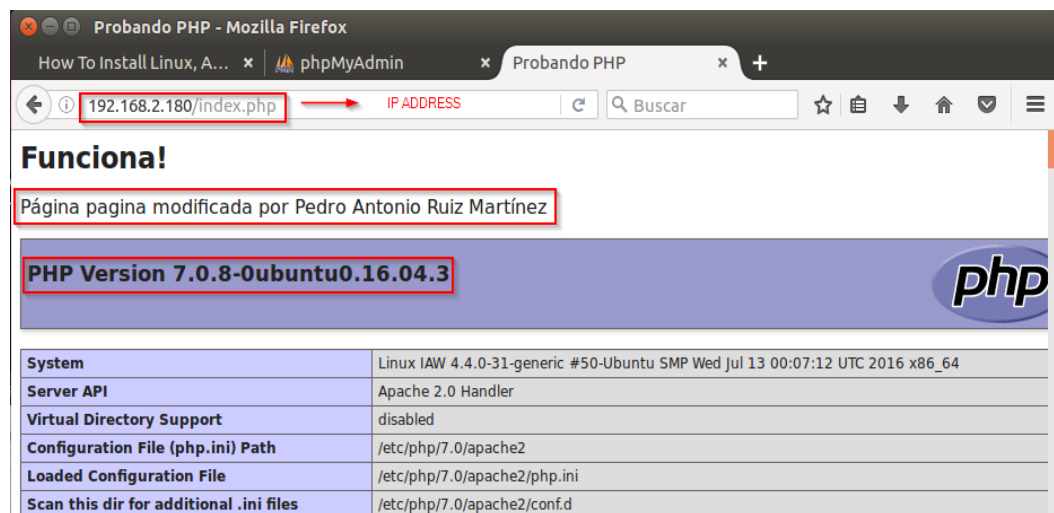
With "**localhost**":



With "127.0.0.1":



With "IP Address":



4.- phpMyAdmin installation

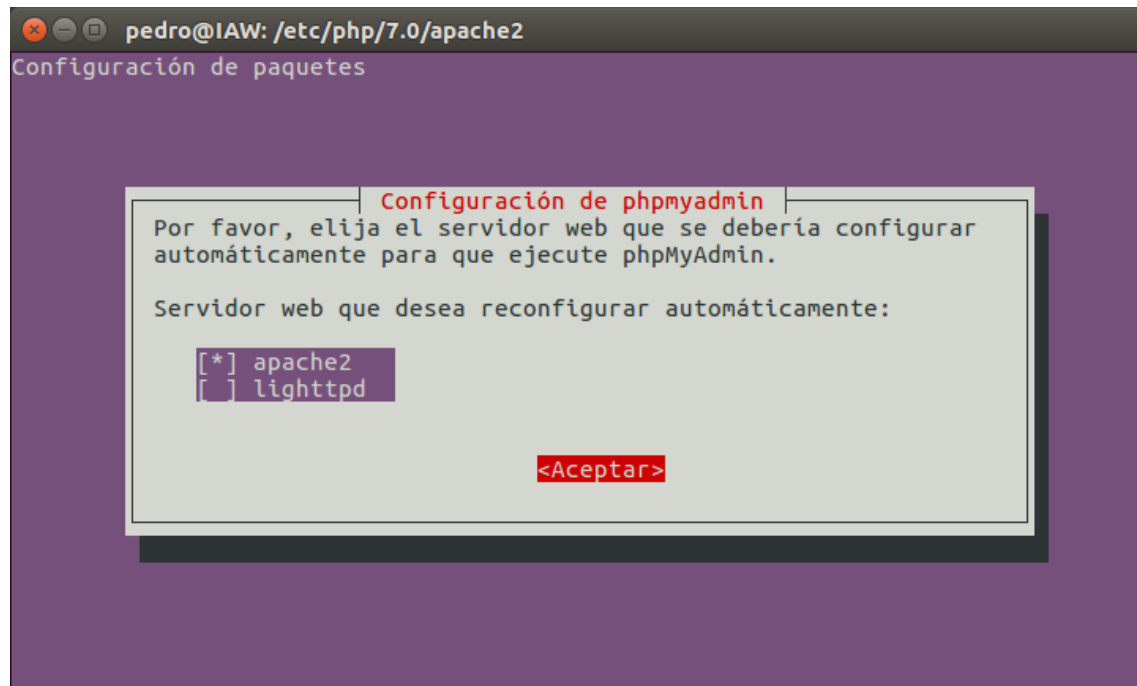
For the installation "phpMyAdmin" we must open the terminal and put the following sentence:

\$ sudo apt-get install phpmyadmin apache2-utils

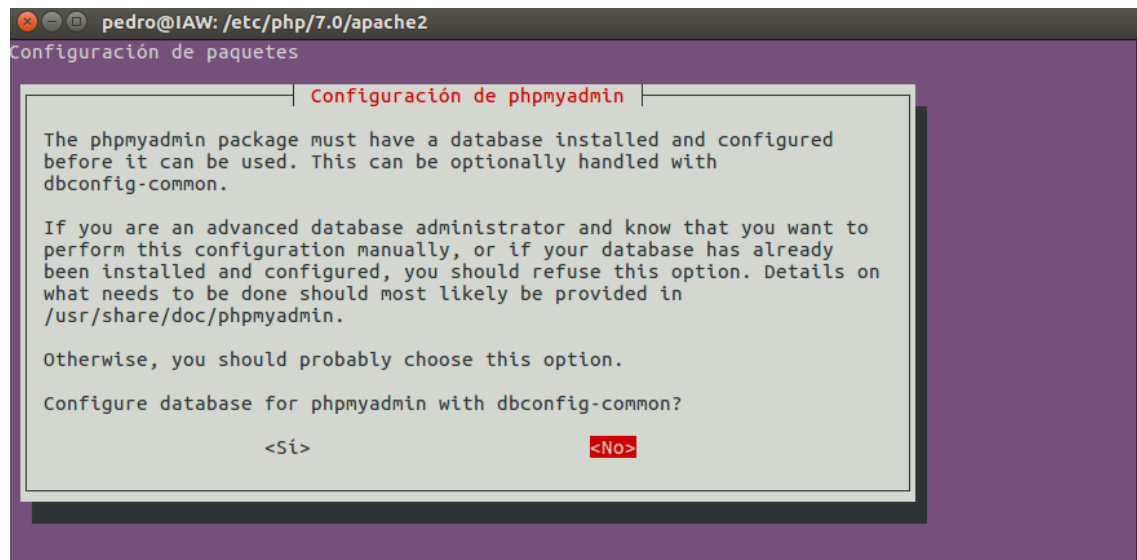
During the installation, phpMyAdmin will walk us through a basic configuration. Once the process starts up, we will follow these steps:

- 1. Select Apache2 for the server*
- 2. Choose <No> when asked about whether to Configure the database for phpmyadmin with dbconfig-common*

1.

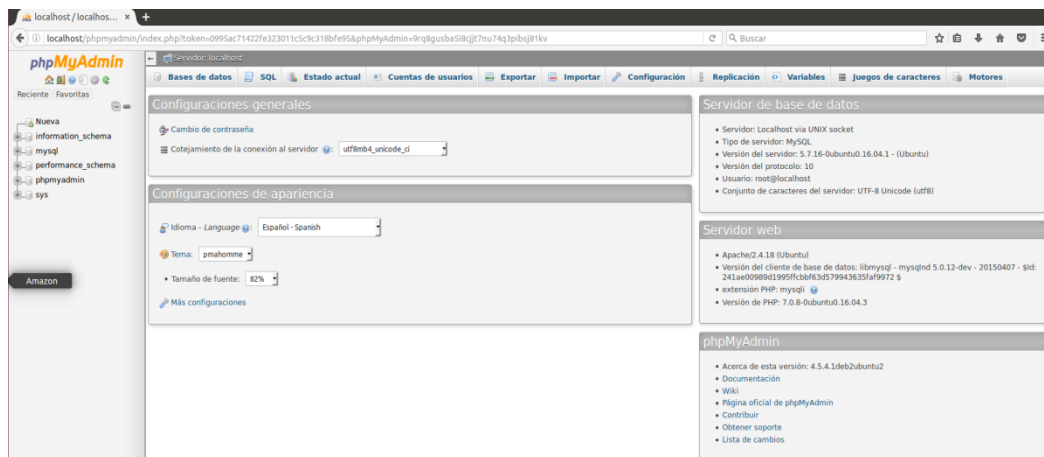
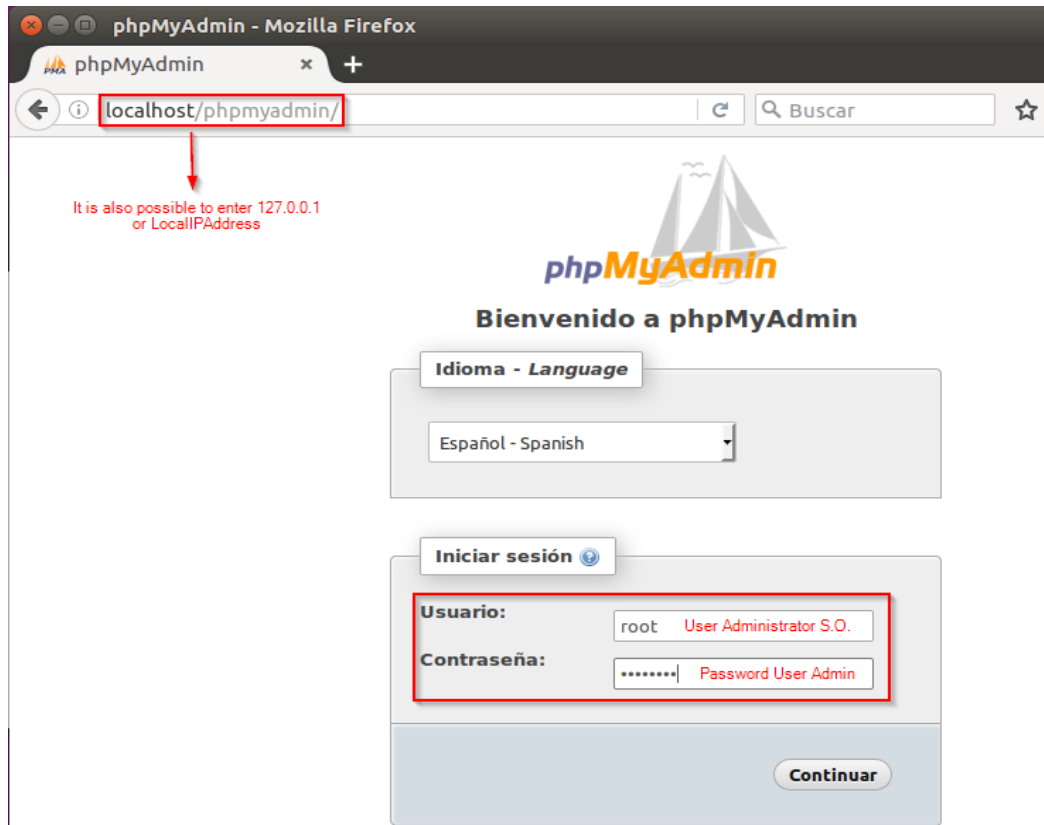


2.



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After the installation has completed, We go to the navigator and put the "localhost/phpMyAdmin" in the bar of navigation to check that the installation was successful:

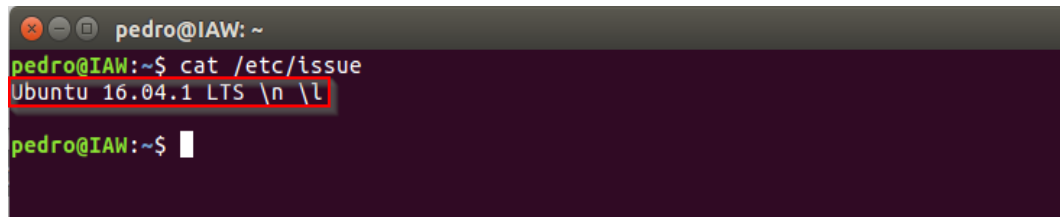


Finally we will check the versions of the software installed including the S.O:

System version:

We open a terminal and write the following sentence:

\$ cat /etc/issue

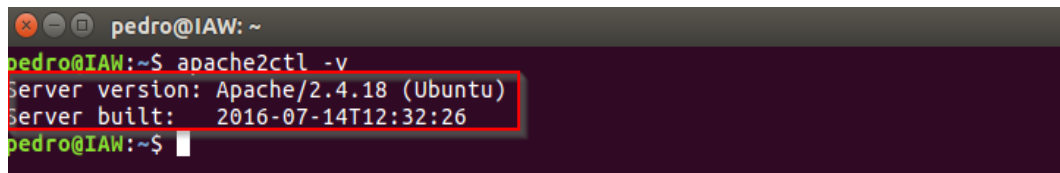


```
pedro@IAW: ~  
pedro@IAW:~$ cat /etc/issue  
Ubuntu 16.04.1 LTS \n \l  
pedro@IAW:~$
```

Apache version:

We open a terminal and write the following sentence:

\$ apache2ctl -v

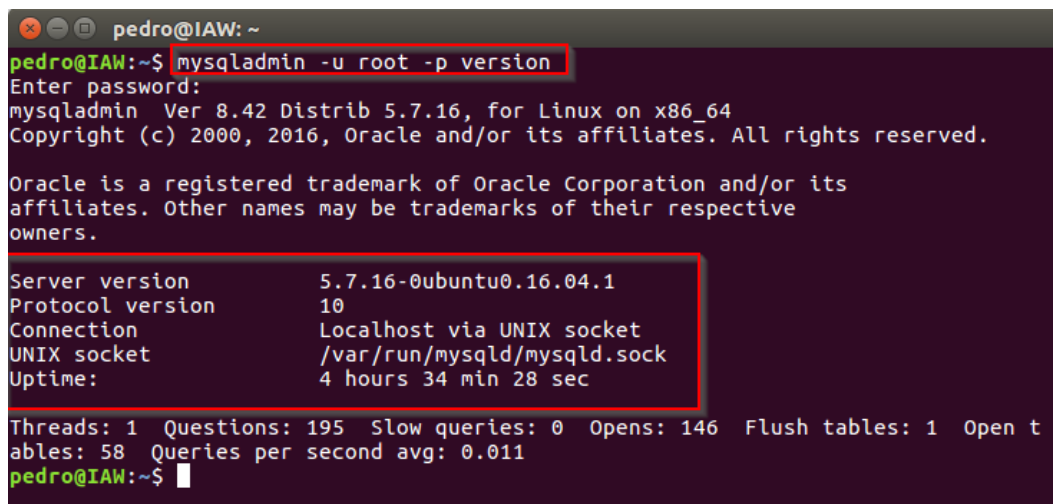


```
pedro@IAW: ~  
pedro@IAW:~$ apache2ctl -v  
Server version: Apache/2.4.18 (Ubuntu)  
Server built: 2016-07-14T12:32:26  
pedro@IAW:~$
```

MySQL version:

We open a terminal and write the following sentence:

\$ mysqladmin -u root -p version

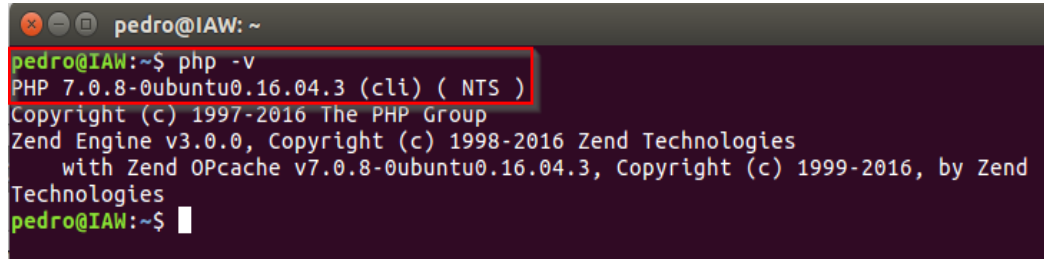


```
pedro@IAW: ~  
pedro@IAW:~$ mysqladmin -u root -p version  
Enter password:  
mysqladmin Ver 8.42 Distrib 5.7.16, for Linux on x86_64  
Copyright (c) 2000, 2016, Oracle and/or its affiliates. All rights reserved.  
  
Oracle is a registered trademark of Oracle Corporation and/or its  
affiliates. Other names may be trademarks of their respective  
owners.  
  
Server version          5.7.16-0ubuntu0.16.04.1  
Protocol version        10  
Connection              Localhost via UNIX socket  
UNIX socket             /var/run/mysqld/mysqld.sock  
Uptime:                 4 hours 34 min 28 sec  
  
Threads: 1 Questions: 195 Slow queries: 0 Opens: 146 Flush tables: 1 Open t  
ables: 58 Queries per second avg: 0.011  
pedro@IAW:~$
```

PHP version:

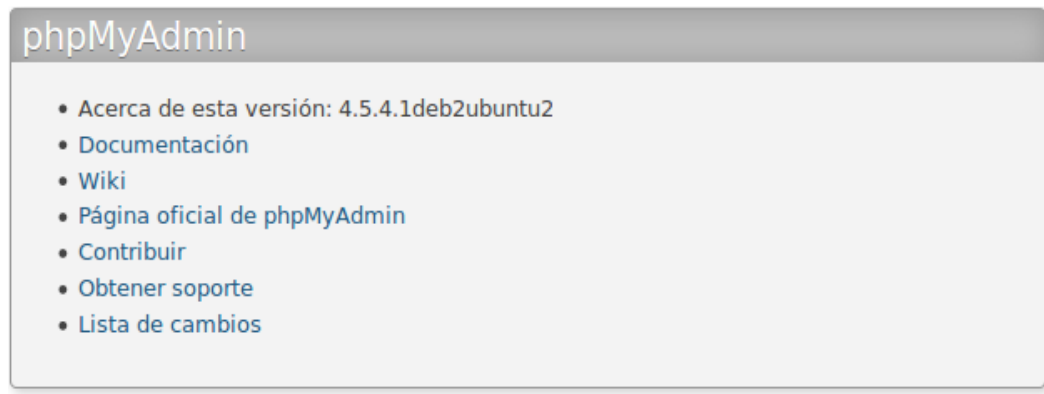
We open a terminal and write the following sentence:

\$ php -v

A terminal window titled 'pedro@IAW: ~' with a dark background. The command 'php -v' has been executed, and the output is displayed in green text. The first line of the output, 'PHP 7.0.8-0ubuntu0.16.04.3 (cli) (NTS)', is enclosed in a red rectangular box. The full output text is: PHP 7.0.8-0ubuntu0.16.04.3 (cli) (NTS)
Copyright (c) 1997-2016 The PHP Group
Zend Engine v3.0.0, Copyright (c) 1998-2016 Zend Technologies
with Zend OPcache v7.0.8-0ubuntu0.16.04.3, Copyright (c) 1999-2016, by Zend Technologies
The prompt 'pedro@IAW:~\$' is followed by a white cursor bar.

```
pedro@IAW:~$ php -v
PHP 7.0.8-0ubuntu0.16.04.3 (cli) ( NTS )
Copyright (c) 1997-2016 The PHP Group
Zend Engine v3.0.0, Copyright (c) 1998-2016 Zend Technologies
with Zend OPcache v7.0.8-0ubuntu0.16.04.3, Copyright (c) 1999-2016, by Zend
Technologies
pedro@IAW:~$
```

phpMyAdmin version:

A screenshot of the phpMyAdmin version page. It features a grey header with the 'phpMyAdmin' logo. Below the header, on a light grey background, is a bulleted list of links. The first item is 'Acerca de esta versión: 4.5.4.1deb2ubuntu2'. The other items are 'Documentación', 'Wiki', 'Página oficial de phpMyAdmin', 'Contribuir', 'Obtener soporte', and 'Lista de cambios', all in blue text.

phpMyAdmin

- Acerca de esta versión: 4.5.4.1deb2ubuntu2
- [Documentación](#)
- [Wiki](#)
- [Página oficial de phpMyAdmin](#)
- [Contribuir](#)
- [Obtener soporte](#)
- [Lista de cambios](#)