



Internet Network
&
Services

Ubuntu 10.10 Server Running Moodle 2.0 Application



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1. INTRODUCTION

This document describes the installation of "Moodle", an Open Source Content Management System on Ubuntu Linux so that it uses MySQL as the database. The default database system is PostgreSQL. This project was carried out using Ubuntu 10.10. The installation was tested using the latest Moodle application, "Moodle 2.0".

The Moodle Installation procedure is backward compliance with the older versions of Moodle, but not sure of future releases of Moodle.

What is Moodle?

Moodle is a Course Management System (CMS), also known as a Learning Management System (LMS) or a Virtual Learning Environment (VLE). It is a free web application that educators can use to create effective online learning sites. Moodle is free to download and registration is voluntary.

2. PROCEDURE

This project was carried out using the VMware workstation cloud environment. From the start I decided to simplify the installation process by dividing the process into 3 stages.

- Stage 1: Download & Installation of Operating System.
- Stage 2: Installation of the LAMP server.
- Stage 3: Installation and Configuration of Moodle.

3. Step 1: Installation of Operating System-Ubuntu 10.10

For the purpose of this project, all the installations will be done from the command line interface. This means all installations will be done by issue Linux commands from the Ubuntu server. The command-line interface is the default for the Ubuntu server without the desktop. In this project both version are necessary, therefore am going to briefly illustrate how to download and install both.

3.1. Downloading Ubuntu

- From your web browser, navigate to <http://www.ubuntu.com/getubuntu/download>
- Select the architecture of your processor (32 or 64 bit), for this project select 64 bit for the server and 32 bits for the desktop.
- Click "Start download". A pop up window opens, prompting you where to run or save the file, choose save file.
- Insert the storage media you want to use (either USB or CD), and click save.

After downloading the ISO image successfully, you are now ready to start installation.

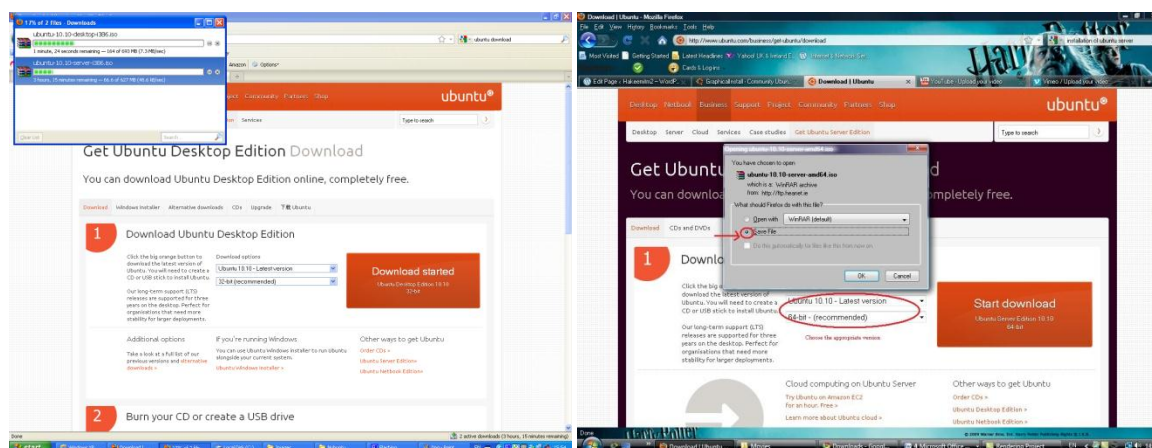


Fig. 1: Downloading Ubuntu

3.2. Installing Ubuntu in a Virtual Machine

- Create a new VM from VMware booting from the .iso image on the storage device.
- Follow the Ubuntu installation wizard till the VMware instance boots up.

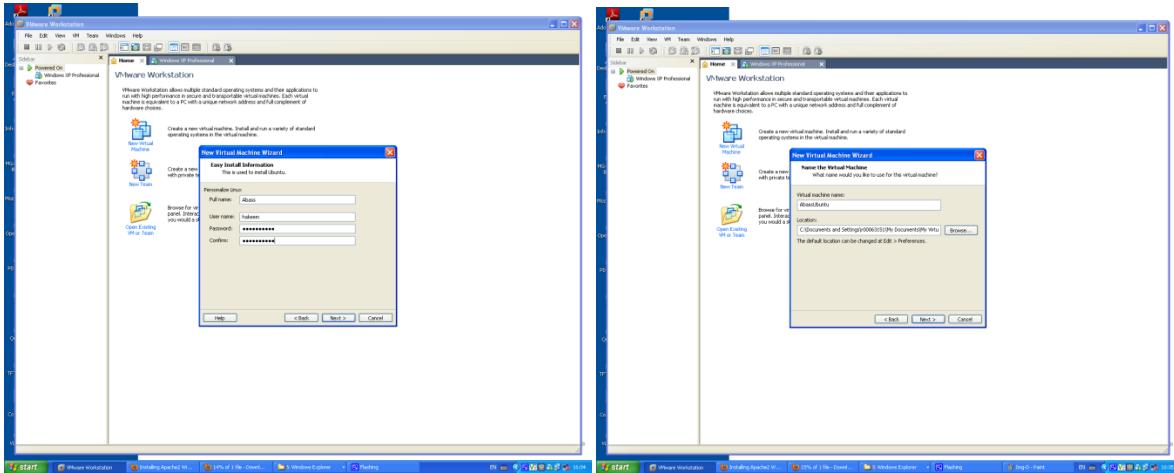


Fig. 2: Configuring and installing from the ISO image on the storage media. This procedure is the same for Ubuntu server and desktop

Note: At this point, take note of the username and password that you provided, DONT FOGET IT!

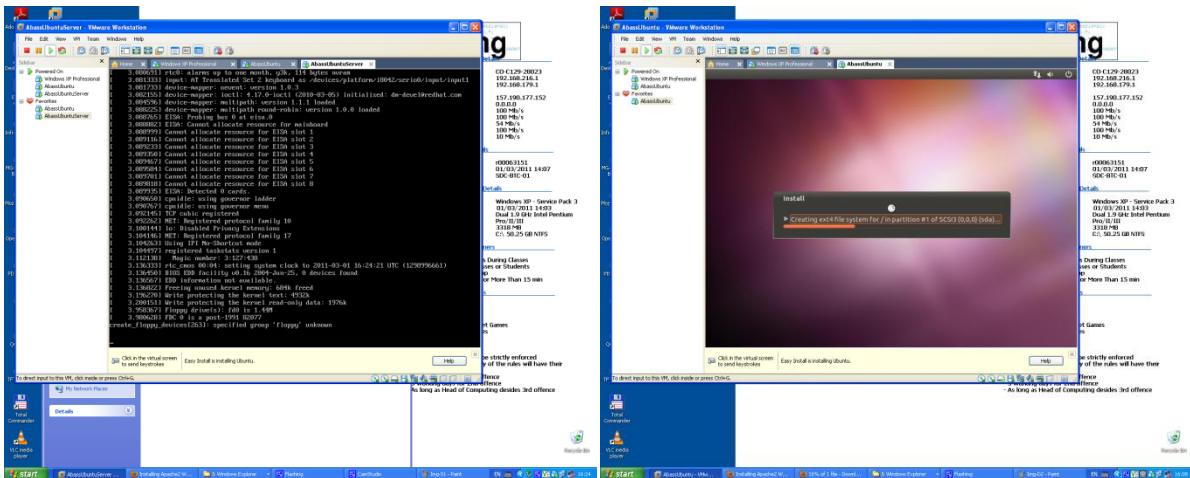


Fig. 3: Installation in progress.

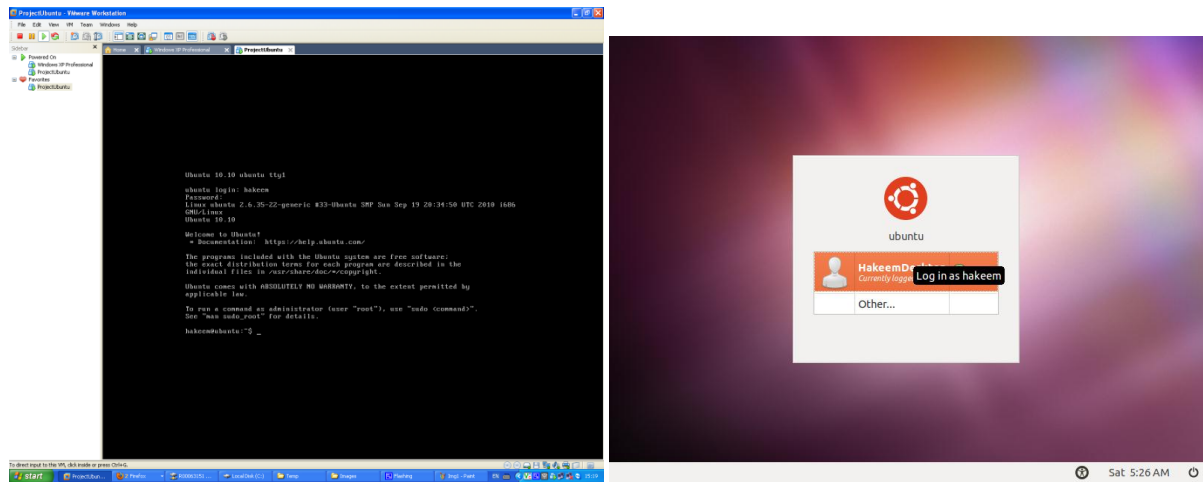


Fig. 4: Installation complete

If finally your screen displays image as above and below, then you have successfully install the base system and you are ready to go on to the next step of this project.

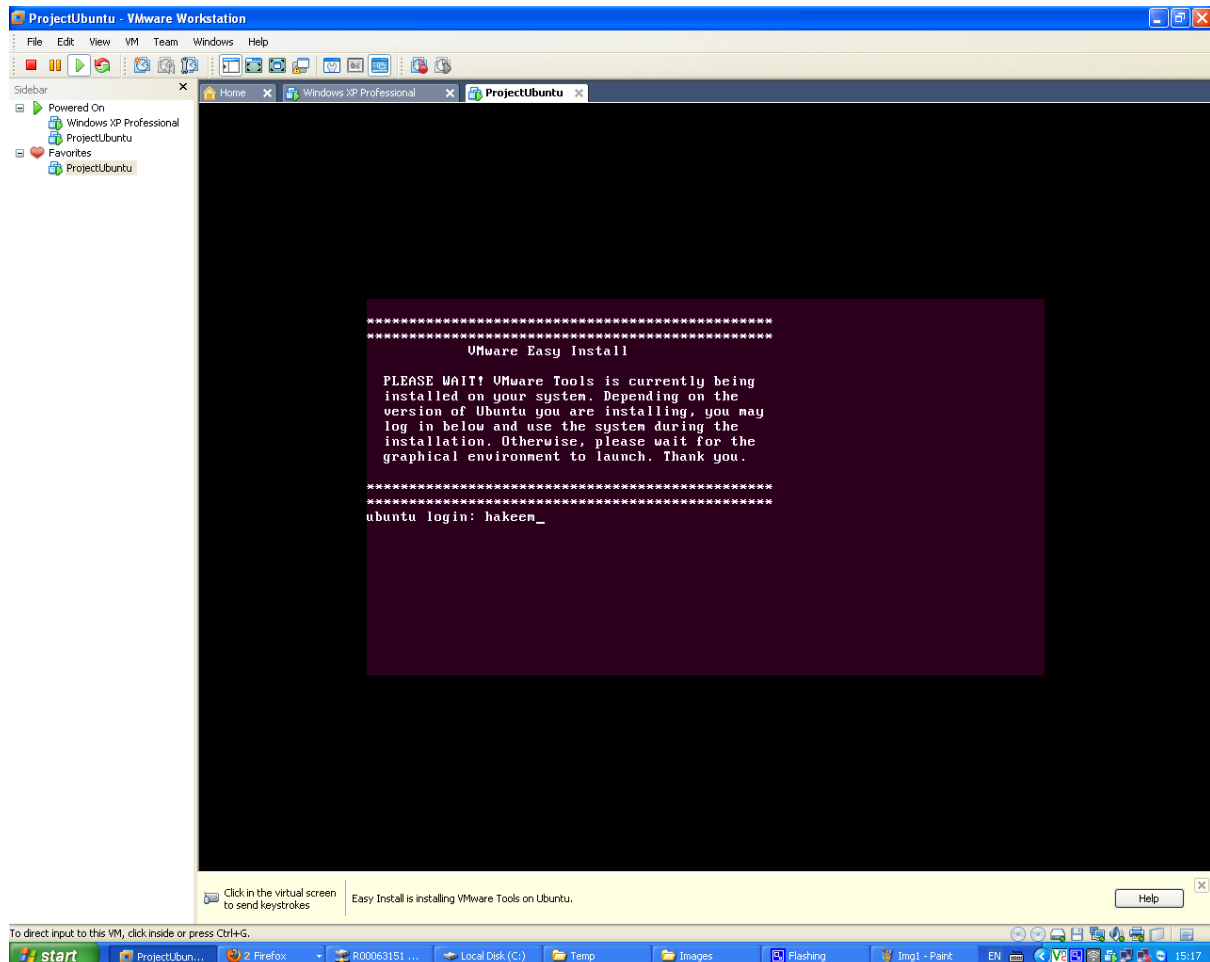


Fig. 5: Installation complete

4. Step 2: Installing the LAMP Server & other application

LAMP (Linux-Apache-MySQL-PHP) is an acronym for a solution stack of free, open source software, originally coined from the first letters of Linux (operating system), Apache HTTP Server, MySQL (database software), and PHP, Python or Perl (scripting language), principal components to build a viable general purpose web server.

4.1. Login into Ubuntu Server

Type into the command line interface;

```
#sudo -i
```

You are then ask to provide your username and password you gave during the Ubuntu installation

Then,

```
#apt-get update
```

This will upgrade installed packages to latest versions.

4.2. Install LAMP Server

Type into the command line interface;

```
#apt-get tasksel install lamp-server
```

This command installs the lamp-server, directly or you can type;

```
#tasksel
```

And you get something as below;



Fig. 6: Choosing LAMP server

Navigate to LAMP server by using the up & down and select the relevant application and press 'return' on the keyboard to start the installation.

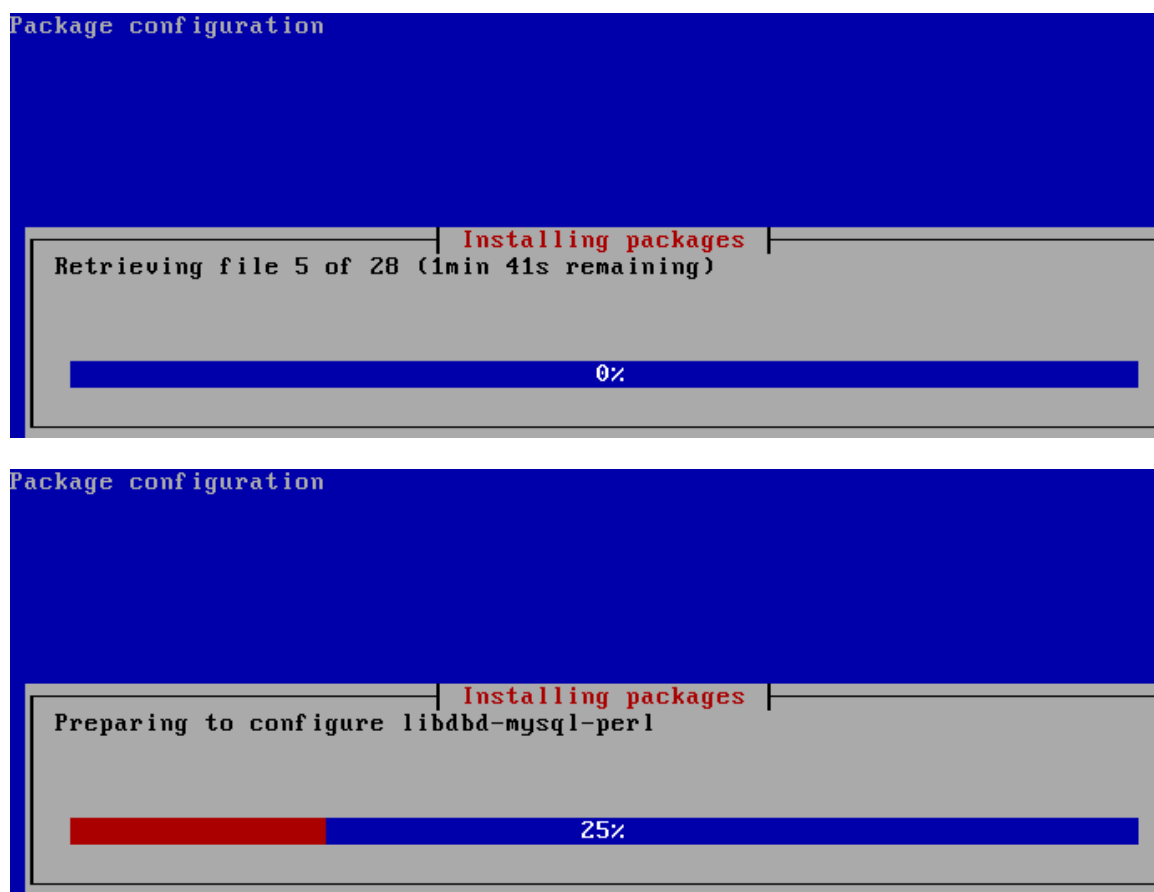


Fig. 7: Installation of the LAMP server in Progress

During the installation of the LAMP server you will be asked to provide root password for MYSQL for 'root' user, this is also important to remember for later use.

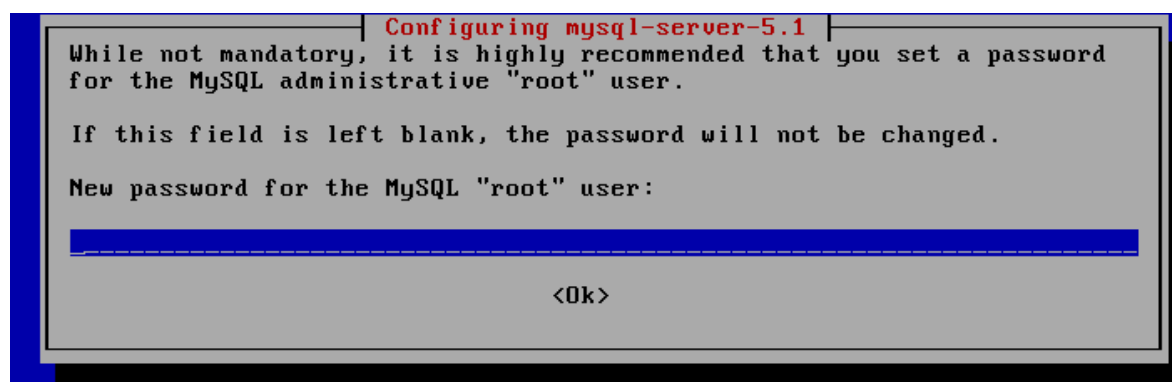


Fig. 7: Giving Password for MYSQL

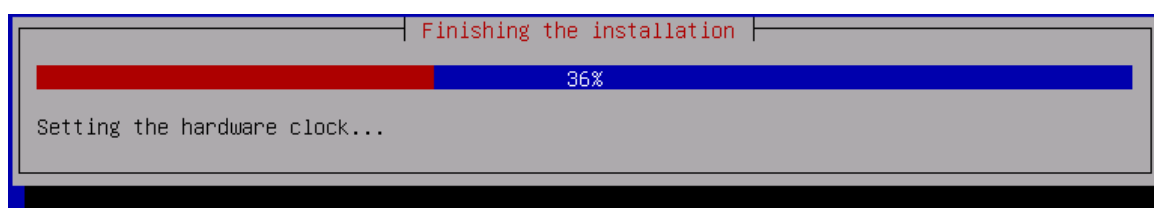
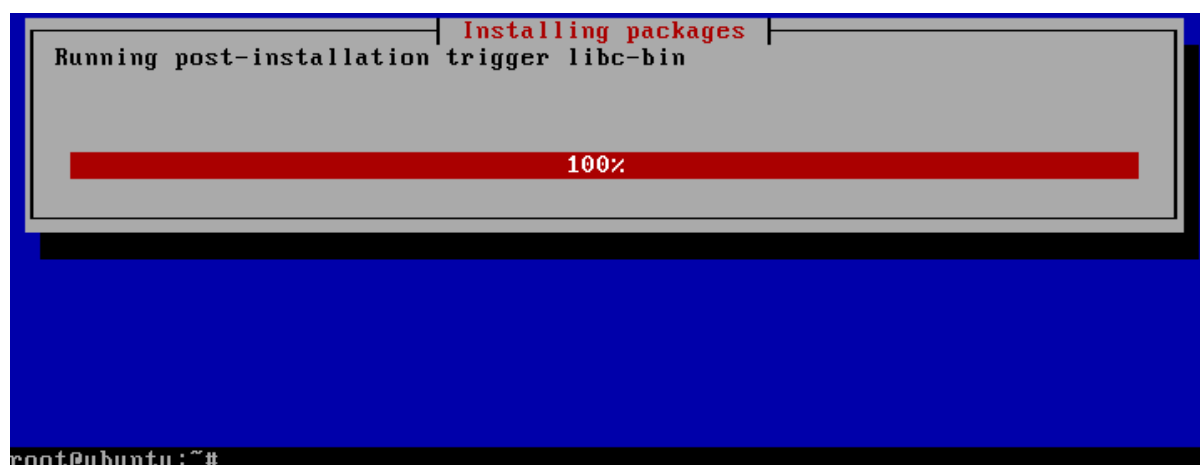


Fig. 8: LAMP Server Finishing installation



*Fig. 9: LAMP Server installation completed
LAMP Server Installation time: 4-5 minutes.*

4.3. Installing PHP5 Packages

Install the package PHP5-GD & PHP5-CURL which are required by Moodle.

#apt-get install php5-gd

```
root@ubuntu:~# apt-get install php5-gd
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following extra packages will be installed:
  libgd2-xpm libjpeg62 libt1-5 libxpm4
Suggested packages:
  libgd-tools
The following NEW packages will be installed:
  libgd2-xpm libjpeg62 libt1-5 libxpm4 php5-gd
0 upgraded, 5 newly installed, 0 to remove and 71 not upgraded.
Need to get 565kB of archives.
After this operation, 1,622kB of additional disk space will be used.
Do you want to continue [Y/n]? _
```

Fig. 10: Installing PHP5-GD

After successful installation as shown above, then;

#apt-get install php5-curl

```
root@ubuntu:~# apt-get install php5-curl
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following extra packages will be installed:
  libcurl3
The following NEW packages will be installed:
  libcurl3 php5-curl
0 upgraded, 2 newly installed, 0 to remove and 71 not upgraded.
Need to get 300kB of archives.
After this operation, 680kB of additional disk space will be used.
Do you want to continue [Y/n]? _
```

Fig. 11: Installing PHP5-CURL

4.4. Testing PHP5 & Getting details about php5 installation

At this stage, you will create a small PHP file (info.php) in the '/var/www' directory. In the command line type;

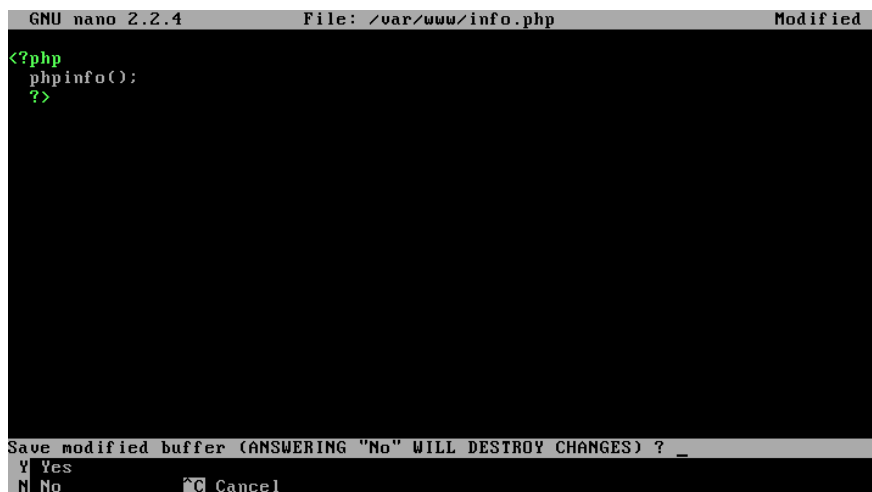
```
#cd /var/www
```

This command takes you to the '/var/www' directory, then type;

```
#nano /var/www/info.php
```

In the editor that open add the following text;

```
<?php  
  Phpinfo();  
?>
```



The screenshot shows the GNU nano 2.2.4 editor interface. The title bar indicates the file is '/var/www/info.php' and it has been modified. The editor content shows the PHP code: <?php, phpinfo();, and ?>. At the bottom, a prompt asks 'Save modified buffer (ANSWERING "No" WILL DESTROY CHANGES) ?'. The user has responded with 'N' for No, and the editor shows 'Cancelled'.

Fig. 12: Creating PHPTest script

Exit the editor, and save as /var/www/info.php – ‘Press ctrl +x’



The screenshot shows the GNU nano 2.2.4 editor interface. The title bar indicates the file is '/var/www/info.php' and it has been modified. The editor content shows the PHP code: <?php, phpinfo();, and ?>. At the bottom, a prompt asks 'Save modified buffer (ANSWERING "No" WILL DESTROY CHANGES) ?'. The user has responded with 'X' for Exit, and the editor shows 'Cancelled'. The bottom status bar displays various keyboard shortcuts: ^G Get Help, ^O WriteOut, ^R Read File, ^V Prev Page, ^K Cut Text, ^C Cur Pos, ^X Exit, ^J Justify, ^W Where Is, ^U Next Page, ^U UnCut Text, ^T To Spell.

Fig. 13: Saving the PHPTest script

4.5.Restart Apache

Restart the Apache Web Server so these changes become part of the system.

Type,

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

Go back to root directory from ‘/var/www’ directory by typing

```
#cd
```

Then type,

```
#ifconfig - to get the IP address of the Localhost
```

```
root@ubuntu:~# ifconfig
eth0      Link encap:Ethernet  HWaddr 00:0c:29:a5:7e:54
          inet addr:192.168.63.141  Bcast:192.168.63.255  Mask:255.255.255.0
          inet6 addr: fe80::20c:29ff:fea5:7e54/64  Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:25985 errors:0 dropped:0 overruns:0 frame:0
          TX packets:6675 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:37296942 (37.2 MB)  TX bytes:381036 (381.0 KB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128  Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:131 errors:0 dropped:0 overruns:0 frame:0
          TX packets:131 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:10550 (10.5 KB)  TX bytes:10550 (10.5 KB)

root@ubuntu:~# _
```

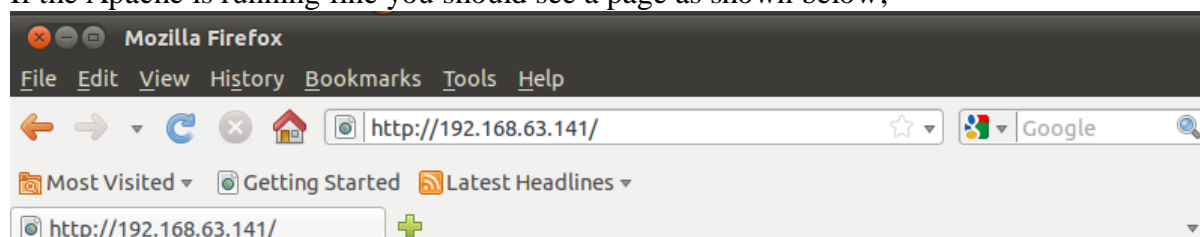
Fig. 14: Creating PHPTest script

4.6. Testing Apache and Php5

Open the browser on the Ubuntu desktop earlier installed and type in the address bar of the browser, as shown below:

<http://ipaddress>

If the Apache is running fine you should see a page as shown below;



It works!

This is the default web page for this server.

The web server software is running but no content has been added, yet.

Fig. 15: Apache Working

Next type in the address bar,

<http://ipaddress/info.php>

To test the PHP 5 is working, then you should see as shown below;

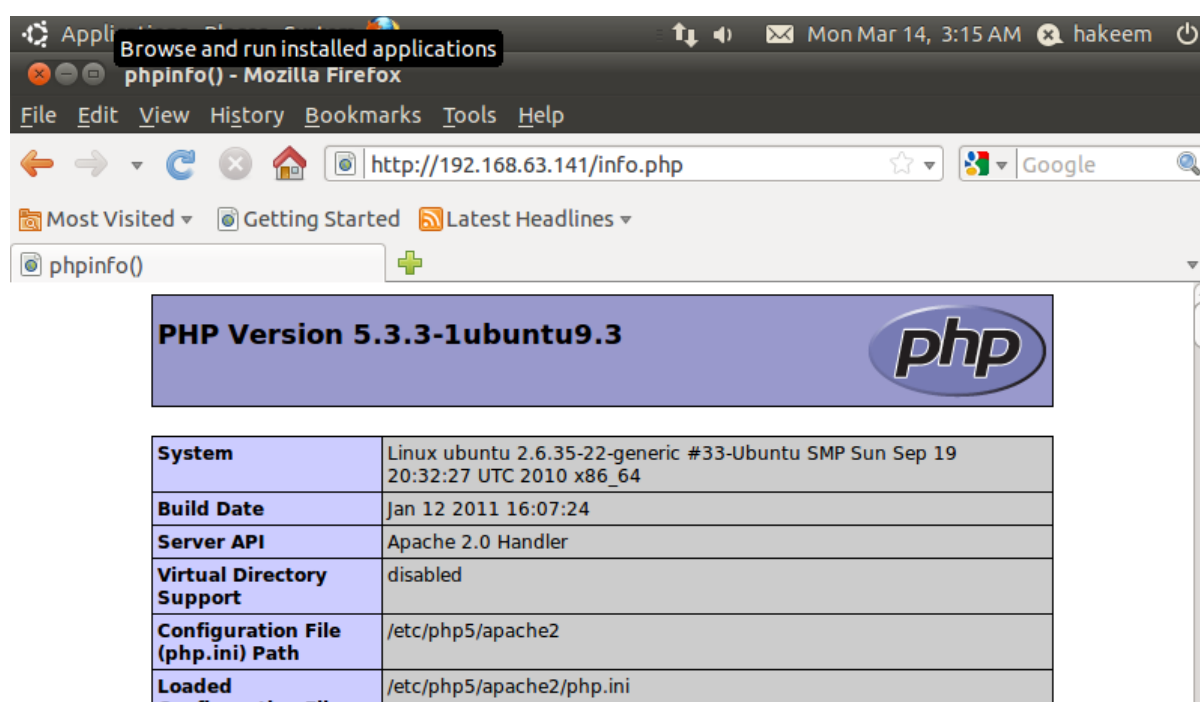


Fig. 16: PHP Working

4.7. Install PHPmyadmin

This is a web interface through which you can fully manage your MYSQL database. To install in the Ubuntu server, type:

```
#apt-get install phpmysqladmin
```

```
root@ubuntu:~# apt-get install phpmysqladmin
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following extra packages will be installed:
  dbconfig-common javascript-common libjs-mootools libmcrypt4 php5-mcrypt
  wwwconfig-common
Suggested packages:
  libmcrypt-dev mcrypt postgresql-client apache apache-ssl
The following NEW packages will be installed:
  dbconfig-common javascript-common libjs-mootools libmcrypt4 php5-mcrypt
  phpmysqladmin wwwconfig-common
0 upgraded, 7 newly installed, 0 to remove and 71 not upgraded.
Need to get 5,198kB of archives.
```

During the installation you will be asked to provide password for the user admin.

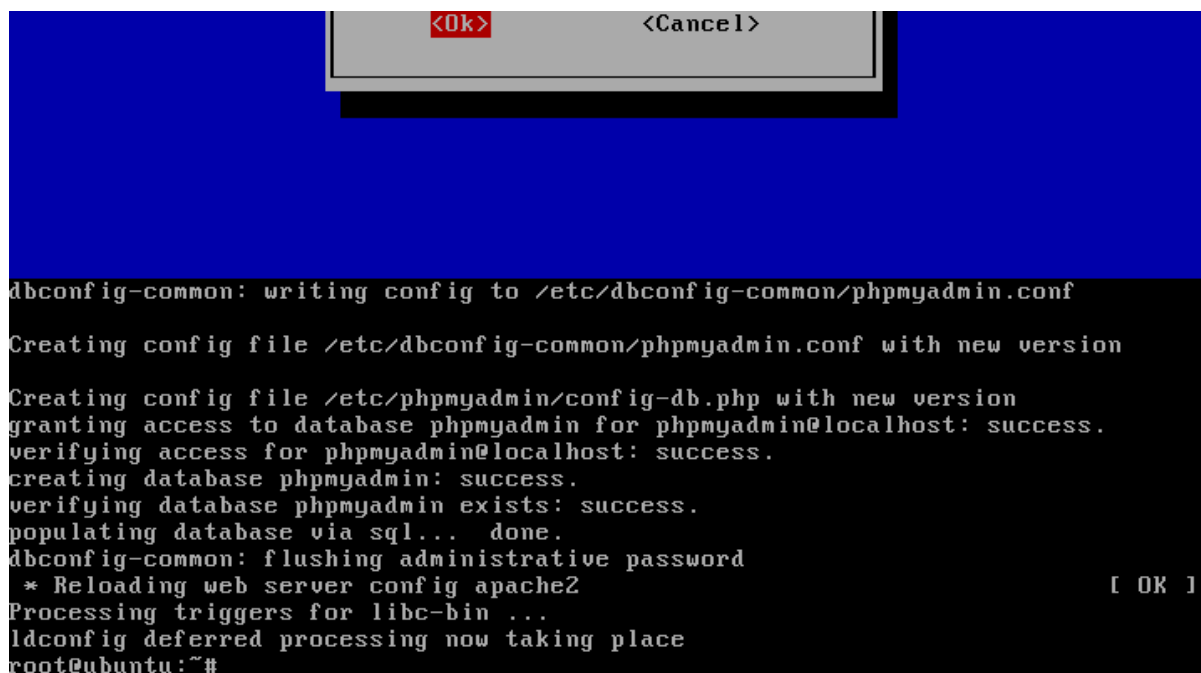
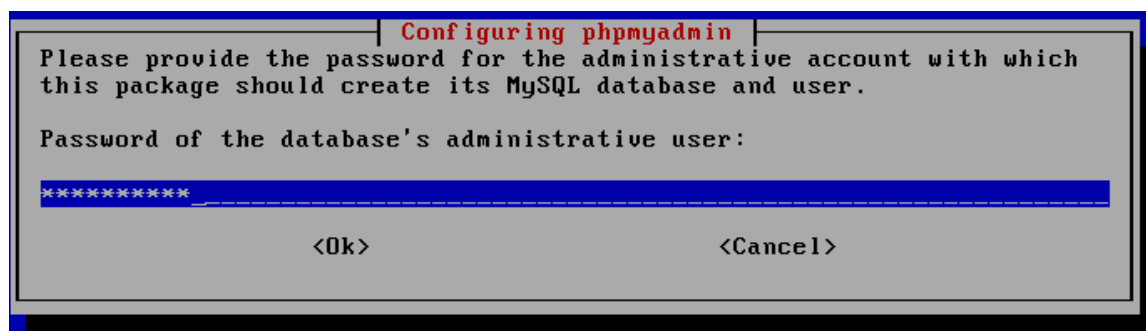


Fig. 17: Phpmysqladmin installation and configuration

Next open your browser again and type;

<http://ipaddress/phpmyadmin>

You should be able to see a page as shown below;

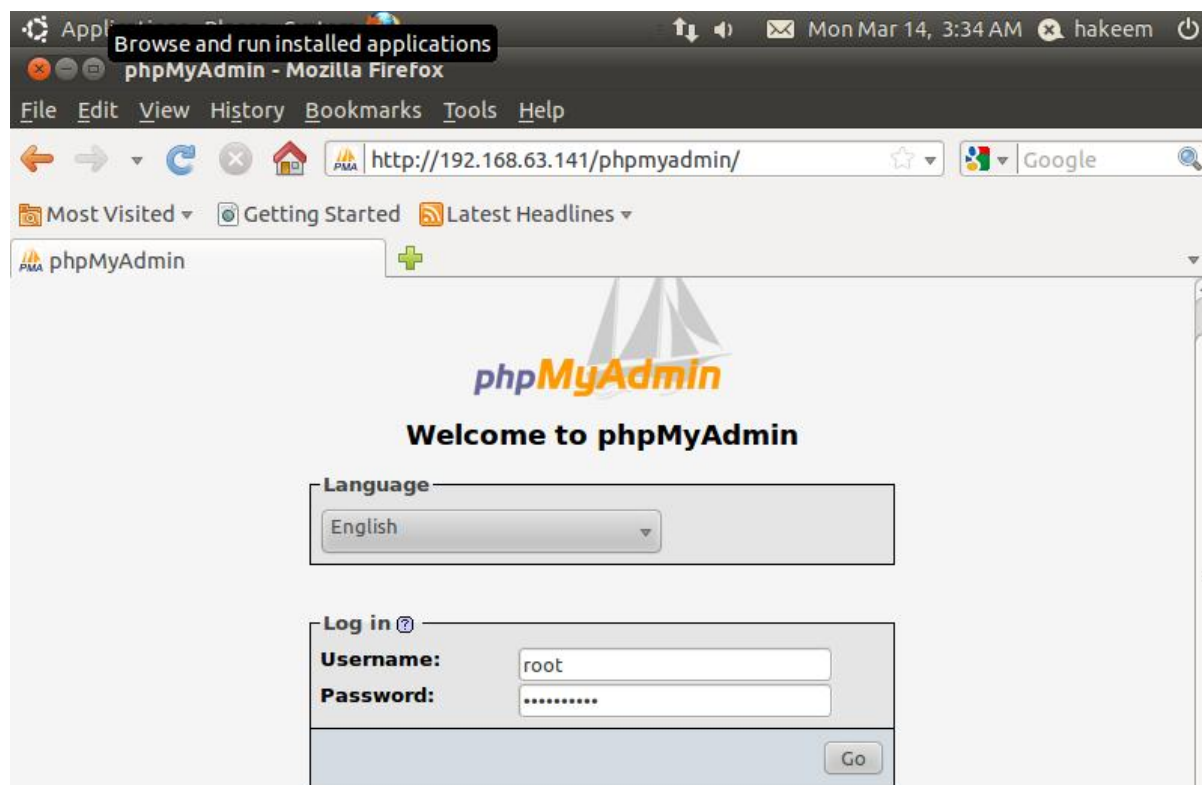
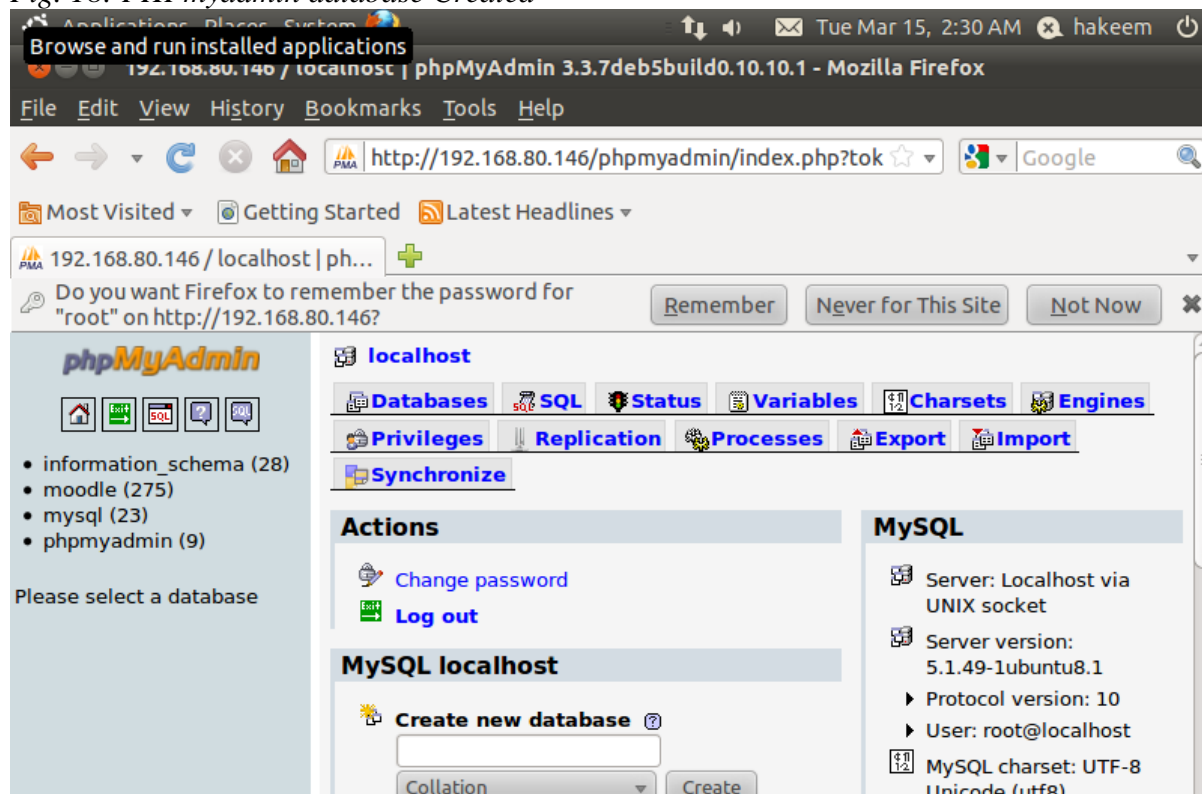


Fig. 18: PHPmyadmin database Created



5. Step 3: Installing Moodle 2.0 on Ubuntu Server

The Moodle installation will be done from the command-line interface, but rather than use 'apt-get' to get Moodle from the repositories, Moodle will be dropped from the <http://moodle.org> website to get the latest Moodle build.

- Installation Steps
 - Download from Website the latest Moodle build.
 - Extract the Zipped file.
 - Make Moodle's data directory
 - Change ownership and permissions for Moodle and moodledata directories.
 - Restart Apache.
 - Run & Install Moodle
 - Set up Moodle Database.
 - Moodle configuration

5.1. Downloading and Unpacking Moodle

At this point we need the Ubuntu server and desktop, first start up a new Firefox Window and type into the address bar <http://download.moodle.org> and click on the 'Latest Release' 'zip format' entry.

The screenshot shows the Moodle download page in a browser window. The page title is 'Standard Moodle Packages'. It features a navigation menu with 'Downloads' selected. The main content area is titled 'Standard Moodle Packages' and includes a note: 'Moodle is Free, Open Source software (read our GPL licence)'. Below this, there is a table of packages. The first row is for 'Moodle 2.0.2+' (MOODLE_20_WEEKLY), which is circled in red and labeled 'Current stable builds'. A red arrow points to this row with the text 'Note: Very Important'. To the right of this row, the '.zip' download button is also circled in red, with a red arrow pointing to it and the text 'Choose this not .tgz'. The second row is for 'Moodle 2.0.2' (MOODLE_202), which is the official final 2.0.2 build.

Version	Information	.tgz	.zip
Moodle 2.0.2+ MOODLE_20_WEEKLY Built Weekly 4 hours 22 mins ago	This package is built every week with new fixes produced by our stable development process. It contains a number of fixes made since the 2.0.2 release and is usually a better choice for production than the actual 2.0.2 package below. <ul style="list-style-type: none">• Progress towards 2.0.3• Recent changes log• Upgrading notes• Requires: PHP 5.2.8, MySQL 5.0.25 or Postgres 8.3 or MSSQL 2005 or Oracle 10.2	Download 21 Feb 461 today	Download 21 Feb 1061 today
Moodle 2.0.2 MOODLE_202 21st February 2011 21 days 19 hours ago	This is the official final 2.0.2 build of Moodle. <ul style="list-style-type: none">• Moodle 2.0.2 Release notes• Bug fixes and improvements• Upgrading notes• Requires: PHP 5.2.8, MySQL 5.0.25 or Postgres 8.3 or MSSQL 2005 or Oracle 10.2	Download 21 Feb 194 today	Download 21 Feb 461 today

Fig. 19: Moodle download page

On clicking the '.zip' file, you will be redirected to the 'sourceforge.net, download website note down the URL as shown below, because you will be using a powerful Linux tool to get the download from this website into the server.



Fig. 19: Moodle download URL

Next, power on the Ubuntu Server, and make sure you are in 'root' directory,

Then type

```
#apt-get install wget
```

'wget' is the tool we will use to get Moodle from the sourceforge.net' website and from 'root' directory type;

```
#cd /var/www
```

The Moodle folder should be downloaded into this directory. Now get Moodle, type;

```
# wget http://sourceforge.net/projects/moodle/files/Moodle/stable20/moodle-latest-20.zip
```

```
Connecting to sourceforge.net|216.34.181.60|:80... connected.
HTTP request sent, awaiting response... 302 Found
Location: http://downloads.sourceforge.net/project/moodle/Moodle/stable20/moodle-latest-20.zip?r=&ts=1300100683&use_mirror=heanet [following]
--2011-03-14 05:20:02-- http://downloads.sourceforge.net/project/moodle/Moodle/stable20/moodle-latest-20.zip?r=&ts=1300100683&use_mirror=heanet
Resolving downloads.sourceforge.net... 216.34.181.59
Connecting to downloads.sourceforge.net|216.34.181.59|:80... connected.
HTTP request sent, awaiting response... 302 Found
Location: http://heanet.dl.sourceforge.net/project/moodle/Moodle/stable20/moodle-latest-20.zip [following]
--2011-03-14 05:20:05-- http://heanet.dl.sourceforge.net/project/moodle/Moodle/stable20/moodle-latest-20.zip
Resolving heanet.dl.sourceforge.net... 193.1.193.66, 2001:770:18:aa40::c101:c142
Connecting to heanet.dl.sourceforge.net|193.1.193.66|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 28409387 (27M) [application/zip]
Saving to: `moodle-latest-20.zip'

100%[=====>] 28,409,387  288K/s  in 1m 48s

2011-03-14 05:21:53 (257 KB/s) - `moodle-latest-20.zip' saved [28409387/28409387]

root@ubuntu:~/var/www#
```

Fig. 20: Moodle download

5.2. Unpacking Moodle

After the download, which take 1-2 minute to finish, install 'unzip' tool;

```
#apt-get install unzip
```

Unpack Moodle, type;

```
#unzip moodle-latest-20.zip
```

At this stage you now have in this directory two files when you issue the list command

```
#ls
```

As shown below;

5.5. Make Moodle data directory

From 'root' go into the 'var' directory

```
#cd /var
```

```
#mkdir moodledata
```

5.4. Change ownership and permissions for Moodle and moodledata directories.

Still in the 'var' directory, change ownership & permissions on the 'moodledata';

```
#chmod 777 /moodledata
```

```
#chown -R /moodledata
```

```
#cd /var/www
```

To go to 'www' directory to change ownership & permissions on the 'Moodle' folder;

```
#chmod 777 /moodle
```

```
#chown -R /moodle
```

5.5. Restart Apache.

```
#cd
```

To go back to 'root' directory, then;

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

5.6. Run & Install Moodle

From this point on, Moodle is ready to finish the final step of the installation, but we need to run through the program's own installer. Start up a Firefox window and type the URL `http://localhost/moodle` into the address bar. This should bring up the first page of the moodle installer shown below;

Select Language

Select the language you want. The default is English click on "next".

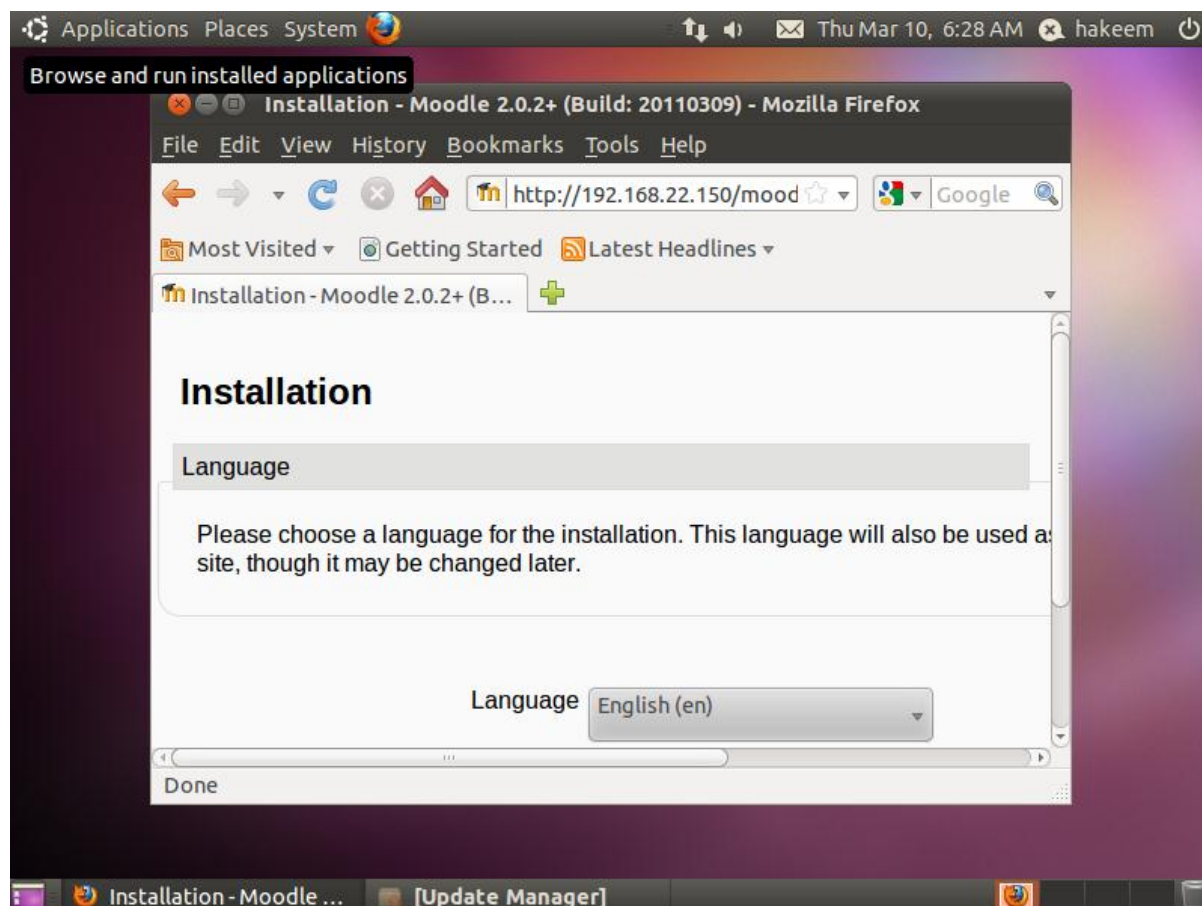


Fig. 22: Moodle language setup

Configuration Completed

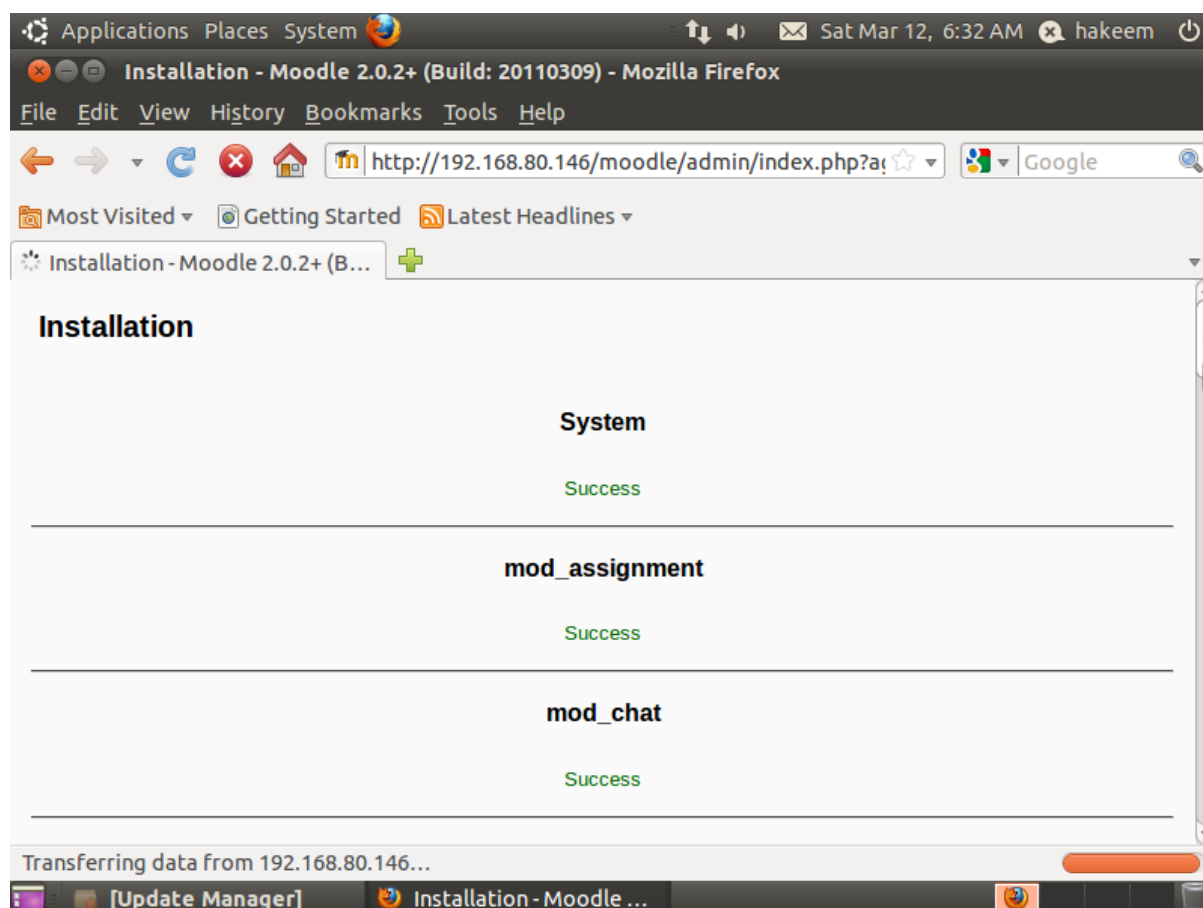
The program now writes a config file to your system. If this step fails, try doing the `sudo chmod 777 /var/www/moodle` command again, as above. Click on 'Next'

Terms and Conditions

Try to read the T & C, to continue, click on the 'Yes' button.

Checking PHP settings

A page of tests are conducted on PHP. All should say "OK" in Green. The only one that isn't by default is "GD Version" - if this has failed reinstall `php5-gd` and restart apache (see above). If they all say "ok" click on next.



Locations

The next page sets the locations of the moodle installation. These should be `/var/www/moodle` and `/var/moodledata` (the last one is the directory you created above).

Click on next. If this fails, check you set up the `/var/moodledata` directory as above.

5.6. Setting up Moodle Database

This can be done from the phpmyadmin page we set up earlier but we going to create the database using MYSQL. From the command-line interface type;

```
#mysql -u root -p
```

You will ask to enter your mysql password you enter earlier, and you are the MYSQL prompt local client, now create the database by typing;

```
>CREATE DATABASE moodle;
```

Check on the phpmyadmin, to see if the Moodle database is created, then create user 'admin';

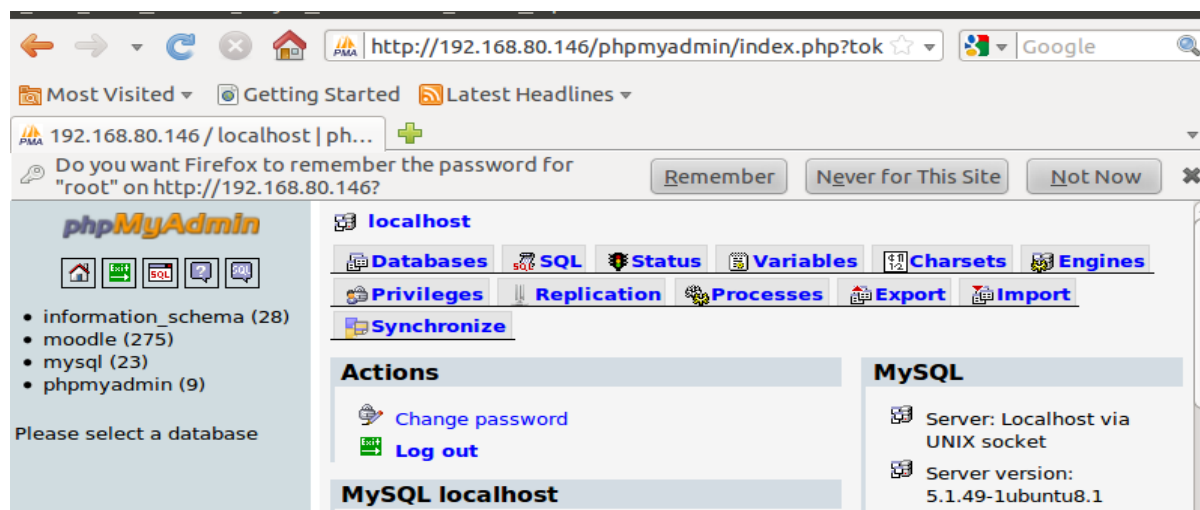


Fig. 23: Moodle database created

>**CREATE USER admin;**

Next create password for user 'admin';

>**SET PASSWORD FOR ADMIN = PASSWORD("password");**

Grant user 'admin' all privileges on the database

>**GRANT ALL PRIVILEGES ON Moodle* TO admin@localhost IDENTIFIED BY '82---**

```

corresponds to your MySQL server version for the right syntax to use near 'DRE
E DATABASE moodle' at line 1
mysql> CREATE DATABASE moodle;
Query OK, 1 row affected (0.16 sec)

mysql> CREATE USER Admin
-> ;
Query OK, 0 rows affected (0.00 sec)

mysql> SET PASSWORD FOR admin = PASSWORD("82forthill");
ERROR 1133 (42000): Can't find any matching row in the user table
mysql> SET PASSWORD FOR Admin = PASSWORD("82forthill");
Query OK, 0 rows affected (0.00 sec)

mysql> GRANT ALL PRIVILEGES ON Moodle.* TO Admin@localhost IDENTIFIED BY '82for
thill';
  
```

Fig. 24: Creating Moodle Database

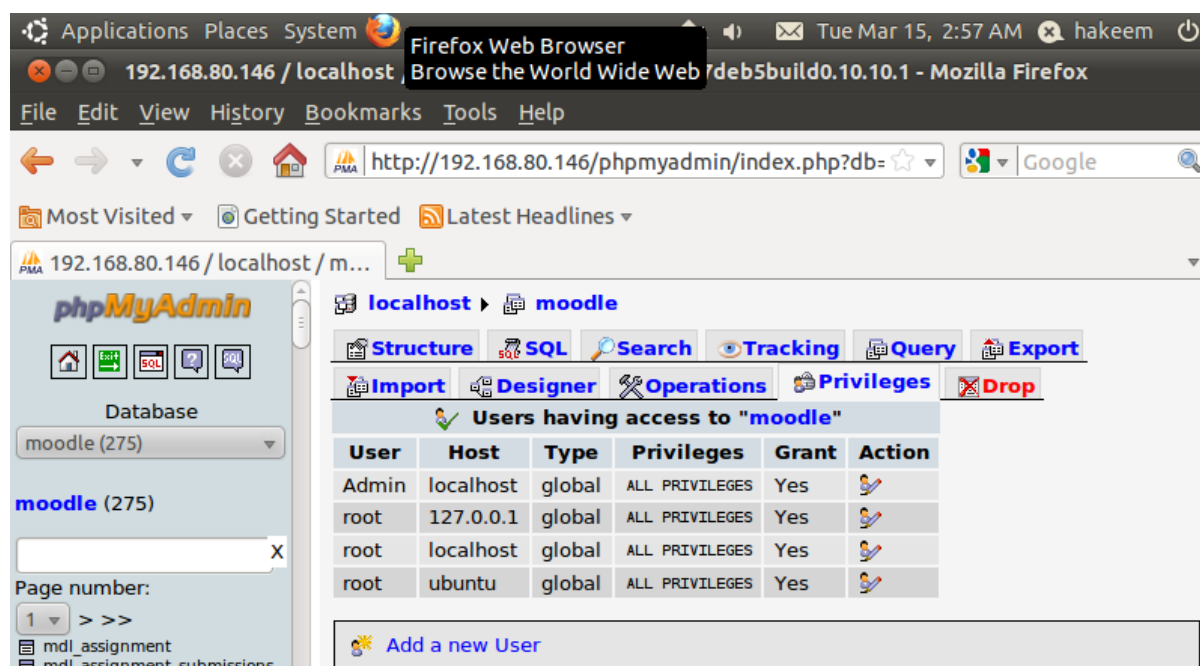


Fig. 25: User created with all the privileges on Moodle Database

This sets the moodle database to be useable by the MySQL user *admin* with the password 82----. This can be changed to any values you like. The quotes around the end are required, because you will get a database error when you try to start Moodle for the first time.

5.6. Final Configurations

With the user 'admin' created with all the privileges you can now go into your moodle page and start customizing the page, creating users, add course categories etc.

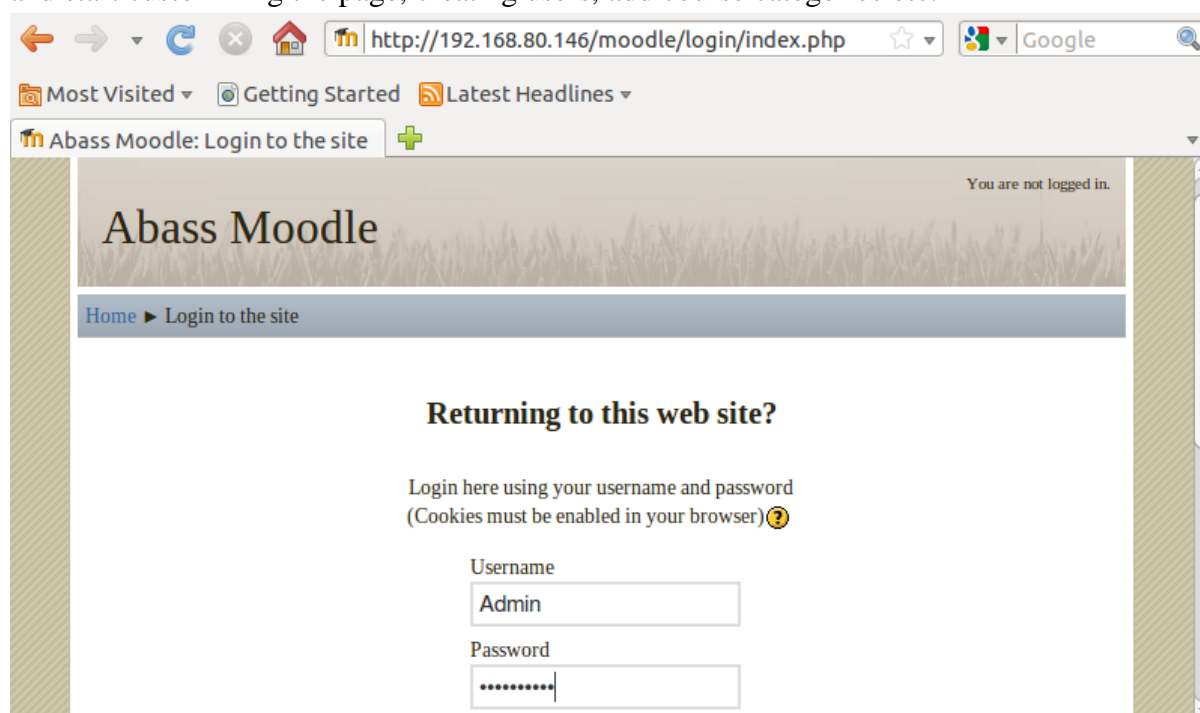


Fig. 24: My Moodle login page

5.6. Administrator Account

On the administrator account page, you will enter your new password for the administrator, then click on 'update profile' at the bottom. This will throw up some errors - correct them so you can carry on, or if you like fill this page in properly. As with everything else, you can change it any time you like.

Next, Click on 'Continue'

Welcome to Moodle

You now have an up and running Moodle server.

Adding custom theme to the Moodle page

- Find free Moodle themes from <http://moodle.org/mod/data/view.php?id=6552>
- Download one. Extract the zip file .
- Copy the extracted folder to /var/www/moodle/theme
- From Moodle, install the new theme:
- Moodle -> Appearance -> Themes -> Theme Selector

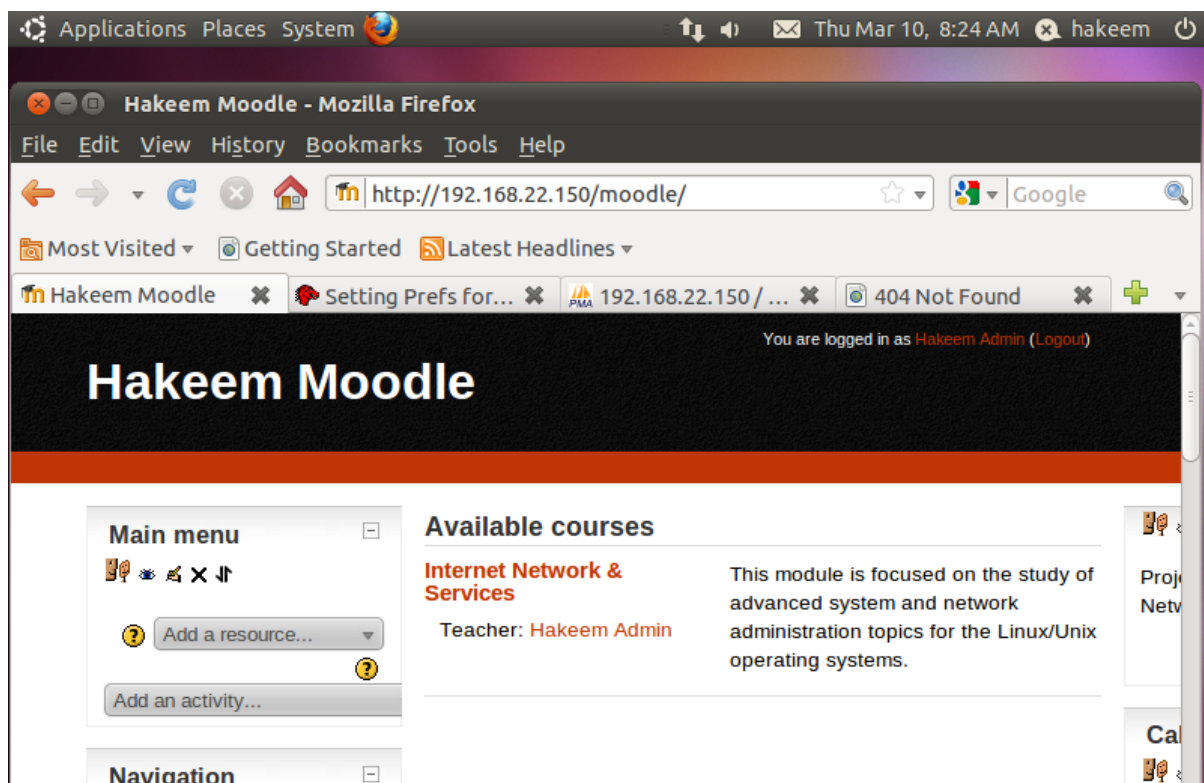


Fig. 24: My Moodle Admin configuration page

6. Conclusion

This project was intend to teach individual on the advantages of having an application running on Ubuntu server. The major thing I learnt is how to install and make an application run on a server securely with the administrator with full permission and ownership.

I was able to install a lot of application free while using the Ubuntu command line interface.

7. REFERENCE

<http://moodle.org/>

<http://www.ubuntu.com/>