

OPTIMISING MOODLE FOR REMOTE TEACHING AND LEARNING

UbuntuNet Alliance Webinar
Prepared By: Henry Chalembo Simfukwe - ZAMREN

Contents:

Introduction to Moodle	3
Installation and Implementation of Moodle	3
Minimum Moodle Server Requirements.....	3
Hardware requirements.....	3
Software requirements	3
Installing Moodle on Ubuntu 18.04 LTS.....	4
Courses, Users, and Roles	15
Moodle Courses	16
Moodle Users.....	18
Creating user-defined profile fields	18
Bulk uploading and updating users.....	18
Moodle Roles	19
Integrating Moodle With BigBlueButton	20

Introduction to Moodle

Moodle stands for **Modular Object-Oriented Dynamic Learning Environment**. Moodle is a learning platform designed to provide educators, administrators and learners with a single robust, secure and integrated system to create personalised learning environments. Moodle Learning Management System (LMS) is a flexible, open source and free to download learning management solution. Moodle serves the learning and training needs of all types of organizations.

Moodle is a platform that provides educators with the technology to provide online learning in a personalized environment that fosters interaction, inquiry and collaboration. Educators, trainers can create and deliver online courses to help their students achieve their learning goals.

Installation and Implementation of Moodle

Minimum Moodle Server Requirements

Hardware requirements

These requirements apply if you host Moodle yourself or if it is hosted on an external server (shared, virtual, dedicated, or clustered).

- **Disk space:** Moodle takes up between 150 and 300 MB of disk space. However, this only provides you with an empty system and does not take into account the space you require for any learning resources. The faster the disks, the better. RAIDed disks are recommended, but are not essential on smaller installations. In a Production environment take into account the resources that will be added to the system and 80GB of disk space is good disk space to start with. On Linux Server Systems its best to have the disk space on an LVM partition which will make it easier to grow the partition when need to increase the disk space arises.
- **Memory:** The (absolute) minimum requirement is 256 MB for a single-user instance, but more is necessary in a multiuser setup. A good rule of thumb is to have 1 GB of RAM for every 30-50 concurrent users. On Windows Based systems this calculation must be doubled due to the higher overhead of the operating system.
- **Network:** While Moodle can run on a standalone machine, its full potential lies in a networked environment. A fast network card is essential, as is good upload and download speed if it is accessed over the Internet.

Software requirements

For Moodle 3.7 or higher, you must have the following components up and running on your server:

- **Database:** Moodle officially supports five database systems:
 - i. MySQL (version 5.6 or higher; the ACID-compliant InnoDB storage engine is highly recommended)
 - ii. MariaDB (version 5.5.31 or higher)

- iii. PostgreSQL (version 9.4 and for production the recommended is version 11.x then 12.x in Moodle 3.7.5 onwards),
- iv. Microsoft SQL Server (version 2008 or later)
- v. Oracle Database (version 11.2 or higher).
- **Web server:** Apache is the preferred web server option, but Moodle works well with any other web server that supports PHP, such as Nginx and Microsoft IIS.
- **PHP:** PHP 7.2 is required to run Moodle 3.7 or higher.
- **PHP extensions:** Moodle makes use of a number of extensions, most of which are compiled into PHP by default. They are as follows:
*graphviz aspell ghostscript clamav php-pspell php-curl php-gd php-intl
 php-mysql php-xml php-xmlrpc php-ldap php-zip php-soap php-mbstring*

Depending on your specific setup, additional software and hardware might be required. It is assumed that the database, web server, PHP, and its extensions have been installed correctly, as this is not a VLE administrator task. Once this is the case, we are ready to go.

Installing Moodle on Ubuntu 18.04 LTS

Moodle Shall be installed on a Virtual (VM) Test environment with the following Setup:

- **Operating System:** Ubuntu 18.04 LTS
- **Disk Space:** 80Gib set up on LVM partition
- **Memory:** 2Gib
- **Network:** 100Mb connection
- **Database:** MySQL
- **Webserver:** Apache
- **PHP:** PHP 7.2
- **FQDN:** `ubuntulearn.zamren.zm`
- **SSL:** Let's Encrypt
- **Moodle Version:** 3.8

Step 1: Download and Install Ubuntu Server 18.04 LTS

Step 2: Ensure the universe Package Source is included by editing the file

```
vim /etc/apt/sources.list
```

```
deb http://archive.ubuntu.com/ubuntu bionic main universe
deb http://archive.ubuntu.com/ubuntu bionic-security main universe
deb http://archive.ubuntu.com/ubuntu bionic-updates main universe
```

Save and close the file

Step 3: Update your Server and Install Software that will be need

```
sudo apt -y update
sudo apt -y dist-upgrade
sudo apt -y install git
```

```
sudo apt -y install apache2 mysql-client mysql-server php libapache2-mod-php
```

```
[root@ubuntu:/home/learn# apt -y update
Hit:1 http://archive.ubuntu.com/ubuntu bionic InRelease
Get:2 http://archive.ubuntu.com/ubuntu bionic-security InRelease [88.7 kB]
Get:3 http://archive.ubuntu.com/ubuntu bionic-updates InRelease [88.7 kB]
Fetched 177 kB in 2s (89.5 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
All packages are up to date.
[root@ubuntu:/home/learn# apt -y dist-upgrade
Reading package lists... Done
Building dependency tree
Reading state information... Done
Calculating upgrade... Done
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
[root@ubuntu:/home/learn# apt -y install git
Reading package lists... Done
Building dependency tree
Reading state information... Done
git is already the newest version (1:2.17.1-1ubuntu0.7).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
[root@ubuntu:/home/learn# apt -y install apache2 mysql-client mysql-server php libapache2-mod-php
Reading package lists... Done]
```

Enable and Start your Apache web server and your MySQL server

```
systemctl start apache2
systemctl enable apache2
systemctl status apache2
```

```
[root@ubuntu:/home/learn# systemctl start apache2
root@ubuntu:/home/learn# 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
root@ubuntu:/home/learn# systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
   Drop-In: /lib/systemd/system/apache2.service.d
             └─apache2-systemd.conf
     Active: active (running) since Sun 2020-05-03 20:59:00 UTC; 26min ago
       Main PID: 25542 (apache2)
          Tasks: 7 (limit: 2322)
         CGroup: /system.slice/apache2.service
                   ├─25542 /usr/sbin/apache2 -k start
                   ├─25552 /usr/sbin/apache2 -k start
                   ├─25553 /usr/sbin/apache2 -k start
                   ├─25554 /usr/sbin/apache2 -k start
                   ├─25555 /usr/sbin/apache2 -k start
```

```
systemctl start mysql
systemctl enable mysql
systemctl status mysql
```

```

root@ubuntu:/home/learn# systemctl start mysql
root@ubuntu:/home/learn# systemctl enable mysql
Synchronizing state of mysql.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable mysql
root@ubuntu:/home/learn# systemctl status mysql
● mysql.service - MySQL Community Server
   Loaded: loaded (/lib/systemd/system/mysql.service; enabled; vendor preset: enabled)
     Active: active (running) since Sun 2020-05-03 20:58:56 UTC; 30min ago
       Main PID: 24614 (mysqld)
          Tasks: 29 (limit: 2322)
        CGroup: /system.slice/mysql.service
                  └─24614 /usr/sbin/mysqld --daemonize --pid-file=/run/mysqld/mysqld.pid

May 03 20:58:56 ubuntu systemd[1]: Starting MySQL Community Server...
May 03 20:58:56 ubuntu systemd[1]: Started MySQL Community Server.

```

Step 4: Secure Your Mysql Installation mysql_secure_installation

On the Screen Prompts:

Would you like to setup VALIDATE PASSWORD plugin?

Press y|Y for Yes, any other key for No: No (**Choose No**)

New password: (**Enter mysql root password of your choosing**)

Re-enter new password: (**Confirm your mysql root password**)

Remove anonymous users? (Press y|Y for Yes, any other key for No) : Y (**Choose Yes**)

Disallow root login remotely? (Press y|Y for Yes, any other key for No) : Y (**Choose Yes**)

Remove test database and access to it? (Press y|Y for Yes, any other key for No) : Y (**Choose Yes**)

Reload privilege tables now? (Press y|Y for Yes, any other key for No) : Y (**Choose Yes**)

Step 5: Secure Your Apache Webserver with Let's Encrypt SSL

Edit the following files and the line **ServerName ubuntulearn.zamren.zm** (replace with your FQDN) and change the web root folder to moodle installation directory **DocumentRoot /var/www/moodle** (replace with your moodle site installation directory)

```

vim /etc/apache2/sites-available/000-default.conf
vim /etc/apache2/sites-available/default-ssl.conf

```

```

<VirtualHost *:80>
    # The ServerName directive sets the request scheme, hostname and port that
    # the server uses to identify itself. This is used when creating
    # redirection URLs. In the context of virtual hosts, the ServerName
    # specifies what hostname must appear in the request's Host: header to
    # match this virtual host. For the default virtual host (this file) this
    # value is not decisive as it is used as a last resort host regardless.
    # However, you must set it for any further virtual host explicitly.
    #ServerName www.example.com

    ServerAdmin webmaster@localhost
    ServerName ubuntulearn.zamren.zm
    DocumentRoot /var/www/moodle

```

Restart your Apache Web Server
systemctl restart apache2

Set the MTU of your Interface to 1300 (There is bug in Ubuntu 18.04 when using the default MTU which causes the server to drop connection with the let's encrypt servers during certificate requests and renewal)

```
ifconfig ens18 mtu 1300
```

Add the Repository for Let's Encrypt to your server

```
add-apt-repository ppa:certbot/certbot
```

Install Let's Encrypt engine for Apache Webserver

```
apt install python-certbot-apache
```

Generate and Install the Let's Encrypt SSL certificate

```
certbot --apache -d ubuntulearn.zamren.zm (Replace with your FQDN)
```

Step 6: Modify the default MySQL Configuration

Edit the file **vim /etc/mysql/mysql.conf.d/mysqld.cnf** (Kindly take note that the location of this file is dependant on where your MySQL configuration files are installed). Include the following lines under [mysqld]

```
default_storage_engine = innodb
innodb_file_per_table = 1
innodb_file_format = Barracuda
innodb_large_prefix = 1
```

```
[mysqld]
#
# * Basic Settings
#
default_storage_engine = innodb
innodb_file_per_table = 1
innodb_file_format = Barracuda
innodb_large_prefix = 1
user          = mysql
pid-file      = /var/run/mysqld/mysqld.pid
socket        = /var/run/mysqld/mysqld.sock
port          = 3306
basedir       = /usr
datadir       = /var/lib/mysql
tmpdir        = /tmp
lc-messages-dir = /usr/share/mysql
skip-external-locking
#
# Instead of skip-networking the default is now to listen only on
# localhost which is more compatible and is not less secure.
bind-address    = 127.0.0.1
..
```

Restart your MySQL service and check the status of the service just to be sure that its running after the changes to the configuration file

```
systemctl restart mysql  
systemctl status mysql
```

Step 7: Log into MySQL with the root User and Create the Database for your Moodle Site

```
mysql -u root -p  
CREATE DATABASE ubuntudb;  
(Replace ubuntudb with your own database name)
```

```
CREATE USER 'ubuntu'@'localhost' IDENTIFIED BY 'learn2020';  
(Replace ubuntu with database USER and learn2020 with USER Password)
```

```
GRANT ALL PRIVILEGES ON ubuntudb.* to 'ubuntu'@'localhost'  
IDENTIFIED BY 'learn2020' WITH GRANT OPTION;
```

```
FLUSH PRIVILEGES;
```

```
EXIT;
```

```
[root@Ubuntu:/home/learn# mysql -u root -p  
|Enter password:  
Welcome to the MySQL monitor. Commands end with ; or \g.  
Your MySQL connection id is 2  
Server version: 5.7.29-0ubuntu0.18.04.1 (Ubuntu)  
  
Copyright (c) 2000, 2020, 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> CREATE DATABASE ubuntudb;  
Query OK, 1 row affected (0.00 sec)  
  
[mysql> CREATE USER 'ubuntu'@'localhost' IDENTIFIED BY 'learn2020';  
Query OK, 0 rows affected (0.01 sec)  
  
[mysql> GRANT ALL PRIVILEGES ON ubuntudb.* to 'ubuntu'@'localhost' IDENTIFIED BY 'learn2020' WITH GRANT OPTION;  
Query OK, 0 rows affected, 1 warning (0.00 sec)  
  
[mysql> FLUSH PRIVILEGES;  
Query OK, 0 rows affected (0.00 sec)  
  
mysql> EXIT;]
```

Step 8: Install the Required PHP Extensions for moodle. **Note:** Take note of the version that was installed during the installation of PHP in Step 3. You can issue the command on the terminal **php -v OR php -version** to know the version installed. If for example the version installed was php7.4 then you need to install php7.4 extensions. In our case the version that was installed is php7.2, which means we shall have to install php7.2 extensions

```
sudo apt -y install graphviz aspell ghostscript clamav php7.2-  
pspell php7.2-curl php7.2-gd php7.2-intl php7.2-mysql php7.2-  
xml php7.2-xmlrpc php7.2-ldap php7.2-zip php7.2-soap php7.2-  
mbstring
```

Step 9: Obtain Moodle Installation files using git

```
cd /var/www (change directory to web root folder)
git clone git://git.moodle.org/moodle.git
root@ubuntu:/home/learn# cd /var/www
root@ubuntu:/var/www# ls
html
root@ubuntu:/var/www# git clone git://git.moodle.org/moodle.git
Cloning into 'moodle'...
remote: Counting objects: 1151562, done.
remote: Compressing objects: 100% (260624/260624), done.
remote: Total 1151562 (delta 857453), reused 1150219 (delta 856110)
Receiving objects: 100% (1151562/1151562), 389.57 MiB | 1.93 MiB/s, done.
Resolving deltas: 100% (857453/857453), done.
Checking out files: 100% (20796/20796), done.
root@ubuntu:/var/www#
```

```
cd moodle
git branch -a
root@ubuntu:/var/www# ls
html moodle
root@ubuntu:/var/www# cd moodle
root@ubuntu:/var/www/moodle# git branch -a
* master
  remotes/origin/HEAD -> origin/master
  remotes/origin/MOODLE_13_STABLE
  remotes/origin/MOODLE_14_STABLE
  remotes/origin/MOODLE_15_STABLE
  remotes/origin/MOODLE_16_STABLE
  remotes/origin/MOODLE_17_STABLE
  remotes/origin/MOODLE_18_STABLE
  remotes/origin/MOODLE_19_STABLE
  remotes/origin/MOODLE_20_STABLE
  remotes/origin/MOODLE_21_STABLE
  remotes/origin/MOODLE_22_STABLE
  remotes/origin/MOODLE_23_STABLE
  remotes/origin/MOODLE_24_STABLE
  remotes/origin/MOODLE_25_STABLE
  remotes/origin/MOODLE_26_STABLE
  remotes/origin/MOODLE_27_STABLE
  remotes/origin/MOODLE_28_STABLE
  remotes/origin/MOODLE_29_STABLE
  remotes/origin/MOODLE_30_STABLE
  remotes/origin/MOODLE_31_STABLE
  remotes/origin/MOODLE_32_STABLE
  remotes/origin/MOODLE_33_STABLE
  remotes/origin/MOODLE_34_STABLE
  remotes/origin/MOODLE_35_STABLE
  remotes/origin/MOODLE_36_STABLE
  remotes/origin/MOODLE_37_STABLE
  remotes/origin/MOODLE_38_STABLE
  remotes/origin/master
root@ubuntu:/var/www/moodle#
```

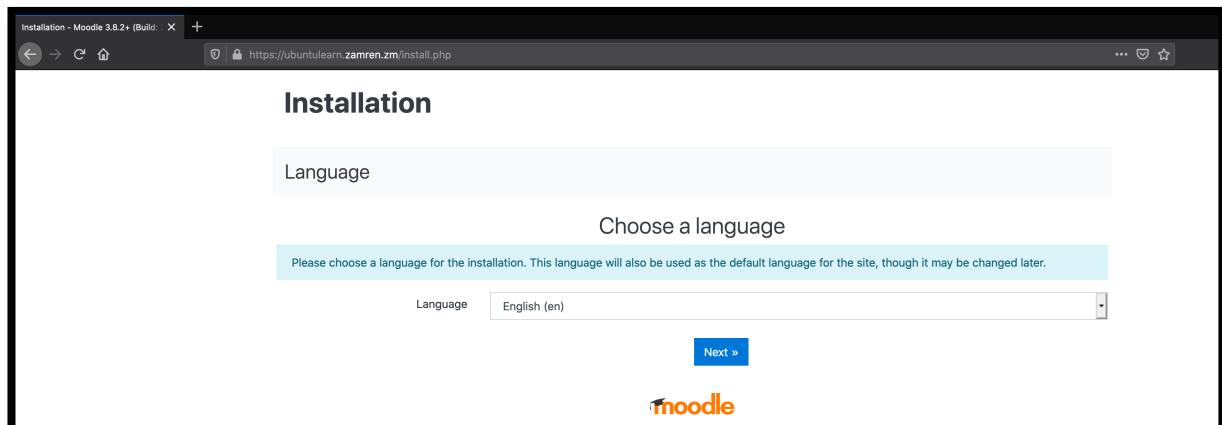
```
git branch --track MOODLE_38_STABLE origin/MOODLE_38_STABLE
git checkout MOODLE_38_STABLE
root@ubuntu:/var/www/moodle# git branch --track MOODLE_38_STABLE origin/MOODLE_38_STABLE
Branch 'MOODLE_38_STABLE' set up to track remote branch 'MOODLE_38_STABLE' from 'origin'.
root@ubuntu:/var/www/moodle# git checkout MOODLE_38_STABLE
Switched to branch 'MOODLE_38_STABLE'
Your branch is up to date with 'origin/MOODLE_38_STABLE'.
```

Step 10: Create the Moodle data directory (Directory where Moodle content is stored when created in Moodle) and assign appropriate permissions to both the Moodle data directory and the Moodle site installation directory

```
mkdir /var/moodledata
chown -R www-data:www-data /var/moodledata
chown -R www-data.www-data /var/www/moodle
chmod -R 775 /var/www/moodle
```

```
root@ubuntu:/var/www/moodle#
root@ubuntu:/var/www/moodle# mkdir /var/moodledata
root@ubuntu:/var/www/moodle# chown -R www-data:www-data /var/moodledata
root@ubuntu:/var/www/moodle# chown -R www-data.www-data /var/www/moodle
root@ubuntu:/var/www/moodle# chmod -R 775 /var/www/moodle/
```

Step 11: Open your browser and begin the Moodle installation. In your browser address bar enter <https://ubuntulearn.zamren.zm> (replace with your FQDN)



Installation Image: 1Enter https://FQDN

Web address	<input type="text" value="https://ubuntulearn.zamren.zm"/>
Moodle directory	<input type="text" value="/var/www/moodle"/>
Data directory	<input type="text" value="/var/moodledata"/>

[« Previous](#) [Next »](#)

Installation Image: 2 Enter the Web Address and Moodle Data Paths

Installation

Database

Choose database driver

Moodle supports several types of database servers. Please contact server administrator if you do not know which type to use.

Type

[« Previous](#) [Next »](#)



Installation Image: 3 Choose Database Driver

Database host	<input type="text" value="localhost"/>
Database name	<input type="text" value="ubuntudb"/>
Database user	<input type="text" value="ubuntu"/>
Database password	<input type="text" value="learn2020"/>
Tables prefix	<input type="text" value="mdl_"/>
Database port	<input type="text"/>
Unix socket	<input type="text"/>

[« Previous](#) [Next »](#)

Installation Image: 4 Enter the Database Details as Created in Step 7

Installation

Moodle - Modular Object-Oriented Dynamic Learning Environment Copyright notice

Copyright (C) 1999 onwards Martin Dougiamas (<https://moodle.com>)

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

See the Moodle License information page for full details: <https://docs.moodle.org/dev/License>

Confirm

Have you read these conditions and understood them?

[Continue](#) [Cancel](#)

Installation Image: 5 Click Continue to start the Installation

Installation - Moodle 3.8.2+ (Build: 20200502)

Moodle 3.8.2+ (Build: 20200502)

For information about this version of Moodle, please see the online Release Notes

Server checks

Name	Information	Report	Plugin	Status
unicode		<i>must be installed and enabled</i>	OK	OK
database	mysql (5.7.29-0ubuntu0.18.04.1)	<i>version 5.6 is required and you are running 5.7.29.0.0.18.04.1</i>	OK	OK
php		<i>version 7.1.0 is required and you are running 7.2.24.0.0.18.04.4</i>	OK	OK
pcreunicode		<i>should be installed and enabled for best results</i>	OK	OK
php_extension	iconv	<i>must be installed and enabled</i>	OK	OK
php_extension	mbstring	<i>should be installed and enabled for best results</i>	OK	OK
php_extension	curl	<i>must be installed and enabled</i>	OK	OK
php_extension	openssl	<i>must be installed and enabled</i>	OK	OK
php_extension	tokenizer	<i>should be installed and enabled for best results</i>	OK	OK
php_extension	xmlrpc	<i>should be installed and enabled for best results</i>	OK	OK
php_extension	soap	<i>should be installed and enabled for best results</i>	OK	OK

Installation Image: 6 Click Continue if your Server Meets the requirements

Installation

System

Success

antivirus_clamav

Success

availability_completion

Success

Installation Image: 7 Click on Continue After All Components are installed

Installation

On this page you should configure your main administrator account which will have complete control over the site. Make sure you give it a secure username and password as well as a valid email address. You can create more admin accounts later on.

[▶ Expand all](#)

▼ General

Username ! ?

admin

Choose an authentication method ! ?

Manual accounts

The password must have at least 8 characters, at least 1 digit(s), at least 1 lower case letter(s), at least 1 upper case letter(s), at least 1 non-alphanumeric character(s) such as as *, -, or #

New password ! ?

.....



Press enter to save changes

Force password change ?

First name !

Admin

Surname !

User

Email address !

Installation Image: 8 Enter and Update Appropriate Fields for Moodle Admin User Account with your information and click on Update Profile

New settings - Front page settings

Full site name
fullname: Ubuntu ZAMREN Test Moodle

Short name for site (eg single word)
shortname: UbuntuLearn

Front page summary
summary:

This is a Test Moodle Installation for UbuntuNet Webinar

This summary can be displayed on the front page using the course/site summary block.

New settings - Location settings

Default timezone
timezone: Africa/Lusaka Default: Europe/London

This is the default timezone for displaying dates - each user can override this setting in their profile. Cron tasks and other server settings are specified in this timezone. You should change the setting if it shows as "Invalid timezone"

Installation Image: 9 Update Appropriate Fields for the Moodle Site and Click Save Changes

The Next Screen is for you to register your Moodle Site with Moodle. This is an optional Step and You can click on SKIP if you don't want to register your site OR you can Enter the Appropriate Information and Register Your Site with Moodle

Ubuntu ZAMREN Test Moodle

Dashboard / Site administration / Registration

Complete your site registration

We'd love to stay in touch and provide you with important things for your Moodle site! By registering:

- You can subscribe to receive notifications of new Moodle releases, security alerts and other important news.
- You can access and activate mobile push notifications from your Moodle site through our free Moodle app.
- You are contributing to our Moodle statistics of the worldwide community, which help us improve Moodle and our community sites.
- If you wish, your site can be included in the list of registered Moodle sites in your country.

About the Moodle app Moodle statistics Other sites in my country

Expand all

Registration information

Name	Ubuntu ZAMREN Test Moodle
Site listing	Do not list my site
Description	<p>This is a Test Moodle Installation for UbuntuNet Webinar </p>
Language	English

After This Step Your Installation of Your Moodle Site is Finshed. To Access it simply visit <https://FQDN>

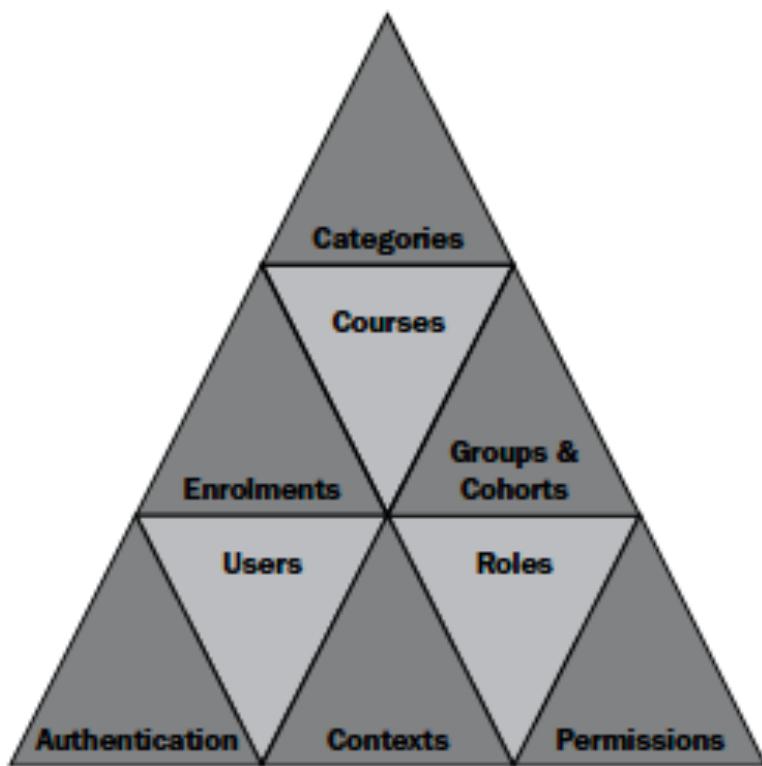
Courses, Users, and Roles

Moodle courses: Courses are central to Moodle as this is where learning takes place. Lecturers/ Trainers/ Teachers upload their learning resources, create activities, assist in learning and grade work and monitor progress. Students on the other hand read, listen to or watch learning resources, participate in activities, submit work and collaborate with others.

Moodle users: These are individuals accessing our Moodle system. Typical users are students and teachers, but also other types such as managers, parents, assessors, examiners, or guests. Oh, and the administrator, of course!

Moodle roles: Roles are effectively permissions that specify which features users are allowed to access and, also, where and when (in Moodle) they can access them.

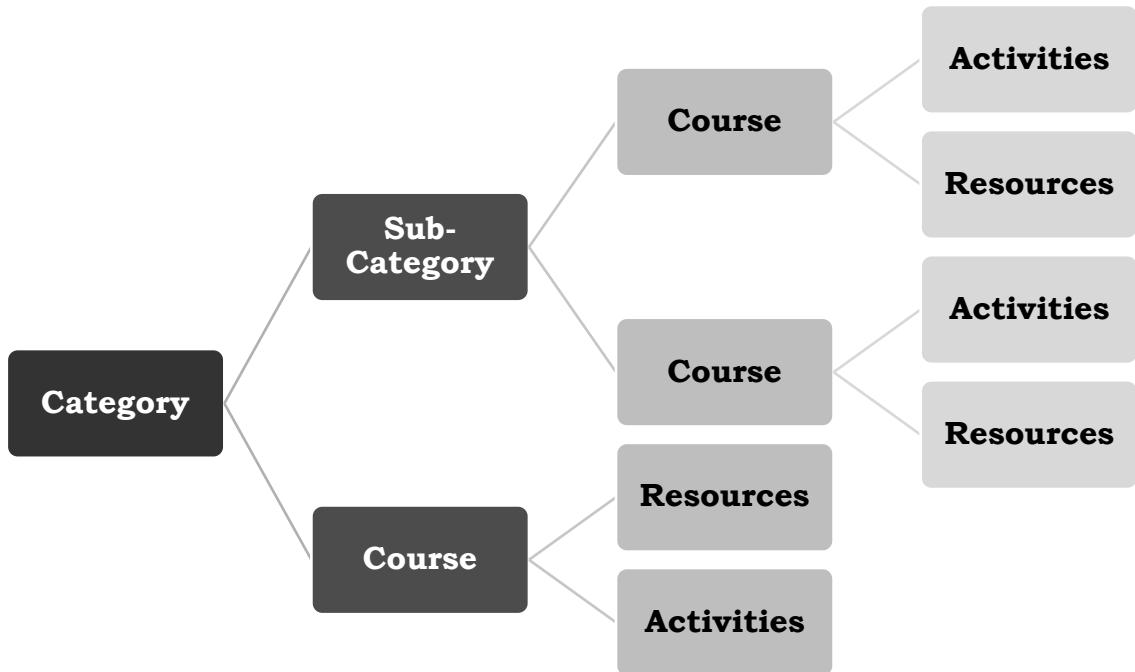
The diagram below shows an overview of courses, users, and roles. It shows how central the three concepts are, and also how other features are related to them.



Users have to go through an Authentication process to get access to Moodle. They then have to go through an Enrolments step to be able to participate in Courses which themselves are organized into Categories. Groups & Cohorts are different ways to group users at course level or sitewide. Users are granted Roles in particular Contexts. Which role is allowed to do what and which isn't depends entirely on the Permissions set within that role.

Moodle Courses

A Course in Moodle represents a subject. Moodle manages activities and stores resources in courses, and this is where learning and collaboration takes place. Courses themselves belong to categories, which are organized hierarchically, similar to folders on our local hard drive.



Moodle comes with a default category called Miscellaneous, which is sufficient to show the basics of courses. It's always important to observe the following best practice when it comes to creating courses in Moodle:

- a. Do not use the Miscellaneous category (In Fact Rename OR Delete it)
- b. Create Your own categories. A quick naming guide for categories is to name each category after the faculty, department or school of a university. E.g a University can have the School of Education, School of Natural Science and School of Engineering. In Moodle we can create a category for each school of the University and we must assign both a Category name and a Category ID number (this field is important as it easily comes in handy when uploading courses in bulk). To create a Category, Login as a Moodle Site administrator, navigate to Site Administration in the Dashboard, Choose **Course | Manage courses and categories | Create new category**.

Add new category

Parent category	<input type="button" value="Top"/>
Category name	<input type="text" value="School of Natural Science"/> !
Category ID number	<input type="text" value="NS1"/> ?
Description	<input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="A"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="B"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="I"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="="/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="="/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="%"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value=">"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="?"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="!"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input style="width:15px; height:15px; border:none; border-radius:50%; background-color:#ccc; color:#000; margin-right:5px;" type="button" value="<><><><><><><><><><><><><><><><><><>"/> <input type="button" value="<><><><><><

Moodle Users

Moodle users, or rather their user accounts, are dealt with in **Users | Accounts**. It is important to understand the difference between authentication and enrolment. Moodle users have to be authenticated in order to log in to the system. Authentication grants user's access to the system through login where a username and password have to be given. Moodle supports a significant number of authentication mechanisms such LDAP, Cohort Sync and Shibboleth. Enrolment happens at course level. However, a user has to be authenticated to the system before enrolment to a course can take place. So, a typical workflow is as follows:

- i. Create your users.
- ii. Create your courses (and categories).
- iii. Associate users to courses and assign roles.

Another way of looking at the difference between authentication and enrolment is how a user will get access to a course. Please bear in mind that this is a very simplistic view and ignores supported features such as external authentication, guest access, and self-enrolment.

Creating user-defined profile fields

Moodle allows new arbitrary fields to be added to the user profile. This feature can be found in **Users | Accounts | User profile fields**. This feature can be used to create additional fields that are not in Moodle by design but are important to your institution to keep data about your students such as gender, program of study and intake. The field name will be **profile_field_fieldname** e.g **profile_field_gender**.

Bulk uploading and updating users

Uploading users in bulk allows you to import multiple user accounts from a text file such as a csv file or you can update user accounts that already exist in your system. Student information is often available in student management information system, which can be exported data to an Excel spreadsheet or directly to a text file. Before uploading users, you have to generate a text file that must conform to a certain format. Its general format is that of a Comma Separated Value (CSV) file, which is a flat text file format. You can create such a CSV file in Excel or any other spreadsheet application. Use the first row to provide field names, and then fill in each cell with the required data. Then save the file as CSV, making sure that you specify that the top row contains field names. The most important fields are username, password, firstname, lastname and email

	A	B	C	D	F	G
1	username	password	firstname	lastname	email	profile_field_gender
2	WC0098901	Zamb#476	Henry	Simfukwe	WC0098901@ubuntulearn.zamren.zm	Male
3	WC0098981	Zamb#476	Covid	Mwale	WC0098981@ubuntulearn.zamren.zm	Female

Moodle Roles

Roles define what users can or cannot see and do in your Moodle system. Moodle comes with pre-defined roles, but it also allows us to create our own roles; for instance, for parents or external assessors. Each role has a certain scope (called context – a context is a ring-fenced area in Moodle where roles can be assigned to users), which is defined by a set of permissions (expressed as capabilities). For example, a teacher is allowed to grade an assignment whereas a student isn't. Or, a student is allowed to submit an assignment, whereas a teacher isn't.

A user can be assigned different roles in different contexts; where the context can be a course, a category, an activity module, a user, a block, the front page, or Moodle itself. For instance, you are assigned the Administrator role for the entire system, but additionally, you might be assigned the Teacher role in any courses you are responsible for; or, a learner will be given the Student role in a course, but might have been granted the Teacher role in a forum in order to act as a moderator.

Role	Description	Short name
Administrator	Administrators have full access to the entire site and to all courses.	admin
Course creator	Course creators can create new courses, but not participate or teach in them.	coursecreator
Manager	Managers can access courses and modify them, without participation.	manager
Teacher	Editing teachers can do anything within a course, including changing activities and grading students.	editingteacher
Non-editing teacher	Non-editing teachers can teach in courses and grade students, but not alter any activities.	teacher
Student	Students can participate in courses.	student
Guest	Guests have minimal privileges and usually cannot enter any content.	guest
Authenticated user	All logged-in users.	user
Authenticated user on frontpage	All users logged in to the frontpage course.	frontpage

Integrating Moodle With BigBlueButton

In order to integrate your Moodle Site with BigBlueButton you need have the BigBlueButtonBN plugin installed in your Moodle. The plugin can be downloaded from https://moodle.org/plugins/mod_bigbluebuttonbn

Input the BigBlueButton Server URL and BigBlueButton Shared Secret in the settings of the BigBlueButtonBN plugin

The screenshot shows the 'General configuration' section of the BigBlueButtonBN plugin settings in Moodle. It includes fields for 'BigBlueButton Server URL' (with a default value of http://test-inst) and 'BigBlueButton Shared Secret' (with a default value of 8cd8ef52e8e1). Both fields are highlighted with a blue border.

General configuration

These settings are **always** used

BigBlueButton Server URL
bigbluebuttonbn_server_url

https://webconf.zamren.zm/bigbluebuttonbn Default: http://test-inst

The URL of your BigBlueButton server must end with /bigbluebuttonbn provided by Blindside Networks that you can use for testing.

BigBlueButton Shared Secret
bigbluebuttonbn_shared_secret

HJzqSfxUxhCaaeqYPqsqWpKdb2HBrXE Default: 8cd8ef52e8e1

The security salt of your BigBlueButton server. (This default salt is for Blindside Networks that you can use for testing.)

You can obtain the BigBlueButton Server URL and BigBlueButton Shared Secret information from your BigBlueButton server by running the command

`bbb-conf --secret`

```
[root@webconf:/home/mkango# bbb-conf --secret]
```

Once the plugin is configured, you can simply add a BigBlueButtonBN Activity to any course in your Moodle Site.

The screenshot shows the 'Add an activity or resource' dialog in Moodle. The 'ACTIVITIES' section lists three options: 'Assignment', 'BigBlueButtonBN', and 'Chat'. The 'BigBlueButtonBN' option is selected.

CS Add an activity or resource

ACTIVITIES

- Assignment
- BigBlueButtonBN
- Chat

Select an activity or resource to view its help. Double-click on an activity or resource name to quickly add it.