LECTURE02: LAMP INSTALLATION

CS418/518: Web programming

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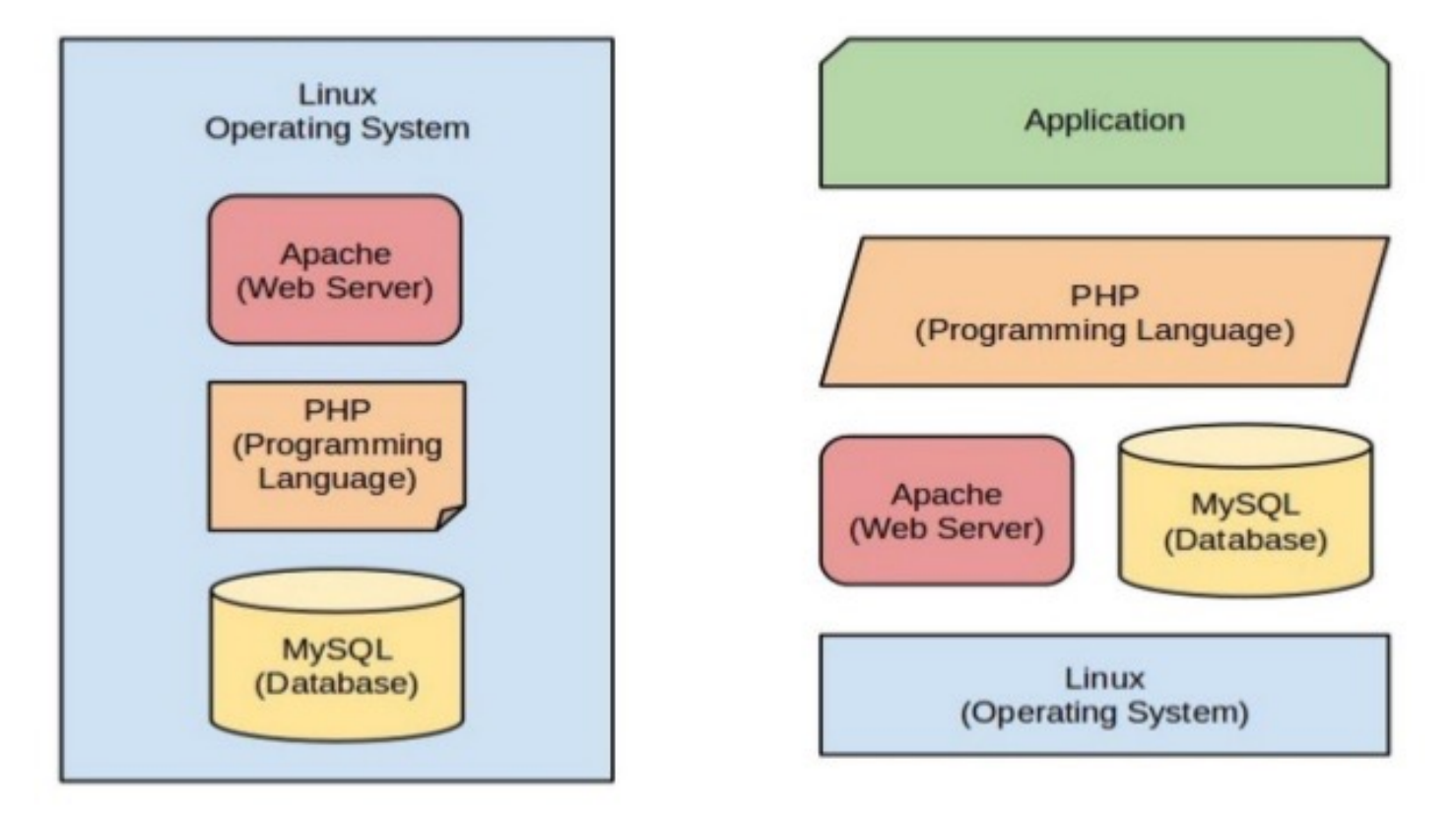
Courtesy: presentation slides from Dr. Justin Brunelle

LAMP ARCHITECTURE

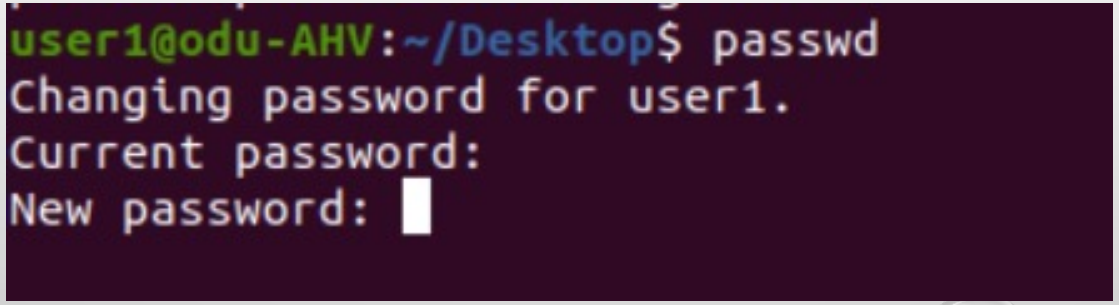


INSTALL LAMP ON UBUNTU

- L: Ubuntu is based on Linux, so no need to install Linux
- A: Most Ubuntu should have Apache HTTP installed. Check to see if it has already been started.
- M: We need to install MySQL and start MySQL server
- P: Most OS should have PHP installed. Check to see if it works.

LAUNCH YOUR SESSION ON THE CCI ENVIRONMENT

- Follow instructions at Wikipage: https://wiki.cova-cci.org/en/protected-academic/CS418
- Student login credentials to the course VMs:
  - username: user1
  - password: CS418Pass
- Students are encouraged to change the password for their 'user1' account using instructions below:
  - Type "passwd" in the terminal. Then type your "current password" and then the "new password"



START AND TEST APACHE HTTP SERVER

- Start the Terminal or other clients you prefer
- To check the status of apache2, use `#sudo apachectl status`
- To start apache `$ sudo systemctl start apache2`
- To stop it `$ sudo systemctl stop apache2`
- To restart it `$ sudo systemctl restart apache`
- To test it: find version `$ apache2 -v`

```
Server version: Apache/2.4.34 (Unix)
Server built:   Feb 22 2019 20:20:11
```

- To verify it is working, go to http://localhost

Note: if port is not specified, it uses the default port which is 80. So it is equivalent to: http://localhost:80.

THE "DOCUMENT ROOT" FOR APACHE

- Document root is the location where the files are shared from the file system
- Apache2's default document root is at /var/www/html
- By default, you need sudo access to write files into the directory. To switch to sudo use $sudo bash
- See files under this directory: $ls -alh
  - a: list all files including hidden files
  - l: list with long format, show permissions
  - h: show readable sizes

In Linux, "~" stands for your home directory. To go to your home directory, just type "cd ~" or "cd" and then "Enter".

- You may not see anything. Transfer files from your computer to virtual machines (VMs) using Google drive (or other cloud-based storage)
  - Download example files from the course GitHub page: https://github.com/lamps-lab/cs418518-f22/tree/main/example
  - Upload them to your Google drive on your computer
  - Download them from Google drive in the VMs
  - Copy them to the document root

A BRIEF INTRO TO THE LINUX PERMISSION CODE

ls -alh

```
-rw-r--r--  1 root  wheel  128B Sep  1  2019 /etc/apache2/users/jianwu.conf
```

user group others

type:
file(f) or directory(d)

user	rw-	binary	110	decimal	6
group	r--	binary	100	decimal	4
others	r--	binary	100	decimal	4

-: 0
r/w: 1

The whole permission code is 644.

CONFIGURATION FILE

- The main configuration file is httpd.conf and located at `/etc/apache2/httpd.conf`
- You can use a text editor to open it: vi, vim, or nano

```
$ sudo vim /etc/apache2/httpd.conf
```

- For us, nothing needs to be changed.
- If you make any changes, you need to restart Apache2 to make it effective

TEST PHP

- Write a simple PHP file under the document root

  ```
  $ echo "<?php phpinfo(); ?>" >  phpinfo.php
  ```

- Then go to http://localhost/phpinfo.php

- Should see something like

PHP Version 7.1.23

System	Darwin Jians-MacBook-Air.local 18.6.0 Darwin Kernel Version 18.6.0: Sun Apr 28 18:06:45 PDT 2019; root:xnu-4903.261.4~6/RELEASE_X86_64 x86_64
Build Date	Feb 22 2019 22:18:47
Configure Command	'/Library/Caches/com.apple.xbs/Binaries/apache_mod_php/install/TempContent/Objects/php/configure' '--prefix=/usr' '--mandir=/usr/share/man' '--infodir=/usr/share/info' '--disable-dependency-tracking' '--sysconfdir=/private/etc' '--with-libdir=lib' '--enable-cli' '--with-iconv=/Applications/Xcode.app/Contents/Developer/Platforms/MacOSX.platform/Developer/SDKs/MacOSX10.14.Internal.sdk/usr' '--with-config-file-path=/etc' '--with-libxml-dir=/Applications/Xcode.app/Contents/Developer/Platforms/MacOSX.platform/Developer/SDKs/MacOSX10.14.Internal.sdk/usr' '--with-openssl=/Applications/Xcode.app/Contents/Developer/Platforms/MacOSX.platform/Developer/SDKs/MacOSX10.14.Internal.sdk/usr/local/libressl' '--with-kerberos=/Applications/Xcode.app/Contents/Developer/Platforms/MacOSX.platform/Developer/SDKs/MacOSX10.14.Internal.sdk/usr' '--with-zlib=/Applications/Xcode.app/Contents/Developer/Platforms/MacOSX.platform/Developer/SDKs/MacOSX10.14.Int

MYSQL

- MySQL 8 should have been installed on your VM
- Under the sudo account (aka root account), type
  - $ mysql –u root –p
  - and input “password” as the password
- You should be able to login

MYSQL FIRST LOGIN

```
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Type 'help;' or '\h' for help. Type '\c' to clear the current input statement
.

mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| mysql              |
| performance_schema |
| sys                |
+--------------------+
4 rows in set (0.01 sec)
```

A BRIEF INTRODUCTION TO MYSQL

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PASSWORDS

- Set a password for root at the first login:
  - `mysql> ALTER USER 'root'@'localhost' IDENTIFIED BY 'MyNewPass';`
  - OR
  - `mysql> SET PASSWORD FOR 'root'@'localhost' = PASSWORD('newpass');`
- Create a new account called 'myadmin'
  - `mysql> CREATE USER 'myadmin'@'localhost' IDENTIFIED BY 'myadminpass';`
  - `mysql> GRANT ALL PRIVILEGES TO 'myadmin'@'localhost';`
  - `mysql> FLUSH PRIVILEGES;`
  - You will use this account for your PHP application.

BASIC OPERATIONS OF MYSQL

- Show all available databases
  - `show databases;`
- Use a database (you must do this first before querying any tables)
  - `use dbname;`
- Show all tables under a database (must run after `use dbname`)
  - `show tables;`
- Show the schema of a table
  - `desc tablename;`

BACKUP SLIDES BEYOND THIS POINT