

# Server Settings

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## ***NOTICE***

### ❖ **Project briefing**

- ✓ During the class time on 6/1(Mon)

# AGENDA

## ❖ Package Management

## ❖ LAMP

- ✓ Linux
- ✓ Apache
- ✓ MySQL + Phpmyadmin
- ✓ Php

## ❖ CMS

- ✓ Batflat

# ***PACKAGE MANAGEMENT***

An abstract graphic consisting of two thin white lines that intersect in the center of the slide. One line slopes upwards from left to right, while the other slopes downwards from left to right, creating an 'X' shape.

# PACKAGE MANAGEMENT

- ❖ APT(Advanced Package Tool)
  - ✓ APT is a free-software user interface that works with core libraries to handle the installation and removal of software on Debian, Ubuntu, and related Linux distributions.
  
- ❖ Let us make our system up-to-date.
  - ✓ Open up a terminal on your Linux
    - \$ sudo apt-get update
    - \$ sudo apt-get upgrade
    - \$ sudo apt-get dist-upgrade
    - \$ sudo apt-get autoremove
  
  - ✓ More info
    - <https://itsfoss.com/apt-get-linux-guide/>

***LAMP***

An abstract graphic consisting of two thin white lines that intersect in the center of the frame. One line slopes upwards from left to right, while the other slopes downwards from left to right. The background is a solid dark gray.

# INSTALLING THE LAMP STACK ON UBUNTU

- ❖ Now we would like to **equip our Linux with software packages** that enable **hosting web contents**
- ❖ We will install so-called **LAMP stack**:  
**Linux** + **A**pache httpd + **M**ysql + **P**hp



# INSTALLING THE LAMP STACK ON UBUNTU

## ❖ Hypertext Transfer Protocol

- ✓ An application protocol for distributed, collaborative, hypermedia information systems.
- ✓ HTTP is the foundation of data communication for the World Wide Web, where hypertext documents include hyperlinks to other resources that the user can easily access, for example by a mouse click or by tapping the screen in a web browser.
- ✓ HTTP was developed to facilitate hypertext and the World Wide Web.

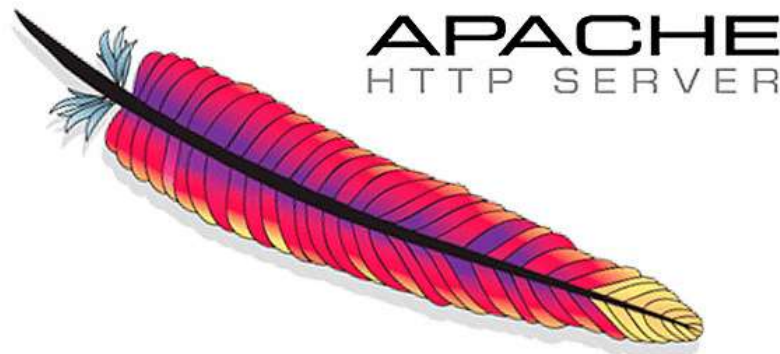




# INSTALLING THE LAMP STACK ON UBUNTU

## ❖ Apache HTTP Server

- ✓ Apache is the most widely used web server software.
- ✓ Developed and maintained by Apache Software Foundation, Apache is an **open source software** available for free.
- ✓ It runs on 67% of all web servers in the world.
- ✓ It is fast, reliable, and secure.



# INSTALLING THE LAMP STACK ON UBUNTU

## ❖ MySQL

- ✓ **MySQL** is a freely available **open source** Relational Database Management System (RDBMS) that uses Structured Query Language (SQL).
- ✓ SQL is the most popular language for adding, accessing and managing content in a database.
- ✓ It is most noted for its quick processing, proven reliability, ease and flexibility of use.



# INSTALLING THE LAMP STACK ON UBUNTU

## ❖ PHP: Hypertext Preprocessor

- ✓ **PHP** stands for Hypertext Preprocessor.
- ✓ It's an **open source**, server-side, scripting language used for the development of web applications.
- ✓ By scripting language, we mean a program that is script-based (lines of code) written for the automation of tasks.
- ✓ Web pages can be designed using HTML. With HTML, code execution is done on the user's browser (client-side). On the other hand, with PHP server-side scripting language, it's executed on the server before it gets to the web browser of the user.



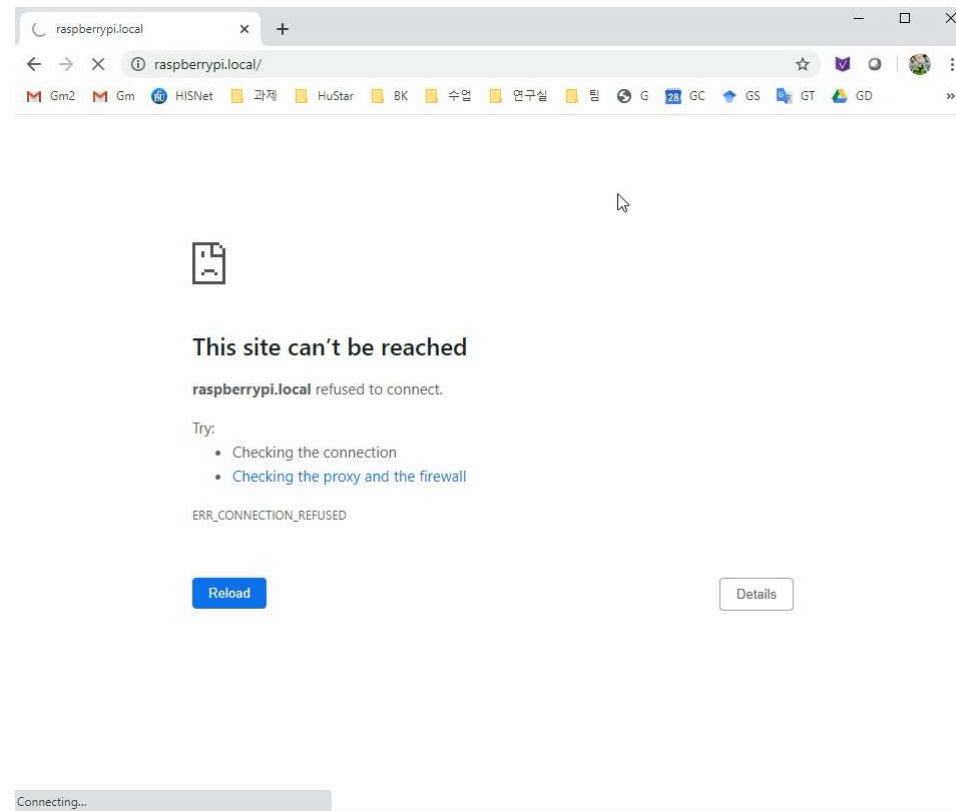
# INSTALLING THE LAMP STACK ON UBUNTU

## ❖ Installing Apache Httpd (HTTP Server)

✓ Turn off nginx first!

– \$ sudo systemctl stop nginx

```
$ sudo systemctl stop nginx
```



# INSTALLING THE LAMP STACK ON UBUNTU

## ❖ Installing Apache Httpd (HTTP Server)

### ✓ Install Apache2

- \$ sudo apt-get install apache2 -y
- (On some systems, it is already installed.)

```
pi@raspberrypi:~$ sudo apt-get install apache2 -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
apache2 is already the newest version (2.4.38-3+deb10u3).
apache2 set to manually installed.
The following package was automatically installed and is no longer required:
  libmicrodns0
Use 'sudo apt autoremove' to remove it.
0 upgraded, 0 newly installed, 0 to remove and 8 not upgraded.
```

### ✓ Start the Apache server

- \$ sudo service apache2 restart

```
$ sudo service apache2 restart
```

# INSTALLING THE LAMP STACK ON UBUNTU

## ❖ Installing MySQL Server (Database management system)

✓ On your terminal,

– \$ sudo apt-get install mariadb-server php-mysql -y

```
pi@raspberrypi:/var/www/html $ sudo apt install mariadb-server php-mysq
l -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following package was automatically installed and is no longer requ
ired:
  libmicrodns0
Use 'sudo apt autoremove' to remove it.
The following additional packages will be installed:
  galera-3 gawk libaio1 libcgi-fast-perl libcgi-pm-perl
  libconfig-inifiles-perl libdbd-mysql-perl libdbi-perl
  libencode-locale-perl libfcgi-perl libhtml-parser-perl
  libhtml-tagset-perl libhtml-template-perl libhttp-date-perl
  libhttp-message-perl libio-html-perl liblwp-mediatypes-perl
  libmariadb3 libreadline5 libsigsegv2 libterm-readkey-perl
  libtimedate-perl liburi-perl mariadb-client-10.3
  mariadb-client-core-10.3 mariadb-common mariadb-server-10.3
  mariadb-server-core-10.3 mysql-common php7.3-mysql socat
Suggested packages:
```

# INSTALLING THE LAMP STACK ON UBUNTU

## ❖ Installing MySQL Server (Database management system)

- ✓ On your terminal,
  - \$ sudo apt-get install mariadb-server php-mysql -y
- ✓ Create a new user to login to mysql
  - \$ sudo mysql

```
pi@raspberrypi:/var/www/html $ sudo mysql
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 72
Server version: 10.3.22-MariaDB-0+deb10u1 Raspbian 10

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

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

MariaDB [(none)]> █
```

- Enter following commands consecutively. (you can change 'admin' and 'your\_password')
- > create user admin@localhost identified by 'your\_password';
- > grant all privileges on \*.\* to admin@localhost;
- > FLUSH PRIVILEGES;
- > exit;

```
MariaDB [(none)]> create user admin@localhost identified by 'raspberry'
;
Query OK, 0 rows affected (0.001 sec)

MariaDB [(none)]> grant all privileges on *.* to admin@localhost;
Query OK, 0 rows affected (0.001 sec)

MariaDB [(none)]> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.001 sec)

MariaDB [(none)]> █
```



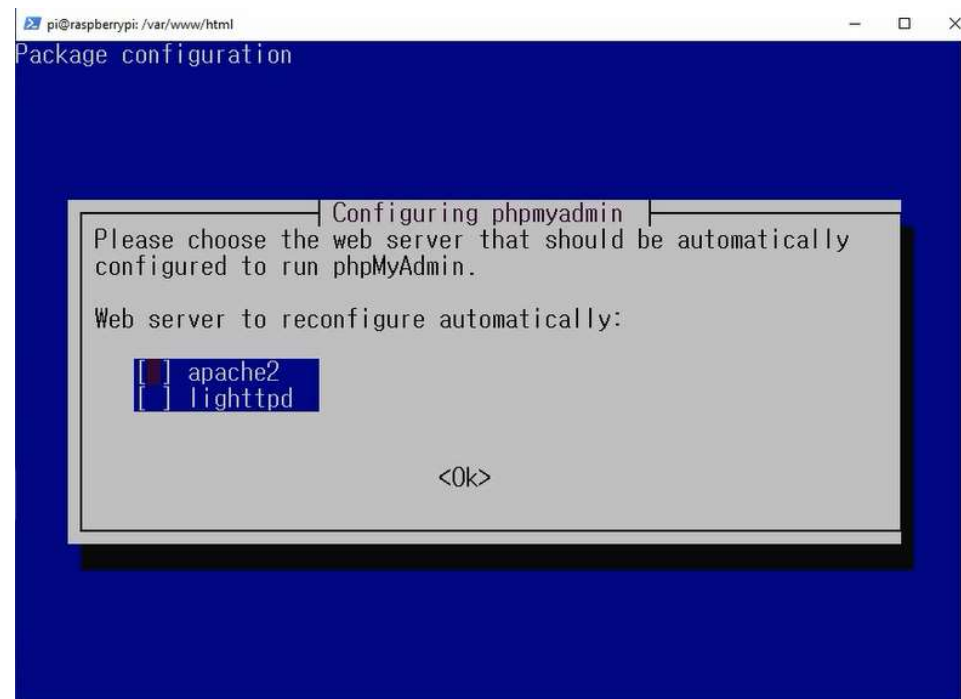
# INSTALLING THE LAMP STACK ON UBUNTU

## ❖ Let us install our second WebApp – *Phpmyadmin*

- ✓ *Phpmyadmin* is a web-based MySQL client application which allows you to easily explore and manipulate the MySQL database.
- ✓ Installation is straightforward:

```
$ sudo apt-get install phpMyAdmin -y
```

```
$ sudo apt install phpmyadmin -y
```

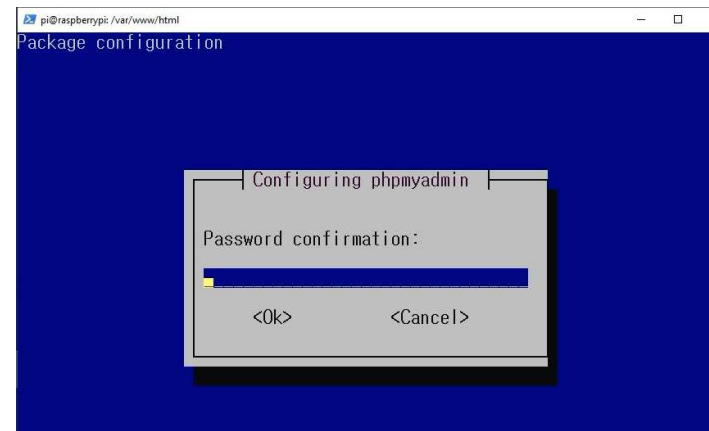
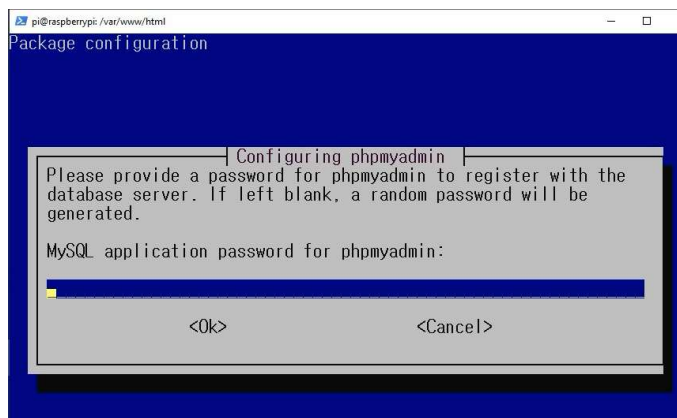
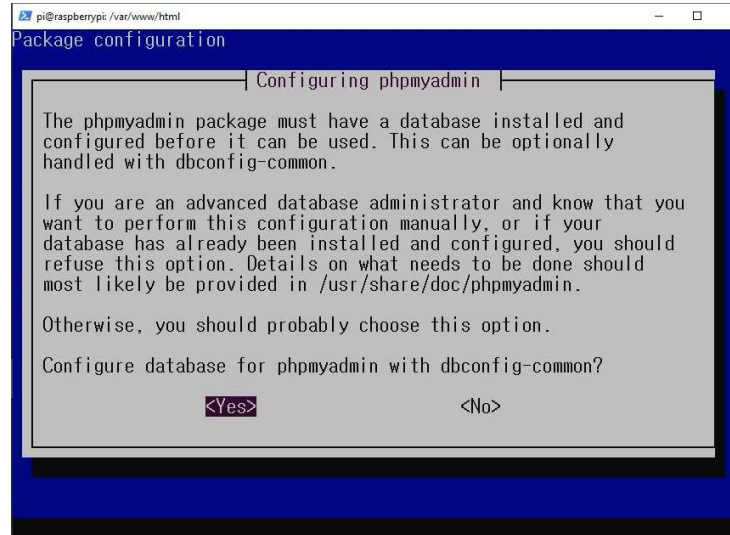




# INSTALLING THE LAMP STACK ON UBUNTU

## ❖ Let us install our second WebApp – *Phpmyadmin*

✓ \$ sudo apt-get install phpMyAdmin -y



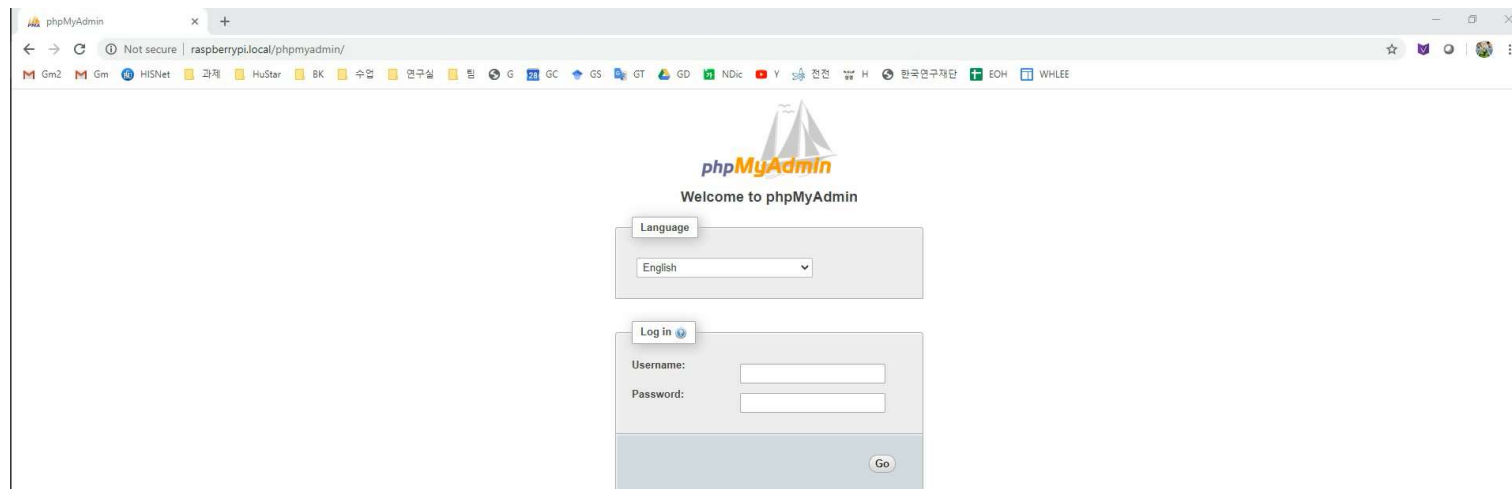
# INSTALLING THE LAMP STACK ON UBUNTU

## ❖ Let us install our second WebApp – *Phpmyadmin*

- ✓ Enter the following command (to move the phpmyadmin folder to /var/www/html)
- `$ sudo ln -s /usr/share/phpMyAdmin/ /var/www/html/phpMyAdmin`

```
pi@raspberrypi:/var/www/html $ sudo ln -s /usr/share/phpmyadmin/ /var/w  
ww/html/phpmyadmin
```

- ✓ Go to web browser on your computer (not raspberry pi) and enter <http://raspberrypi.local/phpmyadmin/>
- Use ID/PW that you created in page 15 in this lecture note.



# INSTALLING THE LAMP STACK ON UBUNTU

- ❖ Let us install our second WebApp – *Phpmyadmin*
  - ✓ Watch this video for more information about *Phpmyadmin*.  
<https://www.youtube.com/watch?v=n7c5zMk8cx4>

# INSTALLING THE LAMP STACK ON UBUNTU

## ❖ Installing Php (Hypertext Preprocessor)

- ✓ On your terminal,

\$ sudo apt-get install php -y

```
$ sudo apt-get install php -y■
```

# INSTALLING THE LAMP STACK ON UBUNTU

## ❖ Testing Php

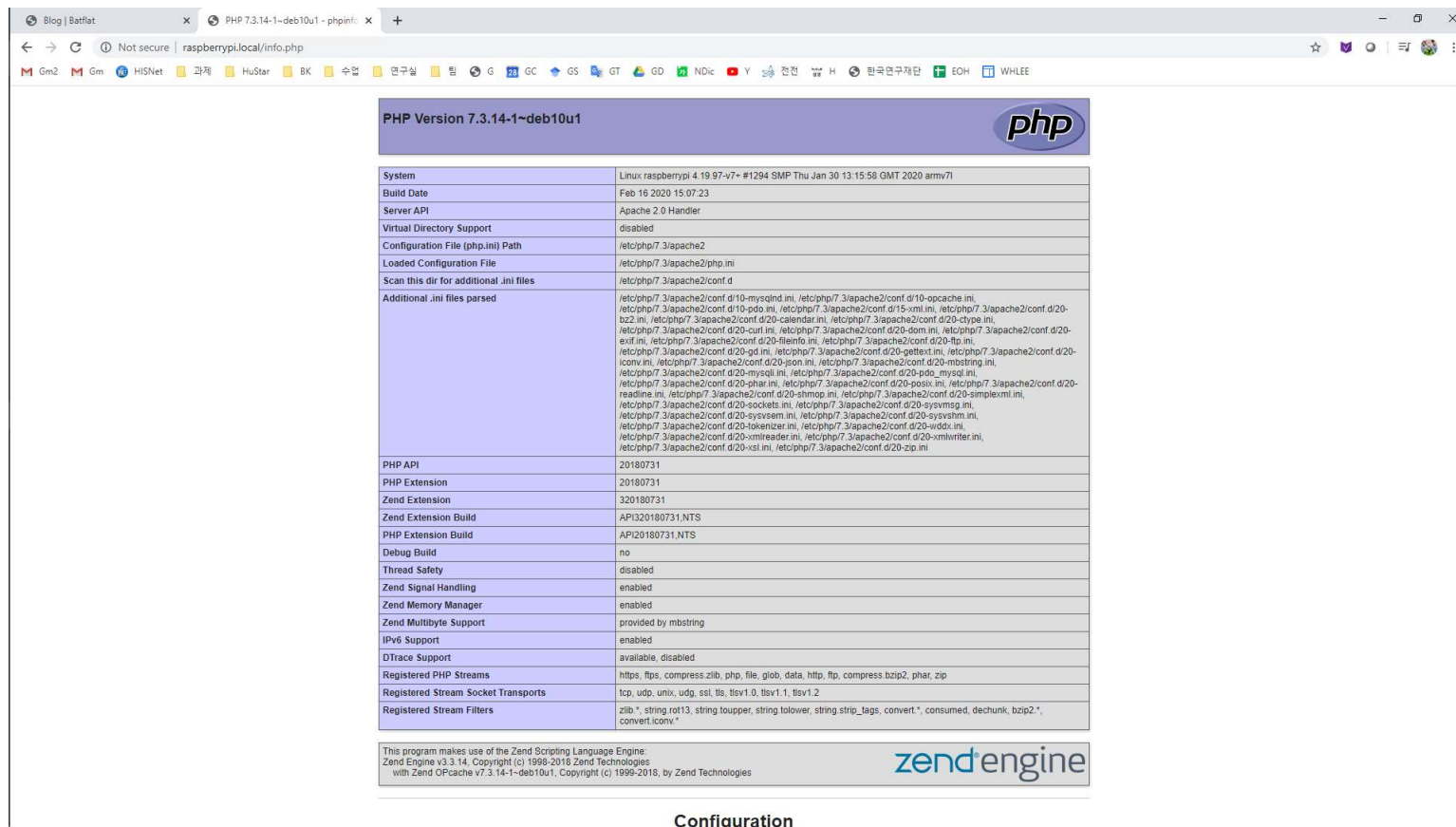
- ✓ Create a file info.php under /var/www/html
  - \$ sudo vim info.php
  - info.php should have the following content:

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

# INSTALLING THE LAMP STACK ON UBUNTU

## ❖ Testing Php

- ✓ Open a web browser and go to `raspberrypi.local/info.php`
- ✓ If you are able to see a screen as below, you are good to go



The screenshot shows a web browser window with the address bar displaying `raspberrypi.local/info.php`. The page content includes the PHP logo and a table of configuration details.

PHP Version 7.3.14-1~deb10u1	
System	Linux raspberrypi 4.19.97-v7+ #1294 SMP Thu Jan 30 13:15:58 GMT 2020 armv7l
Build Date	Feb 16 2020 15:07:23
Server API	Apache 2.0 Handler
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc/php/7.3/apache2
Loaded Configuration File	/etc/php/7.3/apache2/php.ini
Scan this dir for additional .ini files	/etc/php/7.3/apache2/conf.d
Additional .ini files parsed	/etc/php/7.3/apache2/conf.d/10-mysqlnd.ini, /etc/php/7.3/apache2/conf.d/10-opcache.ini, /etc/php/7.3/apache2/conf.d/10-pdo.ini, /etc/php/7.3/apache2/conf.d/15-xm.ini, /etc/php/7.3/apache2/conf.d/20-bz2.ini, /etc/php/7.3/apache2/conf.d/20-calendar.ini, /etc/php/7.3/apache2/conf.d/20-ctype.ini, /etc/php/7.3/apache2/conf.d/20-curl.ini, /etc/php/7.3/apache2/conf.d/20-dom.ini, /etc/php/7.3/apache2/conf.d/20-exif.ini, /etc/php/7.3/apache2/conf.d/20-fileinfo.ini, /etc/php/7.3/apache2/conf.d/20-ftp.ini, /etc/php/7.3/apache2/conf.d/20-gd.ini, /etc/php/7.3/apache2/conf.d/20-gettext.ini, /etc/php/7.3/apache2/conf.d/20-iconv.ini, /etc/php/7.3/apache2/conf.d/20-json.ini, /etc/php/7.3/apache2/conf.d/20-mbstring.ini, /etc/php/7.3/apache2/conf.d/20-mysqli.ini, /etc/php/7.3/apache2/conf.d/20-pdo_mysql.ini, /etc/php/7.3/apache2/conf.d/20-phar.ini, /etc/php/7.3/apache2/conf.d/20-posix.ini, /etc/php/7.3/apache2/conf.d/20-readline.ini, /etc/php/7.3/apache2/conf.d/20-shmop.ini, /etc/php/7.3/apache2/conf.d/20-simplexml.ini, /etc/php/7.3/apache2/conf.d/20-sockets.ini, /etc/php/7.3/apache2/conf.d/20-sysvmsg.ini, /etc/php/7.3/apache2/conf.d/20-syssem.ini, /etc/php/7.3/apache2/conf.d/20-sysvshm.ini, /etc/php/7.3/apache2/conf.d/20-tokenizer.ini, /etc/php/7.3/apache2/conf.d/20-xml.ini, /etc/php/7.3/apache2/conf.d/20-xmlreader.ini, /etc/php/7.3/apache2/conf.d/20-xmlwriter.ini, /etc/php/7.3/apache2/conf.d/20-xsl.ini, /etc/php/7.3/apache2/conf.d/20-zip.ini
PHP API	20180731
PHP Extension	20180731
Zend Extension	320180731
Zend Extension Build	API320180731.NTS
PHP Extension Build	API20180731.NTS
Debug Build	no
Thread Safety	disabled
Zend Signal Handling	enabled
Zend Memory Manager	enabled
Zend Multibyte Support	provided by mbstring
IPv6 Support	enabled
OTrace Support	available, disabled
Registered PHP Streams	https, ftps, compress.zlib, php, file, glob, data, http, ftp, compress.bzip2, phar, zip
Registered Stream Socket Transports	tcp, udp, unix, udg, ssl, tls, tlsv1.0, tlsv1.1, tlsv1.2
Registered Stream Filters	zlib*, string.rot13, string.toupper, string.tolower, string.strip_tags, convert.*, consumed, dechunk, bzip2*, convert.iconv*

This program makes use of the Zend Scripting Language Engine.  
Zend Engine v3.3.14, Copyright (c) 1999-2018 Zend Technologies  
with Zend OPcache v7.3.14-1~deb10u1, Copyright (c) 1999-2018, by Zend Technologies

zend engine

Configuration

# INSTALLING THE LAMP STACK ON UBUNTU

## ❖ Testing Php

- ✓ Try another example
  - Create an html file

### Example

```
<!DOCTYPE html>
<html>
<body>

<h1>My first PHP page</h1>

<?php
echo "Hello World!";
?>

</body>
</html>
```



?



# ***CMS***

***(CONTENTS MANAGEMENT SYSTEM )***



## ❖ **Contents Management System (CMS)**

- ✓ One can easily build one's website or blog using a CMS
- ✓ Examples: WordPress, Zoomla, Drupal, **Batflat**

## ❖ Contents Management System (CMS)

- ✓ One can easily build one's website or blog using a CMS
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## ❖ We will try to use Batflat

- ✓ Website
  - <https://batflat.org/>
- ✓ Setup tutorial
  - <https://websiteforstudents.com/setup-batflat-on-ubuntu-18-04-16-04-18-10-with-nginx-mariadb-and-php-7-2-fpm/>

- ❖ **Turn off Apache2 and turn on nginx again**
  - ✓ `$ sudo service apache2 stop`
  - ✓ `$ sudo systemctl restart nginx.service`

## ❖ Install PHP 7.2 and Related Modules

✓ `$ sudo apt install php7.2-fpm php7.2-common php7.2-mbstring  
php7.2-xmlrpc php7.2-sqlite3 php7.2-soap php7.2-gd php7.2-xml  
php7.2-cli php7.2-curl php7.2-zip`

## ❖ Restart nginx

✓ `$ sudo systemctl restart nginx.service`

## ❖ Download Batflat Latest Release Enter following commands

- ✓ \$ cd /tmp
- ✓ \$ wget https://github.com/sruupl/batflat/archive/master.zip
- ✓ \$ unzip master.zip
- ✓ \$ sudo mv batflat-master /var/www/html/batflat

```
pi@raspberrypi:~$ cd /tmp
pi@raspberrypi:/tmp$ wget https://github.com/sruupl/batflat/archive/master.zip
--2020-05-28 19:16:17-- https://github.com/sruupl/batflat/archive/master.zip
Resolving github.com (github.com)... 15.164.81.167
Connecting to github.com (github.com)|15.164.81.167|:443... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://codeload.github.com/sruupl/batflat/zip/master [following]
--2020-05-28 19:16:18-- https://codeload.github.com/sruupl/batflat/zip/master
Resolving codeload.github.com (codeload.github.com)... 13.124.75.135
Connecting to codeload.github.com (codeload.github.com)|13.124.75.135|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: unspecified [application/zip]
Saving to: 'master.zip'

master.zip          [      <=>      ] 1.34M  362KB/s   in 3.8s
2020-05-28 19:16:22 (362 KB/s) - 'master.zip' saved [1404925]
```

```
pi@raspberrypi:/tmp$ unzip master.zip
Archive:  master.zip
  inflating: batflat-master/
  inflating: batflat-master/.gitignore
  inflating: batflat-master/.htaccess
  inflating: batflat-master/LICENSE.txt
  inflating: batflat-master/ReadMe.md
  creating: batflat-master/admin/
  inflating: batflat-master/admin/.htaccess
  inflating: batflat-master/admin/index.php
```

```
pi@raspberrypi:/tmp$ sudo mv batflat-master /var/www/html/batflat
```

❖ **Run the commands below to set the correct permissions for Batflat to adjust the directory permissions**

- ✓ `$ sudo chown -R www-data:www-data /var/www/html/batflat/`
- ✓ `$ sudo chmod -R 755 /var/www/html/batflat/`

```
pi@raspberrypi:/var/www/html/batflat $ sudo chown -R www-data:www-data /var/www/html/batflat/
pi@raspberrypi:/var/www/html/batflat $ sudo chmod -R 755 /var/www/html/batflat/
```

## ❖ Configure Nginx Batflat Site (Enter the following content)

✓ \$ sudo vim /etc/nginx/sites-available/batflat

```
server {
    listen 80;
    listen [::]:80;
    root /var/www/html/batflat;
    index index.php index.html index.htm;
    server_name raspberrypi.local;

    client_max_body_size 100M;

    autoindex off;

    location / {
        try_files $uri $uri/ @handler;
    }

    location /admin {
        try_files $uri $uri/ /admin/index.php?$args;
    }

    location @handler {
        if (!-e $request_filename) { rewrite / /index.php last; }
        rewrite ^(.*.php)/ $1 last;
    }

    location ~ \.php$ {
        include snippets/fastcgi-php.conf;
        fastcgi_pass unix:/var/run/php/php7.2-fpm.sock;
        fastcgi_param SCRIPT_FILENAME $document_root$fastcgi_script_name;
        include fastcgi_params;
    }
}
```

## ❖ Enable the Batflat Site and Rewrite Module

✓ `sudo ln -s /etc/nginx/sites-available/batflat /etc/nginx/sites-enabled/`

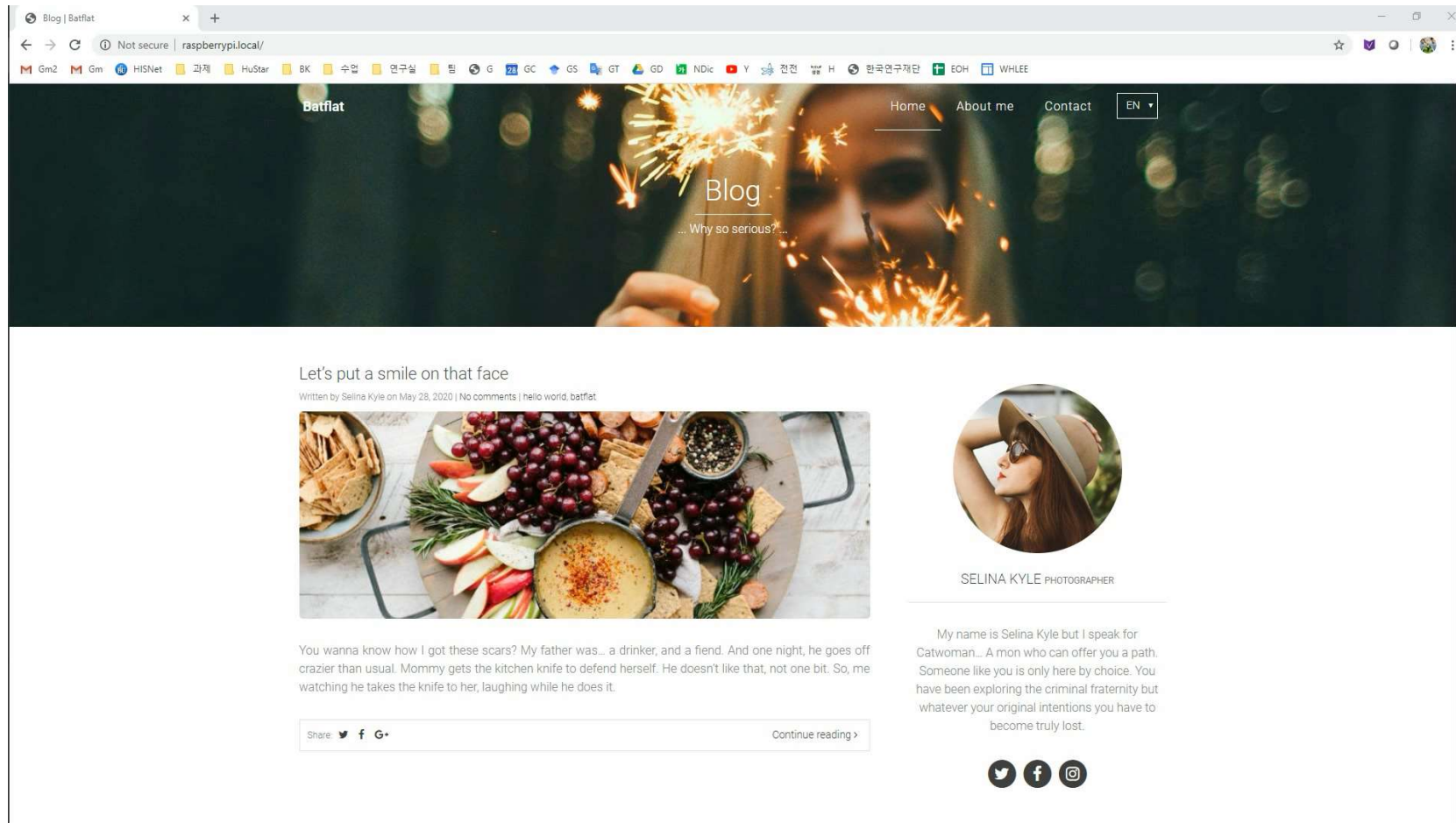
## ❖ Restart Nginx

✓ `$ sudo systemctl restart nginx.service`



## ❖ Open a web browser and go to

✓ `http://raspberrypi.local/`

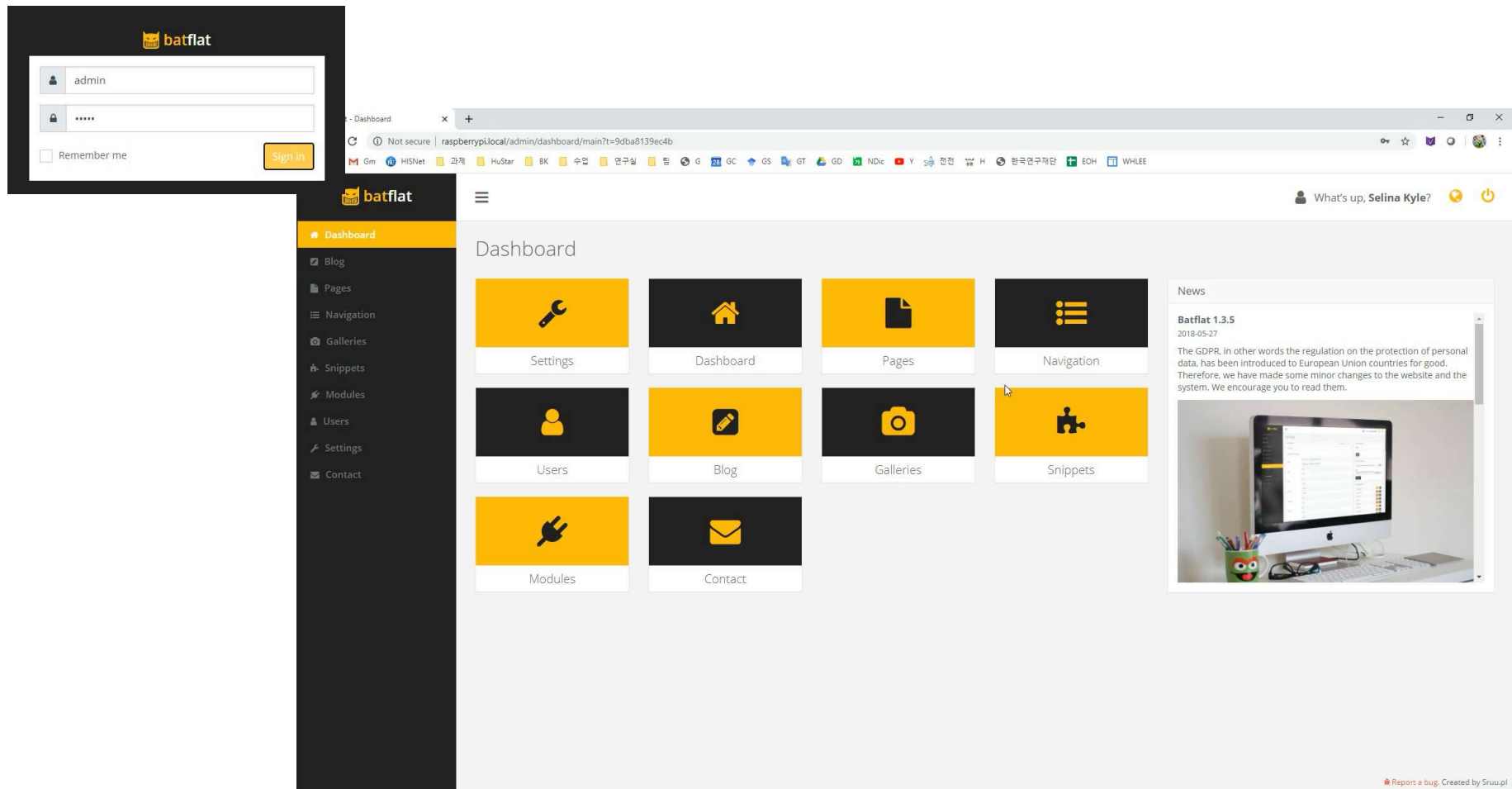


# CMS

❖ To logon as admin, go to

✓ <http://raspberrypi.local/admin>

✓ ID/PW: admin/admin





*Thank you!*