Server Settings

이원형 교수
Dr. Lee, WonHyong
whlee@handong.edu

❖ **Project briefing**

   ✓ During the class time on 6/1(Mon)

AGENDA

❖ **Package Management**
❖ **LAMP**
  ✓ Linux
  ✓ Apache
  ✓ MySQL + Phpmyadmin
  ✓ Php
❖ **CMS**
  ✓ Batflat

PACKAGE MANAGEMENT

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

❖ **Now we would like to equip our Linux with software packages that enable hosting web contents**

❖ **We will install so-called LAMP stack:**
Linux + Apache httpd + Mysql + Php

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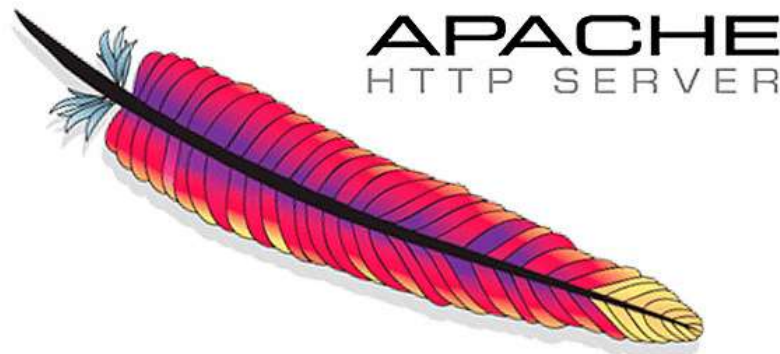
❖ **Apache HTTP Sever**
- ✓ Apache is the most widely used web server software.
- ✓ Developed and maintained by Apache Software Foundation, Apache is an **open source software** available for free.
- ✓ It runs on 67% of all webservers in the world.
- ✓ It is fast, reliable, and secure.

❖ **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.

❖ **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 Apache Httpd (HTTP Server)

- ✓ Turn off `nginx` first!
  - – `$ sudo systemctl stop nginx`
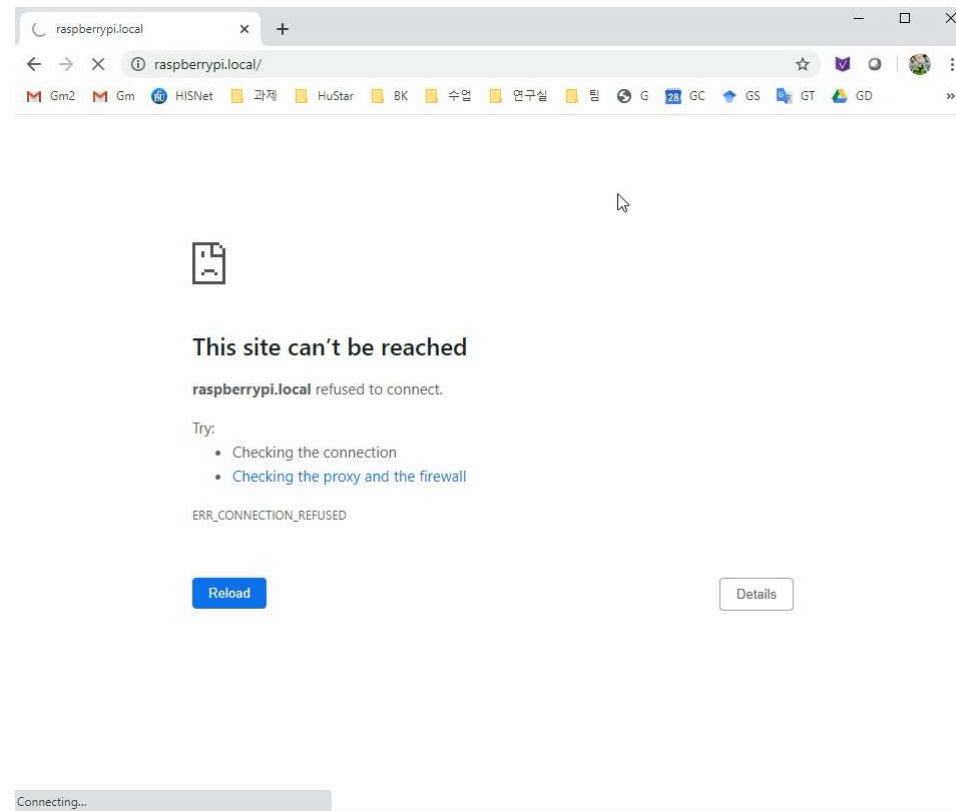
❖ **Installing Apache Httpd (HTTP Server)**
  ✓ Install Apache2
    – `$ sudo apt-get install apache2 -y`
    – (On some systems, it is already installed.)

```
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 requ
ired:
  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 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 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`

  - – 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;

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❖ **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
    ```
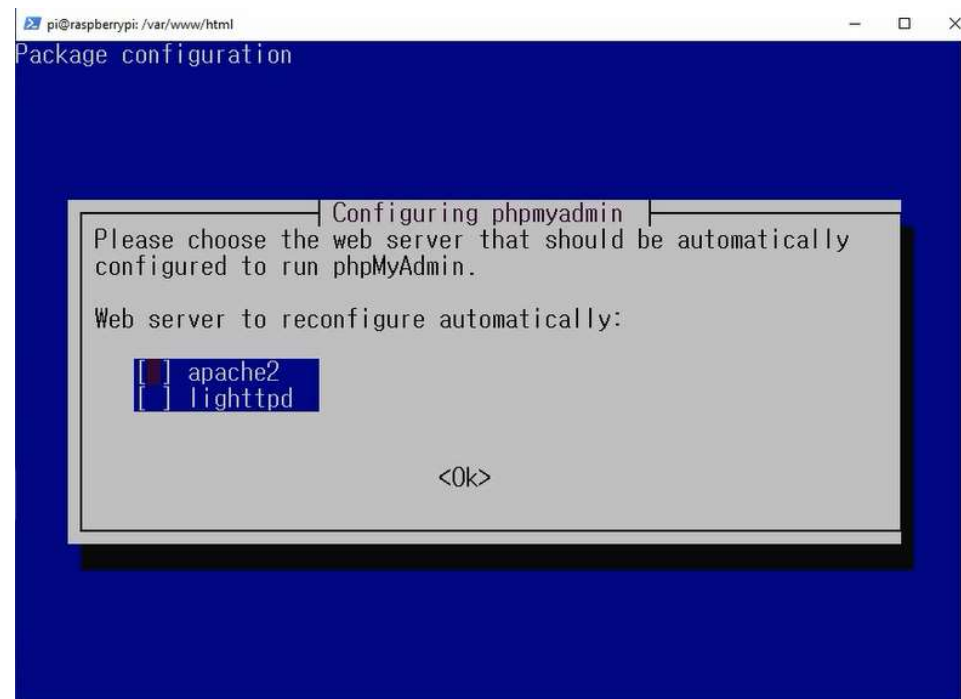
❖ **Let us install our second WebApp –** *Phpmyadmin*
- ✓ `$ sudo apt-get install phpMyAdmin -y`
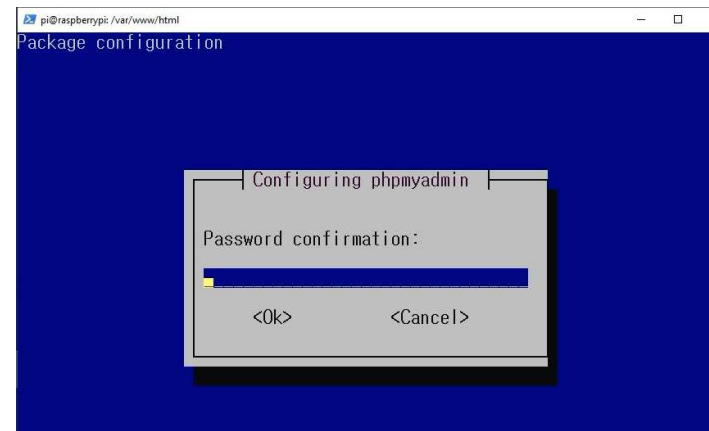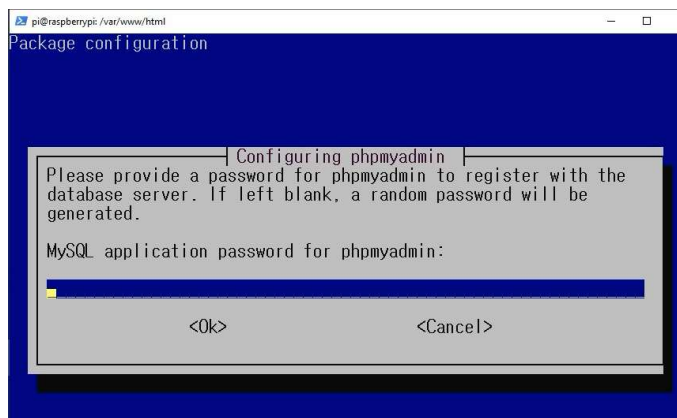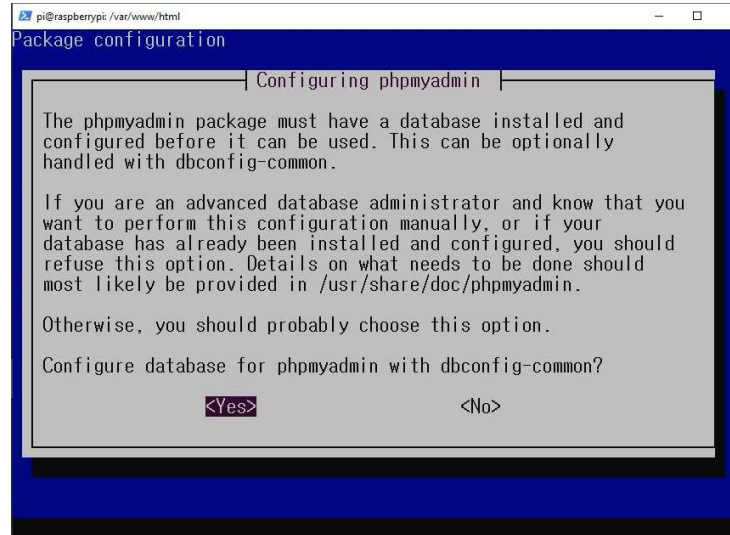
❖ **Let us install our second WebApp – *Phpmyadmin***

✓ Enter the following command (to move the phpmyadmin folder to /var/www/html)

– $ sudo ln -s /usr/share/phpMyAdmin/ /var/www/html/phpMyAdmin

✓ 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.

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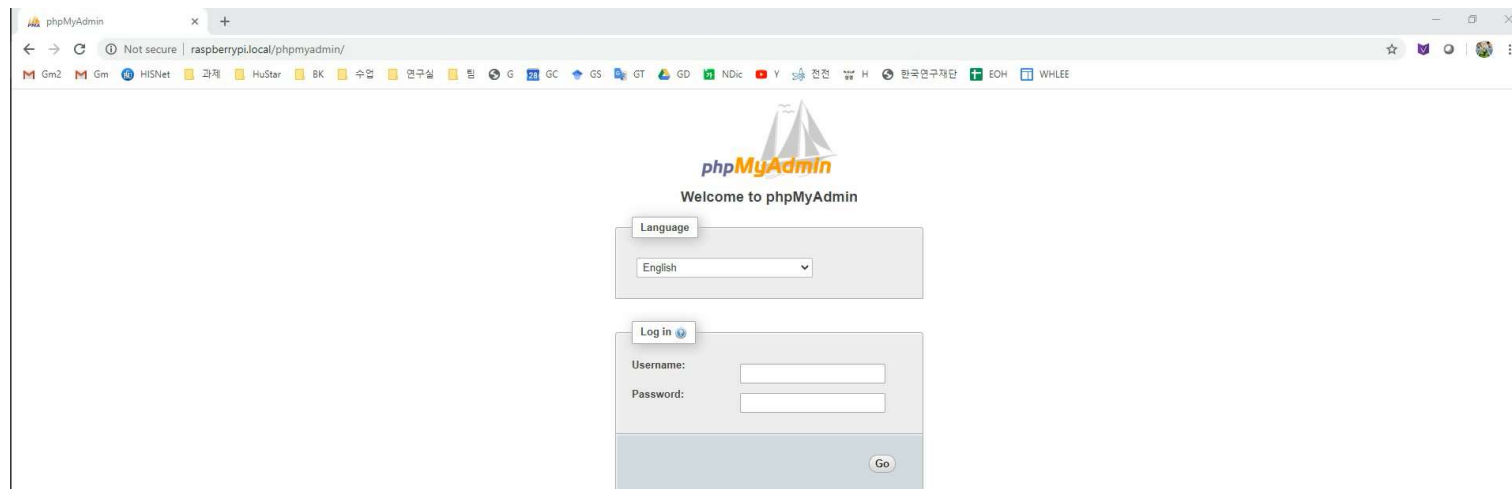
❖ **Let us install our second WebApp – *Phpmyadmin***

  ✓ Watch this video for more information about *Phpmyadmin*.
    https://www.youtube.com/watch?v=n7c5zMk8cx4

❖ **Installing Php (Hypertext Preprocessor)**

   ✓ On your terminal,
      $ sudo apt-get install php -y
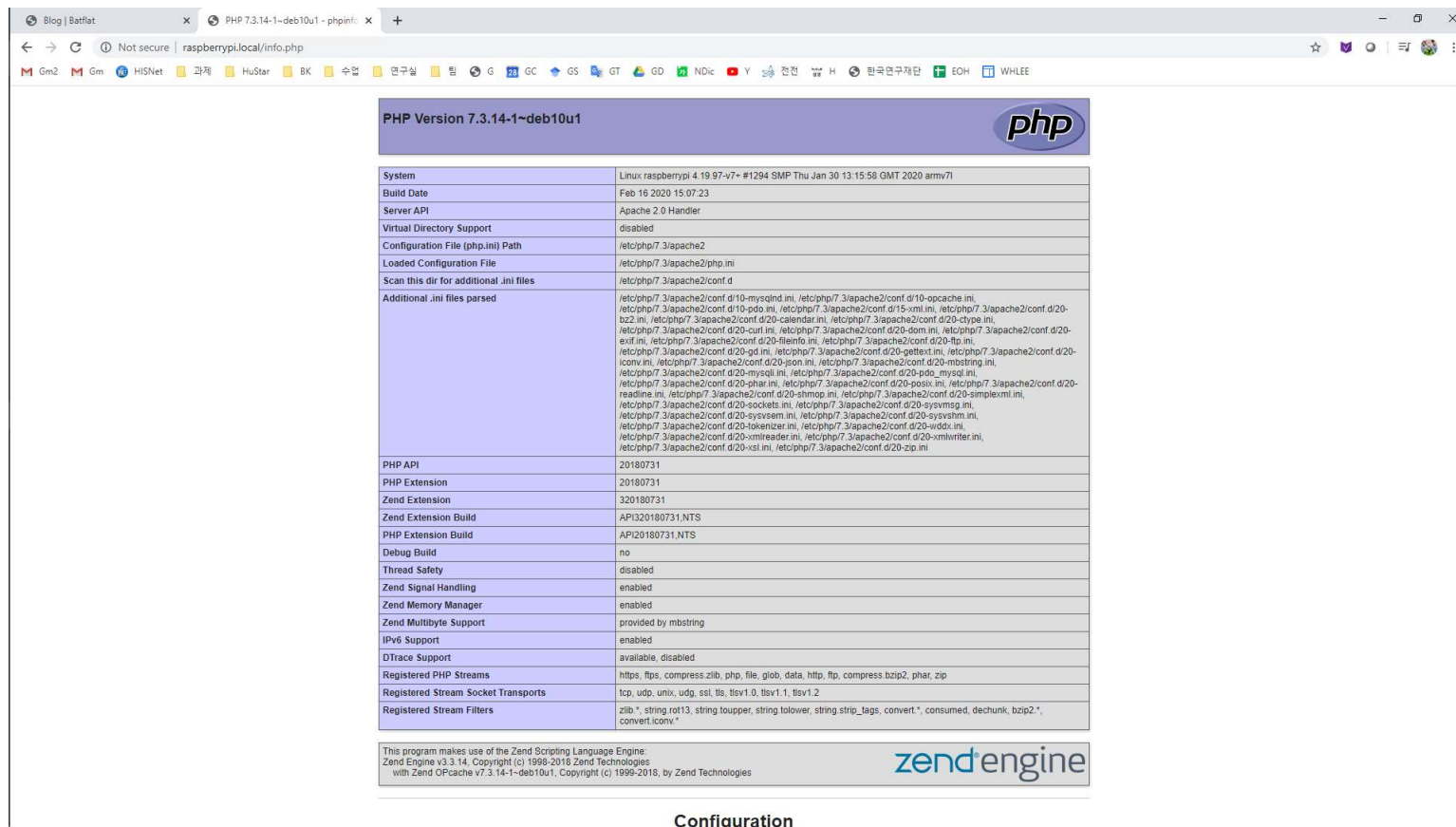
❖ **Testing Php**
- ✓ Create a file `info.php` under `/var/www/html`
  - – `$ sudo vim info.php`
  - – `info.php` should have the following content:

❖ **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

❖ **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)

CMS

❖ **Contents Management System (CMS)**
  - ✓ One can easily build one's website or blog using a CMS
  - ✓ Examples: WordPress, Zoomla, Drupal, **Batflat**

CMS

❖ **Contents Management System (CMS)**

  ✓ One can easily build one's website or blog using a CMS

  ✓ Examples: WordPress, Zoomla, Drupal, **Batflat**

❖ **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/

CMS

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

CMS

❖ **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`

CMS

❖ **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`

CMS

❖ **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/`

❖ **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;
      }
}
```

CMS

❖ **Enable the Batflat Site and Rewrite Module**
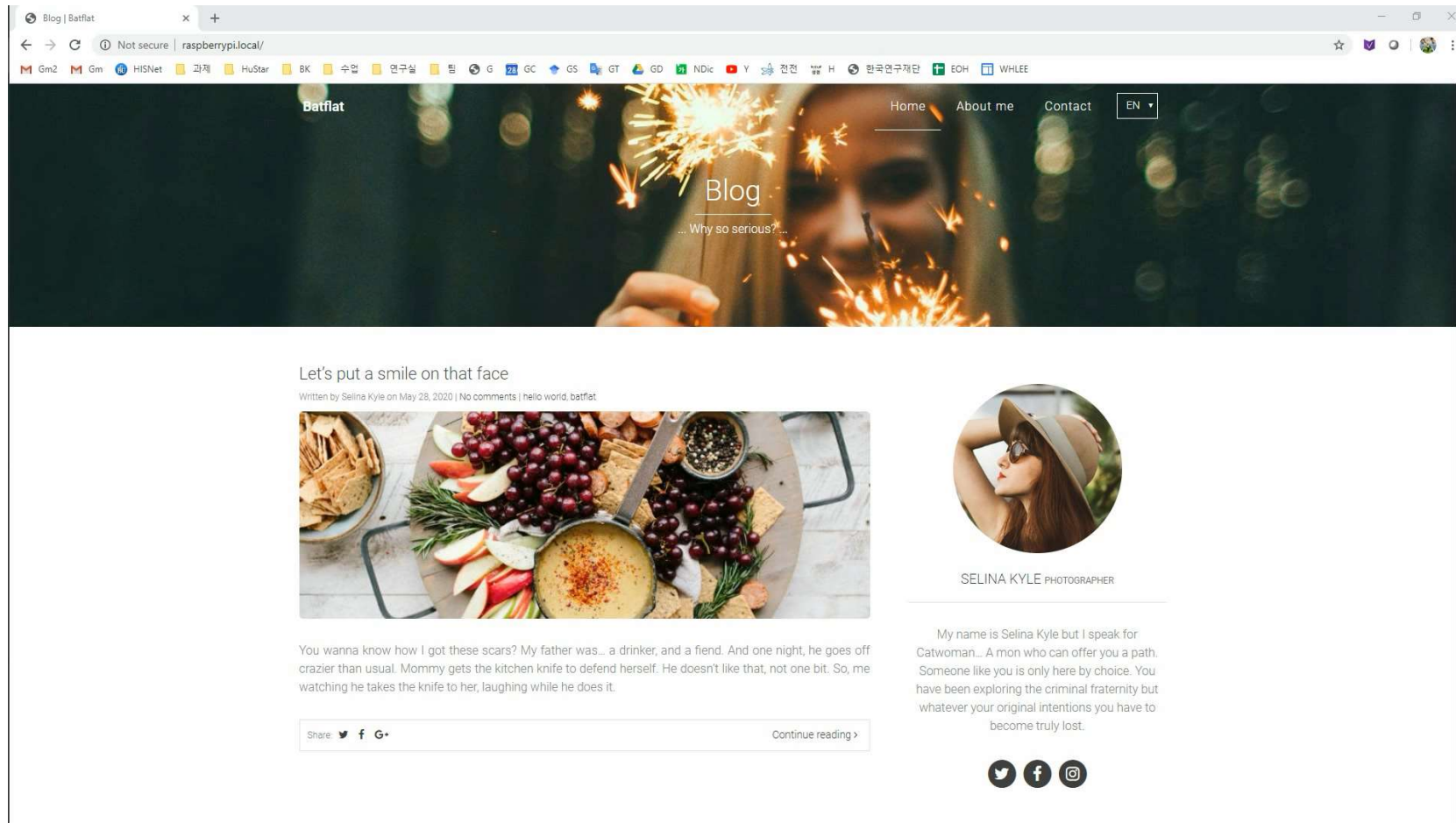- ✓ sudo ln -s /etc/nginx/sites-available/batflat /etc/nginx/sites-enabled/

❖ **Restart Nginx**
- ✓ `$ sudo systemctl restart nginx.service`

CMS

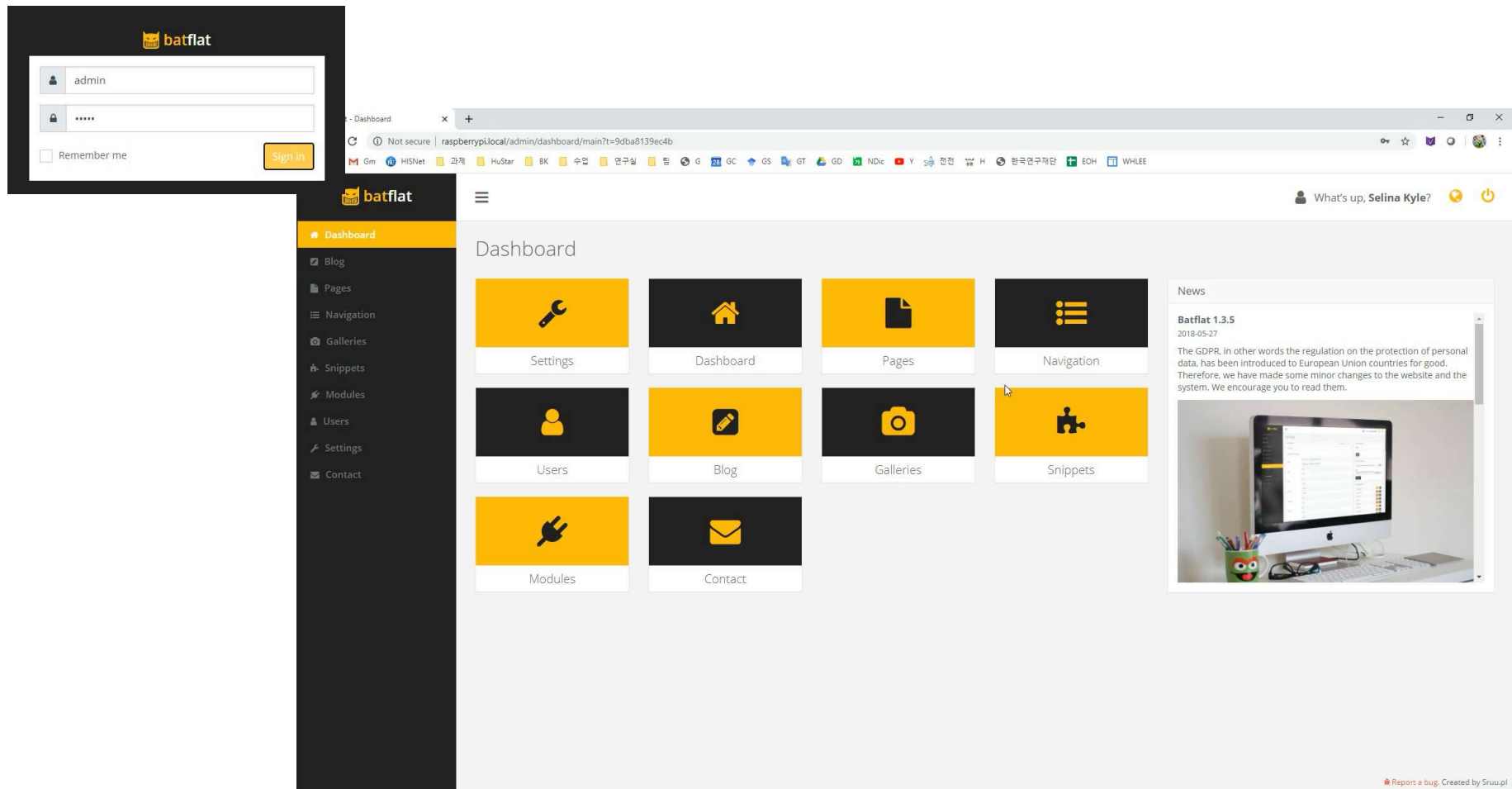❖ **Open a web browser and go to**
  ✓ `http://raspberrypi.local/`

CMS

❖ **To logon as admin, go to**
- ✓ http://raspberrypi.local/admin
- ✓ ID/PW: admin/admin

ICU

Thank you!