

# HW4

## Web Server/Services & Git

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hku

# Requirements

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- Apache (25%+10%)
- PHP (25%)
- MySQL (10%+10%)
- Git (5%+15%)
- Bonuses (35%)

- Basic 40%
- Advanced 55%
- Bonus 35%



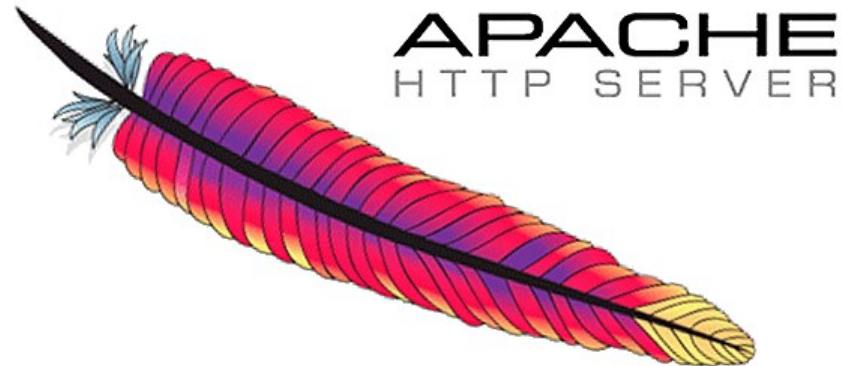
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# Apache

# Apache

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- Virtual Hosts (5%)
- Access Control (5%)
- HTTPS (5%)
- .htaccess (5%)
- Userdir (5%)
- Rewrite (10%)

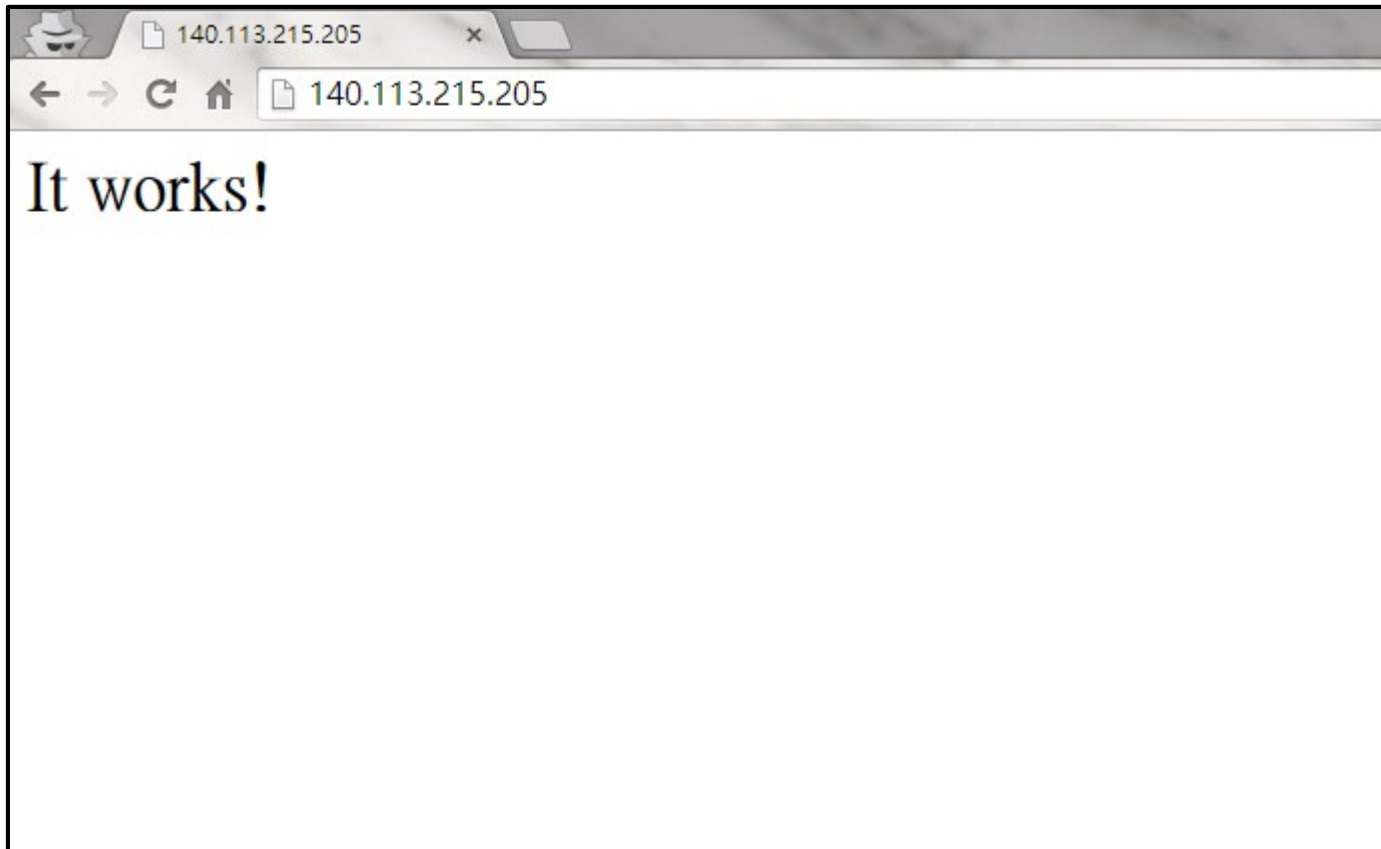


Total: 35%

# Apache – Basic System

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- Install Apache
- <http://yourIP> should show as below:

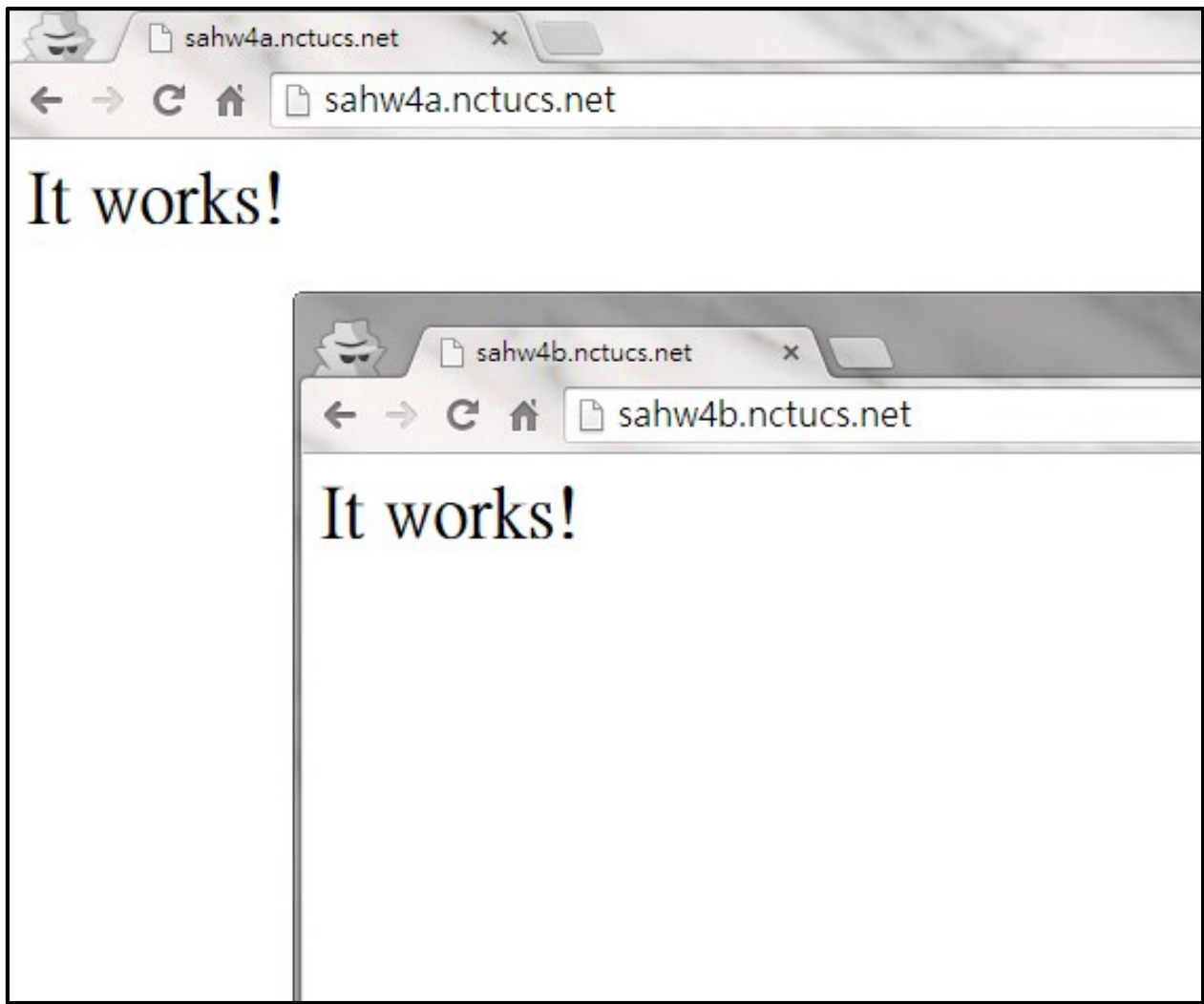


# Apache – Virtual Hosts

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- ❑ Setup two name-based virtual hosts in Apache.
- ❑ You can get domain names from:
  - <https://www.nctucs.net/>
  - <http://twbbs.org/>
  - <http://www.noip.com/>
  
- ❑ <http://httpd.apache.org/docs/2.4/vhosts/>

# Apache – Virtual Hosts



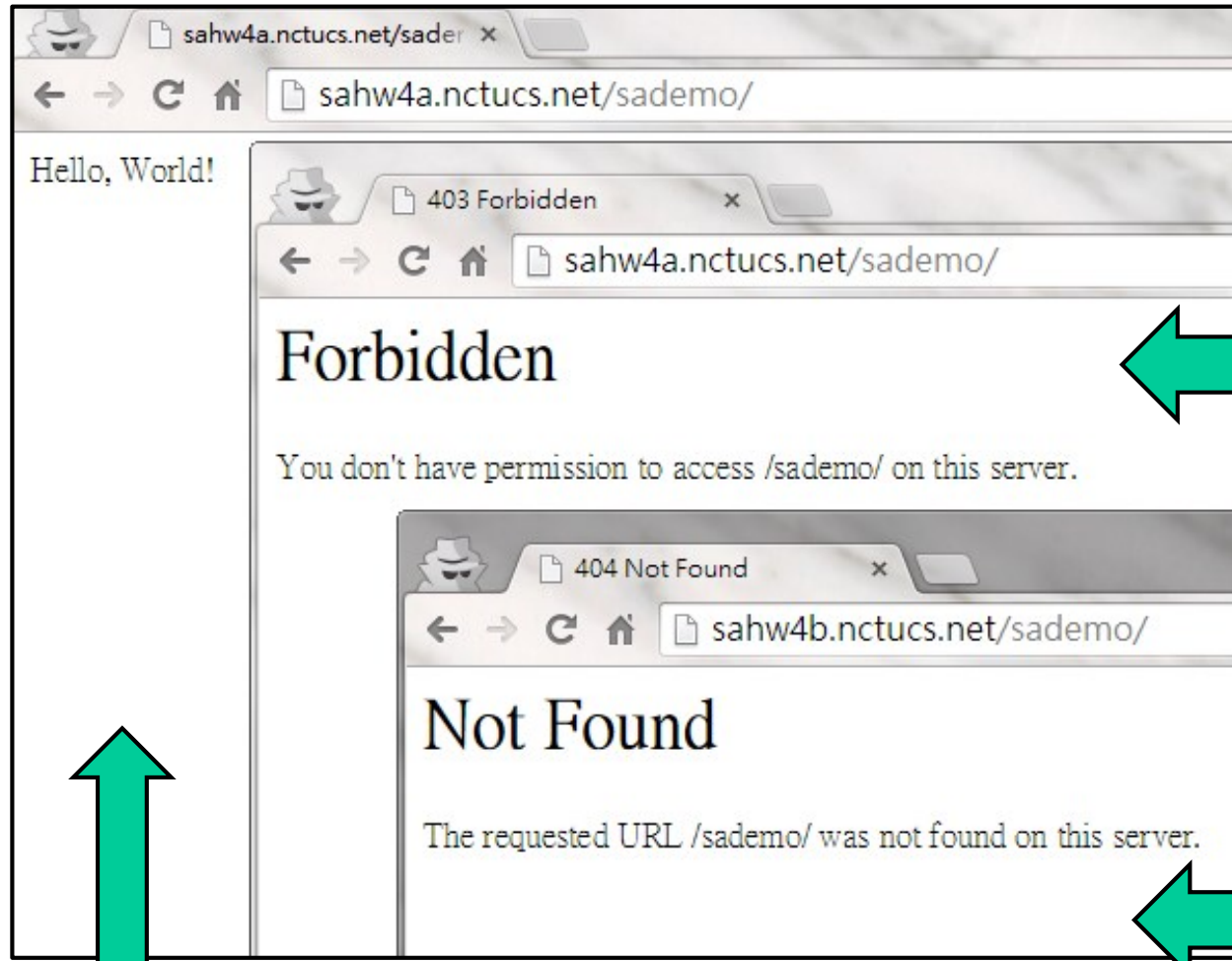
# Apache – Access Control

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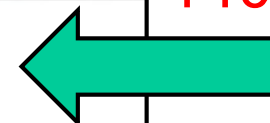
- ❑ <http://domainA/sademo/> (Which prints “Hello, World!”)
  - Allow connections from 140.113.0.0/16
  - Deny connections from 140.113.235.0/24
- ❑ Only when accessing [domainA](#) can see it
  
- ❑ [http://httpd.apache.org/docs/2.4/mod/mod\\_access\\_compat.html](http://httpd.apache.org/docs/2.4/mod/mod_access_compat.html)
- ❑ [http://httpd.apache.org/docs/2.4/mod/mod\\_authz\\_host.html](http://httpd.apache.org/docs/2.4/mod/mod_authz_host.html)
- ❑ [http://httpd.apache.org/docs/2.4/mod/mod\\_alias.html](http://httpd.apache.org/docs/2.4/mod/mod_alias.html)



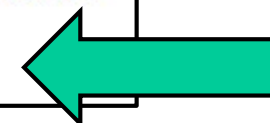
# Apache – Access Control



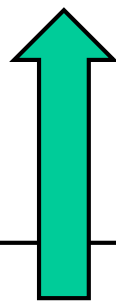
From 140.113.235.x



domainB



From 140.113.x.x



# Apache – HTTPS

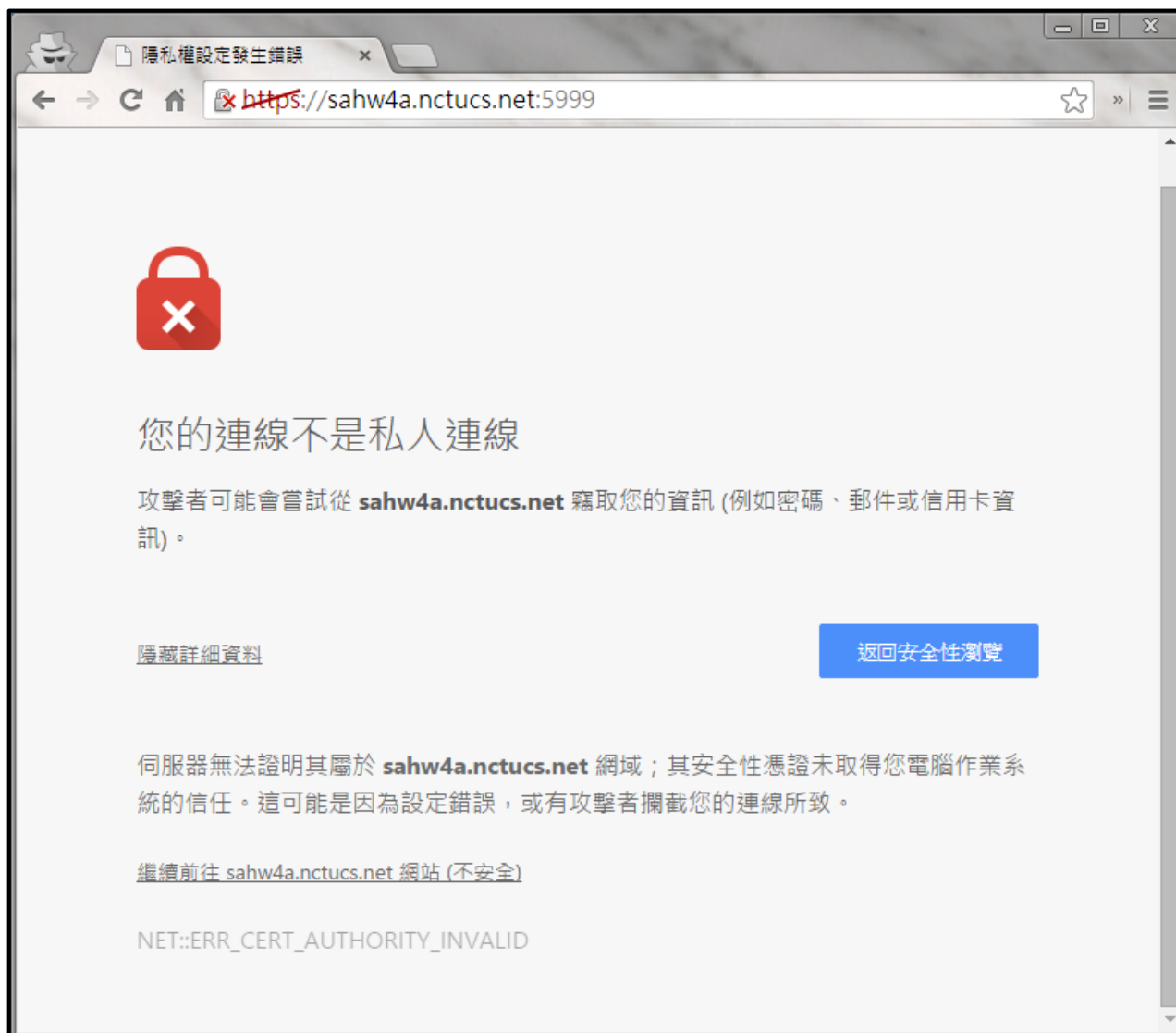
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## ❑ You need to

- Generate a CA certificate
- Generate and sign domainA's certificate with CA

❑ <http://httpd.apache.org/docs/2.4/ssl/>

# Apache – HTTPS



# Apache – HTTPS



# Apache – .htaccess

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- ❑ When access <http://domainA/private/>
  - Need enter **your student ID** as username.
  - And use **our IRC channel's password** to access the page.
- ❑ The page will print **your student ID**.
  
- ❑ <http://httpd.apache.org/docs/2.4/howto/htaccess.html>

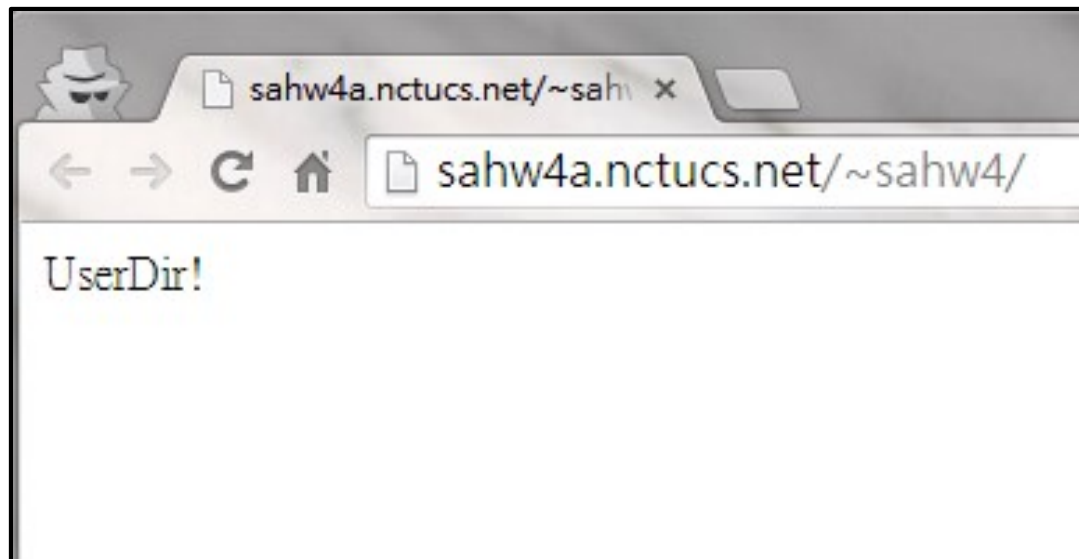
# Apache – .htaccess



# Apache – UserDir

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- ❑ Add a user “sahw4”
- ❑ Let its userdir work and print “UserDir!”



- ❑ [http://httpd.apache.org/docs/2.4/howto/public\\_html.html](http://httpd.apache.org/docs/2.4/howto/public_html.html)

# Apache – Rewrite (1)

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## ❑ Redirect

- [http://domainA/home/\[a-zA-Z\]+/.\\*](http://domainA/home/[a-zA-Z]+/.)

## ❑ to

- [http://people.cs.nctu.edu.tw/~\[a-zA-Z\]+/.\\*](http://people.cs.nctu.edu.tw/~[a-zA-Z]+/)

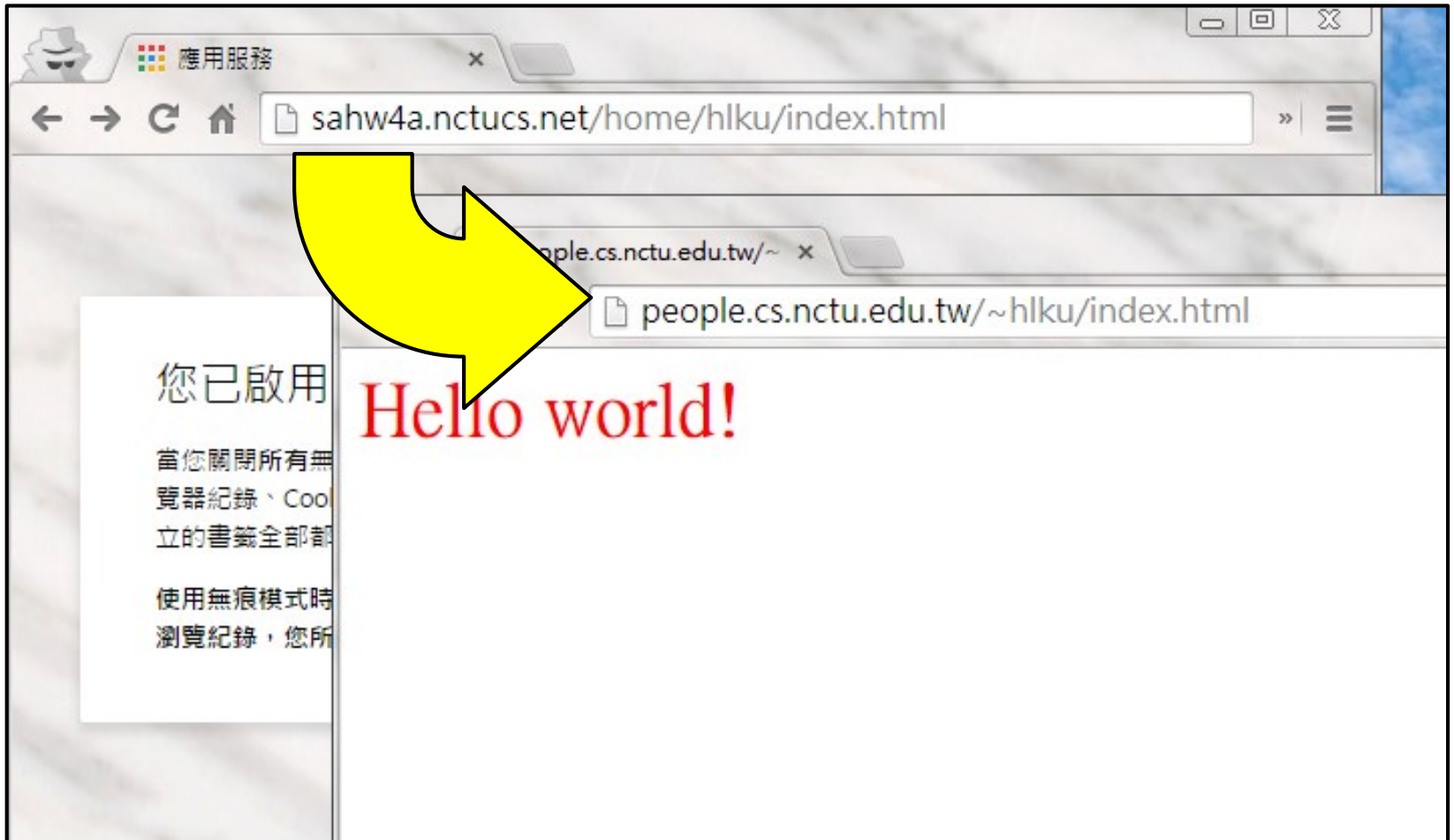
## ❑ However

- [http://domainA/home/\[a-zA-Z\]+/.\\*](http://domainA/home/[a-zA-Z]+/.).mp3 would be forbidden.

## ❑ [http://httpd.apache.org/docs/2.4/mod/mod\\_rewrite.html](http://httpd.apache.org/docs/2.4/mod/mod_rewrite.html)



# Apache – Rewrite (1)

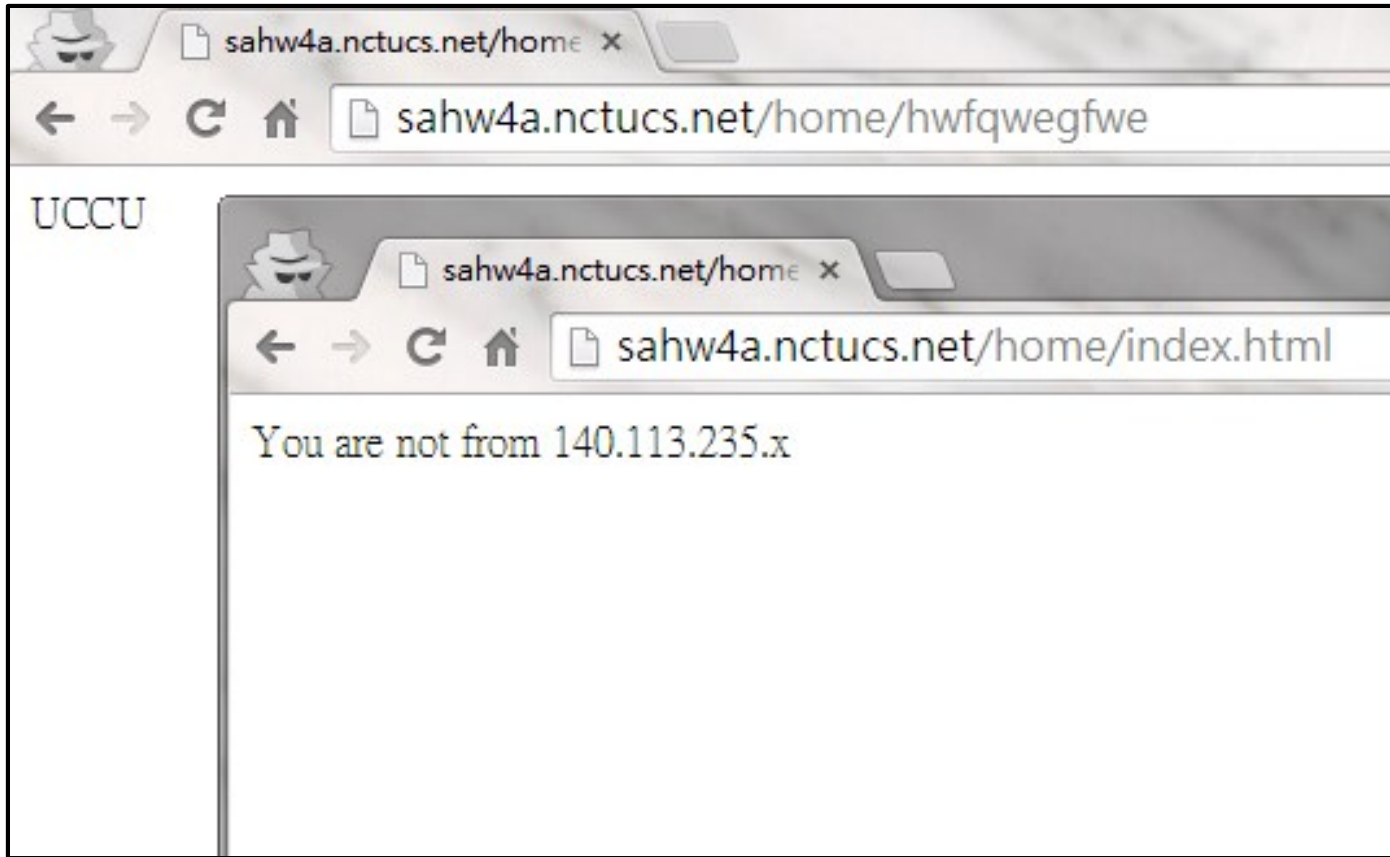


# Apache – Rewrite (2)

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- ❑ If the connection came from 140.113.235.\* :
  - Redirect <http://domainA/home/>\*
  - to <http://domainA/home/uccu.html> which prints “UCCU”
  
- ❑ Otherwise don't redirect.
  
  
- ❑ [http://httpd.apache.org/docs/2.4/mod/mod\\_rewrite.html](http://httpd.apache.org/docs/2.4/mod/mod_rewrite.html)

# Apache – Rewrite (2)



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# PHP

# PHP

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- Show IP (5%)
- CRUD (20%)



- Total: 25%

# PHP – Basic System

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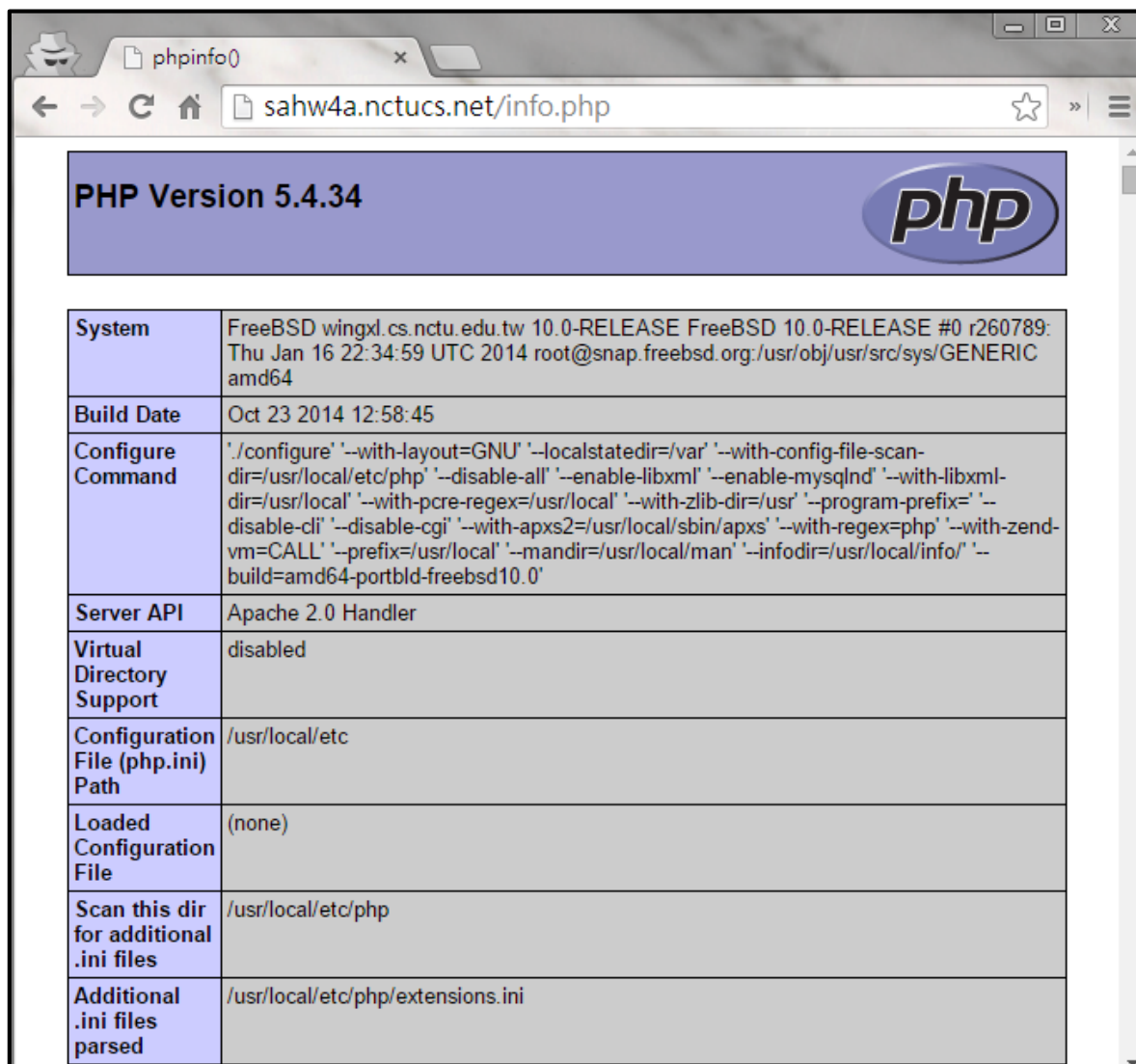
## ❑ Install PHP

- /usr/ports/lang/php5
- /usr/ports/lang/php5-extensions

❑ <http://domain/info.php> prints out `phpinfo()`.

❑ <http://domain/myip.php> prints out the user's IP address.

# PHP – Basic System



PHP Version 5.4.34

<b>System</b>	FreeBSD wingxl.cs.nctu.edu.tw 10.0-RELEASE FreeBSD 10.0-RELEASE #0 r260789: Thu Jan 16 22:34:59 UTC 2014 root@snap.freebsd.org:/usr/obj/usr/src/sys/GENERIC amd64
<b>Build Date</b>	Oct 23 2014 12:58:45
<b>Configure Command</b>	'./configure' '--with-layout=GNU' '--localstatedir=/var' '--with-config-file-scan-dir=/usr/local/etc/php' '--disable-all' '--enable-libxml' '--enable-mysqlnd' '--with-libxml-dir=/usr/local' '--with-pcre-regex=/usr/local' '--with-zlib-dir=/usr' '--program-prefix=' '--disable-cli' '--disable-cgi' '--with-apxs2=/usr/local/sbin/apxs' '--with-regex=php' '--with-zend-vm=CALL' '--prefix=/usr/local' '--mandir=/usr/local/man' '--infodir=/usr/local/info' '--build=amd64-portbld-freebsd10.0'
<b>Server API</b>	Apache 2.0 Handler
<b>Virtual Directory Support</b>	disabled
<b>Configuration File (php.ini) Path</b>	/usr/local/etc
<b>Loaded Configuration File</b>	(none)
<b>Scan this dir for additional .ini files</b>	/usr/local/etc/php
<b>Additional .ini files parsed</b>	/usr/local/etc/php/extensions.ini

# PHP – CRUD

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## CRUD

- Create, read, update, delete

## Write a simple web application that has the four actions.

- <http://domainB/crud/>

## Users can

- Add a entry
- Show all entries
- Modify and update an entry
- Delete an entry

## You may use **PHP framework** (such like [CI](#), [Laravel](#), [Phalcon](#), [Symfony](#) ..., etc. ) to speed up the development process.



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# MySQL

# MySQL

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- Basic Usage (5%)
- phpMyAdmin (5%)
- Blog (10%)

Total: 20%



# MySQL – Basic System

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## ❑ Install MySQL

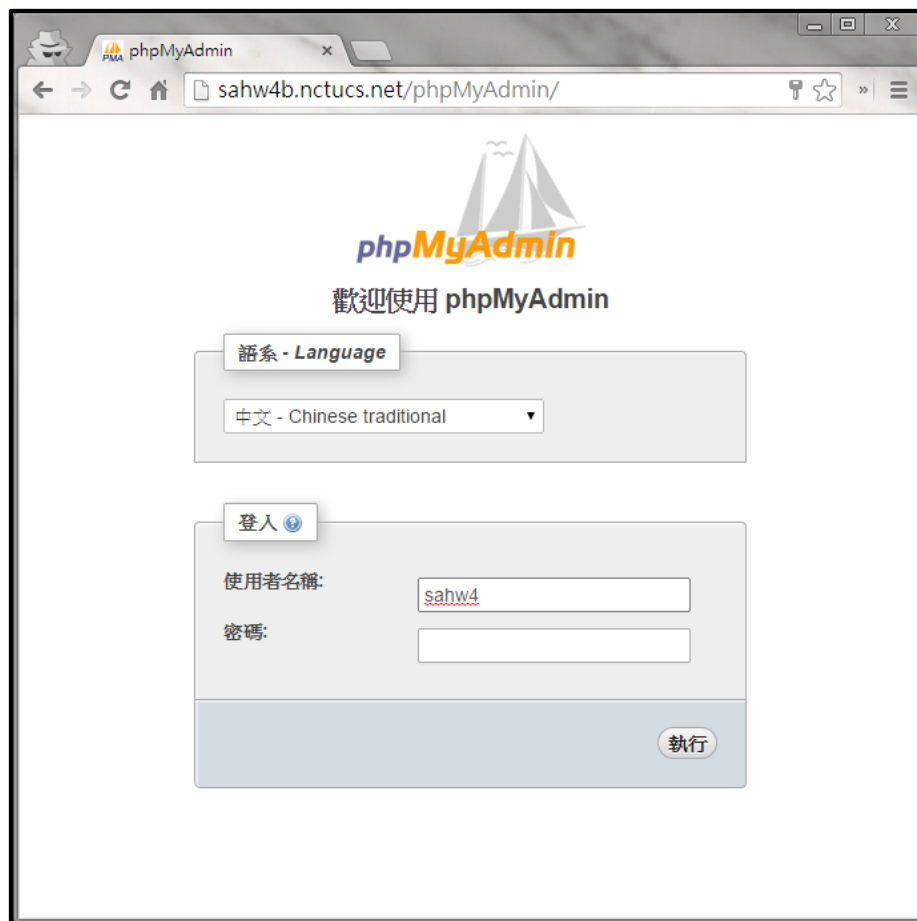
- Add a user “sahw4”, password is *your student ID*.
- Can remote control, but only from 140.113.17.0/24
  - `mysql -h yourIP -u sahw4 -p`
- This user can SELECT, INSERT, UPDATE, DELETE, CREATE.

❑ <http://dev.mysql.com/doc/refman/5.6/en/privilege-system.html>

# MySQL – phpMyAdmin

## ❑ Install phpMyAdmin

- <http://domainB/phpMyAdmin/>



# MySQL – Blog

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## Install Wordpress

- [www/wordpress](http://www.wordpress)
- <http://domainB/wordpress/>

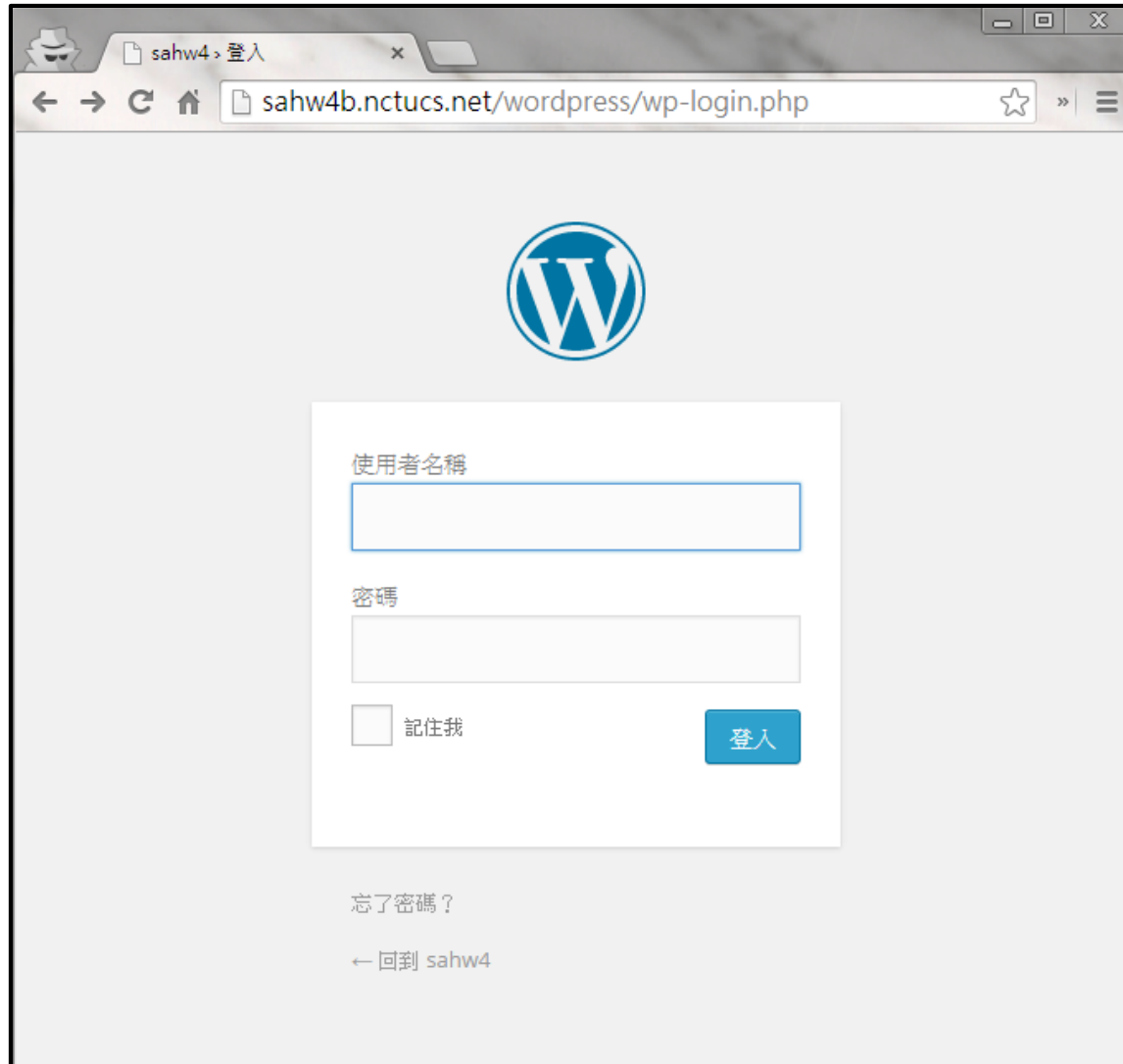
## Write a blog post about your process of this homework.

- Please write as much detail as possible to let TAs believe that you have done this homework by yourself.

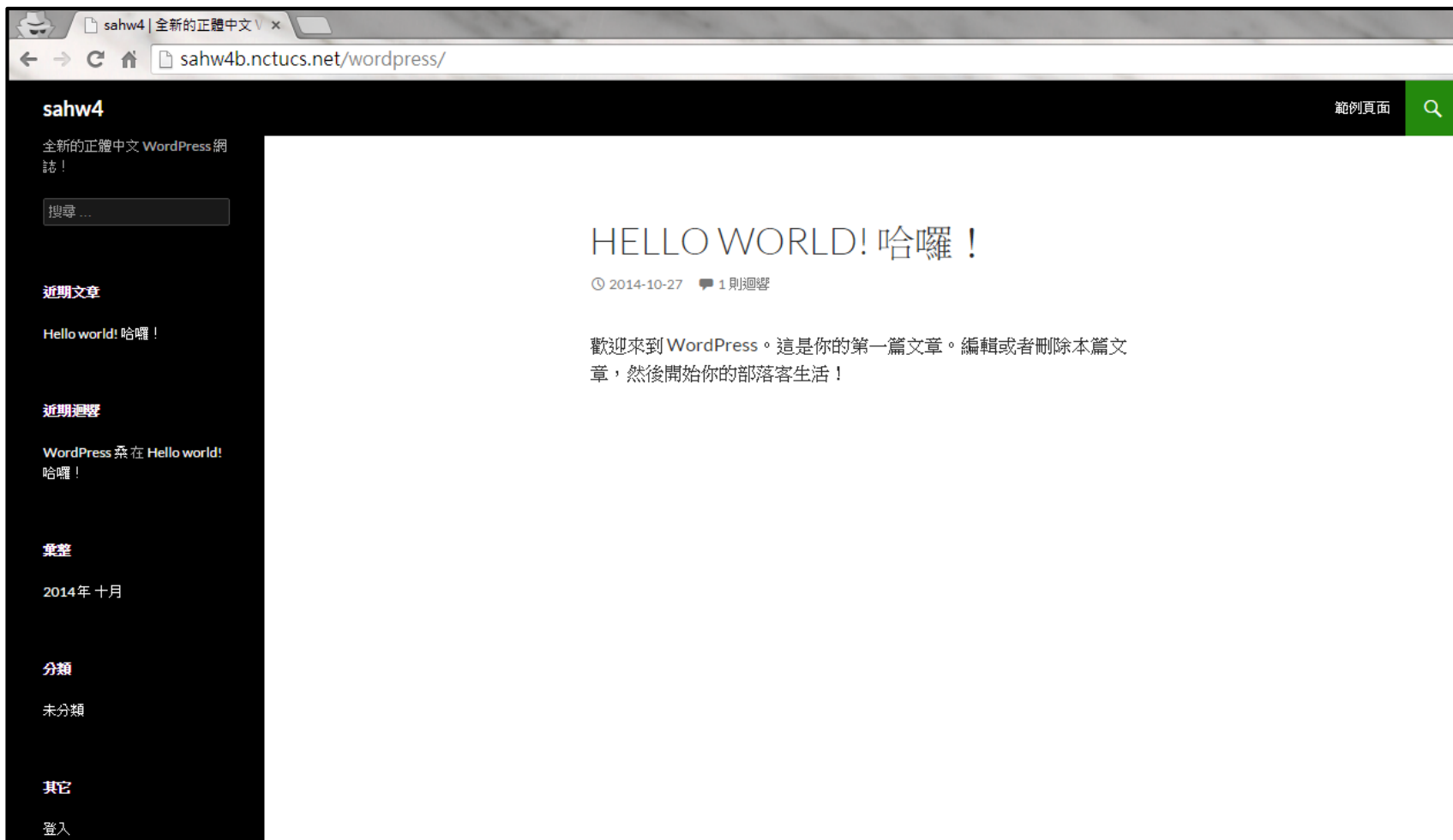


**WORDPRESS**

# MySQL – Blog



# MySQL – Blog



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# Git



# Git

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❑ Basic Usage (5%)

❑ GitWeb (5%)

❑ Git Clone (4%)

❑ Git Push (6%)

❑ Total: 20%



# git

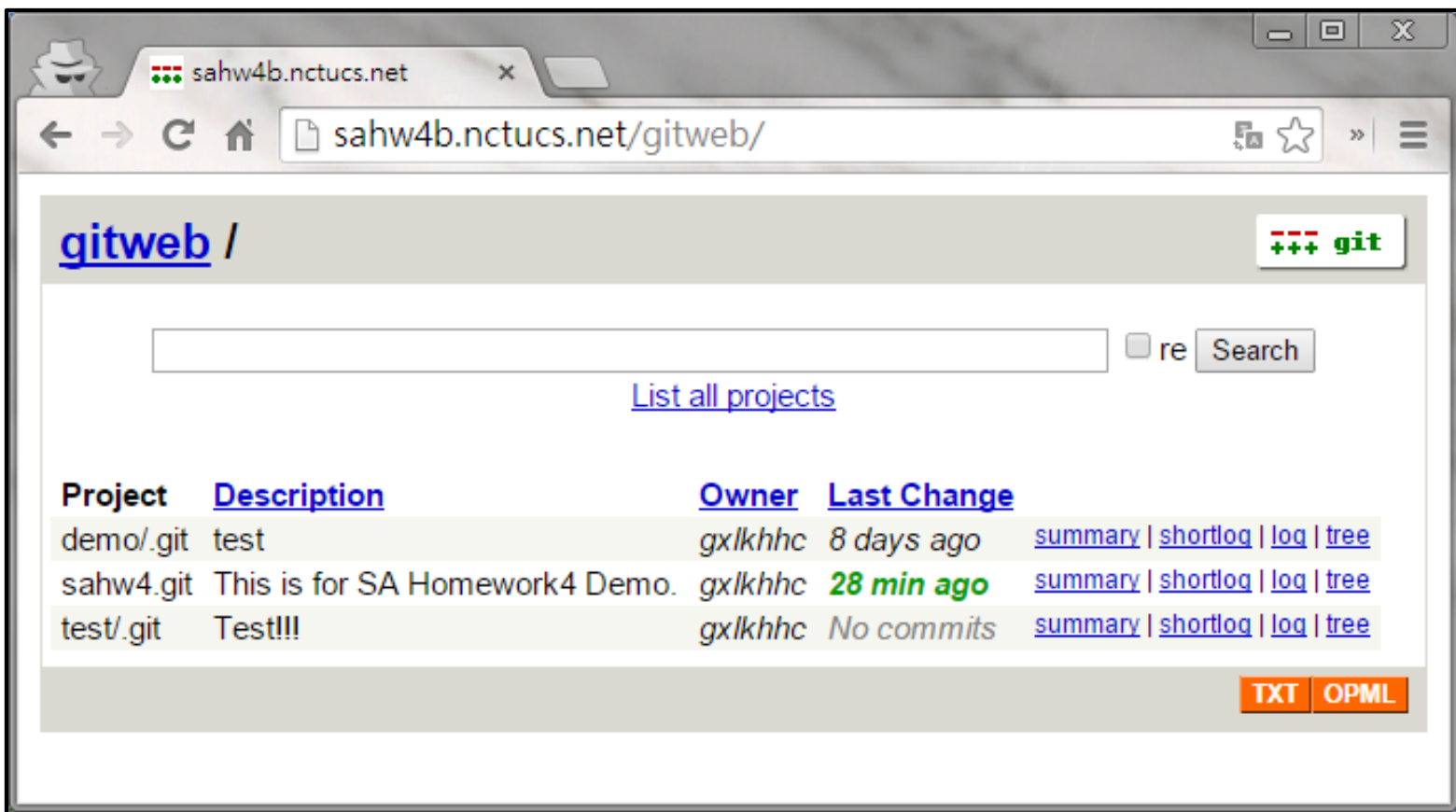
# Git – Basic Usages

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- ❑ Install Git with GitWeb
  - Initial a repository named “[sahw4.git](#)”.
- ❑ Try some basic commands:
  - git add, git commit, git branch, git merge, git checkout ..., etc.
- ❑ At least 2 branches and 2 merges.
  - You may use ‘git log --all --graph --oneline’ to see the tree.
- ❑ <http://git-scm.com/doc>
- ❑ <http://git-scm.com/book/>
- ❑ <https://try.github.io> Learn Git in 15 minutes!

# Git – GitWeb

- ❑ <http://domainB/gitweb/>
  - Can see the “sahw4.git” repository.



The screenshot shows a web browser window with the address bar containing `sahwb.nctucs.net/gitweb/`. The page title is `gitweb /`. Below the title is a search bar with a "re" checkbox and a "Search" button. A link [List all projects](#) is visible. The main content is a table of repositories:

Project	Description	Owner	Last Change	
<a href="#">demo/.git</a>	test	<a href="#">gxlkhhc</a>	8 days ago	<a href="#">summary</a>   <a href="#">shortlog</a>   <a href="#">log</a>   <a href="#">tree</a>
<a href="#">sahwb.git</a>	This is for SA Homework4 Demo.	<a href="#">gxlkhhc</a>	28 min ago	<a href="#">summary</a>   <a href="#">shortlog</a>   <a href="#">log</a>   <a href="#">tree</a>
<a href="#">test/.git</a>	Test!!!	<a href="#">gxlkhhc</a>	No commits	<a href="#">summary</a>   <a href="#">shortlog</a>   <a href="#">log</a>   <a href="#">tree</a>

At the bottom right, there are buttons for `TXT` and `OPML`.

# Git – Clone

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❑ Let your git repository can be **cloned** by others

- Use git protocol
- Clone without username and password.
- **git clone** <git://domain/git/sahw4.git> work
  - It should be same as what gitweb shows.

❑ <http://git-scm.com/book/en/v2/Git-on-the-Server-The-Protocols>

# Git – Push

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- ❑ Let your git repository can be **pushed / pulled** by others.
  - Use **HTTP** protocol
  - Username is **your student ID**
  - And the password is same as our **IRC channel's password**
  - **git pull** <http://domain/git/sahw4.git> work (3%)
  - **git push** work (3%)
  
- ❑ <http://git-scm.com/2010/03/04/smart-http.html>

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# Bonuses

Before going further, make sure you have at least **all the basics** (40%) **done**.

# Bonus

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- FastCGI (10%)
- Nginx Reverse Proxy (10%)
- GitLab (15%)



NGINX



GITLAB

Total: 35%

# FastCGI

- ❑ Let FastCGI handle PHP.
- ❑ `phpinfo( )` should print something like:

Server API	FPM/FastCGI
------------	-------------

or

Server API	CGI/FastCGI
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- ❑ Make php port with FPM option (PHP-FPM)
- ❑ [http://httpd.apache.org/mod\\_fcgid/](http://httpd.apache.org/mod_fcgid/)
- ❑ [http://httpd.apache.org/docs/2.4/mod/mod\\_proxy\\_fcgi.html](http://httpd.apache.org/docs/2.4/mod/mod_proxy_fcgi.html)
- ❑ [http://www.fastcgi.com/mod\\_fastcgi/docs/mod\\_fastcgi.html](http://www.fastcgi.com/mod_fastcgi/docs/mod_fastcgi.html)



# Nginx Reverse Proxy


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- Install Nginx
- Setup Nginx and make it listen to a port (such like 8080).
- Reverse proxy Nginx **to your apache server.**
  
- <http://yourIP:8080/> works (5%)
- <http://yourIP:8080/myip.php> works (5%)
  
- <http://nginx.com/resources/>

# GitLab

- ❑ <http://domainB/gitlab/>

## GitLab Community Edition



Open source software to collaborate on code

Manage git repositories with fine grained access controls that keep your code secure. Perform code reviews and enhance collaboration with merge requests. Each project can also have an issue tracker and a wiki.

[Explore public projects](#) [Documentation](#) [About GitLab](#)

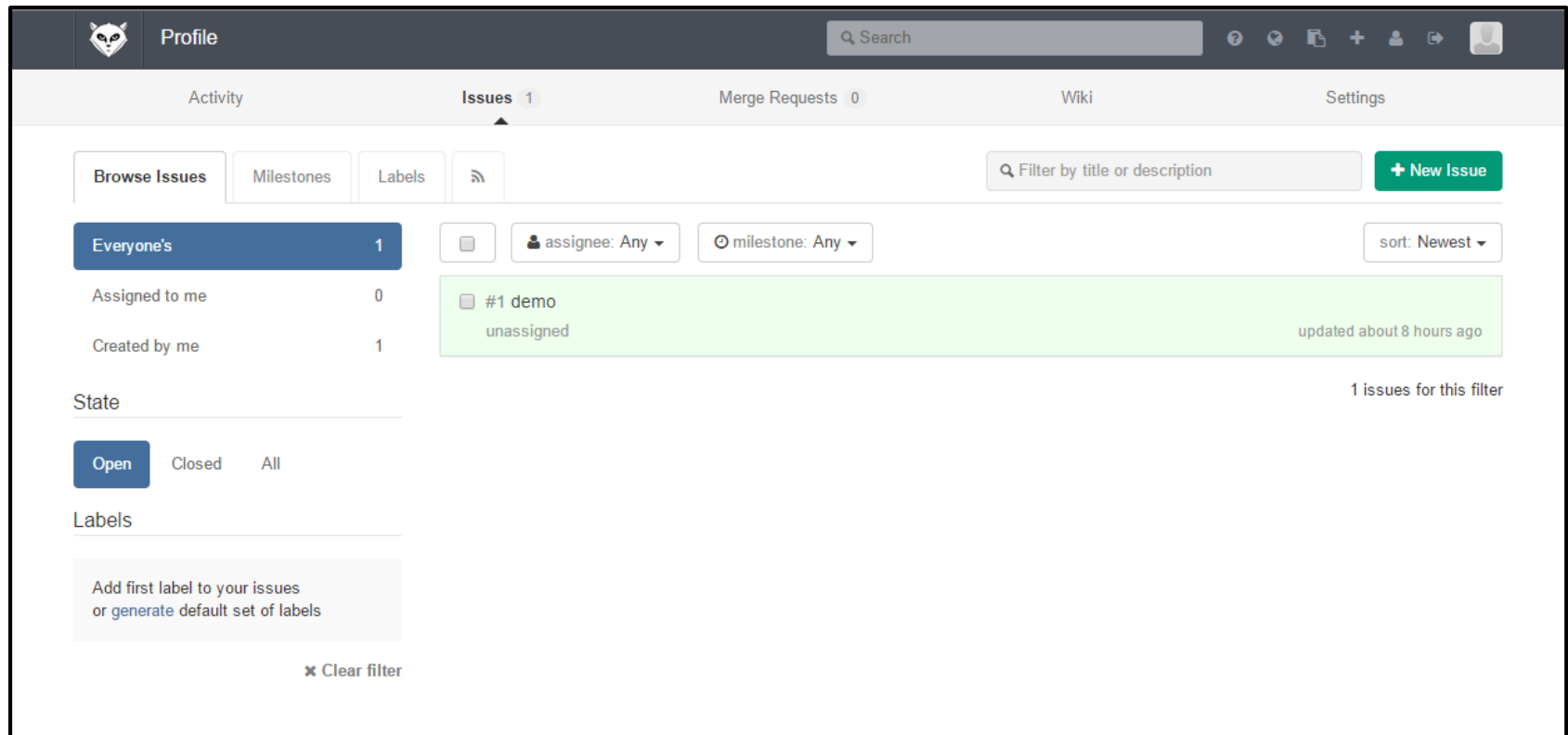
### Sign in

Remember me

Did not receive confirmation email? [Send again](#)

# GitLab

- ❑ Create an account “sahw4” and our IRC channel’s password as the password.



The screenshot shows the GitLab interface for a user profile. The top navigation bar includes a search bar and icons for help, home, add, user, and profile. Below the navigation bar, there are tabs for Activity, Issues (1), Merge Requests (0), Wiki, and Settings. The main content area is divided into several sections:

- Browse Issues:** Includes tabs for Milestones, Labels, and a search bar with the text "Filter by title or description". A green "+ New Issue" button is located to the right of the search bar.
- Filters:** A list of filters on the left shows "Everyone's" with a count of 1, "Assigned to me" with 0, and "Created by me" with 1. To the right, there are dropdown menus for "assignee: Any" and "milestone: Any", and a "sort: Newest" dropdown.
- Issue List:** A single issue is displayed in a light green box. It is titled "#1 demo" and is currently "unassigned". It was "updated about 8 hours ago".
- State:** A section with buttons for "Open", "Closed", and "All".
- Labels:** A section with a button that says "Add first label to your issues or generate default set of labels".
- Footer:** A "Clear filter" button is located at the bottom of the page.

At the bottom right of the issue list, it says "1 issues for this filter".

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# Reminder

# Reminder

- ❑ Make sure you use port forwarding if you use VM.
  - Apache, HTTPS, MySQL, Nginx, Git, ...
  - And **add exceptions to the firewall** of your host computer.



# Reminder

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- ❑ If you use VMWare, it would use the 443 port.
  - You need to use another port as your HTTPS port.
  
- ❑ When you are going to choose a different port from the default one, be ware of that Google Chrome would block some ports.

# Deadline & Demo

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❑ 2014-12-11, 3:00 am

❑ Online judge.

❑ <http://nasa.cs.nctu.edu.tw/sahw4>

- If you don't have public IP, please contact TAs.

❑ You can resubmit before the due time.

- But only the grade of **last submit** would count.
- The manual demo parts (such like CRUD, blog) would judge after the due time.

# Need Help?

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- ❑ IRC channel #nctuNASA on freenode
- ❑ BBS bs2.to board CS-SysAdmin
- ❑ Email ta@nasa.cs.nctu.edu.tw
- ❑ Goto CSCC to ask professional 3F!
  
- ❑ Read this article before you asking a question:
  - <https://code.google.com/p/smartquestions/> (Traditional Chinese)
  - <http://www.catb.org/~esr/faqs/smart-questions.html> (English)



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# Q & A