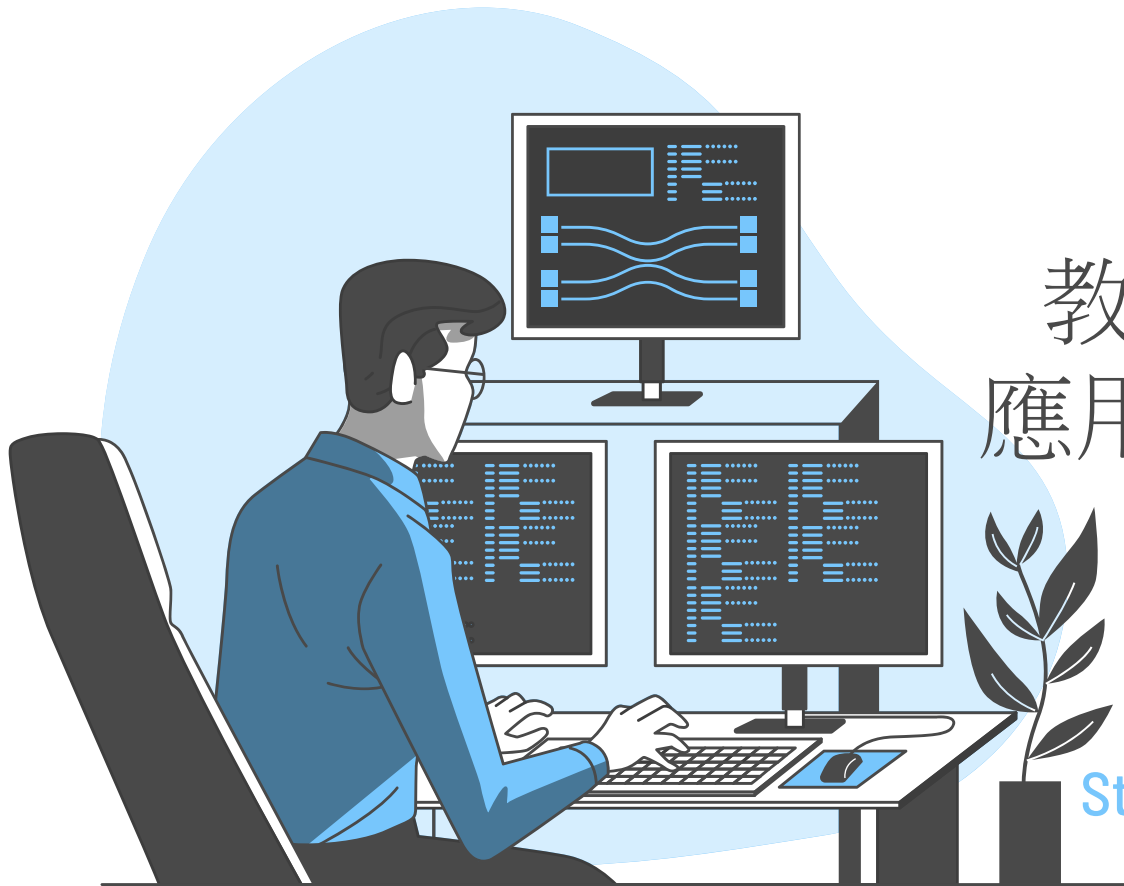




運用不同工具
教授開發互聯網
應用及**Web**應用程
序工作坊

Mr Leung Yiu Tun
ICT Teacher
St. Stephen's Girls' College



Rundown of Today

01

Introduction to XAMPP

02

How to download and install

03

Key points on XAMPP Setup

04

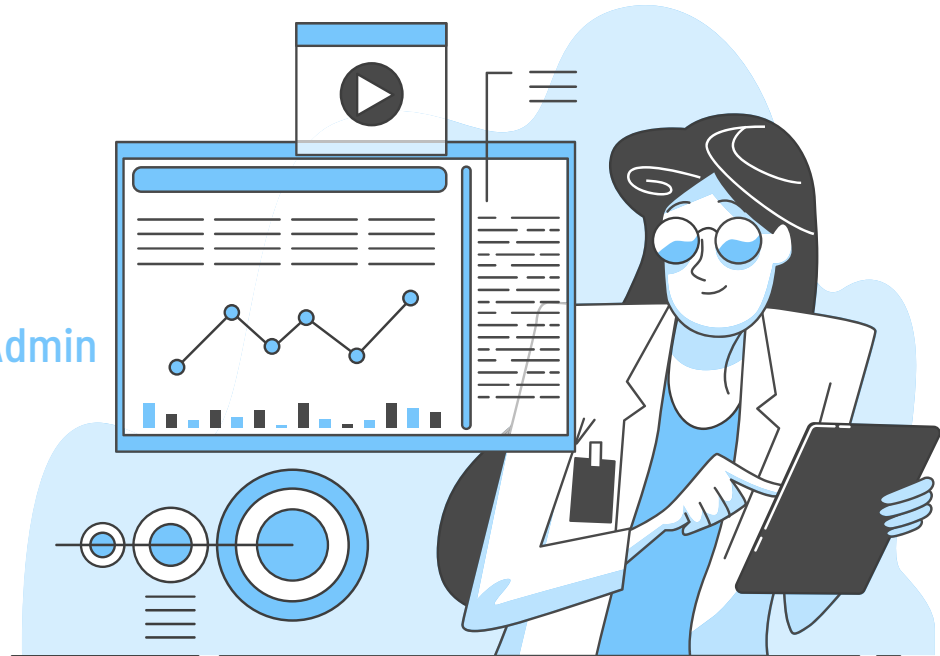
Use of MySQL Server and phpMyAdmin

05

Deployment of a SBA Exemplar

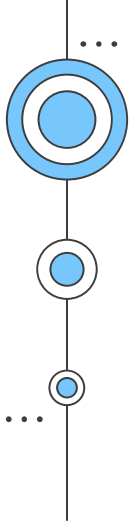
06

PHP Basics

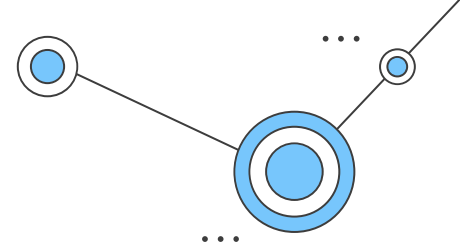


01

Introduction to XAMPP



XAMPP is a Portable Web Server



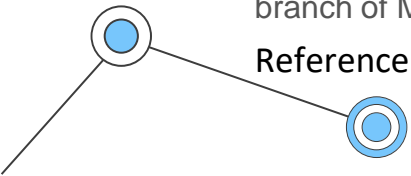
XAMPP is the most popular PHP development environment

XAMPP is an abbreviation for cross-platform (**X**), **A**pache, **M**ySQL, **P**HP and **P**erl

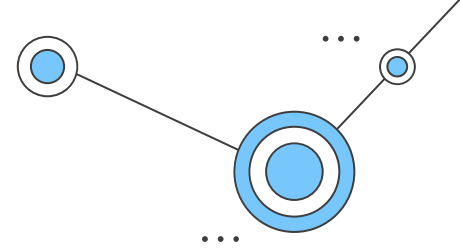
XAMPP is a completely free, easy to install Apache distribution containing MariaDB, PHP, and Perl. The XAMPP open source package has been set up to be incredibly easy to install and to use.

MySQL is now a product under Oracle Corporation and MariaDB is a branch of MySQL.

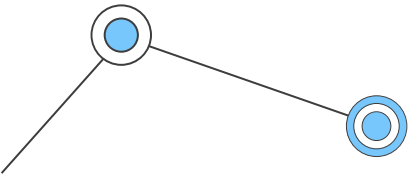
Reference: <https://www.youtube.com/watch?v=h6DEDm7C37A>



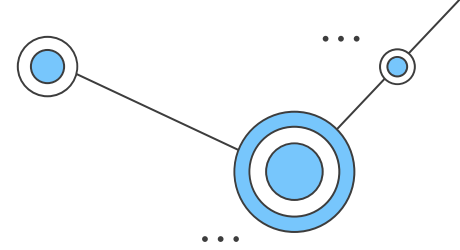
Deployment of XAMPP



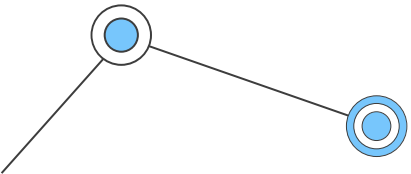
It is Multi Cross-Platform, which implies it works on both Windows, Macintosh and Linux. With a single command, you may start and stop the entire web server and database stack. Both a full and a standard version of XAMPP are available.



Advantages of Using XAMPP

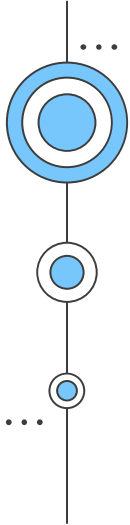


- It is Easy to Install as compare to other web servers like WAMP.
- It is Multi Cross Platform which means XAMPP is available for Windows and Linux.
- It also comes with a number of other modules including OpenSSL, phpMyAdmin, MediaWiki, Joomla, WordPress and more.
- XAMPP is offered in both a full and a standard version (Smaller version).
- You can start and stop the whole web server+database stack with one command.



02

How to download and install



Download XAMPP

Visit to <https://www.apachefriends.org>

For Windows Users


Browse to the "Download" Section and Choose "More Downloads"

Go to the "XAMPP Windows" / "Latest Version" folder and download "**xampp-portable-windows-x64-X.X.X-X-VSXX-installer.exe**"

For Mac Users (Non-VM Version)

Browse to the "Download" Section and Choose "More Downloads"

Go to the "XAMPP Mac OS X" / "Latest Version" folder and download "**xampp-osx-X.X.X-X-installer.dmg**"

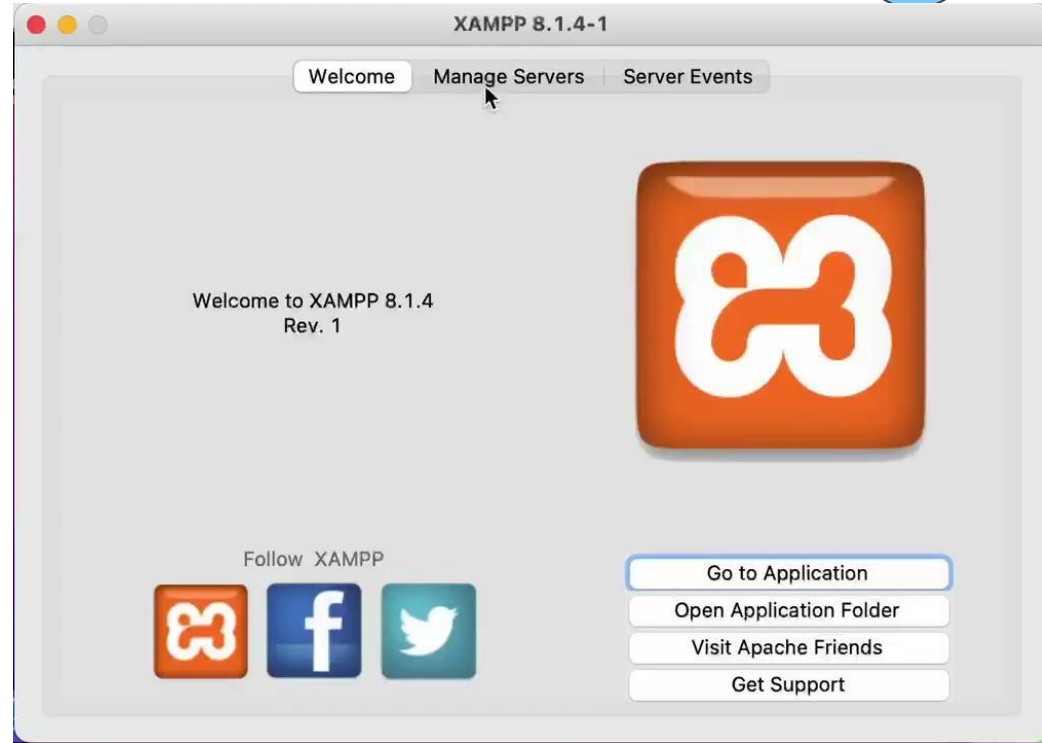


XAMPP for **OS X** 7.4.29, 8.0.19, 8.1.6, 7.4.29, 8.0.19 & 8.1.6

Version		Checksum		Size
7.4.29 / PHP 7.4.29	What's Included?	md5	sha1	Download (64 bit) 163 Mb
8.0.19 / PHP 8.0.19	What's Included?	md5	sha1	Download (64 bit) 162 Mb
8.1.6 / PHP 8.1.6	What's Included?	md5	sha1	Download (64 bit) 163 Mb
7.4.29 / PHP 7.4.29	What's Included?	md5	sha1	Download (64 bit) 360 Mb
8.0.19 / PHP 8.0.19	What's Included?	md5	sha1	Download (64 bit) 360 Mb
8.1.6 / PHP 8.1.6	What's Included?	md5	sha1	Download (64 bit) 361 Mb

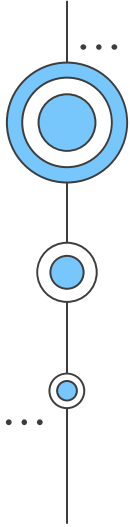
[Requirements](#) [Add-ons](#) [More Downloads »](#)

XAMPP Demo

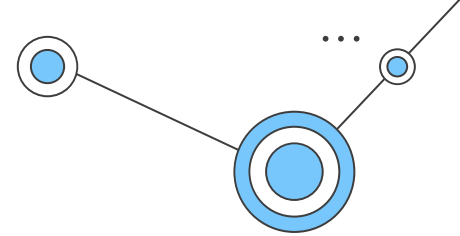


03

Key points on XAMPP Setup (Web Server Setup Experience)



Document Root



Where should I place my web pages?

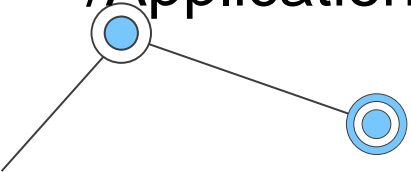
```
httpd.conf
25 # Do not add a slash at the end of the directory path.  If you point
26 # ServerRoot at a non-local disk, be sure to specify a local disk on the
27 # Mutex directive, if file-based mutexes are used.  If you wish to share the
28 # same ServerRoot for multiple httpd daemons, you will need to change at
29 # least PidFile.
30 #
31 ServerRoot "/Applications/XAMPP/xamppfiles"
32
```

Windows

DriveLetter:\xampp\apache\conf\httpd.conf

MacOS

/Applications/XAMPP/xamppfiles/etc/httpd.conf



Why can't I see debug messages of my PHP scripts?

Windows

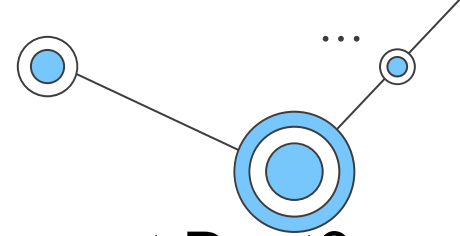
DriveLetter:\xampp\php\php.ini

MacOS

/Applications/XAMPP/xamppfiles/etc/php.ini

```
php.ini
...
456 ; This directive controls whether or not an error message is displayed on the screen,
457 ; notices and warnings too. Error output is disabled by default because it can be
458 ; it could be very dangerous in production environments, especially when used in
459 ; which is triggering the error, sensitive information such as database credentials
460 ; out of your application such as database credentials. For production environments, we
461 ; For production environments, we recommend you disable this directive by setting
462 ; sending them to STDOUT.
463 ; Possible Values:
464 ;   Off = Do not display any errors
465 ;   stderr = Display errors to STDERR (affects only CGI/FastCGI environments)
466 ;   On or stdout = Display errors to STDOUT
467 ; Default Value: On
468 ; Development Value: On
469 ; Production Value: Off
470 ; http://php.net/display-errors
471 display_errors=0
472
```

phpMyAdmin Alias



Why can't I see the folder **phpMyAdmin** in Document Root?

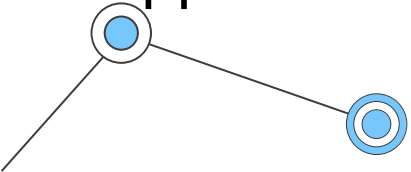
```
httpd-xampp.conf
1 # We will enable it by default
2 #<IfDefine PHP>
3     LoadModule php_module          modules/libphp.so
4 #</IfDefine>
5
6 LoadModule perl_module             modules/mod_perl.so
7
8 Alias /phpmyadmin "/Applications/XAMPP/xamppfiles/phpmyadmin"
9
```

Windows

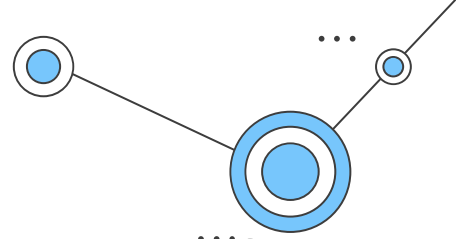
DriveLetter:\apache\conf\extra\httpd-xampp.conf

MacOS

/Applications/XAMPP/xamppfiles/etc/extra/httpd-xampp.conf



MySQL Database



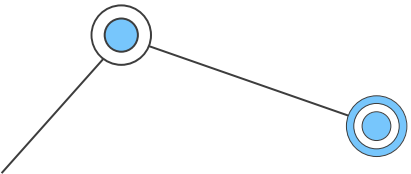
Where are my database files stored?

Windows

DriveLetter:\xampp\mysql\data

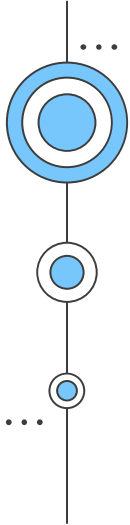
MacOS

/Applications/XAMPP/xamppfiles/var/mysql

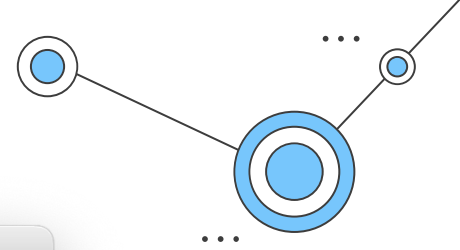


04

Use of MySQL Server and phpMyAdmin






Start MySQL Server



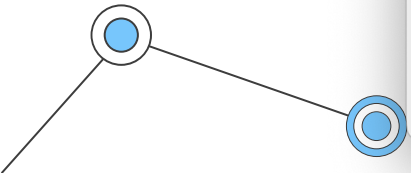
XAMPP 8.1.4-1

Welcome Manage Servers Server Events

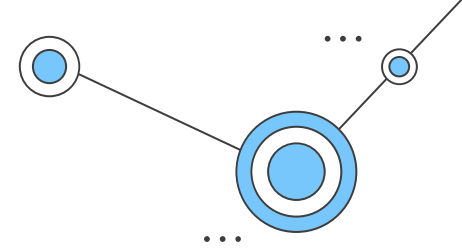
Server	Status
 MySQL Database	Running
 ProFTPD	Stopped
 Apache Web Server	Running

Start
Stop
Restart
Configure

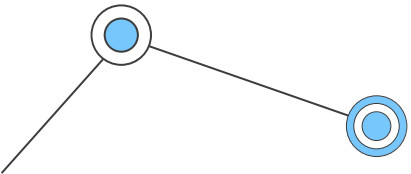
Start All Stop All Restart All



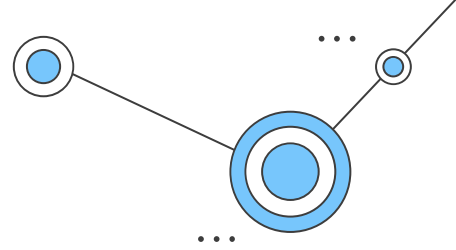
Grant Necessary Permission



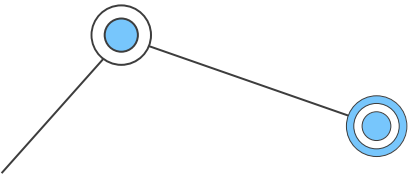
- Firewall?
- Access to Folders?



phpMyAdmin



phpMyAdmin is a free software tool written in PHP, intended to handle the administration of MySQL over the Web. phpMyAdmin supports a wide range of operations on MySQL and MariaDB.





Default Page of XAMPP

Welcome to XAMPP

localhost/dashboard/

Apache Friends Applications FAQs HOW-TO Guides PHPInfo phpMyAdmin

XAMPP Apache + MariaDB + PHP + Perl

Welcome to XAMPP for OS X 8.1.4

You have successfully installed XAMPP on this system! Now you can start using Apache, MariaDB, PHP and other components. You can find more info in the [FAQs](#) section or check the [HOW-TO Guides](#) for getting started with PHP applications.

XAMPP is meant only for development purposes. It has certain configuration settings that make it easy to develop locally but that are insecure if you want to have your installation accessible to others. If you want have your XAMPP accessible from the internet, make sure you understand the implications and you checked the [FAQs](#) to learn how to protect your site. Alternatively you can use [WAMP](#), [MAMP](#) or [LAMP](#) which are similar packages which are more suitable for production.

Start the XAMPP Control Panel to check the server status.

Community

XAMPP has been around for more than 10 years – there is a huge community behind it. You can get involved by joining our [Forums](#), adding yourself to the [Mailing List](#), and liking us on [Facebook](#), following our exploits on [Twitter](#), or adding us to your [Google+](#) circles.

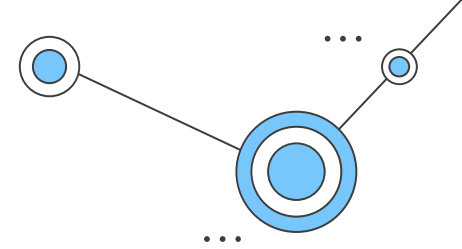
Contribute to XAMPP translation at translate.apachefriends.org.

Can you help translate XAMPP for other community members? We need your help to translate XAMPP into different languages. We have set up a site, translate.apachefriends.org, where users can contribute translations.

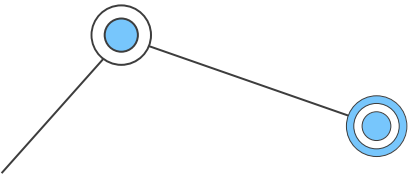
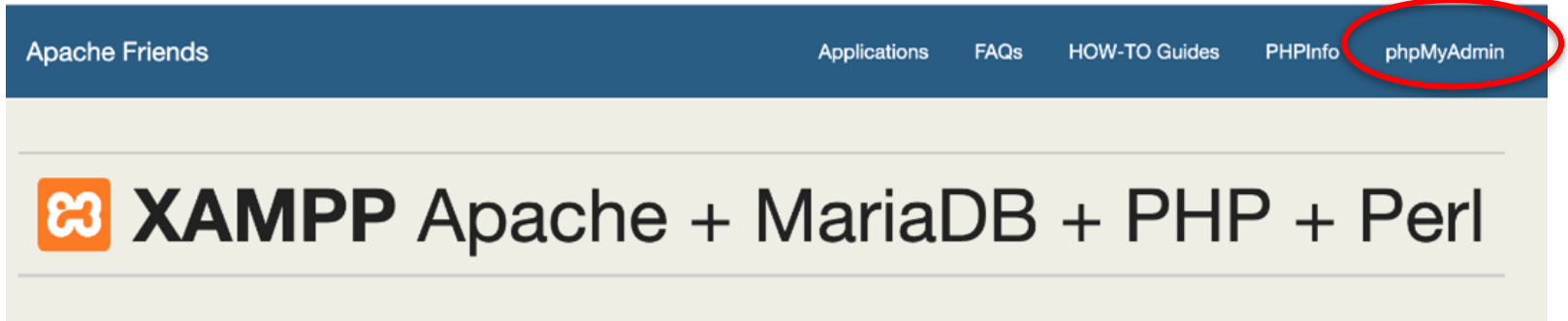
Install applications on XAMPP using Bitnami

Apache Friends and Bitnami are cooperating to make dozens of open source applications available on XAMPP, for free. Bitnami-packaged applications include Wordpress, Drupal, Joomla! and dozens of others and can be deployed with one-click installers. Visit the

Access to phpMyAdmin



<http://localhost/phpmyadmin/>





phpMyAdmin

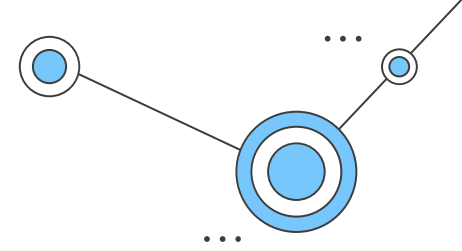
The screenshot displays the phpMyAdmin interface in a browser window. The address bar shows the URL `localhost/phpmyadmin/`. The interface is in Chinese and features a top navigation bar with tabs for `資料庫` (Database), `SQL`, `狀態` (Status), `使用者帳號` (User accounts), `匯出` (Export), `匯入` (Import), `設定` (Settings), `備援` (Backup), `變數` (Variables), `字元集` (Character sets), `引擎` (Engines), and `附加元件` (Plugins).

The main content area is divided into several sections:

- 一般設定 (General):** Includes a dropdown for `伺服器連線編碼與排序` (Server connection collation and sorting) set to `utf8mb4_unicode_ci`, with a `更多設定` (More settings) link.
- 外觀設定 (Appearance):** Includes a `語言 - Language` dropdown set to `中文 - Chinese traditional` and a `佈景主題` (Theme) dropdown set to `pmahomme`.
- 資料庫伺服器 (Database server):** Lists server details:
 - 伺服器: Localhost via UNIX socket
 - 伺服器類型: MariaDB
 - 伺服器連線: 未有使用 SSL
 - 伺服器版本: 10.4.21-MariaDB - Source distribution
 - 協定版本: 10
 - 使用者: root@localhost
 - 伺服器字元集: UTF-8 Unicode (utf8mb4)
- 網頁伺服器 (Web server):** Lists server details:
 - Apache/2.4.53 (Unix) OpenSSL/1.1.1n PHP/8.1.4 mod_perl/2.0.12 Perl/v5.34.1
 - 資料庫用戶端版本: libmysql - mysqlnd 8.1.4
 - PHP 擴充套件: mysql, curl, mbstring
 - PHP 版本: 8.1.4
- phpMyAdmin:** Lists version and documentation links:
 - 版本資訊: 5.1.3
 - 說明文件
 - 官方首頁
 - 貢獻
 - 技術支援
 - 版本沿革
 - 授權

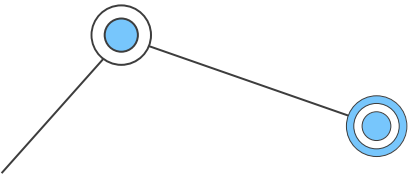
The left sidebar shows a tree view of databases and schemas, including `food_order`, `information_schema`, `mysql`, `performance_schema`, `phpmyadmin`, and `test`. The bottom status bar indicates `主控台` (Main console).

Default Credential for Access to MySQL Server



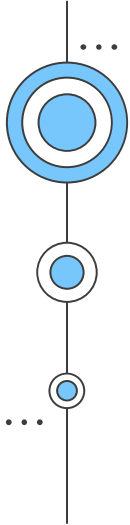
Username: **root**

Password: **<empty>**



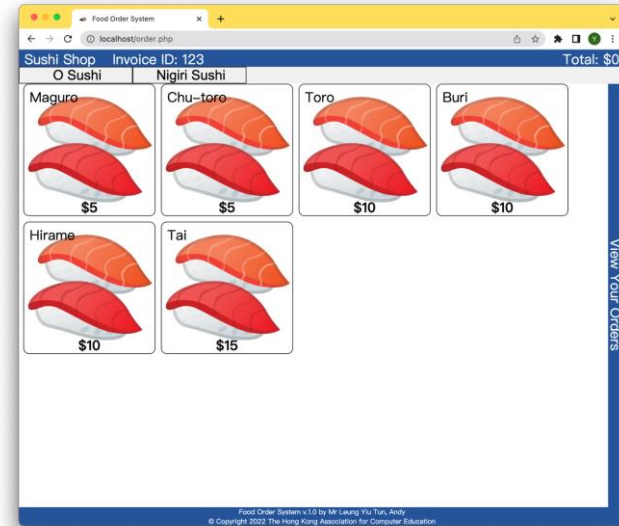
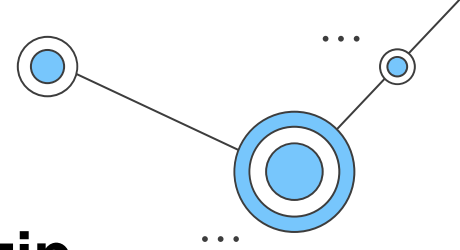
05

Deployment of a SBA Exemplar

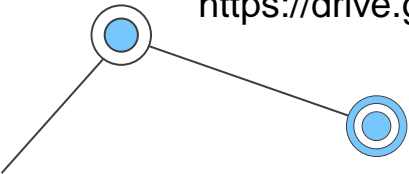


Download SBA Exemplar Food Order System - Sushi Shop

HKACE-Elective_B-SBA-Exemplar.zip

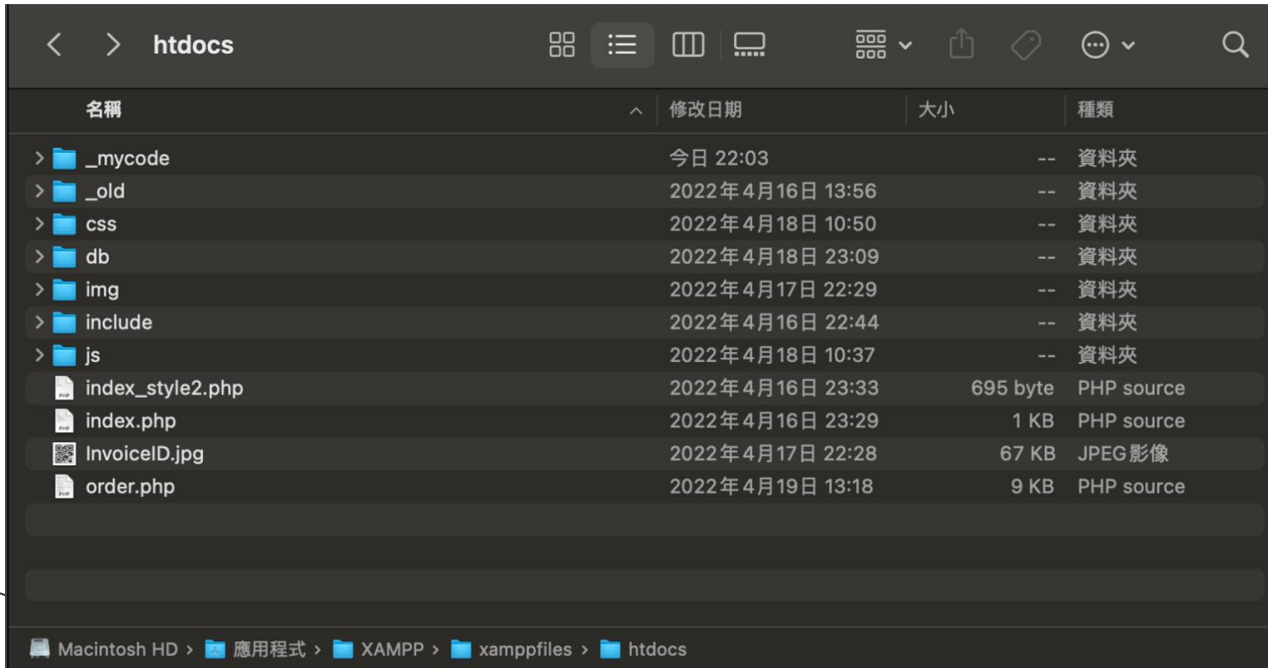


<https://drive.google.com/file/d/1XcupaxsUxM0K8VSfEYgkvSqCMwtxY0zB/view?usp=sharing>

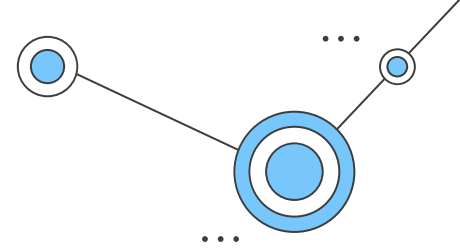


Extract the files into the Document Root

1. Retain the XAMPP files in a backup folder
2. Extract the files in the Document Root



ProFTPd



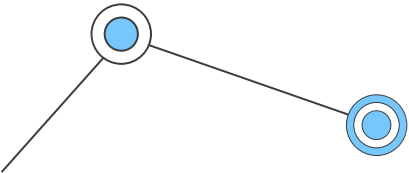
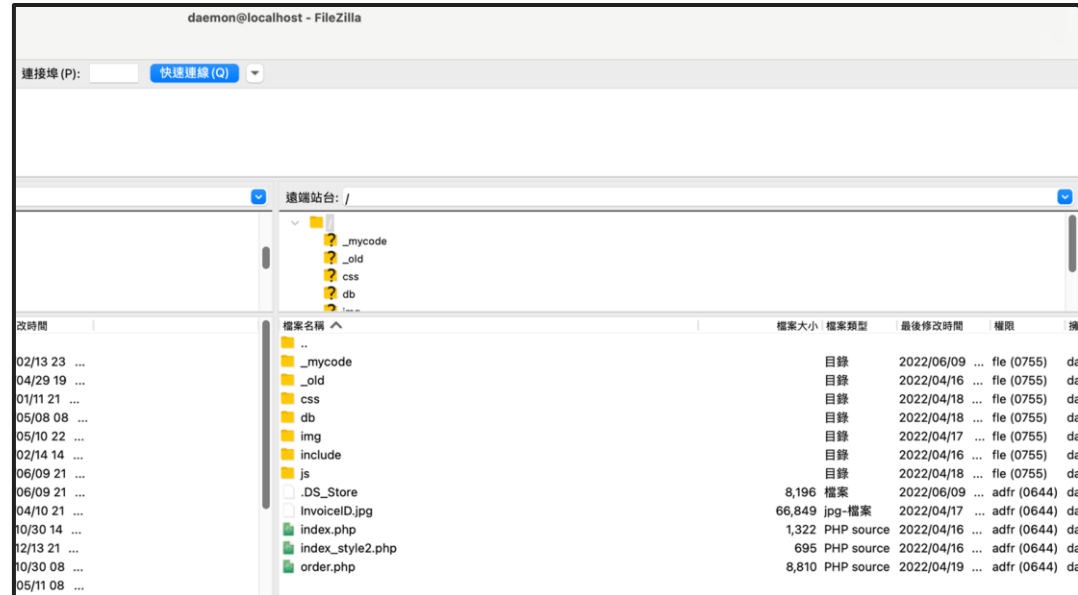
A FTP Server is available for use.

Use any FTP client to access

Host: **localhost**

Username: **daemon**

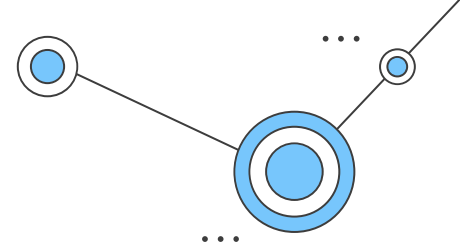
Password: **xampp**



Import the Database of Sushi Shop

1. Open `sqls.txt` in folder “\db\” (SQLs to be pasted into phpMyAdmin)
2. Go to <http://localhost/phpmyadmin/>
3. Create a database named “**food_order**” using character coding system “**utf8mb4_unicode_ci**”
4. Browse to the newly created database and click the “**SQL**” tab, paste the SQLs into the textarea and **Execute**

Login the Sushi Shop either by scanning a QR Code or input an invoice number

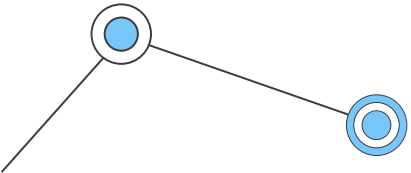


Method1: Scanning a QR Code

Browse to <http://localhost/>

Method2: Input an invoice number

Browse to http://localhost/index_style2.php

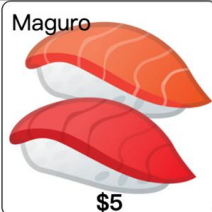


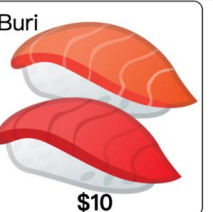
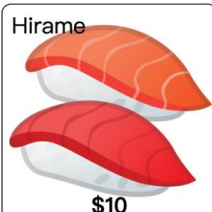



Welcoming Screen of Sushi Shop

Food Order System

localhost/order.php

Sushi Shop Invoice ID: 123 Total: \$0

O Sushi	Nigiri Sushi
 <p>Maguro</p> <p>\$5</p>	 <p>Chu-toro</p> <p>\$5</p>
 <p>Toro</p> <p>\$10</p>	 <p>Buri</p> <p>\$10</p>
 <p>Hirame</p> <p>\$10</p>	 <p>Tai</p> <p>\$15</p>

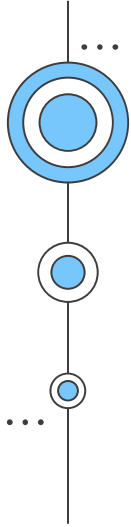
View Your Orders

Food Order System v.1.0 by Mr Leung Yiu Tun, Andy
© Copyright 2022 The Hong Kong Association for Computer Education

Clear Orders of Sushi Shop

The screenshot shows the phpMyAdmin interface with the 'orders' table selected. A red circle highlights the 'orders' table in the left sidebar. Another red circle highlights a list of operations in the '資料表維護' (Table Maintenance) section, including '清空資料表 (TRUNCATE)' and '刪除資料表 (DROP)'. The 'Copy table to (database.table)' section shows 'food_order' selected and 'orders' as the target table.

- 清空資料表 (TRUNCATE)
- 刪除資料表 (DROP)



HKDSE ICT 2025 Sample Paper

Elective B

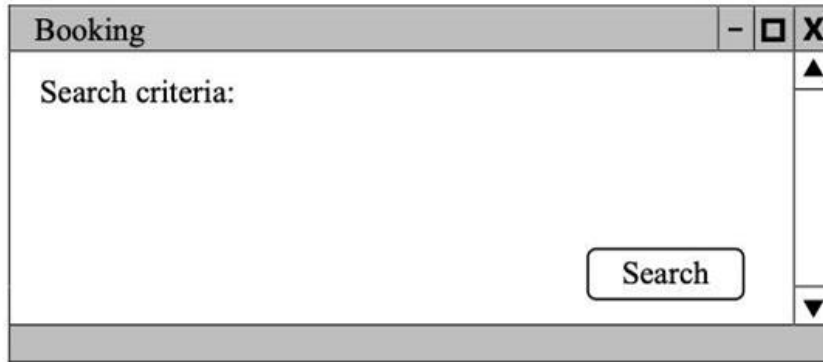
...



Section B Web Application Development

[Modified from DSE 2020 ICT P2C Q.3]

6. An online booking system is used for booking dozens of sports facilities. To search for available sports facilities, users have to input the following:
- (1) One facility
 - (2) One location (Kowloon / Hong Kong / N.T.)
 - (3) The date of using the facility
- (a) With reference to the following sample, draft a web search page with the use of three different HTML form elements. (3 marks)



The image shows a screenshot of a web browser window titled "Booking". The window has a title bar with standard minimize, maximize, and close buttons. The main content area contains the text "Search criteria:" followed by a large empty rectangular input field. At the bottom right of the input field is a button labeled "Search". The browser's status bar is visible at the bottom.

Create client interfaces

Demo Client-side scripts

- (b) Explain briefly how cookies in a browser can help users to book sports facilities more efficiently. Give an example to illustrate your answer. (2 marks)

[Modified from DSE 2019 ICT P2B Q.1]

7. Give two services provided by each of the following devices.

(a) Domain controller

(2 marks)

(b) DHCP server

(2 marks)

[Modified from DSE 2019 ICT P2B Q.3(b) and DSE 2015 ICT P2B Q.4(b)]

8. (a) The URL of a web server is 'https://103.6.136.236:9090'.

(i) What does the number '9090' represent?

(1 mark)

(ii) What is the benefit of using this URL instead of 'https://103.6.136.236'?

(1 mark)

(b) What kinds of control over folders and files can a file server have? Give **two** examples.

(2 marks)

Setup Simple Network
Services

Setup Ethernet/Wireless
Networks

Folder/File Permissions
(Read, Write, Execute)

[New question]

9. Peter plans to develop a simple personal weight management system. He creates `index.html` with internal CSS. Part of the HTML and CSS code is shown below:


Line	Code
:	:
10	<style>
11	body {
12	background-color: lightblue;
13	}
14	h2 {
15	font-size: 30px;
16	}
17	</style>
:	:
100	<body>
101	<h2 style="font-size:25px;">Personal Weight Management System</h2>
102	<p>Instructions</p>
103	<p>Input:</p>
104	 Height Weight
105	<p>Output:</p>
106	 BMI
107	<p>Go to login page</p>
:	:
300	</body>
:	:
:	:

- (a) (i) What is the font size of the text 'Personal Weight Management System'? (1 mark)
- (ii) Modify a line in the code to change the background colour of the web page to green where the HTML color name is `Green`. (1 mark)



Edit Web Pages

Data on the login page of the system `login.html` will be sent to `process.php`, where both files are stored in the server. Part of the HTML code is shown below:

Code	
<pre>· · · <body> <form name="myForm" action="/process.php" method="POST"> Name: <input type="text" name="fname">
 Password: <input type="password" name="pw">
 <input type="submit" value="Submit"> </form> · · ·</pre>	

- (b) GET and POST are common methods used in PHP. What is the purpose for using them? Give **two** reasons to support the use of the POST method. (3 marks)
- (c) Peter adds the following code to `process.php`.

Line	Code
1	<code><?php</code>
·	·
·	·
·	·

(c) Peter adds the following code to `process.php`.

Line	Code
1	<?php
.	.
.	.
.	.
6	<code>\$c = 0;</code>
7	<code>\$p = ["fname", "pw"];</code>
8	<code>foreach (\$p as \$v){</code>
9	<code> if(empty(\$_POST[\$v])){</code>
10	<code> \$c = \$c + 1;</code>
11	<code> }</code>
12	<code>}</code>
.	.
.	.
.	.
80	?>

Demo Server-side scripts

- (i) Briefly describe the purpose of the code from line 6 to 12. (2 marks)
- (ii) Although Peter can add JavaScript code to `login.html` for the same purpose in (c)(i), he still uses this code. Why? (2 marks)

Differences between Client-side and Server-side

When a user logs in to the system, `input.html` will be shown for inputting the user's weight and height. Then, a Body Mass Index (BMI) value based on the weight and height will be calculated and stored. At the same time, the average BMI value of the latest three BMI values is calculated. If the number of BMI values is less than three, the system will output the message 'Not enough values'.

Consider the following:

Variable	Description
N	Stores the number of BMI values
AvgB	Stores the average BMI value
V	An array for storing the BMI values where $V[0]$ and $V[N-1]$ store the first BMI value and the latest BMI value respectively

(d) Part of `input.html` is shown below. Give the missing parts.

(3 marks)

`input.html`

Line	Code
10	<code><body></code>
.	.
.	.
.	.
20	<code><p id="msg"></p></code>
.	.
.	.

(d) Part of input.html is shown below. Give the missing parts.

(3 marks)

input.html

Line	Code
10	<body>
.	.
.	.
.	.
20	<p id="msg"></p>
.	.
.	.
.	.
30	<script>
.	.
.	.
.	.
40	AvgB = <input type="text" value="(d1)"/> ;
41	if (N < 3) {
42	document.getElementById("msg").innerHTML="Not enough
43	values"; }
44	else{
45	for(k=0; k<3; k++){
46	AvgB = <input type="text" value="(d2)"/> ;
47	}
48	AvgB = <input type="text" value="(d3)"/> ;
49	}

Demo Client-side scripts

The system is connected to a database PWMS in the server. Users' BMI values will be stored in a database table BMIRrd. Some sample records are listed below:

NAME	BMI	DATE
Ben	25.3	1-2-2025
Alice	18.5	1-2-2025
Ben	25.8	17-4-2025

Part of input.html is shown below.

Line	Code
85	<?php
.	.
.	.
.	.
95	/* The four attributes of mysqli_connect store the hostname, login
96	name, password of the user and database name respectively. */
97	\$conn = mysqli_connect(\$dbhost, \$dbuser, \$dbpass, \$dbname);
98	if(!\$conn){
99	die("Failed to connect!");
100	}
101	\$sql = "SELECT (f1) FROM (f2) WHERE NAME = ". "\"\ ". (f3) . "\"\ ";
102	\$result = mysqli_query(\$conn, \$sql);

Demo Server-side scripts

Line	Code
85	<?php
.	.
.	.
.	.
95	/* The four attributes of mysqli_connect store the hostname, login
96	name, password of the user and database name respectively. */
97	\$conn = mysqli_connect(\$dbhost, \$dbuser, \$dbpass, \$dbname);
98	if(!\$conn){
99	die("Failed to connect!");
100	}
101	\$sql = "SELECT (f1) FROM (f2) WHERE NAME = ". "\"\"". (f3) . "\"\>";
102	\$result = mysqli_query(\$conn, \$sql);
103	while(\$row = mysqli_fetch_assoc(\$result)){
104	echo \$row["BMI"] . " " . \$row["DATE"] . " ";
105	}
.	.
.	.
.	.
200	?>

Develop a simple web application

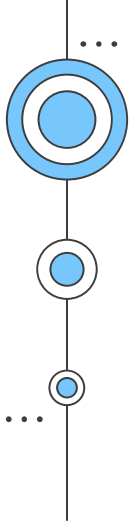
- (e) What is the purpose of the code from line 98 to 100? (2 marks)
- (f) To display all BMI and DATE records of users who are logging on to the system, the code from line 101 to 105 is used. Give the missing parts on line 101. (3 marks)

Code Study

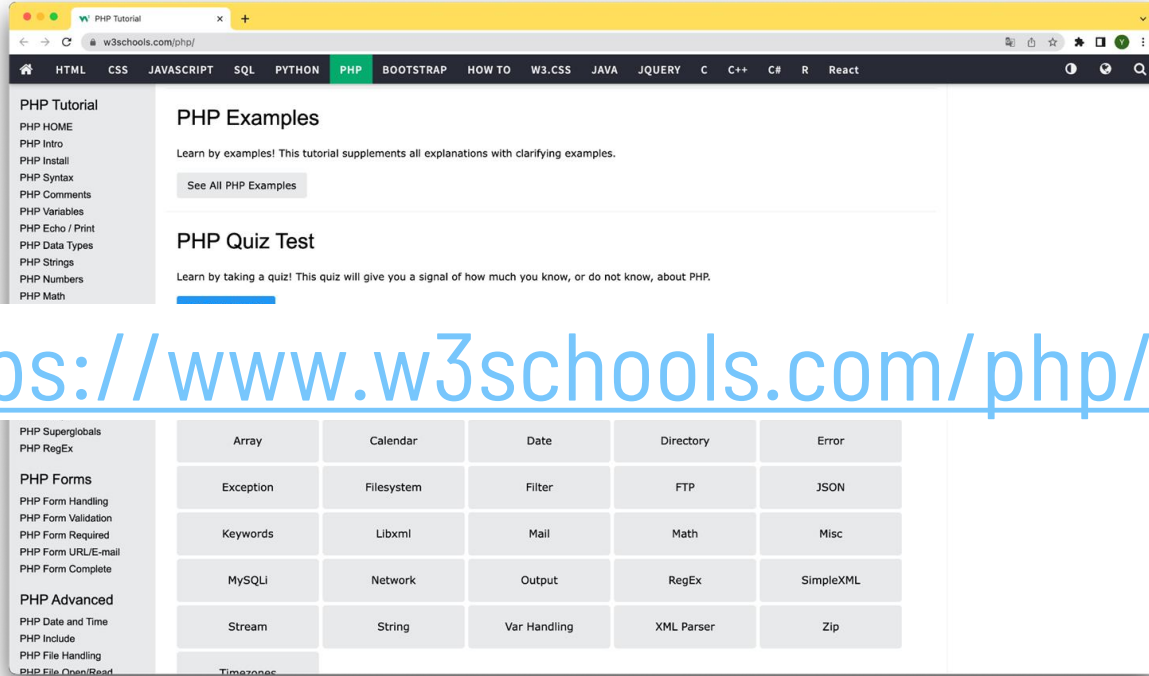
PHPs	JavaScripts	CSSs ...
<code>index.php</code> <code>index_style2.php</code> <code>order.php</code> <code>/include/libraries.php</code> <code>/include/settings.php</code>	<code>/js/shopping_cart.js</code> <code>/js/multi_tabs.js</code>	<code>/css/style.css</code> <code>/css/responsive.css</code> <code>/css/shopping_cart.css</code> <code>/css/multi_tabs.css</code>

06

PHP Basics



A Good Website worths to have a look



The screenshot shows a web browser displaying the PHP tutorial page on W3Schools. The page has a dark navigation bar with links for various programming languages and technologies. The main content area is divided into sections for 'PHP Examples' and 'PHP Quiz Test'. Below these sections is a grid of links to various PHP topics.

PHP Tutorial

- PHP HOME
- PHP Intro
- PHP Install
- PHP Syntax
- PHP Comments
- PHP Variables
- PHP Echo / Print
- PHP Data Types
- PHP Strings
- PHP Numbers
- PHP Math

PHP Examples

Learn by examples! This tutorial supplements all explanations with clarifying examples.

[See All PHP Examples](#)

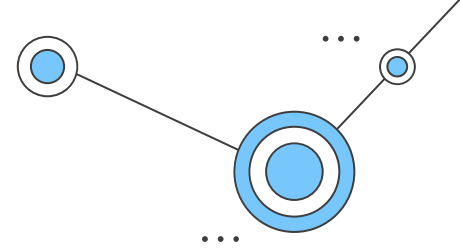
PHP Quiz Test

Learn by taking a quiz! This quiz will give you a signal of how much you know, or do not know, about PHP.

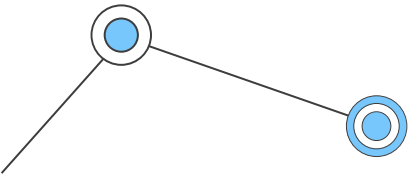
<https://www.w3schools.com/php/>

PHP Superglobals	Array	Calendar	Date	Directory	Error
PHP RegEx	Exception	Filesystem	Filter	FTP	JSON
PHP Forms	Keywords	Libxml	Mail	Math	Misc
PHP Form Handling	MySQLi	Network	Output	RegEx	SimpleXML
PHP Form Validation	Stream	String	Var Handling	XML Parser	Zip
PHP Form Required					
PHP Form URL/E-mail					
PHP Form Complete					
PHP Advanced					
PHP Date and Time					
PHP Include					
PHP File Handling					
PHP File Open/Read					

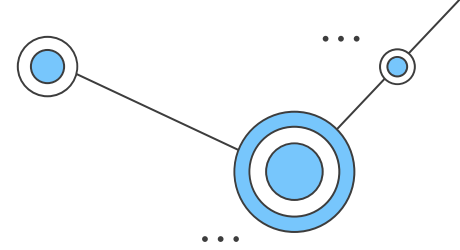
PHP Scripts Start and End



PHP starts with `<?php`
PHP ends with `?>`



PHP – Comments



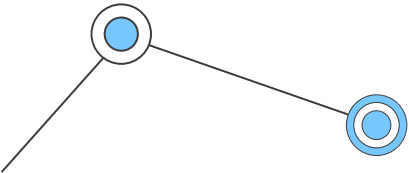
// This is a single-line comment

This is also a single-line comment

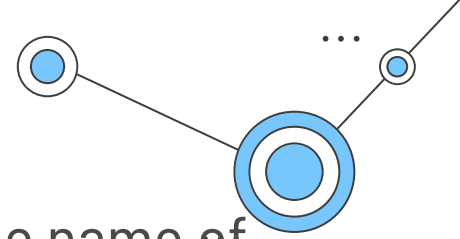
/*

This is a multiple-lines comment block
that spans over multiple
lines

*/



PHP – Variables



In PHP, a variable starts with the **\$** sign, followed by the name of the variable

Indexed arrays - Arrays with a numeric index

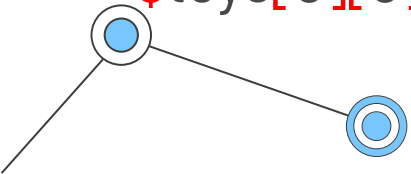
```
$toys[0] = "car";
```

Associative arrays - Arrays with named keys

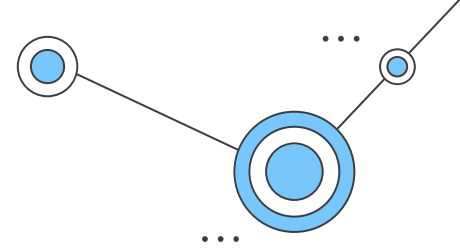
```
$toys['car'] = "100";
```

Multidimensional arrays - Arrays containing one or more arrays

```
$toys[0][0] = "car";
```

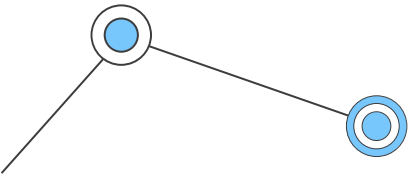


PHP - include_once



include_once may be used in cases where the same file might be included and evaluated more than once during a particular execution of a script, so in this case it may help avoid problems such as function redefinitions, variable value reassignments, etc.

```
<?php include_once($_SERVER['DOCUMENT_ROOT'].'/include/header.php');?>
```





The Hong Kong Association for Computer Education
香港電腦教育學會

Thanks!

Do you have any questions?

ytl@hkace.org.hk

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