# **Introduction to PHP**

PHP is a server-side and general-purpose scripting language that is especially suited for web development.

PHP originally stood for **Personal Home Page**. However, now, it stands for **Hypertext Preprocessor**. It's a recursive acronym because the first word itself is also an acronym.

PHP was created by Rasmus Lerdorf in 1994. It's currently maintained by the PHP Development Team.

#### PHP is a server-side language

When you open a website on your web browser, for example, https://www.phptutorial.net

The web browser sends an HTTP request to a web server where phptutorial.net locates. The web server receives the request and responds with an HTML document.

In this example, the web browser is a client while the web server is the server. The client requests for a page, and the server serves the request.

PHP runs on the web server, processes the request, and returns the HTML document.

#### PHP is a general-purpose language

When it comes to the purpose of the programming languages, there are two main types: domain-specific and general-purpose languages.

The domain-specific languages are used within specific application domains. For example, SQL is a domain-specific language. It's used mainly for querying data from relational databases. And SQL cannot be used for other purposes.

On the other hand, PHP is a general-purpose language because PHP can develop various applications.

#### PHP is a cross-platform language

PHP can run on all major operating systems, including Linux, Windows, and macOS.

You can use PHP with all leading web servers such as Nginx, OpenBSD, and Apache. Some cloud environments also support PHP like Microsoft Azure and Amazon AWS.

PHP is quite flexible. It's not just limited to processing HTML. PHP has built-in support for generating PDF, GIF, JPEG, and PNG images.

One notable feature of PHP is that it supports many databases, including MySQL, PostgreSQL, MS SQL, db2, Oracle Database, and MongoDB.

## What can PHP do

PHP has two main applications:

- Server-side scripting PHP is well-suited for developing dynamic websites and web applications.
- Command-line scripting like Python and Perl, you can run PHP script from the command line to perform administrative tasks like sending emails and generating PDF files.

The tutorials on this website mainly focus on server-side scripting.

## **How PHP Works**

The following illustrates how PHP works:



#### How PHP works:

- First, the web browser sends an HTTP request to the web server, e.g., index.php.
- Second, the PHP preprocessor that locates on the web server processes PHP code to generate the HTML document.
- Third, the web server sends the HTML document back to the web browser.

# **Advantages of PHP**

Since PHP is designed for the web in the first place, it brings many advantages to web development:

- Simple PHP is quite easy to learn and get started.
- Fast PHP websites typically run very fast.
- Stable PHP is stable since it has been in existence for a long time.
- Open-source and free PHP is open source and free. It means that you don't have to pay a license fee to use PHP to develop software products.
- Community support PHP has an active online community that helps you whenever you face an issue.

# Install PHP

Installing PHP on your computer allows you to safely develop and test a web application without affecting the live system.

To work with PHP locally, you need to have the following software:

- PHP
- A web server that supports PHP. We'll use the <u>Apache webserver</u>.
- A database server. We'll use the <u>MySQL database server</u>.

Typically, you won't install all this software separately because connecting them is tricky and not intended for beginners.

Therefore, it's easier to find an all-in-one software package that includes PHP, a web server, and a database server. One of the most popular PHP development environments is <u>XAMPP</u>.

XAMPP is an easy install Apache distribution that contains PHP, MariaDB, and Apache webserver. XAMPP supports Windows, Linux, and macOS.

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Note that <u>MariaDB</u> is a fork of the most popular relational database management system, MySQL.

# Download XAMPP

To install XAMPP on windows, you can go to the <u>XAMPP official website</u> and download the suitable version for your platform.

## Install XAMPP on Windows

To install XAMPP on Windows, you can follow these steps:

### Step 1. Start the installation

Double-click the downloaded file to start setting up XAMPP:

🔀 Setup		_		×
	Setup - XAMPP Welcome to the XAMPP Setup Wizard.			
bitnami 🕑				
	< Back N	ext >	Cano	cel

### Step 2. Select components to install

Select the components that you want to install. In this step, you can select Apache, MySQL, PHP, and phpMyAdmin, deselect other components like the following, and click the Next button to go to the next step.

😫 Setup			_		×
Select Components					ខា
Select the components you want to install; clear Next when you are ready to continue.	the components yo	ou do not w	vant to	install.	Click
Server     Apache     MySQL     FileZilla FTP Server     Mercury Mail Server     Tomcat     Program Languages     PHP     Perl     Perl     Program Languages     MySQL     Fike Sendmail					
XAMPP Installer	< Back	Next 3	>	Car	ncel

### Step 3. Specifying the installation folder

Select a folder to install XAMPP. It's recommended to install XAMPP in the c:\xampp folder. Click the Next button to go to the next step.

🖾 Setup		_		×
Installation folder				ខា
Please, choose a folder to install XAMPP				
Select a folder C:\xampp	<b>12</b>			
XAMPP Installer	< Back	Next >	Car	ncel

# Step 4. Selecting a language

Select a language for XAMPP Control Panel. By default, it's English. And you can select your preferred language and click the Next button to go to the next step.

🖾 Setup				-	_		$\times$
Languag	e						ខ
XAMPP Cor	ntrol Panel for Wi	ndows supports d	ifferent languages.				
Language	English		$\sim$				
XAMPP Instal	ler		< Back	Next >	•	Car	ncel

### Step 5. Bitnami for XAMPP

Feel free to skip this step because you don't need Bitnami for learning PHP. Just click the Next button to go to the next step.



### Step 6. Begin installing XAMPP

And you're now ready to install XAMPP. Click the Next button to start the installation. It'll take a few minutes to complete.



#### Step 7. Completing the XAMPP setup

Once completed, the XAMPP setup wizard shows the following screen. You can click the Finish button to launch the XAMPP Control Panel:



The XAMPP Control Panel lists installed services. To start a service, you click the corresponding Start button:

🔀 XAMPP Control Panel v3.2.4 [Compiled: Jun 5th 2019] – 🗆 🗙										
ខា	XAM	d and a c	onfig							
Modules - Service	Module	PID(s)	Port(s)	Actions				🥘 N	etstat	
	Apache			Start	Admin	Config	Logs	2	Shell	
	MySQL			Start	Admin	Config	Logs	📄 Ex	plorer	
	FileZilla			Start	Admin	Config	Logs	🛛 🌄 Se	rvices	
	Mercury			Start	Admin	Config	Logs	0	Help	
	Tomcat			Start	Admin	Config	Logs		Quit	
11:59:22 / 11:59:22 / 11:59:22 / 11:59:22 / 11:59:22 / 11:59:22 / 11:59:22 / 11:59:22 /	AM [main] AM [main] AM [main] AM [main] AM [main] AM [main] AM [main] AM [main]	Checking fo All prerequi Initializing I The FileZill The Mercur The Tomca Starting Ch Control Par	or prerequisites isites found Modules a module is dis ry module is dis t module is dis t module is dis neck-Timer nel Ready	abled sabled abled					< >	

The following shows the Apache web server and MySQL are up and running. The Apache web server listens on the ports 80 and 443 while the MySQL listens on port 3306:

🔀 XAMPP Control Panel v3.2.4 [Compiled: Jun 5th 2019] -									
ខ	XAMPP Control Panel v3.2.4								
Modules Service	Module	PID(s)	Port(s)	Actions				🛛 🎯 Ne	etstat
	Apache	11548 12396	80, 443	Stop	Admin	Config	Logs	- 🗾 S	Shell
	MySQL	12428	3306	Stop	Admin	Config	Logs	🛅 Ex	plorer
	FileZilla			Start	Admin	Config	Logs	🚽 🛃 Se	rvices
	Mercury			Start	Admin	Config	Logs	0	Help
	Tomcat			Start	Admin	Config	Logs		Quit
11:59:22 AM[main]The Mercury module is disabled11:59:22 AM[main]The Tomcat module is disabled11:59:22 AM[main]Starting Check-Timer11:59:22 AM[main]Control Panel Ready11:59:51 AM[Apache]Attempting to start Apache app11:59:51 AM[Apache]Status change detected: running11:59:53 AM[mysql]Attempting to start MySQL app11:59:53 AM[mysql]Status change detected: running									^ ~

### Step 8. Launch the XAMPP

Open the web browser and navigate to the following URL: http://localhost/. If the installation is completed successfully, you'll see the welcome screen of the XAMPP.

### Troubleshooting

By default, Apache uses port 80. However, if port 80 is used by another service, you'll get an error like this:

Problem detected!
Port 80 in use by "Unable to open process" with PID 4!
Apache WILL NOT start without the configured ports free!
You need to uninstall/disable/reconfigure the blocking application
or reconfigure Apache and the Control Panel to listen on a different port
Code language: plaintext (plaintext)

In this case, you need to change the port from 80 to a free one, e.g., 8080. To do that, you follow these steps:

First, click the Config button that aligns with the Apache module:

😂 xamp	P Control Pan	el v3.2.4 [Con	npiled: Jun 5th 20	19]			_		×
ខ	XAN	IPP Contr			<i>🎤</i> C	onfig			
Modules Service	Module	PID(s)	Port(s)	Actions				🔞 Ne	etstat
	Apache			Start	Admin	Config	Logs	2 5	Shell
	MySQL	2196	3306	Stop	Admin	Con	Apache (http	od.conf)	
	FileZilla			Start	Admin	Con	Apache (http Apache (http	od-ssl.cor od-xampi	nt) p.conf)
	Mercury			Start	Admin	Con	PHP (php.in	i)	,
	Tomcat			Start	Admin	Con	phpMyAdm	in (config	.inc.php)
2:26:51 F 2:26:51 F 2:26:51 F 2:26:51 F 2:26:51 F 2:26:51 F 2:28:18 F	PM [Apache] PM [Apache] PM [Apache] PM [Apache] PM [Apache] PM [Apache]	improper p Press the the Windo If you need entire log y Problem d	rivileges, a cras Logs button to v ws Event Viewe I more help, cop vindow on the fo etected!	h, or a shut view error log r for more c by and post brums	down by ar gs and che lues this	nother i ick	<browse> [A <browse> [F <browse> [p</browse></browse></browse>	Apache] PHP] ohpMyAd	min]

Second, find the line that has the text Listen 80 and change the port from 80 to 8080 like this:

```
httpd.conf - Notepad
                                                 2
File Edit Format View Help
# mutex file directory is not on a local disk or is not appropriate for some
# other reason.
#
# Mutex default:logs
#
# Listen: Allows you to bind Apache to specific IP addresses and/or
# ports, instead of the default. See also the <VirtualHost>
# directive.
#
# Change this to Listen on specific IP addresses as shown below to
# prevent Apache from glomming onto all bound IP addresses.
#
#Listen 12.34.56.78:80
Listen 8080
```

Third, click the Start button to start the Apache service. If the port is free, Apache should start properly, as shown in the following picture:

😫 XAMPP	XAMPP Control Panel v3.2.4 [Compiled: Jun 5th 2019] -								
XAMPP Control Panel v3.2.4									
Service	Module	PID(s)	Port(s)	Actions				Netstat	
	Apache	15696 17640	443, 8080	Stop	Admin	Config	Logs	🗾 Shell	
	MySQL	2196	3306	Stop	Admin	Config	Logs	Explorer	
	FileZilla			Start	Admin	Config	Logs	Services	
	Mercury			Start	Admin	Config	Logs	😧 Help	
	Tomcat			Start	Admin	Config	Logs	📃 Quit	
2:28:20 PM       [Apache]       entire log window on the forums         2:43:35 PM       [Apache]       Problem detected!         2:43:35 PM       [Apache]       Port 80 in use by "Unable to open process" with PID 4!         2:43:35 PM       [Apache]       Apache WILL NOT start without the configured ports free!         2:43:35 PM       [Apache]       You need to uninstall/disable/reconfigure the blocking application         2:43:35 PM       [Apache]       or reconfigure Apache and the Control Panel to listen on a different port         2:43:35 PM       [Apache]       Attempting to start Apache app         2:43:36 PM       [Apache]       Status change detected: running									