

# COMP30680

# Web Application Development

Server Side Introduction

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# Learning outcomes

On successful completion of this module the learner will be able to:

1. Develop client-side applications using HTML, CSS and JavaScript.
2. Become familiar with the JSON data-interchange format and RESTful web service APIs.
3. Develop server-side applications using PHP.
4. Connect to a database from a web application.
5. Implement web applications using LAMP/WAMP/MAMP solution stacks.
6. Display an overall awareness of how to approach website development.

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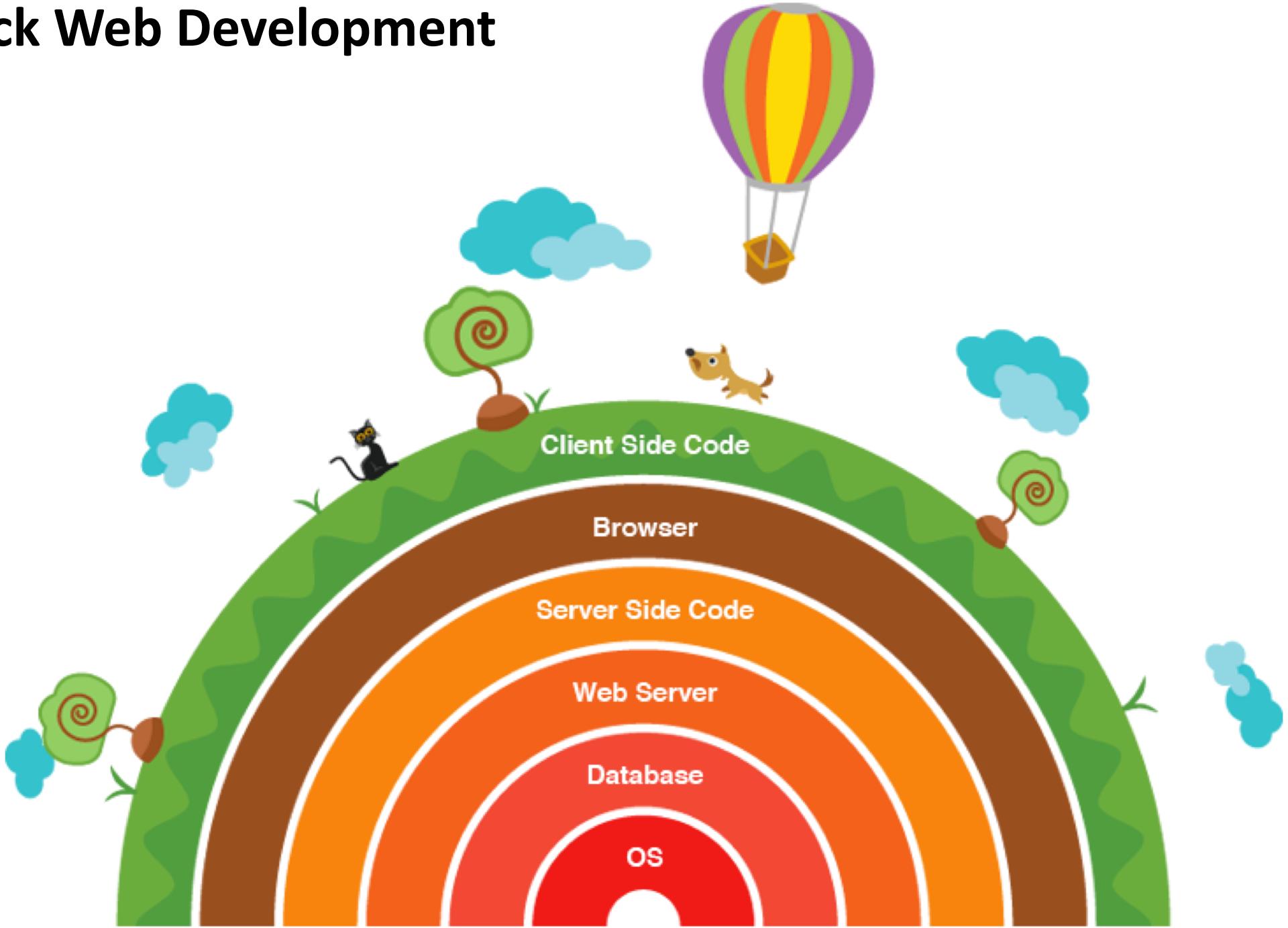
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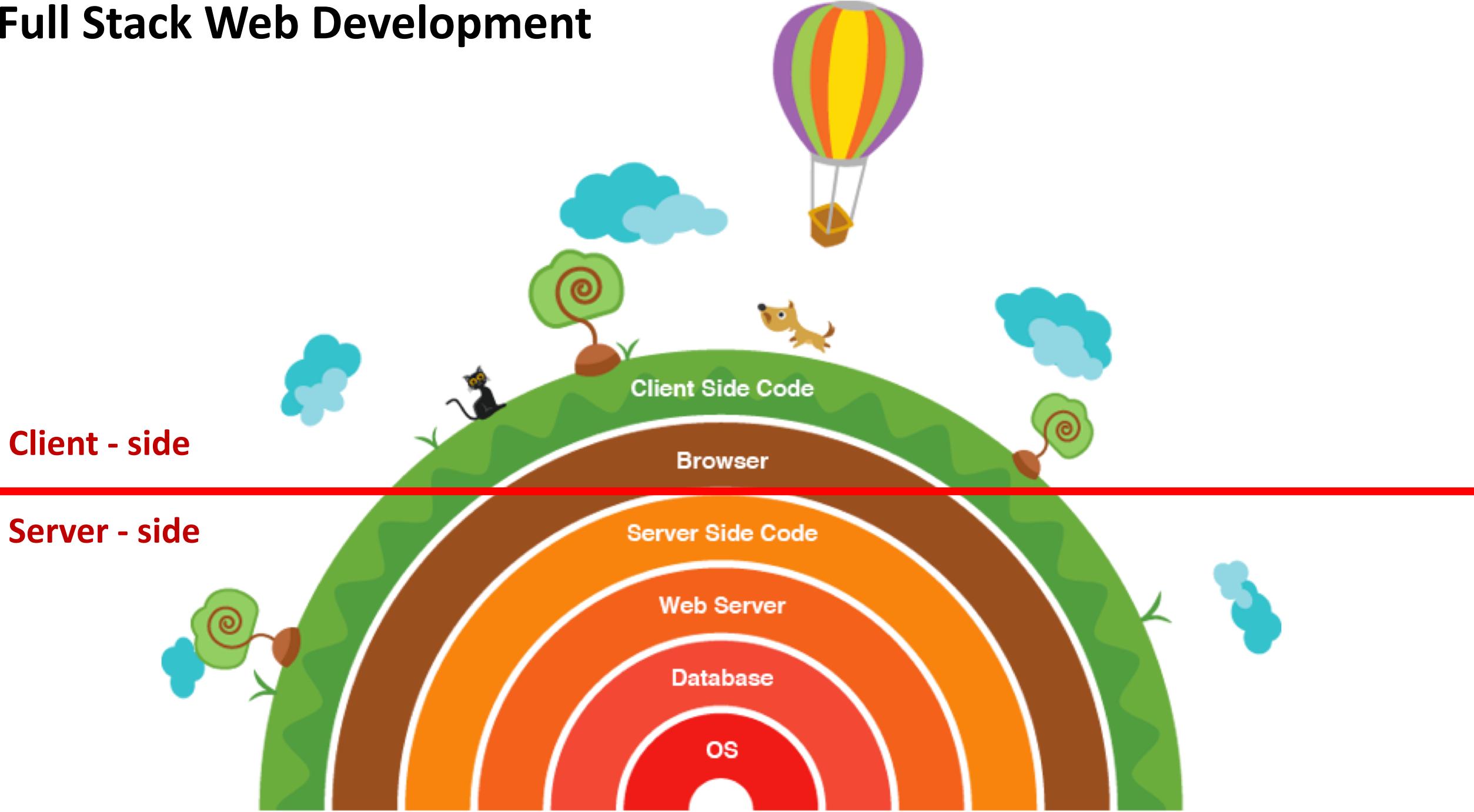
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# Full Stack Web Development

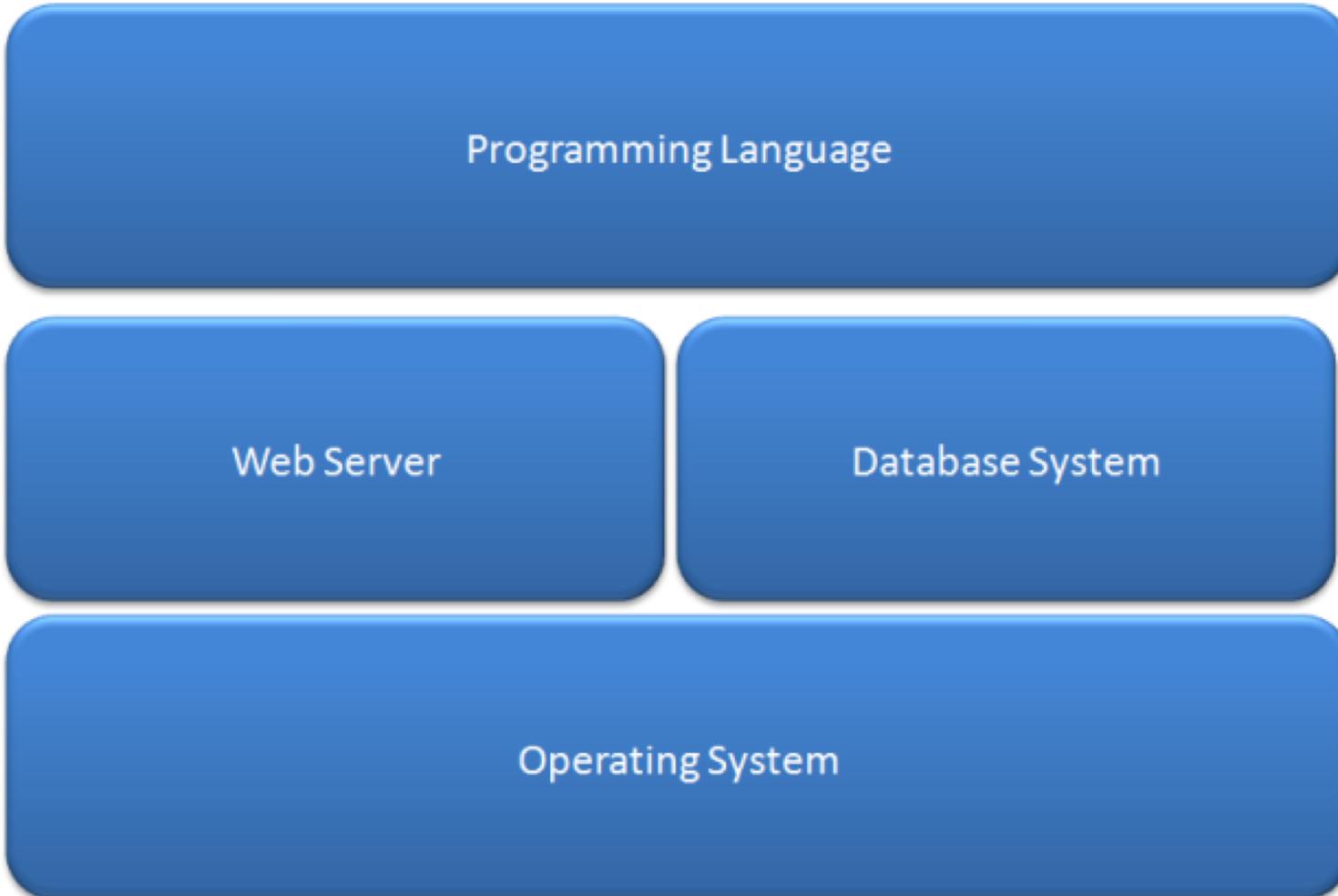


# Full Stack Web Development

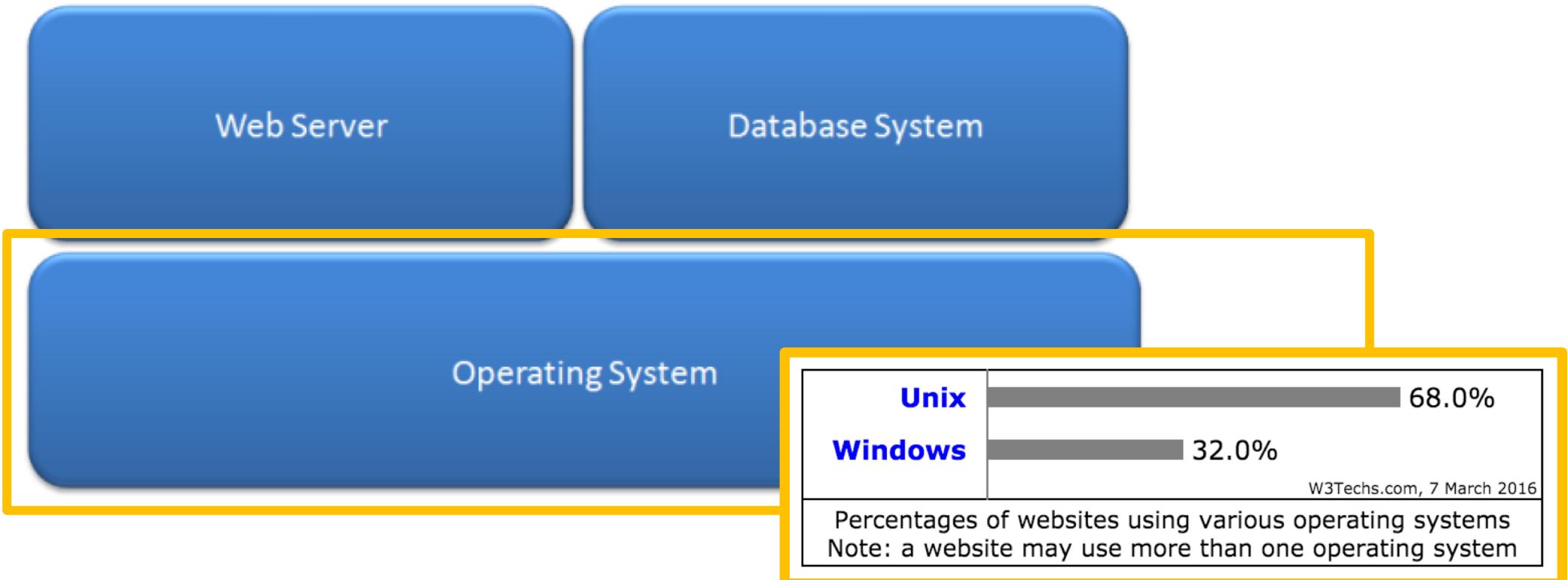


# Server side stack

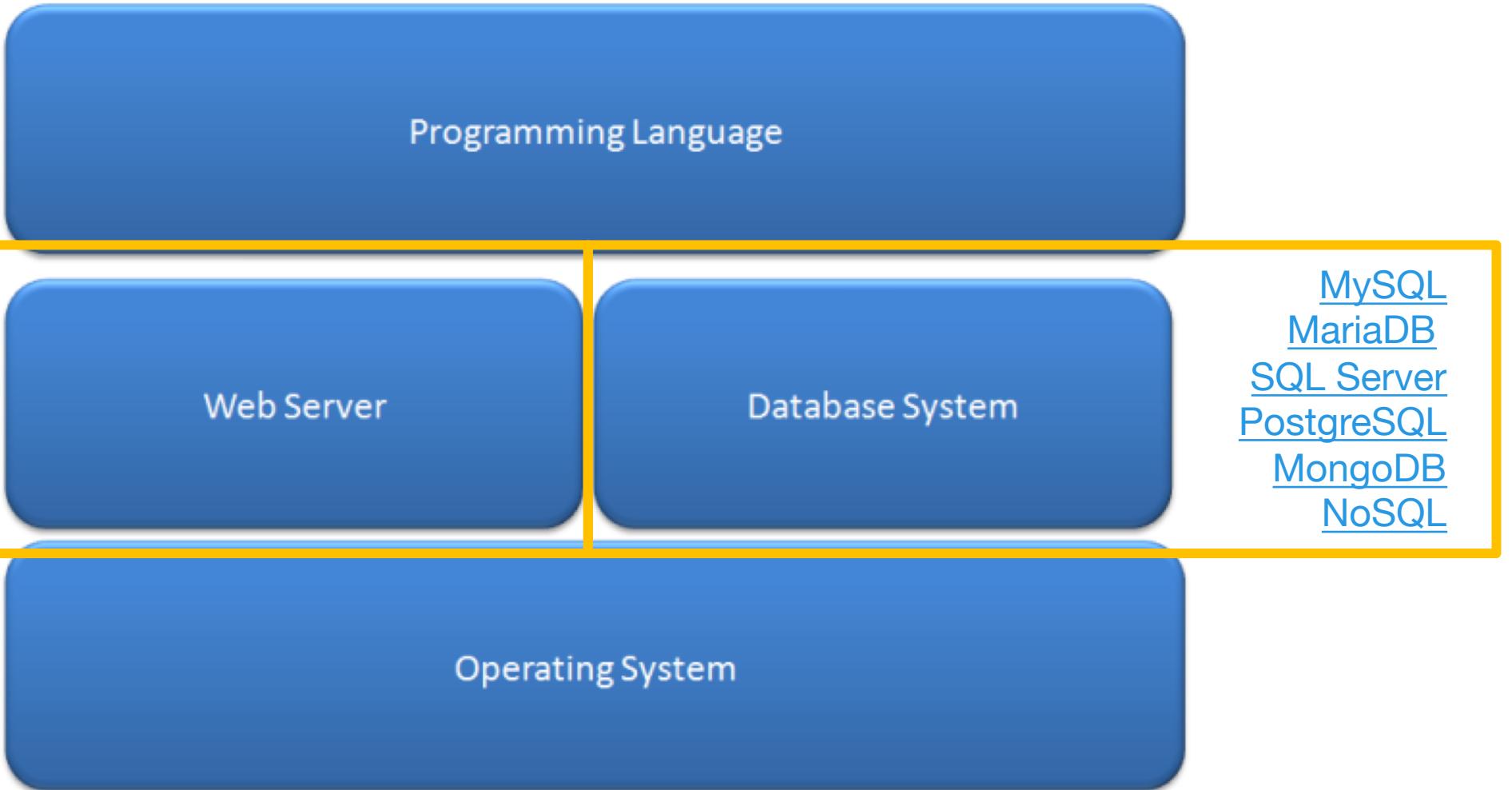
Four major components:



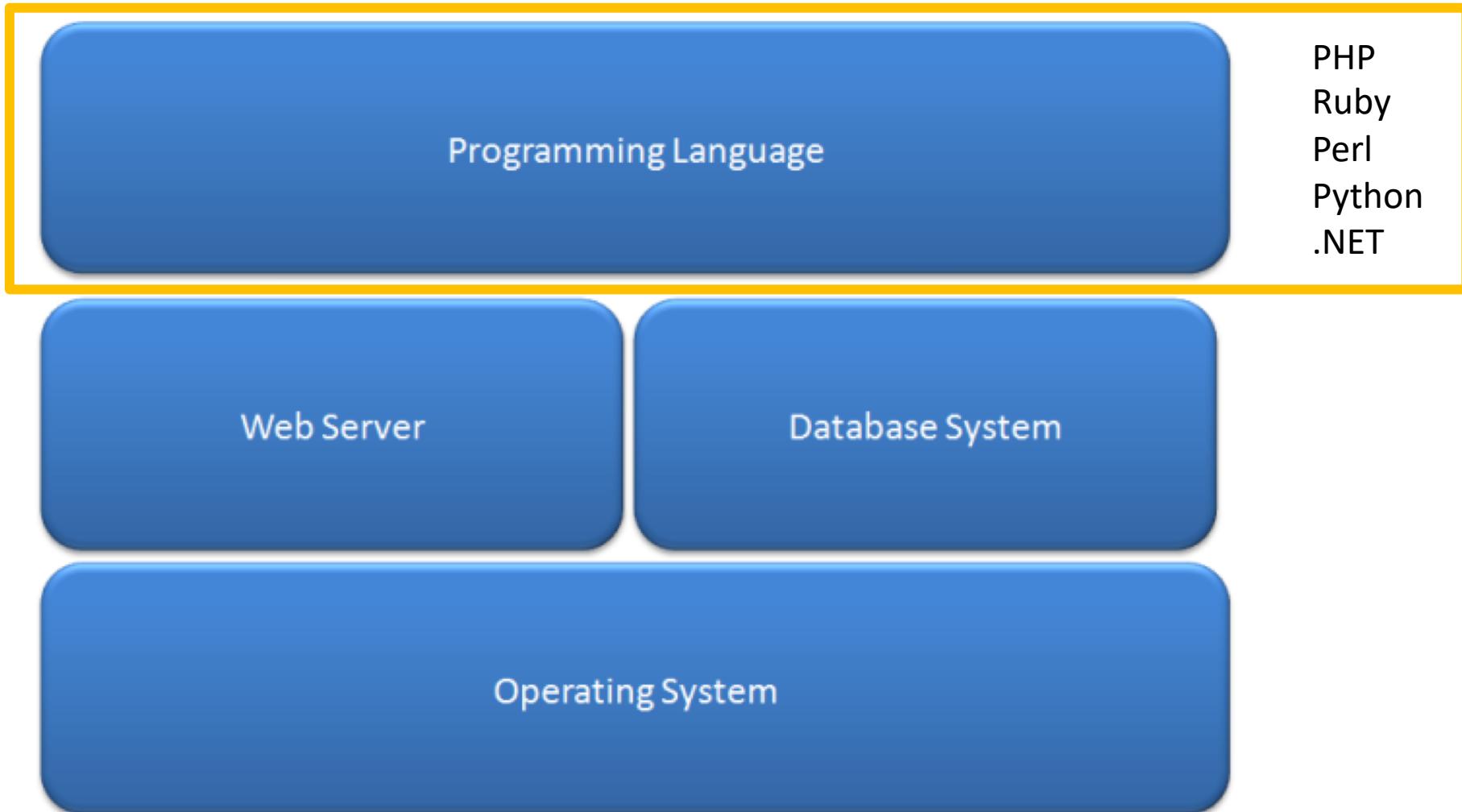
# Server side stack



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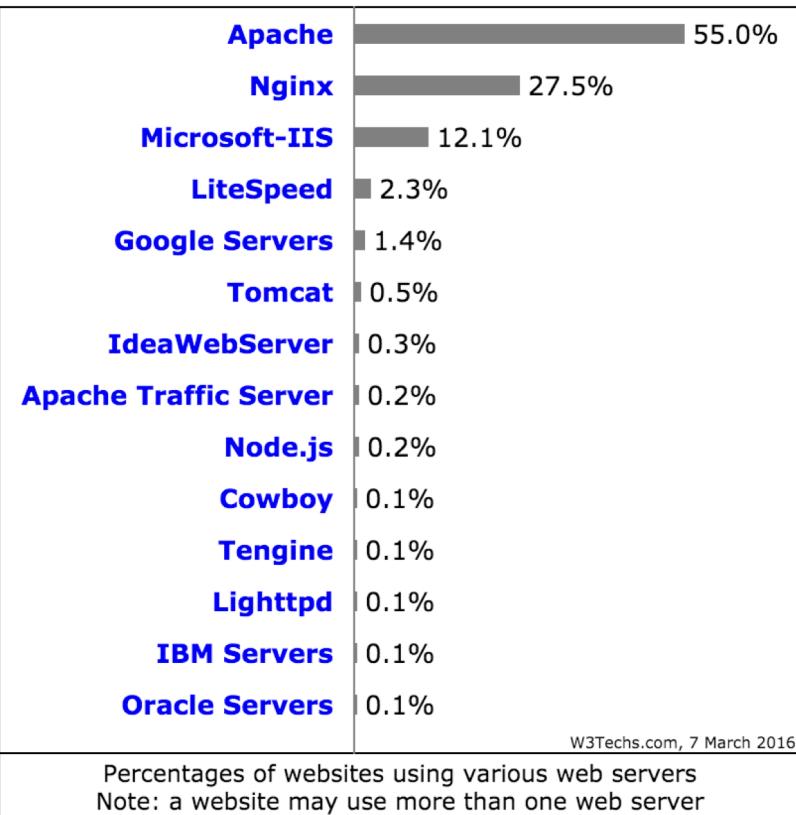
# Server side stack



# Apache

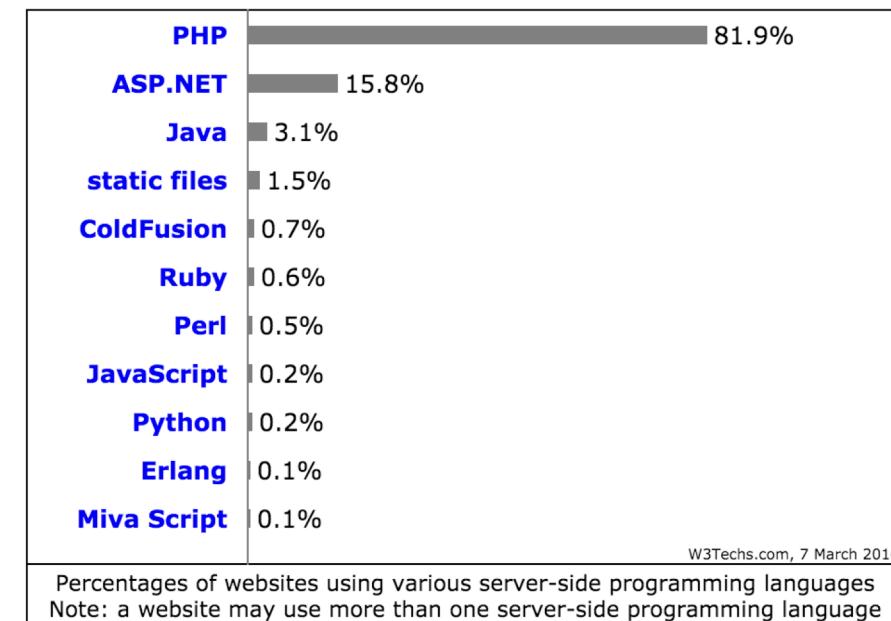
# MySQL

# PHP



Rank			DBMS
Mar 2016	Feb 2016	Mar 2015	
1.	1.	1.	Oracle
2.	2.	2.	MySQL +
3.	3.	3.	Microsoft SQL Server
4.	4.	4.	MongoDB +
5.	5.	5.	PostgreSQL
6.	6.	6.	DB2
7.	7.	7.	Microsoft Access
8.	8.	8.	Cassandra +
9.	↑ 10.	↑ 10.	Redis +
10.	↓ 9.	↓ 9.	SQLite

<http://db-engines.com/en/ranking>



[http://w3techs.com/technologies/overview/programming\\_language/all](http://w3techs.com/technologies/overview/programming_language/all)

[http://w3techs.com/technologies/overview/web\\_server/all](http://w3techs.com/technologies/overview/web_server/all)

# Apache

The Apache HTTP Server Project is an effort to develop and maintain an open-source **HTTP server** for modern operating systems including UNIX and Windows. The goal of this project is to provide a secure, efficient and extensible server that provides HTTP services in sync with the current HTTP standards.

The Apache HTTP Server ("httpd") was launched in 1995 and it has been the most popular web server on the Internet since April 1996.

<https://httpd.apache.org/>

A short history: [https://httpd.apache.org/ABOUT\\_APACHE.html](https://httpd.apache.org/ABOUT_APACHE.html)

FAQ: <https://wiki.apache.org/httpd/FAQ>

# MySQL

SQL stands for Structured Query Language

SQL lets you access and manipulate databases



**MySQL** is an open-source relational database management system (RDBMS). It is the world's second most widely used RDBMS, and the most widely used open-source client–server model RDBMS. It is named after co-founder Michael Widenius's daughter, My.

## RDBMS

RDBMS stands for Relational Database Management System.

RDBMS is the basis for SQL, and for all modern database systems such as MS SQL Server, IBM DB2, Oracle, MySQL, and Microsoft Access.

The data in RDBMS is stored in database objects called tables.

A table is a collection of related data entries and it consists of columns and rows.

# MySQL

## What Can MySQL do?

- It can execute queries against a database
- It can retrieve data from a database
- It can insert records in a database
- It can update records in a database
- It can delete records from a database
- It can create new databases
- It can create new tables in a database
- It can create stored procedures in a database
- It can create views in a database
- It can set permissions on tables, procedures, and views



...

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# PHP

PHP is an acronym for "PHP: Hypertext Preprocessor"

PHP is a widely-used, open source scripting language

PHP is free to download and use

PHP files have extension ".php"

PHP files can contain text, HTML, CSS, JavaScript, and PHP code

PHP code are executed on the server, and the result is returned to the browser as plain HTML

## **What can it do?**

PHP can generate dynamic page content

PHP can create, open, read, write, delete, and close files on the server

PHP can collect form data

PHP can send and receive cookies

PHP can add, delete, modify data in your database

PHP can be used to control user-access

PHP can encrypt data

# PHP

## Why PHP?

PHP runs on various platforms (Windows, Linux, Unix, Mac OS X, etc.)

PHP is compatible with almost all servers used today (Apache, IIS, etc.)

PHP supports a wide range of databases

PHP is free and open source

PHP is easy to learn and runs efficiently on the server side

## W3Schools:

### **PHP is an amazing and popular language!**

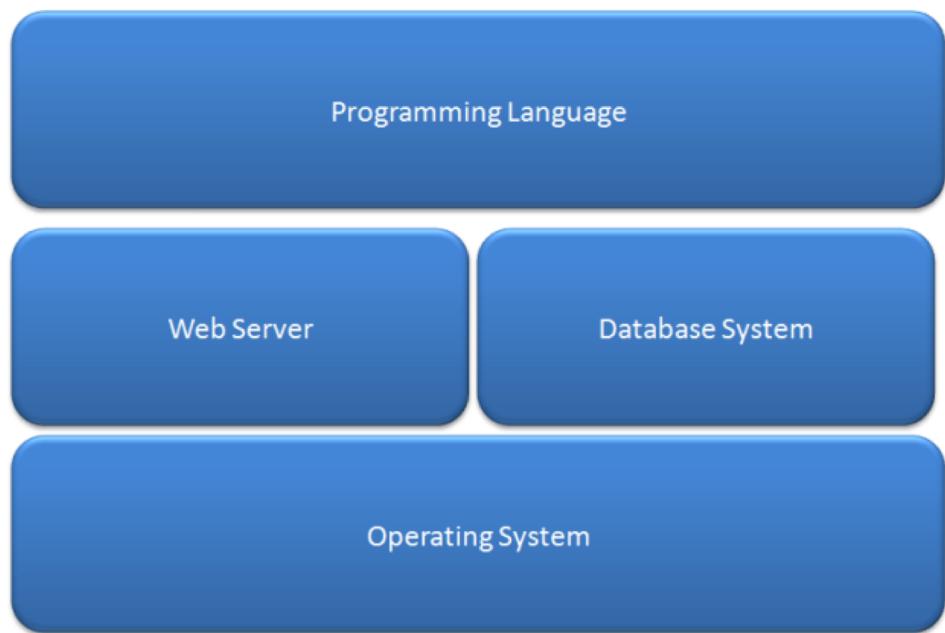


It is powerful enough to be at the core of the biggest blogging system on the web (WordPress)!

It is deep enough to run the largest social network (Facebook)!

It is also easy enough to be a beginner's first server side language!

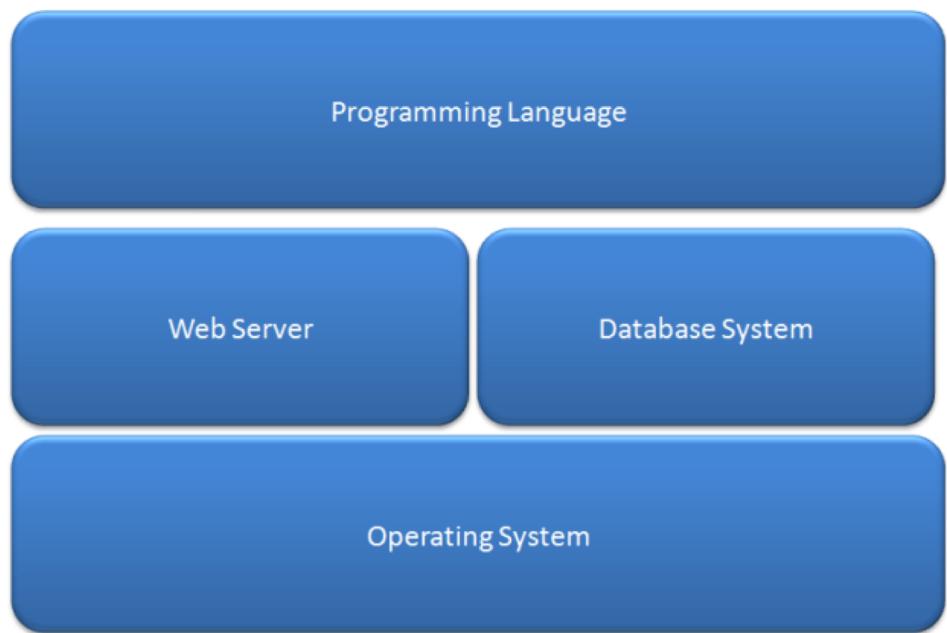
# Development stack



**Options available  
for different  
operating systems**



# Development stack



**Options available  
for different  
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# XAMPP Apache + MariaDB + PHP + Perl

## What is XAMPP?

XAMPP is the most popular PHP development environment

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.



### Download

[Click here for other versions](#)



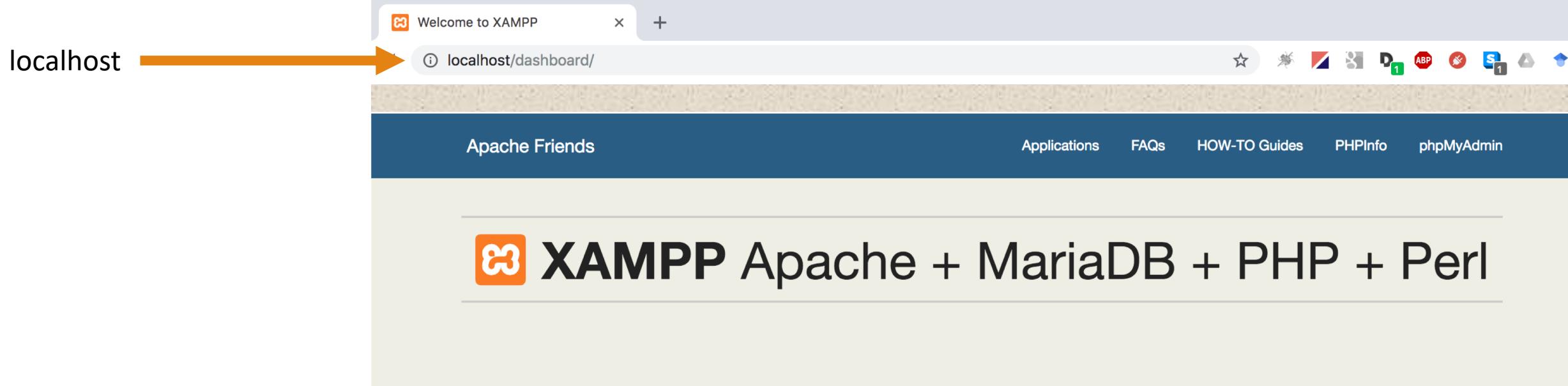
XAMPP for Windows  
7.2.11 (PHP 7.2.11)



XAMPP for Linux  
7.2.11 (PHP 7.2.11)



XAMPP for OS X  
XAMPP-VM (PHP 7.2.11)



# Welcome to XAMPP for OS X 7.2.11

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.

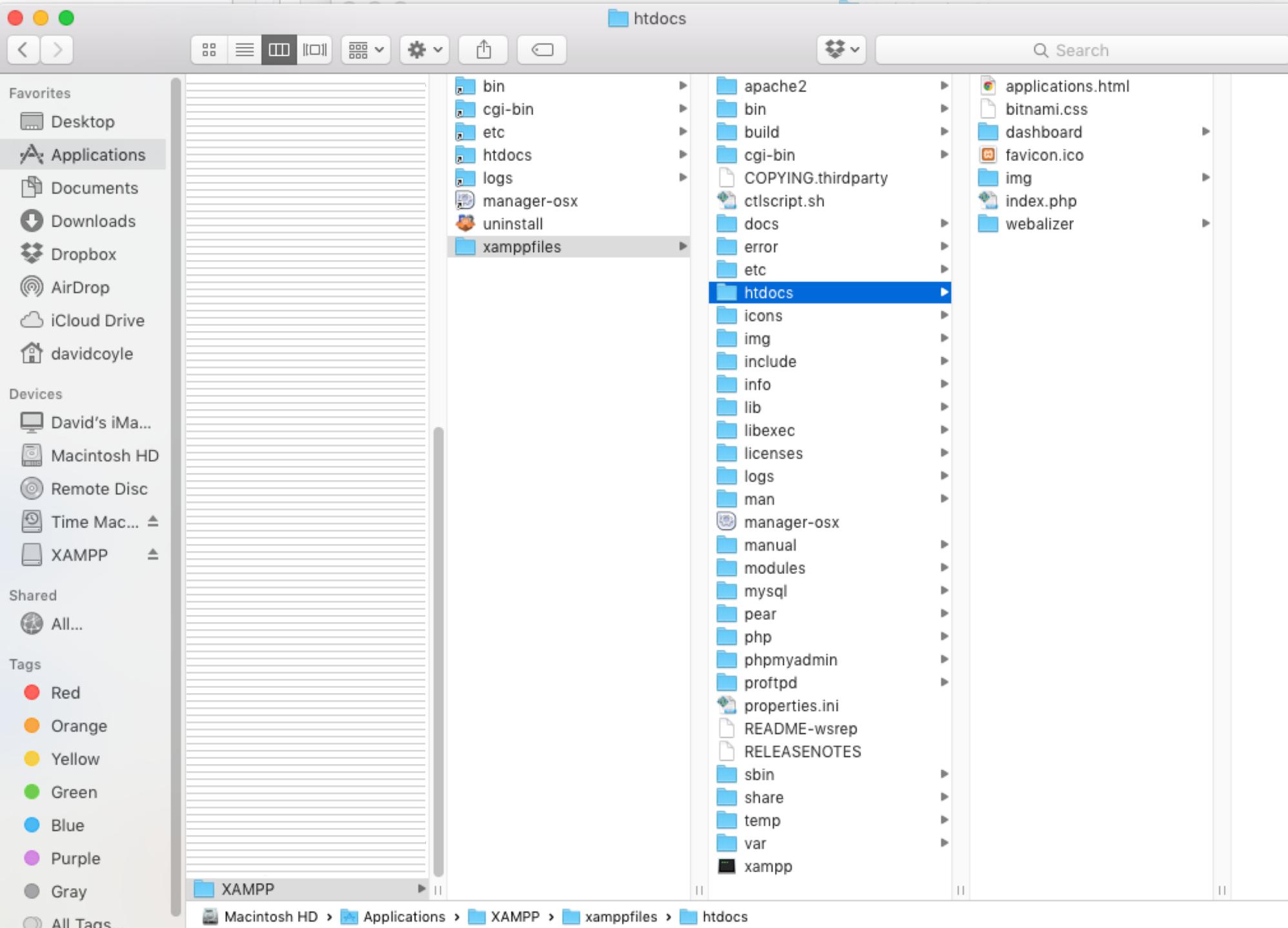
XAMPP is meant only for development purposes. It has certain configuration settings that make it easy to develop locally but that are insecure if you want to have your installation accessible to others. If you want have your XAMPP accessible from the internet, make sure you understand the implications 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](http://translate.apachefriends.org).



## htdocs

This is where you put file to run on your local server

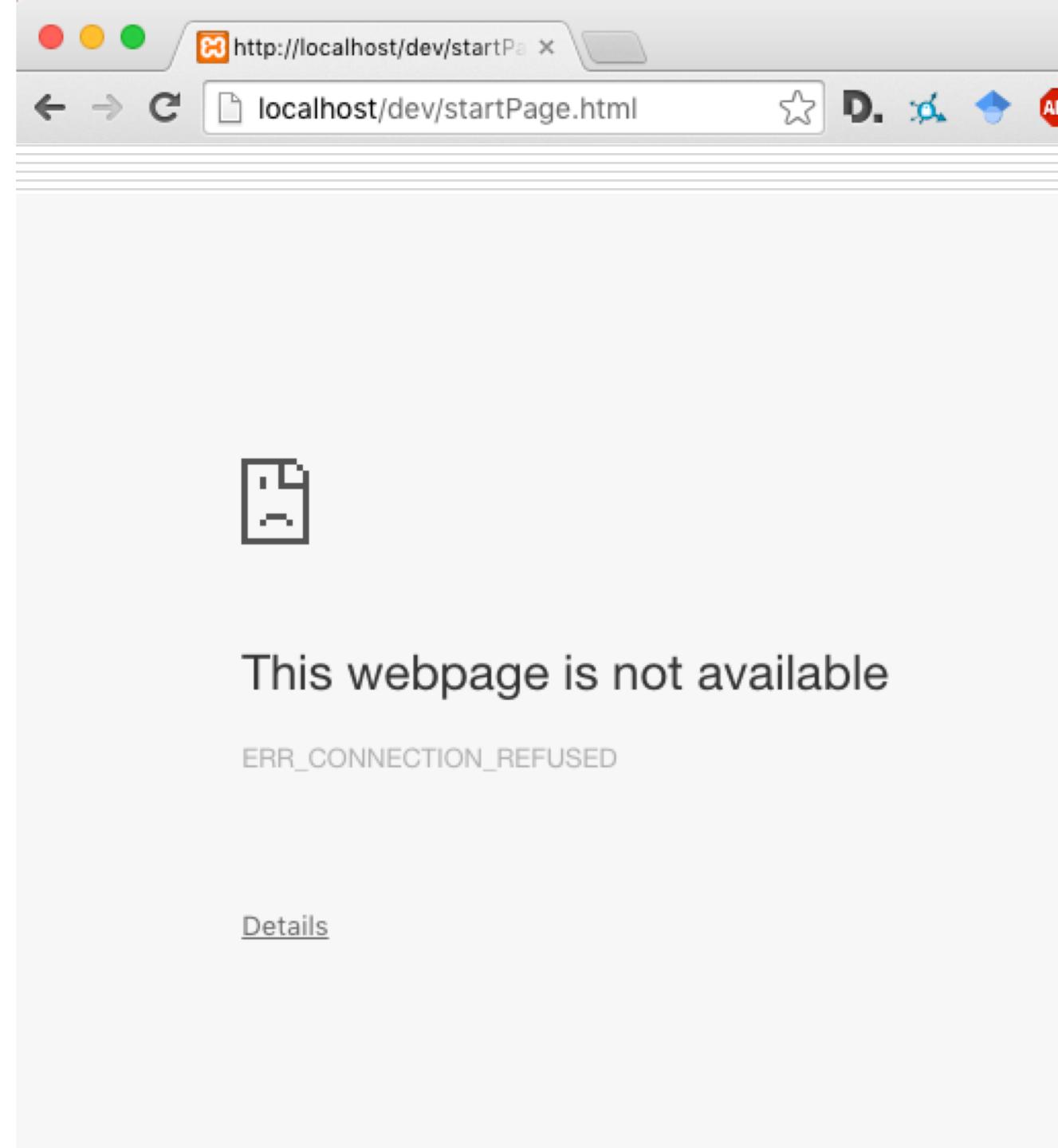
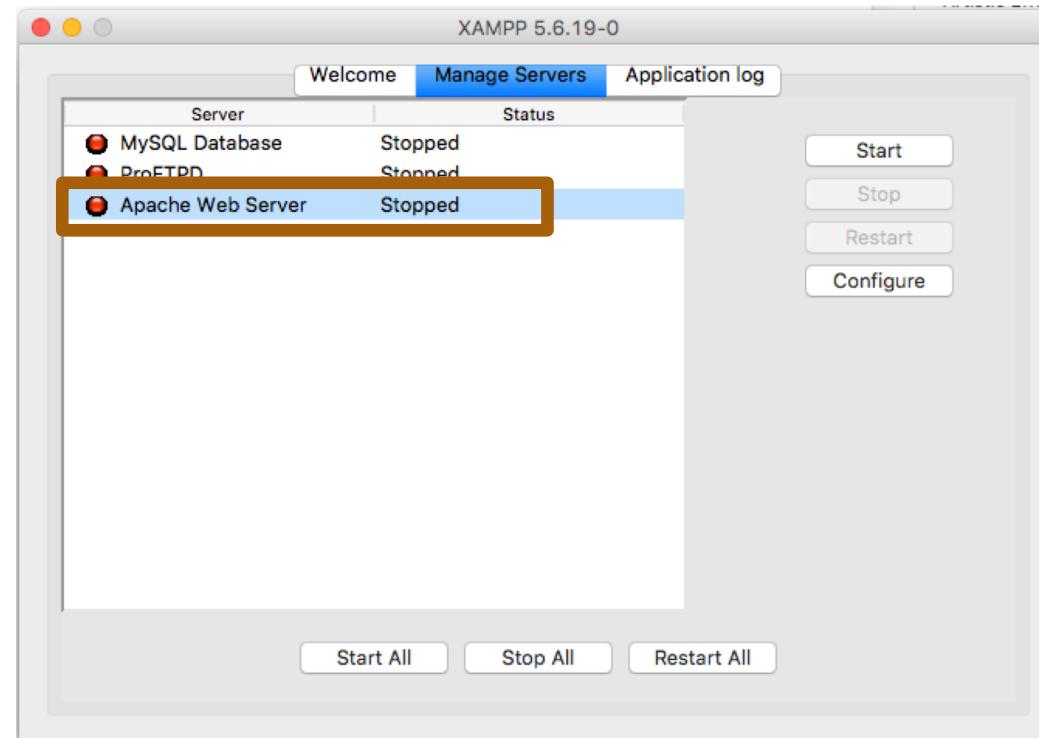
# XAMPP Manager



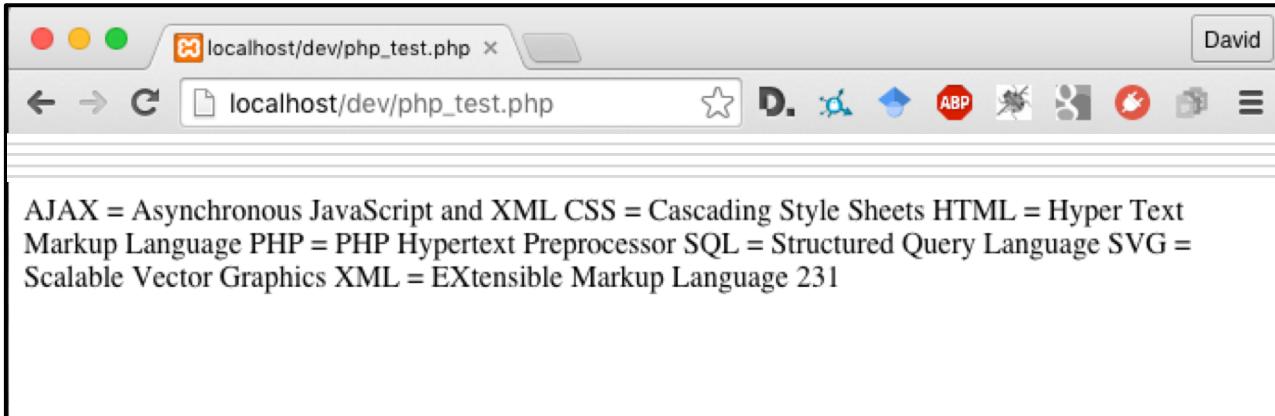
Server	Status	Actions
MySQL Database	Stopped	<a href="#">Start</a>
ProFTPD	Stopped	<a href="#">Stop</a>
Apache Web Server	Running	<a href="#">Restart</a>

At the bottom of the window, there are three buttons: "Start All", "Stop All", and "Restart All".

# XAMPP Manager



# Open a PHP file



The file itself

```
1 <!DOCTYPE html>
2 <html>
3 <body>
4
5 <?php
6 echo readfile("webdictionary.txt");
7 ?>
8
9 </body>
10 </html>
```

View source in browser

A screenshot of a web browser window titled "view-source:localhost/dev/php\_test....". The browser interface is similar to the first one. The main content area displays the raw HTML source code, which includes the PHP code from the file and its execution results:

```
1 <!DOCTYPE html>
2 <html>
3 <body>
4
5 AJAX = Asynchronous JavaScript and XML
6 CSS = Cascading Style Sheets
7 HTML = Hyper Text Markup Language
8 PHP = PHP Hypertext Preprocessor
9 SQL = Structured Query Language
10 SVG = Scalable Vector Graphics
11 XML = EXtensible Markup Language
12 231
13 </body>
14 </html>
```

# Next:

Lecture 14 – PHP basics

Practical 7 - XAMP

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Lecture 15 – Connecting to a database with PHP

Practical 8 – PHP starter

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Lecture 16 – File management with PHP

Lecture 17 – Error handling

Practical 9 – PHP & MySQL

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Lecture 18 – Forms and filters

Lectures 19 & 20

– Wrap up