WHEN DEVELOPING WEB APPLICATIONS, WHICH PROGRAMMING LANGUAGE IS BETTER FOR THE BACK-END, PHP OR PYTHON?

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Annotation
In this article, the answer to the question of which of the PHP programming languages and python programming languages is better to choose for the development of web applications has been found. in addition, the wide possibilities of the 2 programming languages and their disadvantages are also covered in detail.

Keywords
web application, PHP, Python, programming language, Oracle, MySQL, Java, JavaScript

With stiff competition to produce high-performing, scalable, reliable, secure, and flexible web products, it has become necessary to choose a wise technology base, including the programing language.

While experienced programmers have their personal preferences, logical opinions, and favorite tools for software development, beginners and project managers face trouble while choosing a programming language to get started.

There are so many programming languages out there like Java, Python, JavaScript, PHP, Ruby, etc., each with its strong and weak points. You also need to narrow down your choice of programming languages based on your unique project requirements, timeline, the end goal, budget, amongst other factors.

What Is PHP?

PHP - from the English Hypertext Preprocessor - "hypertext preprocessor". It is a scripting language used to create websites and web applications. The language integrates with most web servers and works with all common operating systems. PHP has a clear syntax and a low entry threshold to learn.

Table 1

Advantages and disadvantages of PHP

Advantages	Disadvantages
High performance. For web development, program execution speed is a key parameter. This is where PHP outperforms most languages, including Python.	**Non-system syntax.** For example, function names may be similar but perform very different operations. Also, when the language was being finalized, C and Java were used, so you can find their syntax. A novice developer can get confused, but an experienced one, on the contrary, will see this as an advantage, because it will be easier for him to switch to new languages.
Work with different platforms. In web development, it is important to ensure consistent quality, regardless of the server-side solution of the operating system or the web server. PHP supports Oracle, MySQL, Apache, Windows, Unix, Linux and other platforms.	
	Negative glory. PHP was created as a language that a person can use without training. Therefore, inexperienced programmers mastered it superficially and rushed to fulfill orders. Sites broke down, and
Popularity. 79% of sites are written in PHP, this language is used by common content management systems, such as WordPress,	

Drupal, Magento. The language is often required in programmer jobs. In February 2021, there were more than 5.5 thousand vacancies for PHP developers on the hh.ru website. **Big community.** The PHP developer community is larger than that of Python, so the choice of libraries in the web development field is wider. The community makes it easier to find the right guide or get an answer to a question.	unfortunate specialists could not do anything. Although the language is improving and modern PHP is no worse than young languages, you can still hear negative opinions. **Possibility of errors.** If there is an error in the code, the language will allow it to be used. When the flaw is obvious, the error will be very difficult to find. Therefore, although PHP is a simple and flexible language, an inattentive developer can create problems for himself and his colleagues.

What can be done in PHP

According to the official PHP site, you can:

- collect form data (login/password input, etc.);
- create dynamic content on pages;
- send and receive cookies;
- write scripts on the command line;
- execute scripts on the server side;
- develop desktop applications.

Which companies use PHP

Facebook, Lyft, Mint, Hootsuite, Viber, Buffer, DocuSign.

Features

Figure 1. Features of PHP

The features of PHP include

- *Open source:* As PHP is open source, anyone can download it and use it however they like to accomplish their web development goals. This enables developers worldwide to inspect codes, post errors, and contribute to coding and bug fixing.

- *Simple and easy to use:* PHP is simple and easy to use, which is one of the top reasons many developers prefer this programming language.

Its syntax is quite similar to that of C language, with a well-organized and logical structure. It's also easy to learn PHP and dive into coding compared to many scripting languages.

- *Multiple database support:* PHP supports various databases, including MySQL, Oracle, PostgreSQL, etc., along with database integration.

- *Cross-platform compatibility:* It can run on almost all operating systems, including Windows, Mac, Linux, and Unix. PHP scripts also run across devices such as computers, laptops, tablets, and mobiles. Besides, PHP is also compatible with various servers such as IIS, Apache, and more.

• *Flexible:* PHP offers greater flexibility and embedding capabilities. It can easily be integrated with JavaScript, HTML, XML, etc.

• *Error reporting and exception handling:* PHP supports some predefined error-reporting constants to generate error warnings. Additionally, it facilitates exception handling to display errors and fix them.

• *Efficient and fast performance:* PHP scripts can show better performance than many scripting languages such as JSP, PERL, ASP.NET, etc. Its data loading and database connectivity are also faster to enable efficient database management, mail functionality, and server administration.

• *Real-time monitoring:* It provides recent logging details of a user. You can access CPU and memory usage data as well.

• *Object-oriented features:* The object-oriented features in PHP contributes to its speed and offer additional features such as inheritance, data encapsulation, etc.

• *More features:* PHP offers magic constants, regular expressions, PDO class, supports cookies, shell command-line execution, and much more.

What is Python?

Python is a general-purpose object-oriented language, it is used in different areas. For example, applications are written on it, machine learning systems are programmed, and data is analyzed. Developers like it for its built-in data structures, convenient coding features, and dynamic links. This helps you write Python code quickly and reduces the chance of errors.

Table 2

Advantages and disadvantages of PHP

| Advantages	Disadvantages
Simple code. Python programs are easy to write and read. If a developer is given someone else's code, he will not spend much time to figure it out. It is also easier to find errors and vulnerabilities in a simple syntax. **Minimum extra tasks.** The developer does not need to think about the technical issues related to memory. For example, Python automatically deletes objects that cannot be accessed. **Cross-functionality.** Python support is built into various software platforms and operating systems, and the language can be integrated with Java, C, and C++. Therefore, an application written in Python does not need to be rewritten every time. **Wide possibilities.** There are many different libraries for Python - sets of ready-made functions. Instead of writing code from scratch, they can be deployed in just two lines of code and used. For example, manipulate mathematical operations, build neural networks, automate processes.	**Low speed.** Python operations cannot run in parallel, so they are slower and require more device memory. But Python code is written faster, and it happens that this is more important for the customer. Performance can be improved, for example, by rewriting the code in another language and linking it to Python. **Dynamic typing.** In Python, you can create a variable without specifying what type of data it should contain - numbers, text, or something else. Then the developer can think that he adds up the number of goods, but in fact, the articles are hidden behind the variable. As a result, the program can be written correctly, but not work.

What can be done in Python

Some of the more popular uses of Python are:

• cross-platform shell scripts;

• fast automation;

• Web development:

• Data Science, Machine Learning.

Which Companies Use Python

Uber, Pinterest, Mozilla, Spotify, Quora, Pandora, Netflix, Asana.

Features
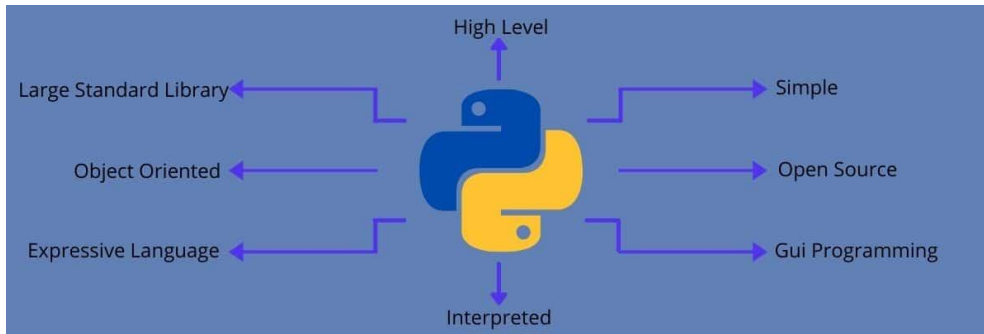
Features of Python

The main features of Python are:

• *Free and open source:* Python is available on its official website to download for FREE and use it. You can also use its publicly available source code and modify it based on your needs.

• *Easy to learn and code:* This high-level language is easier to learn than other languages, including Java, JavaScript, C++, C, etc. Writing programs in it don't require you to manage the memory or remember the entire system architecture.

It's also developer-friendly and uses simpler, less complex syntax with plain English and mathematics. Hence, coding becomes effortless with Python, which is why many developers love it.

• *Object-oriented:* This is one of the main features of Python, which enables concepts like object encapsulation, classes, construct and destruct, and more.

• *Extensible:* Instead of building the entire functionality in its core, this language was designed to be extensible with various modules. Due to the compact modularity, developers find it easy to add programmable interfaces into existing apps. You can also write a Python code in C/C++ and compile it.

• *Interpreted language:* Python codes are executed line-by-line, one at a time similar to Java, C++, and C. Therefore, code compilation is unnecessary, making debugging easier and saves time.

• *Portable:* Python codes are portable. In case you have Python codes for Windows OS, and you want to run it on other operating systems like Mac, Linux, or Unix, it's possible without changing the codes.

• *Dynamically-typed:* A variable type is decided during run time instead of at the start. Hence, you don't need to specify the variable type like int, char, long, double, etc. It reduces lines of code and makes the programming even simpler.

For example, in Java, you write int x = 5

But in Python, you'll write x = 5. That's it. This "x" can be any type of variable.

• *Compressive standard library:* Its standard library houses a rich set of functions and modules, so you don't have to write every code from scratch. You can simply use the available codes for applications like unit-testing, regular expressions, web browsers, CGI, image manipulation, and more.

Differences

The key differences between PHP and Python are summarized as follows:

Parameter	PHP	Python
Language type	Scripting language for web development	General-purpose programming language
Learning curve	Tougher to learn than Python	Easier to learn, even for beginners
Frameworks with examples	A higher number of frameworks supported (examples: CodeIgniter, Laravel, Symfony, Yii, CakePHP)	Fewer frameworks compared to PHP, but what's available is effective (examples: Django, TurboGears, Bottle, Flask, Web2Py, Tornado, Pyramid)

Speed	Earlier versions were slower, but PHP 7 is exceptionally fast—even faster than Python.	Designed to be fast from the beginning
Database connectivity	It's database-friendly, capable of connecting with 25+ databases seamlessly.	Database connectivity is possible, but not for all. Plus, it needs drivers.
Syntax	Its syntax can be a bit complex, uses curly braces, naming rules, $ symbol before variables, and so on.	Its syntax is crisp and clear. No usage of curly braces and no need to define variables.
Library support	Offers Packagist, which is robust, but still PHP lags in providing wider library support	Vast library support for almost all kinds of applications
Key identifiers	Free and open source, frequent enhancements, laidback deployment	Dynamic typing, simple codes, and rapid development
Popularity	More popular (about 79% of websites use PHP)	Less popular than PHP (about 1.1% of all sites on the internet use Python)
Readability	Less readable and maintainable	It's designed to reduce complexities and be highly readable with simple English.
Functional programming	No functional paradigms	Functional programming methods are supported.
Security	Many security attacks have been witnessed	More secure with built-in cybersecurity features
Documentation	Well documented and available, but old comments keep on showing up to foster confusion.	Well documented without confusions
Usage	Mostly for web development	Broader usage, including web and app development along with AI, ML, data science, Big data, etc. emerging technologies
Notable users	Facebook, WordPress, Wikipedia, Yahoo	YouTube, Pinterest, Instagram, Quora, Uber, Spotify, Dropbox
GitHub stars	30K	30.4K
Forks	8.04K	8.23K

Summary

In this PHP vs Python comparison, both PHP and Python are excellent programming languages suitable for web and app development.

PHP has been the go-to choice for a majority of web development projects for quite a long time. But now, Python is slowly making its way with its exceptional features and functionalities for high-end science-based applications and cater to this modern, tech-savvy world.

In the end, it largely depends upon your project requirements along with your skills, knowledge, and expertise in PHP or Python. You can go with either of them if you're an experienced programmer and you need to design a basic website with less complexity.
But if you're a beginner, try learning Python first, and then you can shift gradually to PHP or other languages.

Again, if you need to develop science-based applications and sites like AI, ML, Big Data, etc., Python is better.

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