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A Review on PHP Programming Language

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Abstract: PHP is a scripting language that runs on servers and is frequently used for creating websites. It was developed by Rasmus Lerdorf in the middle of the 1990s and has since grown to be one of the most well-liked programming languages for creating dynamic web applications. PHP is available to developers of all experience levels because it is open-source and cost-free to use. PHP can be directly inserted into HTML code, making it especially well-suited for web development. Additionally, PHP supports a large number of databases, such as MySQL, Oracle, and PostgreSQL, making it a potent tool for creating intricate web applications. This paper contains an introduction to the PHP programming language, what PHP means, what PHP is used for, who uses it, its advantages and disadvantages, its basic syntax, and why it is popular compared to other languages. Some other features are included in this paper to help you easily understand the PHP programming language. This includes ten reasons to learn PHP and the various applications of PHP programming.

Keywords: C++, Object-oriented, Cross-platform, Abstraction, Inheritance, Polymorphism, Standard Template Library (STL), High Flexibility, Scalability, and Low-level Manipulation

1 Introduction

PHP is a popular language for web development due to its ease of use and versatility. As noted by [Trachtenberg Sklar,2021], PHP was designed specifically for building dynamic web pages and has since become a widely used language for web development. It was first released in 1995 by Rasmus Lerdorf, and since then, it has continued to evolve and improve. One of the key benefits of PHP is its flexibility. As an open-source language, PHP has a large and active community of developers who contribute to its development and create useful tools and libraries for it. According to [Sebesta, 2002], PHP is designed to be easy to learn and use, making it an ideal choice for both new and experienced developers. PHP is also known for its compatibility with other web development tools, such as HTML, CSS, and JavaScript. This means that developers can easily integrate PHP code with other web technologies to create powerful and dynamic web applications. PHP is often used in conjunction with other web development tools to create complex web applications. One of the strengths of PHP is its support for databases [Toal,2022]. PHP has built-in support for many popular database systems such as MySQL, PostgreSQL, and SQLite, making it an ideal language for building content management systems (CMS) and e-commerce platforms. PHP's database support is one of its key

features, allowing developers to easily interact with databases and create powerful web applications.

In recent years, PHP has continued to evolve and improve, with the release of version 8 in November 2020. This latest version includes many new features and improvements, such as improved performance, a new JIT (Just-In-Time) compiler, and new syntax enhancements. Overall, PHP is a powerful and flexible programming language that has played a key role in web development for many years. Its ease of use, versatility, and compatibility with other web technologies make it an ideal choice for developers looking to build dynamic and powerful web applications [Toal,2022].

1.1 What does the term PHP mean?

According to the official PHP documentation on php.net (n.d.), PHP stands for "PHP: Hypertext Preprocessor". It is a recursive acronym, which means that the first "P" in "PHP" stands for "PHP" itself. The name reflects the primary use of the language as a tool for processing hypertext, which refers to the markup language used to create web pages. PHP was originally created as a set of Common Gateway Interface (CGI) scripts to process web forms and generate dynamic content for websites, but has since evolved into a general-purpose programming language used for a wide range of tasks beyond web development [Chris,2021].

1.2 What is PHP used for?

PHP is primarily used for server-side web development, where it is used to create dynamic web pages and web applications. It is a versatile language that can be used for a wide range of tasks. Here are some examples of what PHP is used for:

1. Server-side Scripting

Server-side Script is PHP's main strength. If you are just learning to code and want to explore server-side scripting, PHP is a great language to learn. To get cracking with PHP server-side scripting you'll need to have a PHP parser, web server and web browser. This means that PHP code runs on the server-side before being sent to the client's browser as HTML. This allows for dynamic web pages, such as displaying content based on user input or retrieving data from a database. The PHP Group states that this feature of PHP makes it a great choice for web development as it provides powerful tools for creating dynamic and interactive websites.

2. Creating Dynamic Websites

PHP is commonly used to generate dynamic content on web pages by interacting with databases, file systems, and other web-based services. This means that the content of a web page can change dynamically based on various factors, such as user input, time of day, and data stored in a database.

3. Building Web Applications

PHP can be used to build web-based applications, such as content management systems, e-commerce platforms, and social networking sites. With the use of frameworks such as Laravel, Symfony, and CodeIgniter, developers can easily build scalable and robust web applications.

4. Processing and manipulating data

PHP offers powerful tools for processing and manipulating data, such as parsing and generating XML documents, creating PDFs, and working with images.

5. Command-line Scripting

PHP can be used to create command-line scripts for automating tasks, such as data processing and file management [PHP manual, n.d.]. This allows developers to build powerful automation tools that can help them save time and streamline their development process.

6. Developing APIs

PHP can be used to create APIs (Application Programming Interfaces) that allow web-based applications to communicate with each other [W3schools, n.d.]. This means that developers can build web applications that can consume data and services from other web applications, making it easier to integrate different web applications.

1.3 Who uses PHP?

According to the article by Koen Vlaswinkel on Codementor, PHP is widely used by many companies and organizations for web development. Some of the well-known companies that use PHP include Facebook, Wikipedia, Yahoo, Tumblr, and WordPress.

1. Facebook

Over 22 billion times a month, Facebook is accessed, according to Similarweb. Since its creation in 2004, Facebook has benefited from PHP's capacity to produce dynamic content in a matter of seconds. By design, Zuckerberg and Moskowitz wrote all of the PHP code for the core Facebook application. This had a snowball effect, and now PHP is being used by numerous modern technology firms. In 2010, Facebook released HipHop for PHP (HHHPc), a transpiler or compiler that converts source code into source code for another language. HipHop for PHP translates the injected PHP code into C++ before compiling it into an executable binary file.

2. Wikipedia

It is one of the biggest online sources of knowledge for all subjects, big and small. The website provides a wealth of data that has been donated by individual volunteers. In order to swiftly display material on web pages, the platform also makes use of PHP as its main server-side language. The Wikipedia Foundation stated on their official Wikimedia server page that "Our main web application is MediaWiki, which is written in PHP (70%) and JavaScript (30%)". Later in 2014, Wikipedia also switched to HHVM to improve performance by translating PHP code in other languages for faster execution.

3. Yahoo

Yahoo started as a PHP-only site, which powered its Mail, Answers, and News segments. To compete with rival Google, the company made the move to a mixed programming language framework, but it was PHP that gave Yahoo its strong start in the market. While transitions to other code types are ongoing, PHP helped Yahoo develop strong account security, user-friendly templates, and reliable policy frameworks.

4. Tumblr

Tumblr is a blogging and social networking site that brings people together who share common interests from all over the world. On this blogging platform, you can get templates, mobile apps, social networking features, and photos all for free. Developers use the latest version of PHP as the major server-side language on this platform.

5. WordPress

WordPress is a content management system that allows anyone to create a free website or blog quickly and effortlessly. Since WordPress is a web-based service, PHP web application development is used to get data from the database and turn it into an HTML web page.

2 Basic Syntax of PHP

We can insert PHP script or code anywhere in the document. A PHP script or code starts with `<?php` and ends with `?>`: Here are some common and simple language construct in PHP:

- **echo** - used to output one or more strings to the browser or console.

```
<?php
echo "HelloWorld!";
?>
```

- **print** - used to output a single expression to the browser or console.

```
<?php
print "HelloWorld!";
?>
```

- **if** - used for conditional statements.

```
<?php
$num = 10;
if ($num > 0){
    echo "$num is positive .";
}

#Output: 10 is positive .
?>
```

- **for** - used for looping through code a specified number of times.

```
<?php
for ($i = 1; $i <=5; $i++){
    echo "$i ";
}

#Output: 1 2 3 4 5
?>
```

3 Why PHP is Popular Compared to other Programming Languages?

PHP is popular because it is free, open-source, and has a large and active community of developers contributing to its development. It is easy to learn, use, and deploy, making it a great choice for beginners and experienced developers alike. PHP's popularity can also be attributed to its open-source nature, which makes it easily accessible to developers who can use it to create web applications without incurring significant licensing fees. As a result, PHP has a large and active community of developers who contribute to its growth and development. Moreover, PHP offers a high level of compatibility with various platforms and operating systems, making it versatile and easy to use across different environments. This compatibility is due to its ability to integrate with other languages such as HTML, CSS, and JavaScript, further expanding its functionalities. Additionally, PHP has a low learning curve, allowing beginners to quickly grasp the basics of the language and start building web applications. Its syntax is simple and easy to understand, and a vast number of online resources are available to assist with learning and development. Finally, PHP has an extensive set of pre-built functions and libraries, which significantly reduces development time and effort. These functions and libraries make it possible to implement complex functionalities in a short amount of time.

4 Features of PHP Programming Language

Each of its programming languages has its own unique features and abilities, but for PHP, some notable features include its open-source nature, which allows for easy accessibility to developers, and a large and active community contributing to its development. Additionally, PHP offers high compatibility with various platforms and operating systems, making it versatile and easy to use across different environments. Its simple syntax and low learning curve also make it a great choice for beginners. Finally, the extensive set of pre-built functions and libraries makes it possible to implement complex functionalities in a short amount of time. In this section, we are going to discuss some features of the PHP programming language. Now that we have a basic understanding of PHP, let us see some of the most striking features of PHP.

1. Easy to learn

PHP is one of the most user-friendly programming languages out there. This is due to the fact that, despite its severe grammar, it is nevertheless forgiving. In addition to this obvious advantage, you may use a variety of tools and resources to make sure your code is streamlined for speed and effectiveness. PHP is a relatively easy language to learn compared to other programming languages. Its syntax is similar to C, which makes it easier for developers to learn if they have prior experience with C or other C-based languages..

2. Open Source

PHP is an open-source language because it was designed to be freely available and distributed under the PHP License [W3Schools, n.d.]. PHP is an open-source server-side scripting language that is used to develop static or dynamic websites or web applications.” The open-source nature of PHP allows anyone to use, modify, and distribute the language as they see fit, without the need for permission or payment. This has contributed to the widespread popularity of PHP as well as the

large community of developers and contributors who support its development and improvement.

3. Server-side scripting

As a server-side scripting language, PHP allows developers to write code that is executed on the server side, rather than the client-side, where the browser resides. This means that PHP code is processed on the server before it is sent to the client's browser as HTML. The server generates the HTML output and sends it back to the client, which then renders the page in the browser. PHP is a server-side scripting language, which means that it runs on the server before the output is sent to the client's browser. This makes it easier to create dynamic web pages, process forms, and interact with databases.

4. Cross-Platform

PHP can run on various operating systems like Windows, Linux, Unix, and macOS, making it a cross-platform language. This allows developers to create applications that can run on different types of servers and operating systems. Additionally, PHP is compatible with most web servers, such as Apache and Nginx, making it easier to deploy applications.

5. Database Integration

PHP is a server-side scripting language, which means that it runs on the server before the output is sent to the client's browser. This makes it easier to create dynamic web pages, process forms, and interact with databases. Since the code runs on the server, the client cannot view or modify the code, which improves security. This allows developers to create applications that interact with databases, store and retrieve data, and perform operations like creating tables, adding data, and modifying data.

6. Object-oriented Programming

PHP supports object-oriented programming (OOP), which makes it easier to write reusable and maintainable code. OOP allows developers to organize code into classes, objects, and methods, making it easier to manage large and complex applications. Additionally, OOP concepts like inheritance and polymorphism can be used to reduce code duplication and improve code readability.

7. Large Community

PHP has a large and active community of developers, which means that developers can easily find help, resources, and support when needed. Despite being an old language, PHP still comprises 79.8% of all web applications that nearly translates to 20 million websites and 2 million web servers. According to zdnet.com, the demand for PHP developers has also massively increased to 834% since January 2020.

8. Speed

Millions of people use the internet nowadays, and each second they use the web servers to request something. The need for speed is especially important for vital web applications like banking, security, and government ones. Therefore, the servers' processing speed and programming language must be extremely high. PHP became three times faster after version 7.x was released. Below is a comparison between PHP and different back-end programming languages. PHP scripts are typically faster than scripts written in other languages. Users like the quicker loading of their web sites. Because PHP runs in its own memory area, it executes more quickly than most

other programming languages. Additionally, it has quick and effective connectivity to databases.

9. Extensibility

PHP can be extended with third-party libraries and extensions, which can add more functionality to the language. This allows developers to leverage existing code and avoid reinventing the wheel. Additionally, PHP can be integrated with other technologies like HTML, CSS, and JavaScript, making it more versatile. The large number of third-party libraries and extensions available for PHP means that developers can find solutions to common problems quickly and efficiently.

10. Security

PHP has many pre-defined functions for data encryption. Users can also use third-party applications for security. Security and flexibility are often contrasting features, but PHP somehow manages to offer them both, and that's great. PHP is designed specifically to be a more secure language for writing CGI (Computer-generated Imagery) programs. Security algorithms such as Sha1 (secure Hash algorithm 1) and MD5(Message digest 5) are used to encrypt the strings in PHP. Filter_var and strip_tags functions help to keep the environment more secure and safe for users.

5 10 Reasons to Learn PHP Programming Language

Learning PHP can be beneficial for various reasons. First, as mentioned earlier, PHP is a widely used language, making it a valuable skill to have in the job market. Second, it is relatively easy to learn and use, especially for beginners who are just starting with web development. Third, PHP has a large and supportive community that provides resources, documentation, and support for developers. Fourth, PHP is an open-source language, which means that it is free to use and can be customized according to the developer's needs. Finally, PHP has a vast library of pre-built functions and frameworks, which can significantly speed up the development process and reduce coding time. So here are some reasons to learn PHP programming languages:

1. Wide range application

PHP is widely used across various industries and sectors. It is estimated that almost 80% of all websites use PHP as their server-side language. PHP is also commonly used for developing web applications, content management systems (CMS), e-commerce websites, social networking platforms, and more. In addition, PHP is used by companies of all sizes, from small businesses to large corporations. Therefore, learning PHP can open up many career opportunities for developers.

2. Easy to learn

One of the main reasons PHP became so commonplace is that it is relatively simple to get started with. Even without extensive knowledge or experience in web development, most people could create a web page with a single PHP file in a relatively short period of time. The syntax is simple, and command functions are easy to learn, meaning the barriers to entry with PHP are lower than with many other languages.

3. PHP is open source and free

PHP is an open-source programming language. This means it's free. There are no

open or hidden license fees, so it makes it very useful for popular content management systems (CMS), like Wordpress. Since it is open-source, it's available for all developers, especially the new ones who will develop and carry PHP into the future. Also, it is cheaper and easier for them to create a website using PHP.

4. Performance

The performance of PHP has improved significantly over the years. With the release of PHP 7, the performance of PHP has increased significantly, making it a much faster language compared to earlier versions. PHP 7 has improved memory usage and reduced CPU time, resulting in faster execution times. Additionally, PHP has a large number of built-in functions and extensions that allow developers to optimize their code and improve performance. Overall, PHP is a performance language suitable for building scalable and high-performance web applications.

5. Flexibility

PHP is a flexible language that allows developers to create web applications that can be easily modified and extended. This flexibility comes from the fact that PHP is an open-source language, meaning that developers can modify the language to suit their specific needs. Additionally, PHP has a large and active community that creates and maintains a wide range of libraries, frameworks, and tools, further increasing its flexibility. As a result, PHP can be used to create a variety of web applications, from small personal websites to large-scale enterprise applications.

6. PHP has a standard library

PHP is a powerful backend language used in more than 80% of the global web applications. The simplicity of PHP makes it one of the top programming languages, as it uses an easy-to-understand programming structure and developer-friendly web functionalities. Yes, like every other Language PHP uses libraries. PHP Libraries are collections of prewritten code that users can use to optimize tasks. The Standard PHP Library (SPL) is a collection of interfaces and classes that are meant to solve common problems.

7. PHP has well design frameworks

PHP has well-designed frameworks. Some of the popular PHP frameworks include Laravel, Symfony, CodeIgniter, and Yii, among others. These frameworks offer developers a wide range of tools and features to help them build robust and scalable web applications quickly and efficiently. According to a survey conducted by SitePoint in 2020, Laravel is the most popular PHP framework, with over 61% of developers choosing it as their preferred framework. Symfony and CodeIgniter were also popular, with over 14% and 11% of developers using them, respectively.

- *Laravel*

is a free and open-source PHP web framework, created by Taylor Otwell and intended for the development of web applications following the model–view–controller architectural pattern and based on Symfony.

- *Symfony*

is a free and open-source PHP web application framework and a set of reusable PHP component libraries. It was published as free software on October 18, 2005, and released under the MIT license.

- *CodeIgniter*

is an open-source software rapid development web framework, for use in building dynamic web sites with PHP.

- *Yii*

is an open source, object-oriented, component-based MVC PHP web application framework. Yii is pronounced as "Yee" or [ji:] and in Chinese it means "simple and evolutionary" and it can be an acronym for "Yes It Is!".

8. Compatibility

PHP is compatible with a wide range of web servers and platforms, including Apache, Nginx, and Microsoft IIS. This makes it easy to deploy PHP applications to different environments and to integrate with other technologies.

9. Efficient

PHP is known to be an efficient language, especially with the release of PHP 7. With improvements in memory usage and CPU time reduction, PHP 7 provides faster execution times compared to earlier versions. Additionally, PHP has a large number of built-in functions and extensions that allow developers to optimize their code and improve performance. Overall, PHP is a performant language suitable for building scalable and high-performance web applications.

10. Platform Independent

Being platform-independent is another crucial benefit of PHP. PHP is a platform-independent language. It can be used on various operating systems such as Windows, Linux, Unix, and macOS, which helps save time, effort and cost. This allows developers to create applications on one operating system and deploy them on another without much modification. PHP is also compatible with various web servers, making it a flexible language to work with.

6 Conclusion

PHP is a versatile and powerful scripting language that has gained tremendous popularity over the years. It is widely used for developing dynamic web pages, web applications, and content management systems. One of the reasons why PHP is so popular is because it is an open-source language, which means that it is free to use, modify, and distribute. PHP's simplicity and ease of use make it an ideal choice for beginners who are just starting with programming. It has a straightforward syntax, which means that you can write code quickly and easily. Additionally, PHP is compatible with most operating systems and web servers, which means that it can be used on almost any platform. In conclusion, PHP is a versatile and reliable scripting language that has become a go-to choice for web developers all over the world. Its open-source nature, ease of use, and extensive library of functions and modules make it an ideal choice for building dynamic and complex web applications. Whether you are a beginner or an experienced developer, PHP has something to offer everyone.

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