

What is a Regular Expression?

A regular expression is a sequence of characters that forms a search pattern. When you search for data in a text, you can use this search pattern to describe what you are searching for.

A regular expression can be a single character, or a more complicated pattern.

Regular expressions can be used to perform all types of text search and text replace operations.

Syntax

In PHP, regular expressions are strings composed of delimiters, a pattern and optional modifiers.

\$exp = "/w3schools/i";

In the example above, / is the **delimiter**, w3schools is the **pattern** that is being searched for, and i is a **modifier** that makes the search case-insensitive.

The delimiter can be any character that is not a letter, number, backslash or space. The most common delimiter is the forward slash (/), but when your pattern contains forward slashes it is convenient to choose other delimiters such as # or \sim .

Regular Expression Functions

PHP provides a variety of functions that allow you to use regular expressions.

The preg_match(), preg_match_all() and preg_replace() functions are some
of the most commonly used ones:

| Function | Description |
|------------------|--|
| preg_match() | Returns 1 if the pattern was found in the string and 0 if not |
| preg_match_all() | Returns the number of times the pattern was found in the string, which may also be 0 |
| preg_replace() | Returns a new string where matched patterns have been replaced with another string |

Using preg_match()

The preg_match() function will tell you whether a string contains matches of a pattern.

Example

Use a regular expression to do a case-insensitive search for "w3schools" in a string:

```
<?php
$str = "Visit W3Schools";
$pattern = "/w3schools/i";
echo preg_match($pattern, $str); // Outputs 1
?>
```

Using preg_match_all()

The preg_match_all() function will tell you how many matches were found for a pattern in a string.

Example

Use a regular expression to do a case-insensitive count of the number of occurrences of "ain" in a string:

```
<?php
$str = "The rain in SPAIN falls mainly on the plains.";
$pattern = "/ain/i";
echo preg_match_all($pattern, $str); // Outputs 4
?>
```

Using preg_replace()

The preg_replace() function will replace all of the matches of the pattern in a string with another string.

Example

Use a case-insensitive regular expression to replace Microsoft with W3Schools in a string:

```
<?php
$str = "Visit Microsoft!";
$pattern = "/microsoft/i";
echo preg_replace($pattern, "W3Schools", $str); // Outputs "Visit
W3Schools!"
?>
```

Regular Expression Modifiers

Modifiers can change how a search is performed.

| Modifier | Description |
|----------|--|
| i | Performs a case-insensitive search |
| m | Performs a multiline search (patterns that search for the beginning or end of a string will match the beginning or end of each line) |
| u | Enables correct matching of UTF-8 encoded patterns |

Regular Expression Patterns

Brackets are used to find a range of characters:

| Expression | Description |
|------------|--|
| [abc] | Find one character from the options between the brackets |
| [^abc] | Find any character NOT between the brackets |
| [0-9] | Find one character from the range 0 to 9 |

Metacharacters

Metacharacters are characters with a special meaning:

| Metacharacter | Description |
|---------------|--|
| I | Find a match for any one of the patterns separated by as in: cat dog fish |
| • | Find just one instance of any character |
| ^ | Finds a match as the beginning of a string as in: ^Hello |
| \$ | Finds a match at the end of the string as in: World\$ |
| \d | Find a digit |
| \s | Find a whitespace character |
| \b | Find a match at the beginning of a word like this: \bWORD, or at the end of a word like this: WORD\b |
| \uxxxx | Find the Unicode character specified by the hexadecimal number xxxx |

Quantifiers

Quantifiers define quantities:

| Quantifier | Description |
|------------|---|
| n+ | Matches any string that contains at least one <i>n</i> |
| n* | Matches any string that contains zero or more occurrences of <i>n</i> |
| n? | Matches any string that contains zero or one occurrences of <i>n</i> |
| n{x} | Matches any string that contains a sequence of X n 's |
| n{x,y} | Matches any string that contains a sequence of X to Y n 's |
| n{x,} | Matches any string that contains a sequence of at least X n 's |

Note: If your expression needs to search for one of the special characters you can use a backslash (\setminus) to escape them. For example, to search for one or more question marks you can use the following expression: $pattern = \frac{1}{?}$

Grouping

You can use parentheses () to apply quantifiers to entire patterns. They also can be used to select parts of the pattern to be used as a match.

Example

Use grouping to search for the word "banana" by looking for ba followed by two instances of na:

```
<?php
$str = "Apples and bananas.";
$pattern = "/ba(na){2}/i";
echo preg_match($pattern, $str); // Outputs 1
?>
```

PHP Global Variables - Superglobals

Some predefined variables in PHP are "superglobals", which means that they are always accessible, regardless of scope - and you can access them from any function, class or file without having to do anything special.

The PHP superglobal variables are:

- \$GLOBALS
- \$_SERVER
- \$_REQUEST
- \$_POST
- \$_GET
- \$_FILES
- \$ ENV
- \$_COOKIE
- \$_SESSION

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