

Python RegEx

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A RegEx, or Regular Expression, is a sequence of characters that forms a search pattern.

RegEx can be used to check if a string contains the specified search pattern.

RegEx Module

Python has a built-in package called **re**, which can be used to work with Regular Expressions.

Import the re module:

import re

RegEx in Python

When you have imported the re module, you can start using regular expressions:

Example



```
txt = "The rain in Spain"
x = re.search("^The.*Spain$", txt)
```

Try it Yourself »

RegEx Functions

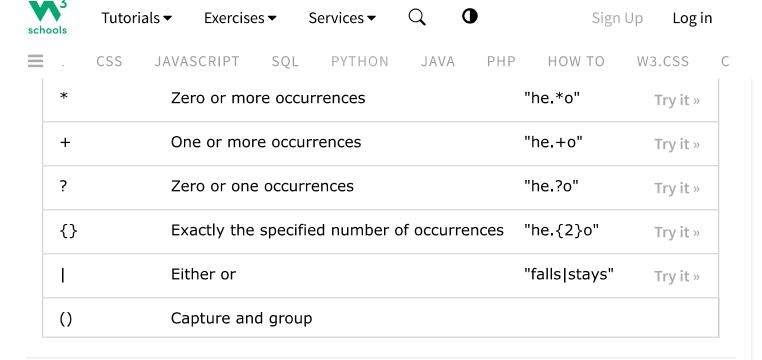
The re module offers a set of functions that allows us to search a string for a match:

Description
Returns a list containing all matches
Returns a Match object if there is a match anywhere in the string
Returns a list where the string has been split at each match
Replaces one or many matches with a string

Metacharacters

Metacharacters are characters with a special meaning:

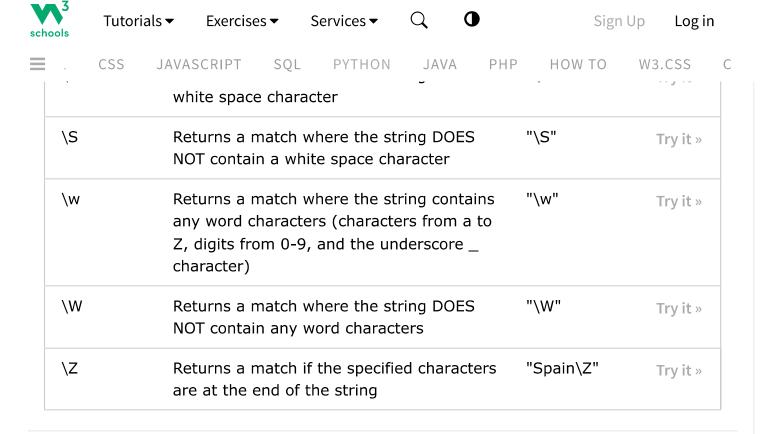
Character	Description	Example	Try it
[]	A set of characters	"[a-m]"	Try it »
\	Signals a special sequence (can also be used to escape special characters)	"\d"	Try it »
	Any character (except newline character)	"heo"	Try it »



Special Sequences

A special sequence is a \ followed by one of the characters in the list below, and has a special meaning:

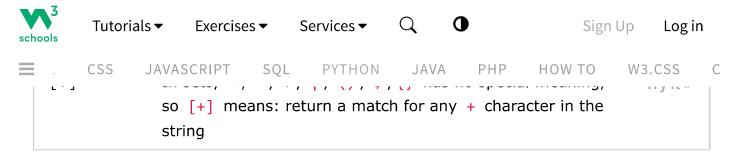
Character	Description	Example	Try it
\A	Returns a match if the specified characters are at the beginning of the string	"\AThe"	Try it »
\b	Returns a match where the specified characters are at the beginning or at the end of a word (the "r" in the beginning is making sure that the string is being treated as a "raw string")	r"\bain" r"ain\b"	Try it » Try it »
\B	Returns a match where the specified characters are present, but NOT at the beginning (or at the end) of a word (the "r" in the beginning is making sure that the string is being treated as a "raw string")	r"\Bain" r"ain\B"	Try it » Try it »
\d	Returns a match where the string contains digits (numbers from 0-9)	"\d"	Try it »



Sets

A set is a set of characters inside a pair of square brackets [] with a special meaning:

Set	Description	Try it
[arn]	Returns a match where one of the specified characters (\boldsymbol{a} , \boldsymbol{r} , or \boldsymbol{n}) is present	Try it »
[a-n]	Returns a match for any lower case character, alphabetically between ${\tt a}$ and ${\tt n}$	Try it »
[^arn]	Returns a match for any character EXCEPT a , r , and n	Try it »
[0123]	Returns a match where any of the specified digits (0 , 1 , 2 , or 3) are present	Try it »
[0-9]	Returns a match for any digit between 0 and 9	Try it »
[0-5][0-9]	Returns a match for any two-digit numbers from 00 and 59	Try it »



The findall() Function

The findall() function returns a list containing all matches.

Example

Print a list of all matches:

```
import re

txt = "The rain in Spain"
x = re.findall("ai", txt)
print(x)

Try it Yourself »
```

The list contains the matches in the order they are found.

If no matches are found, an empty list is returned:

Example

Return an empty list if no match was found:

```
import re

txt = "The rain in Spain"

x = re.findall("Portugal", txt)
print(x)
```



The search() Function

The search() function searches the string for a match, and returns a <u>Match object</u> if there is a match.

If there is more than one match, only the first occurrence of the match will be returned:

Example

Search for the first white-space character in the string:

```
import re

txt = "The rain in Spain"
x = re.search("\s", txt)

print("The first white-space character is located in position:", x.start())

Try it Yourself »
```

If no matches are found, the value None is returned:

Example

Make a search that returns no match:

```
import re

txt = "The rain in Spain"

x = re.search("Portugal", txt)
print(x)
```



The split() Function

The split() function returns a list where the string has been split at each match:

Example

Split at each white-space character:

```
import re

txt = "The rain in Spain"
x = re.split("\s", txt)
print(x)
```

Try it Yourself »

You can control the number of occurrences by specifying the maxsplit parameter:

Example

Split the string only at the first occurrence:

```
import re

txt = "The rain in Spain"

x = re.split("\s", txt, 1)

print(x)
```

Try it Yourself »



Example

Replace every white-space character with the number 9:

```
import re

txt = "The rain in Spain"
x = re.sub("\s", "9", txt)
print(x)

Try it Yourself »
```

You can control the number of replacements by specifying the count parameter:

Example

Replace the first 2 occurrences:

```
import re

txt = "The rain in Spain"

x = re.sub("\s", "9", txt, 2)
print(x)
```

Try it Yourself »

Match Object

A Match Object is an object containing information about the search and the result.



Example

Do a search that will return a Match Object:

```
import re

txt = "The rain in Spain"
x = re.search("ai", txt)
print(x) #this will print an object

Try it Yourself »
```

The Match object has properties and methods used to retrieve information about the search, and the result:

```
.span() returns a tuple containing the start-, and end positions of the match.
```

- .string returns the string passed into the function
- .group() returns the part of the string where there was a match

Example

Print the position (start- and end-position) of the first match occurrence.

The regular expression looks for any words that starts with an upper case "S":

```
import re

txt = "The rain in Spain"

x = re.search(r"\bS\w+", txt)
print(x.span())
```



Example

Print the string passed into the function:

```
import re

txt = "The rain in Spain"
x = re.search(r"\bS\w+", txt)
print(x.string)

Try it Yourself »
```

Example

Print the part of the string where there was a match.

The regular expression looks for any words that starts with an upper case "S":

```
import re

txt = "The rain in Spain"

x = re.search(r"\bS\w+", txt)
print(x.group())
```

Try it Yourself »

Note: If there is no match, the value None will be returned, instead of the Match Object.



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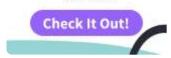
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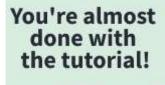
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