

Regular Expressions (Regex)

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What is Regular Expression ?

A Regular Expression (RegEx) is a pattern used to search for specific words, numbers, or symbols in text. It helps in finding, replacing, and extracting information from large text data easily.

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Basic RegEx Patterns

Pattern	Meaning	Example
\d	Matches any digit (0-9)	"My number is 1234" → \d+ finds 1234
\w	Matches any letter or number	"Hello_123" → \w+ finds Hello_123
\s	Matches spaces	"Hello World" → \s finds space
.	Matches any character	"a.b" → . finds a and b
*	Matches 0 or more times	"go*" → matches "g", "go", "goo"
+	Matches 1 or more times	"go+" → matches "go", "goo", but not "g"
?	Matches 0 or 1 time	"colou?r" → matches "color" and "colour"
^	Matches start of string	"^Hello" → matches "Hello World" but not "World Hello"
\$	Matches end of string	"world\$" → matches "Hello world" but not "world Hello"
[]	Matches any character inside brackets	[aeiou] → matches "a" in "apple"
()	Groups patterns	(ab)+ → matches "ababab" in "abababxyz"

How to Use RegEx in Python ?

Python has a built-in module called re that helps us use regular expressions. To use it, we first need to import it:



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Finding Numbers in a Sentence

```
import re
```

```
text = "The price is 150 dollars."
```

```
match = re.search(r'\d+', text)
```

```
if match:
```

```
    print("Number found:", match.group()) # Output: 150
```

The price is **150** dollars. → Output: 150

Finding Emails in a Text

```
import re
```

```
text = "Contact me at codeswithpankaj@gmail.com and p4n.learning@gmail.com"
```

```
emails = re.findall(r'[\w.-]+@[ \w.-]+', text)
```

```
print("Emails found:", emails)
```

Output

```
Emails found: ['codeswithpankaj@gmail.com', 'p4n.learning@gmail.com']
```

Replacing Text Using RegEx

```
import re
```

```
text = "Hello 123, this is a test 456."
```

```
new_text = re.sub(r'\d+', '###', text)
```

```
print(new_text)
```

Output

```
"Hello### this is a test###."
```

Extracting Words from a Sentence

```
import re  
  
text = "Python is an amazing programming language!"  
words = re.findall(r'\w+', text)  
print("Words found:", words)
```

Output

Python is an amazing programming language !

1

2

3

4

5

6

['Python', 'is', 'an', 'amazing', 'programming', 'language']

Conclusion

1. Regular Expressions (RegEx) help search for patterns in text.
2. Useful for finding words, numbers, emails, and more.
3. We can replace and extract specific parts of text using RegEx.
4. Python's re module makes working with RegEx easy.

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