

A regular expression (regex) is a sequence of characters that define a search pattern. It's used for matching strings within other strings based on specific patterns of characters. In Python, regular expressions are implemented using the re module.

Here are a few examples of using regular expressions in Python:

1. Matching a simple pattern:

```
import re

text = "Hello, World!"
pattern = r"Hello"
match = re.search(pattern, text)

if match:
    print("Pattern found:", match.group())
else:
    print("Pattern not found.")
```

2. Matching digits in a string:

```
import re

text = "The price is $1000"
pattern = r"\d+"
matches = re.findall(pattern, text)

print("Digits found:", matches)
```

3. Replacing matched patterns:

```
import re

text = "Hello, World!"
pattern = r"World"
replace_with = "Python"
new_text = re.sub(pattern, replace_with, text)

print("Modified text:", new_text)
```

4. Splitting a string based on a pattern:

```
import re

text = "Python,Java,C,JavaScript"
languages = re.split(r",", text)

print("Programming languages:", languages)
```

These examples show some basic operations using regular expressions in Python (re module). Regular expressions offer powerful ways to search, manipulate, and validate strings based on complex patterns.