Search and Match Functions

Python's **re (Regular Expression)** module helps you find patterns inside strings — such as specific words, digits, or symbols.

To use it, you first import it:

```
import re
```

🔍 1. re.search() – Search Anywhere in the String

Definition:
re.search() scans the **entire string** and returns the **first match** of the pattern **anywhere** in the string.

Syntax:

```
re.search(pattern, string)
```

Returns:

- A **match object** if the pattern is found.
- None if no match is found.

Example:

```
import re


text = "Python is powerful"

result = re.search("powerful", text)


if result:
    print("✅ Word found!")
else:
    print("❌ Word not found.")
```

Output:

✅ Word found!

🎯 2. re.match() – Match Only at the Beginning

Definition:
re.match() **only checks at the beginning** of the string (index 0).
If the pattern doesn't occur right at the start, it won't match.

Syntax:

re.match(pattern, string)

Returns:

- A **match object** if the pattern is found **at the beginning**.
- None otherwise.

Example:

```
import re


text = "Python is powerful"

result = re.match("Python", text)


if result:

    print("✅ Match found at beginning!")

else:

    print("❌ No match at beginning.")
```

Output:

✅ Match found at beginning!

If we change it slightly:

result = re.match("powerful", text)

Output:

❌ No match at beginning.

⚖️ Difference Between re.search() and re.match()

Feature	re.search()	re.match()
Checks	Entire string	Only beginning of string
Returns	First match found anywhere	Match only if pattern starts at index 0
Use Case	Searching within a sentence	Checking prefix or start of text
Example	Find “cat” anywhere in “I like cats”	Match “I” at start of “I like cats”

🧪 **LAB PROGRAMS**

🧩 **Program 1: Search a word in a string using re.search()**

```
# 🧪 Program: Search for a word in a string using re.search()

import re

# Input string
text = "Hello, my name is Christian Jason and I love Python programming."

# Ask user for word to search
word = input("Enter a word to search: ")

# Search for the word anywhere in the string
result = re.search(word, text)

if result:
    print(f"✅ Word '{word}' found in the string at position {result.start()}.")
else:
    print(f"❌ Word '{word}' not found in the string.")
```

Sample Output:

```
Enter a word to search: Jason
```

✅ Word 'Jason' found in the string at position 22.

🧩 **Program 2: Match a word in a string using re.match()**

```
# 🧪 Program: Match a word in a string using re.match()

import re

# Input string
text = "Python is easy to learn."

# Ask user for word to match at the beginning
word = input("Enter a word to match at beginning: ")

# Match only from the start
result = re.match(word, text)

if result:
    print(f"✅ The string starts with '{word}'.")
else:
    print(f"❌ The string does not start with '{word}'.")
```

Sample Output 1:

Enter a word to match at beginning: Python

✅ The string starts with 'Python'.

Sample Output 2:

Enter a word to match at beginning: easy

❌ The string does not start with 'easy'.

🧩 Bonus Tip: Case-Insensitive Search

You can make your searches **case-insensitive** by using the flag re.IGNORECASE or re.I:

re.search(word, text, re.I)

📜 Summary

Function	Checks Where	Example Match	Example Fail
re.search("cat", "I like cats")	Anywhere	✅ Yes	❌ —
re.match("cat", "I like cats")	Beginning only	❌ No	✅ Yes