

# Assignment Programming for AI

April 12, 2023

## 1 How do you use the re.search() function in Python's re library to search for a specific string pattern within a larger string?

- The re.search() function is used to search for a specific pattern within a larger string.
- It takes two arguments: the pattern to search for, and the string to search within. Here's an example:

```
[ ]: import re

pattern = r"python"

text = "I am making assignment for python"

match = re.search(pattern, text)

print(match.group())
```

python

## 2 How can you use the re.search() function in Python's re library to find the first occurrence of a pattern in a string, even if there are multiple occurrences of the pattern?

- The re.search() function searches for the first occurrence of a pattern in a string. Once it finds a match, it stops searching. For Example

```
[ ]: import re

pattern = r"is"

text = "Python is a programming language. It is used for making web_
↳applications."

match = re.search(pattern, text)

print("First match found at index " , match.start())
```

First match found at index 7

### 3 How do you create a regular expression that matches any lowercase letter in Python's re library?

```
[ ]: import re

pattern = r'[a-f]'

text = 'Regular expressions are a powerful tool for string manipulation.'

matches = re.search(pattern, text)

print(matches.group())
```

e

```
[ ]: import re

pattern = r'[a-f]'

text = 'Regular expressions are a powerful tool for string manipulation.'

matches = re.findall(pattern, text)

print(matches)
```

['e', 'a', 'e', 'e', 'a', 'e', 'a', 'e', 'f', 'f', 'a', 'a']

### 4 How do you create a regular expression that matches any uppercase letter in Python's re library?

```
[ ]: import re

pattern = r'[P]'

text = 'Python is a programming language. It is used for making web_
↳ applications. Python is a very popular language. It is used by many data_
↳ scientists. Python is a very easy language to learn.'

matches = re.findall(pattern, text)

print(matches)
```

['P', 'P', 'P']

```
[ ]: import re

pattern = r'[P] '

text = 'Python is a programming language. It is used for making web_
↳applications. Python is a very popular language. It is used by many data_
↳scientists. Python is a very easy language to learn.'

matches = re.search(pattern, text)

print(matches.group())
```

P

## 5 How can you use the re.sub() function in Python's re library to replace a specific pattern in a string with a new value?

```
[ ]: import re

pattern = r'Python'

text = 'Python is a programming language. It is used for making web_
↳applications. Python is a very popular language.'

new_text = re.sub(pattern, 'Java', text)

print(new_text)
```

Java is a programming language. It is used for making web applications. Java is a very popular language.

## 6 How do you create a regular expression that matches any word that begins with a capital letter in Python's re library?

```
[ ]: import re

pattern = r'[A-Z]\w+'

text = 'Python is a programming language. It is used for making web_
↳applications. Python is a very popular language. It is used by many data_
↳scientists. Python is a very easy language to learn.'

matches = re.findall(pattern, text)

print(matches)
```

```
['Python', 'It', 'Python', 'It', 'Python']
```

```
[ ]: import re

pattern = r'[P]\w+'

text = 'Python is a programming language. It is used for making web_
↳applications. Python is a very popular language. It is used by many data_
↳scientists. Python is a very easy language to learn.'

matches = re.search(pattern, text)

print(matches.group())
```

Python

## 7 How do you use the re.search() function in Python's re library to search for a specific pattern within a substring of a larger string?

```
[ ]: import re

pattern = r'Python'

text = 'Python is a programming language. It is used for making web_
↳applications. Python is a very popular language. It is used by many data_
↳scientists. Python is a very easy language to learn.'

substring = text[0:50]

matches = re.search(pattern, substring)

print(substring)
print(matches.group())
```

Python is a programming language. It is used for m  
Python

## 8 How can you use the re.sub() function in Python's re library to replace multiple patterns in a string with different values?

```
[ ]: import re

text = 'The quick brown fox jumps over the lazy dog.'
replacements = {'quick': 'slow', 'brown': 'gray', 'fox': 'rabbit', 'dog': 'cat'}
```

```

pattern = re.compile(''.join(re.escape(key) for key in replacements.keys()))
result = pattern.sub(lambda match: replacements[match.group(0)], text)

print(result)

```

The slow gray rabbit jumps over the lazy cat.

## 9 How do you create a regular expression that matches any string of numbers separated by commas in Python's re library?

```

[ ]: import re

pattern = r'\d+[,] '

text = '1,2,3,4,5,6,7,8,9,10'

matches = re.findall(pattern, text)

print(matches)

```

```
['1,', '2,', '3,', '4,', '5,', '6,', '7,', '8,', '9,']
```

## 10 How do you create a regular expression that matches any email address in Python's re library?

```

[ ]: import re

pattern = r'\b[A-Za-z0-9._%+-]+@[A-Za-z0-9.-]+\.[A-Z|a-z]{2,}\b'

text = 'My email is john.doe@example.com'

match = re.search(pattern, text)

print(match.group(0))

```

```
john.doe@example.com
```