In [2]:
```
import regex as re
```

In [3]:
```
#Question 1- Write a Python program to replace all occurrences of a space, comma, or dot with a colon.
```

In [20]:
```
SampleText = 'Python Exercises, PHP exercises.'
pattern = r"[\s,.]"
match = re.sub(pattern, ":", SampleText)
print(match)
```

```
Python:Exercises::PHP:exercises:
```

In [23]:
```
#Question 2- Write a Python program to find all words starting with 'a' or 'e' in a given string.
```

In [24]:
```
SampleText = "Abdul Kalam was an Indian aerospace scientist also known as Missile Man of India. Data Science is the study of data to extract meaningful insights for business."
pattern = r"\b[ae]\w+"
match = re.findall(pattern, SampleText)
print(match)
```

```
['abdul', 'an', 'aerospace', 'also', 'as', 'extract']
```

In [25]:
```
#Question 3- Create a function in python to find all words that are at least 4 characters long in a string. The use of the re.compile() method is mandatory.
```

In [27]:
```
SampleText = "Abdul Kalam was an Indian aerospace scientist also known as Missile Man of India. Data Science is the study of data to extract meaningful insights for business."
pattern = re.compile(r'\b\w{4,}\b')
match = re.findall(pattern, SampleText)
print(match)
```

```
['Abdul', 'Kalam', 'Indian', 'aerospace', 'scientist', 'also', 'known', 'Missile', 'India', 'Data', 'Science', 'study', 'data', 'extract', 'meaningful', 'insights', 'business']
```

In [28]:
```
#Question 4- Create a function in python to find all three, four, and five character words in a string. The use of the re.compile() method is mandatory.
```

In [29]:
```
SampleText = "Abdul Kalam was an Indian aerospace scientist also known as Missile Man of India. Data Science is the study of data to extract meaningful insights for business."
pattern = re.compile(r'\b\w{3,5}\b')
match = re.findall(pattern, SampleText)
print(match)
```

```
['Abdul', 'Kalam', 'was', 'also', 'known', 'Man', 'India', 'Data', 'the', 'study', 'data', 'for']
```

In [62]:
```
#Question 5- Create a function in Python to remove the parenthesis in a list of strings. The use of the re.compile() method is mandatory.
```

In [63]:
```
def parenthesis_removal(SampleText):
    pattern = re.compile(r'[()]')
    return [pattern.sub('', text) for text in SampleText]

SampleText = ["example(.com)", "hr@fliprobo(.com)", "github(.com)", "Hello (Data Science World)", "Data (Scientist)"]
Match = remove_parentheses(SampleText)
print(Match)
```

```
['example.com', 'hr@fliprobo.com', 'github.com', 'Hello Data Science World', 'Data Scientist']
```

In [64]:
```
#Question 6- Write a python program to remove the parenthesis area from the text stored in the text file using Regular Expression.
```

In [76]:
```
SampleText = ["example (.com)", "hr@fliprobo (.com)", "github (.com)", "Hello (Data Science World)", "Data (Scientist)"]
for text in SampleText:
    print(re.sub(r'\([^)]*\)', "", text))
```

```
example
hr@fliprobo
github
Hello
Data
```

In [77]:
```
#Question 7- Write a regular expression in Python to split a string into uppercase letters.
```

In [80]:
```
Sampletext = "ImportanceOfRegularExpressionsInPython"
pattern = r"[A-Z][^A-Z]*"
Match = re.findall(pattern, Sampletext)
print(Match)
```

```
['Importance', 'Of', 'Regular', 'Expressions', 'In', 'Python']
```

In [81]:
```
#Question 8- Create a function in python to insert spaces between words starting with numbers.
```

In [100]:
```
def insert_spaces(SampleText):
    pattern = r'([A-Za-z]+)(\d+)'
    match = re.sub(pattern, r'\1 \2', SampleText)
    return match
```

In [103]:
```
SampleText = "RegularExpressionsIsAn2ImportantTopic3InPython"
result = insert_spaces(SampleText)
print(result)
```

```
RegularExpression IsAn 2ImportantTopic 3InPython
```

In [104]:
```
#Question 9- Create a function in python to insert spaces between words starting with capital letters or with numbers.
```

In [124]:
```
def insert_spaces(SampleText):
    pattern = r'([A-Z][a-z]+)(\d+)'
    match = re.sub(pattern, r'\1 ', SampleText)
    return match

SampleText = "RegularExpressionsIsAn2ImportantTopic3InPython"
result = insert_spaces(SampleText)
print(result)
```

```
Regular Expression IIs An 2Important Topic 3In Python
```

In [122]:
```
#Question 10- Write a python program to extract email address from the text stored in the text file using Regular Expression.
```

In [128]:
```
SampleText = "Hello my name is Data Science and my email address is xyz@domain.com and alternate email address is xyz.abc@sdomain.domain.com. Please contact us at hr@fliprobo.com fo

pattern = r'\b[A-Za-z0-9.]+@[A-Za-z.]+\.[A-Za-z]{2,}\b'
match = re.findall(pattern, SampleText)
print(match)
```

```
['xyz@domain.com', 'xyz.abc@sdomain.domain.com', 'hr@fliprobo.com']
```

In [129]:
```
#Question 11- Write a Python program to match a string that contains only upper and lowercase letters, numbers, and underscores.
```

In [134]:
```
def match_string(string):
    pattern = r'^[a-zA-Z0-9_]*$'
    if re.search(pattern, string):
        return 'Match found!'
    else:
        return 'No match found!'

print(match_string('Data_Science_0923'))
print(match_string('Data Science 0923'))
```

```
Match found!
No match found!
```

In [133]:
```
#Question 12- Write a Python program where a string will start with a specific number.
```

In [144]:
```
def match_number(string):
    text = re.compile(r"^6")
    if text.match(string):
        return 'Match found!'
    else:
        return 'No match found!'
print(match_number('5-6546854563'))
print(match_number('6-6546565163'))
```

```
No match found!
Match found!
```

In [145]:
```
#Question 13- Write a Python program to remove leading zeros from an IP address
```

In [147]:
```
My_IP = "103.08.022.0059"
string = re.sub('\.[0]*', '.', My_IP)
print(string)
```

```
103.8.22.59
```

In [148]:
```
#Question 14- Write a regular expression in python to match a date string in the form of Month name followed by day number and year stored in a text file.
```

In [179]:
```
Sampletext = 'On August 15th 1947 that India was declared independent from British colonialism, and the reins of control were handed over to the leaders of the Country'
pattern = r"\b([A-Z][a-z]+\s\d{1,2}(?:st|nd|rd|th)\s\d{4})\b"
match = re.findall(pattern, Sampletext)
print(match)
```

```
['August 15th 1947']
```

In [180]:
```
#Question 15- Write a Python program to search some literals strings in a string.
```

In [188]:
```
Sampletext = 'The quick brown fox jumps over the lazy dog.'
Searchedwords = ['fox', 'dog', 'horse']

for words in Searchedwords:
    print('Searching for "%s" in "%s" ->' % (words, Sampletext),)
    if re.search(words, Sampletext):
        print('Match found!')
    else:
        print('No Match found!')
```

```
Searching for "fox" in "The quick brown fox jumps over the lazy dog." ->
Match found!
Searching for "dog" in "The quick brown fox jumps over the lazy dog." ->
Match found!
Searching for "horse" in "The quick brown fox jumps over the lazy dog." ->
No Match found!
```

In [189]:
```
#Question 16- Write a Python program to search a literals string in a string and also find the location within the original string where the pattern occurs
```

In [200]:
```
string = 'The quick brown fox jumps over the lazy dog.'
pattern = 'fox'
match = re.search(pattern, string)
if match:
    start = match.start()
    end = match.end()
    print(f'Found "{match.re.pattern}" in "{match.string}" from {start} to {end}.')
```

```
Found "fox" in "The quick brown fox jumps over the lazy dog." from 16 to 19.
```

In [201]:
```
#Question 17- Write a Python program to find the substrings within a string.
```

In [208]:
```
text = 'Python exercises, PHP exercises, C# exercises'
pattern = 'exercises'

for match in re.finditer(pattern, text):
    print('Found "%s"' % match)
```

```
Found "exercises"
Found "exercises"
Found "exercises"
```

In [209]:
```
#Question 18- Write a Python program to find the occurrence and position of the substrings within a string.
```

In [213]:
```
text = 'Python exercises, PHP exercises, C# exercises'
pattern = 'exercises'
for match in re.finditer(pattern, text):
    s = match.start()
    e = match.end()
    print(f'Found "%s" at %d:%d' % (text[s:e], s, e))
```

```
Found "exercises" at 7:16
Found "exercises" at 22:31
Found "exercises" at 36:45
```

In [214]:
```
#Question 19- Write a Python program to convert a date of yyyy-mm-dd format to dd-mm-yyyy format.
```

In [219]:
```
def convert_date_format(date):
    return re.sub(r'(\d{4})-(\d{1,2})-(\d{1,2})', '\\3-\\2-\\1', date)
date_current = "2023-10-07"
print("Original date in YYY-MM-DD Format: ",date_current)
print("New date in DD-MM-YYYY Format: ",convert_date_format(date_current))
```

```
Original date in YYY-MM-DD Format:  2023-10-07
New date in DD-MM-YYYY Format:  07-10-2023
```

In [220]:
```
#Question 20- Create a function in python to find all decimal numbers with a precision of 1 or 2 in a string. The use of the re.compile() method is mandatory.
```

In [227]:
```
def find_decimal_numbers(SampleText):
    pattern = re.compile(r'\b\d{1,4}\.\d{1,2}\b')
    return re.findall(pattern, SampleText)

SampleText = "01.12, 0132.123, 2.31875, 145.8, 3.01, 27.25 0.25"
Match = find_decimal_numbers(SampleText)
print(Match)
```

```
['01.12', '145.8', '3.01', '27.25', '0.25']
```

In [228]:
```
#Question 21- Write a Python program to separate and print the numbers and their position of a given string.
```

In [234]:
```
def separate_numbers(Sampletext):
    pattern = r'\d+'
    for match in re.finditer(pattern, Sampletext):
        print(f"Number: {match.group(0)}, Position: {match.start()}")

Sampletext = "My Name is Mehtab and I'm 23"
match = separate_numbers(Sampletext)
print(match)
```

```
Number: 23, Position: 26
None
```

In [ ]:
```
#Question 22- Write a regular expression in python program to extract maximum/largest numeric value from a string.
```

In [243]:
```
def extract_max(SampleText):
    numbers = re.findall(r'\d+', SampleText)
    numbers = map(int, numbers)
    print(max(numbers))

SampleText = 'My marks in each semester are: 947, 896, 926, 524, 734, 950, 642'
result = extract_max(SampleText)
print(result)
```

```
950
None
```

In [244]:
```
#Question 23- Create a function in python to insert spaces between words starting with capital letters.
```

In [246]:
```
def capital_letters_spaces(SampleText):
    return re.sub(r"(\w)([A-Z])", r"\1 \2", SampleText)

SampleText = "RegularExpressionIsAnImportantTopicInPython"
match = capital_letters_spaces(SampleText)
print(match)
```

```
Regular Expression Is An Important Topic In Python
```

In [247]:
```
#Question 24- Python regex to find sequences of one upper case letter followed by lower case letters
```

In [259]:
```
def find(string):
    pattern = r'[A-Z]+[a-z]+$'
    if (re.search(pattern, string)):
        print("Found a Match!")
    else:
        print("Match Not Found!")

string = "MehtabDatascience"
output = find(string)
print(output)
```

```
Found a Match!
None
```

In [260]:
```
#Question 25- Write a Python program to remove continuous duplicate words from Sentence using Regular Expression.
```

In [261]:
```
def remove_duplicates(SampleText):
    pattern = r'\b(\w+)(\s+\1\b)+'
    result = re.sub(pattern, r'\1', SampleText)
    return result

SampleText = "Hello hello world world"
match = remove_duplicates(SampleText)
print(match)
```

```
Hello hello world
```

In [262]:
```
#Question 26- Write a python program using RegEx to accept string ending with alphanumeric character.
```

In [263]:
```
def check(string):
    pattern = r'[a-zA-Z0-9]$'
    if (re.search(pattern, string)):
        print("Found a Match!")
    else:
        print("Match Not Found!")

string = "MehtabD0925"
output = check(string)
print(output)
```

```
Found a Match!
None
```

In [264]:
```
#Question 27-Write a python program using RegEx to extract the hashtags.
```

In [268]:
```
def extract_hashtags(Sampletext):
    match = re.findall(r'#\w+', Sampletext)
    return match

Sampletext = ""RT @kapil_kaushik: #Dolitwal I mean #xyzabc is "hurt" by #Demonetization as the same has rendered USELESS <ed><U+00A0><U+008D><ed><U+00B1><U+0089> "acquired funds" Ne
match = extract_hashtags(Sampletext)
print(match)
```

```
['#Dolitwal', '#xyzabc', '#Demonetization']
```

In [269]:
```
#Question 28- Write a python program using RegEx to remove <U+..> like symbols
```

In [270]:
```
Sampletext = "@Jags123456 Bharat band on 28??<ed><U+00A0><U+008D><ed><U+00B8><U+0082>Those who  are protesting #demonetization  are all different party leaders"
pattern = r"<U\+\w{4}>"
match = re.sub(pattern, "", Sampletext)
print(match)
```

```
@Jags123456 Bharat band on 28??<ed><ed>Those who  are protesting #demonetization  are all different party leaders
```

In [271]:
```
#Question 29- Write a python program to extract dates from the text stored in the text file
```

In [274]:
```
Sampletext = "Ron was born on 12-09-1992 and he was admitted to school 15-12-1999."
matches = re.findall(r'(\d{2}-\d{2}-\d{4})',Sampletext)
print(matches)
```

```
['12-09-1992', '15-12-1999']
```

In [275]:
```
#Question 30- Create a function in python to remove all words from a string of length between 2 and 4.
```

In [281]:
```
SampleText = "The following example creates an ArrayList with a capacity of 50 elements. 4 elements are then added to the ArrayList and the ArrayList is trimmed accordingly."
pattern = re.compile(r'\W*\b\w{2,4}\b')
print(pattern.sub('', SampleText))
```

```
 following example creates ArrayList a capacity elements. 4 elements added ArrayList ArrayList trimmed accordingly.
```