Efficient Python Tricks and Tools for Data Scientists - By Khuyen Tran

String

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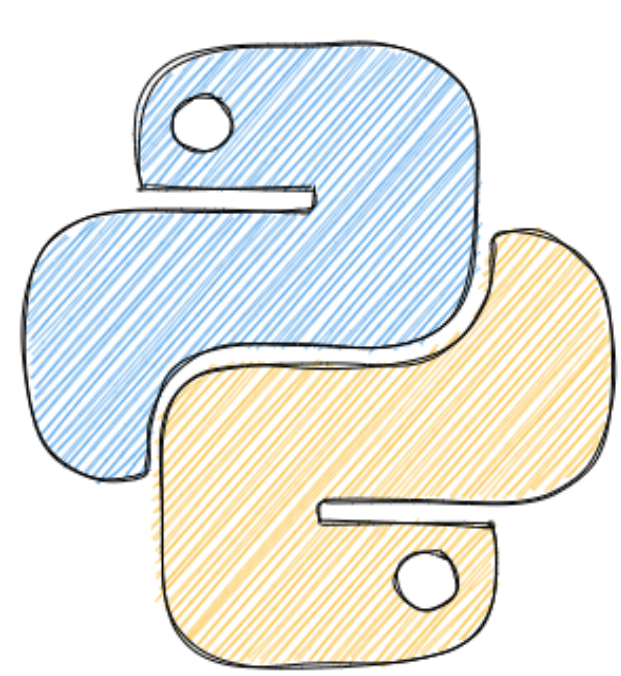

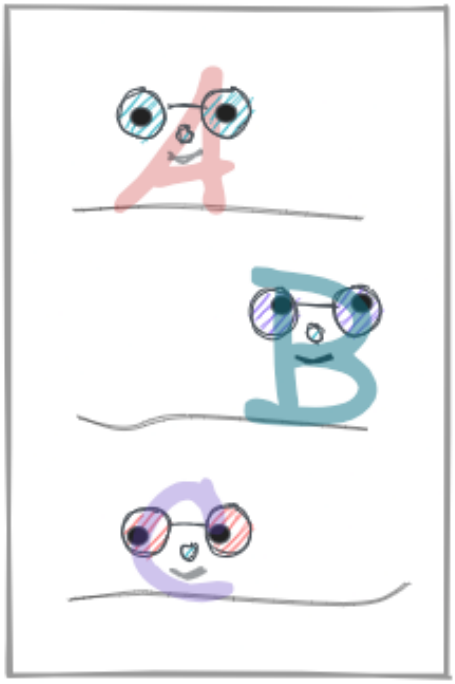

Control the Number of Printed Decimals with f-Strings

If you want to limit the number of decimals being printed, use the f-string as shown below.

```
num = 2.3123

print(f'{num:.1f}') # Limit to 1 decimal
print(f'{num:.2f}') # Limit to 2 decimals
```

```
2.3
2.31
```

Format Dates in Python f-Strings

When printing a Python string, f-strings allow you to format datetime easily with a curly bracket and its formats.

Find all formats here.

```
from datetime import datetime

date = datetime(2022, 1, 1, 15, 30, 45)
print(f'You need to be here at'
f' {date:%I:%M %p} on {date:%A}')
```

```
You need to be here at 03:30 PM on Saturday
```

Pad a String With Zero Using f-String

If you want to pad a string with zero, use f-string.

```
for hour in range(8, 12):
    print(f'It is {hour:02} AM! Wake up!')
```

```
It is 08 AM! Wake up!
It is 09 AM! Wake up!
It is 10 AM! Wake up!
It is 11 AM! Wake up!
```

Use Calculations in Python f-String

If you want to do calculations inside a Python string, use f-string.

```
apple = 3
banana = 2
print(f'The total price is {apple + banana}.')
```

```
The total price is 5.
```

Debug Your Python Code with an Equal Sign in an f-String

It is common to use `f"var={var}"` to see which values are being printed.

```
from itertools import permutations

nums = [1, 2, 3]

for i, j in permutations(nums, 2):
    print(f"i={i}, j={j}")
```

```
i=1, j=2
i=1, j=3
i=2, j=1
i=2, j=3
i=3, j=1
i=3, j=2
```

In Python 3.8 and above, you can get the same outputs using `f"{var=}"`.

```
for i, j in permutations(nums, 2):
    print(f"{i=}, {j=}")
```

```
i=1, j=2
i=1, j=3
i=2, j=1
i=2, j=3
i=3, j=1
i=3, j=2
```

String find: Find The Index of a Substring in a Python String

If you want to find the index of a substring in a string, use `find()` method. This method will return the index of the first occurrence of the substring if found and return `-1` otherwise.

```
sentence = "Today is Saturday"

# Find the index of first occurrence of the substring
sentence.find("day")
```

```
2
```

```
sentence.find("nice")
# No substring is found
```

```
-1
```

You can also provide the starting and stopping position of the search:

```
# Start searching for the substring at index 3
sentence.find("day", 3)
```

```
15
```

re.sub: Replace One String with Another String Using Regular Expression

If you want to either replace one string with another string or to change the order of characters in a string, use `re.sub`.

`re.sub` allows you to use a regular expression to specify the pattern of the string you want to swap.

In the code below, I replace `3/7/2021` with `Sunday` and replace `3/7/2021` with `2021/3/7`.

```
import re

text = "Today is 3/7/2021"
match_pattern = r"(\d+)/(\d+)/(\d+)"

re.sub(match_pattern, "Sunday", text)
```

```
'Today is Sunday'
```

```
re.sub(match_pattern, r"\3-\1-\2", text)
```

```
'Today is 2021-3-7'
```

Split a String by Multiple Characters

Using `str.split` only allows you to split a string by one character.

```
sent = "Today-is a nice_day"

sent.split('-')
```

```
['Today', 'is a nice_day']
```

If you want to split a string by multiple characters, use `re.split()`. re uses regrex to split the string.

```
import re

# split by space, -, or _
re.split(" |-|_", sent)
```

```
['Today', 'is', 'a', 'nice', 'day']
```

Multiline Strings

If your Python string gets very long, you can break it up using parentheses or a backslash.

```
text = (
    "This is a very "
    "long sentence "
    "that is made up."
)

text
```

```
'This is a very long sentence that is made up.'
```

```
text = "This is a very "\
    "long sentence "\
    "that is made up."

text
```

```
'This is a very long sentence that is made up.'
```

difflib.SequenceMatcher: Detect The "Almost Similar" Articles

When analyzing articles, different articles can be almost similar but not 100% identical, maybe because of the grammar, or because of the change in two or three words (such as cross-posting). How can we detect the "almost similar" articles and drop one of them? That is when `difflib.SequenceMatcher` comes in handy.

```
from difflib import SequenceMatcher

text1 = 'I am Khuyen'
text2 = 'I am Khuen'
print(SequenceMatcher(a=text1, b=text2).ratio())
```

```
0.9523809523809523
```

difflib.get_close_matches: Get a List of the Best Matches for a Certain Word

If you want to get a list of the best matches for a certain word, use `difflib.get_close_matches`.

```
from difflib import get_close_matches

tools = ['pencil', 'pen', 'erasor', 'ink']
get_close_matches('pencel', tools)
```

```
['pencil', 'pen']
```

To get closer matches, increase the value of the argument `cutoff` (default 0.6).

```
get_close_matches('pencel', tools, cutoff=0.8)
```

```
['pencil']
```