Other Common String Methods

WE'LL COVER THE FOLLOWING

- Slicing A String

Besides formatting, strings can do a number of other useful tricks.

```
s = '''Finished files are the re-
 sult of years of scientif-
 ic study combined with the
 experience of years.'''
                                    #①
print(s.splitlines())               #②
#['Finished files are the re-',
# 'sult of years of scientif-',
# 'ic study combined with the',
# 'experience of years.']

print(s.lower())                    #③
#finished files are the re-
#sult of years of scientif-
#ic study combined with the
#experience of years.

print(s.lower().count('f'))         #④
#6
```

① You can input multiline strings in the Python interactive shell. Once you start a multiline string with triple quotation marks, just hit `ENTER` and the interactive shell will prompt you to continue the string. Typing the closing triple quotation marks ends the string, and the next `ENTER` will execute the command (in this case, assigning the string to `s`).

② The `splitlines()` method takes one multiline string and returns a list of strings, one for each line of the original. Note that the carriage returns at the end of each line are not included.

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③ The `lower()` method converts the entire string to lowercase. (Similarly, the `upper()` method converts a string to uppercase.)

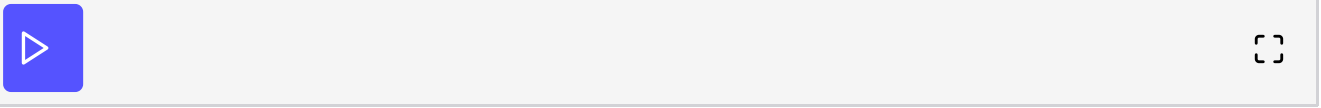
④ The `count()` method counts the number of occurrences of a substring. Yes, there really are six “f”s in that sentence!

Here’s another common case. Let’s say you have a list of key-value pairs in the form `key1=value1&key2=value2`, and you want to split them up and make a dictionary of the form `{key1: value1, key2: value2}`.

```
query = 'user=pilgrim&database=master&password=PapayaWhip'
a_list = query.split('&')                                    #①
print (a_list)
#['user=pilgrim', 'database=master', 'password=PapayaWhip']

a_list_of_lists = [v.split('=', 1) for v in a_list if '=' in v]  #②
print (a_list_of_lists)
#[['user', 'pilgrim'], ['database', 'master'], ['password', 'PapayaWhip']]

a_dict = dict(a_list_of_lists)                               #③
print (a_dict)
#{'user': 'pilgrim', 'database': 'master', 'password': 'PapayaWhip'}
```



① The `split()` string method has one required argument, a delimiter. The method splits a string into a list of strings based on the delimiter. Here, the delimiter is an ampersand character, but it could be anything.

② Now we have a list of strings, each with a key, followed by an equals sign, followed by a value. We can use a list comprehension to iterate over the entire list and split each string into two strings based on the first equals sign. The optional second argument to the `split()` method is the number of times you want to split. `1` means “only split once,” so the `split()` method will return a two-item list. (In theory, a value could contain an equals sign too. If you just used `'key=value=foo'.split('=')`, you would end up with a three-item list `['key', 'value', 'foo']`.)

③ Finally, Python can turn that list-of-lists into a dictionary simply by passing it to the `dict()` function.

> *The previous example looks a lot like parsing query parameters in a **URL**, but real-life **URL** parsing is actually more complicated than this. If you're dealing with url query parameters, you're better off using the urllib.parse.parse_qs() function, which handles some non-obvious edge cases.*

Slicing A String

Once you've defined a string, you can get any part of it as a new string. This is called `slicing` the string. Slicing strings works exactly the same as slicing lists, which makes sense, because strings are just sequences of characters.

```
a_string = 'My alphabet starts where your alphabet ends.'
print (a_string[3:11])           #①
#alphabet

print (a_string[3:-3])           #②
#alphabet starts where your alphabet en

print (a_string[0:2] )           #③
#My

print (a_string[:18])            #④
#My alphabet starts

print (a_string[18:] )           #⑤
# where your alphabet ends.
```

① You can get a part of a string, called a "slice", by specifying two indices. The return value is a new string containing all the characters of the string, in order, starting with the first slice index.

② Like slicing lists, you can use negative indices to slice strings.

③ Strings are zero-based, so `a_string[0:2]` returns the first two items of the string, starting at `a_string[0]`, up to but not including `a_string[2]`.

④ If the left slice index is 0, you can leave it out, and 0 is implied. So `a_string[:18]` is the same as `a_string[0:18]`, because the starting 0 is

implied.

⑤ Similarly, if the right slice index is the length of the string, you can leave it out. So `a_string[18:]` is the same as `a_string[18:44]`, because this string has 44 characters. There is a pleasing symmetry here. In this 44-character string, `a_string[:18]` returns the first 18 characters, and `a_string[18:]` returns everything but the first 18 characters. In fact, `a_string[:n]` will always return the first n characters, and `a_string[n:]` will return the rest, regardless of the length of the string.