Main String Operations

Table of Contents

```
best ='Clarusway'
```

```
best.upper()
```

1

Immutability

```
best.title()
```

Introduction

- String processing is of **great importance** in the IT world. Moreover, there seems to be much more to do in this field.
- Good news! Python's **string** processing **skills** are very **advanced** that we will focus on some main parts of it.
- A significant thing to keep in mind is that `str` is an **immutable** data type. This means you can't just change the string **in place**, so most string methods return a copy of the string. Well, how can we do that?

Introduction

Tips:

- This is the way you should follow: You must create a new variable for the copy you made or assign the same name to the copy to save the changes made to the string for later use.

Introduction

```
var_string = 'ClarusWay'
print(var_string.lower())
print(var_string)
var_string = 'ClarusWay'.lower()
print(var_string)
```

We can't change the string

To change string, we should reassign the new (changed) string value to a variable

```
clarusway
ClarusWay
clarusway
```

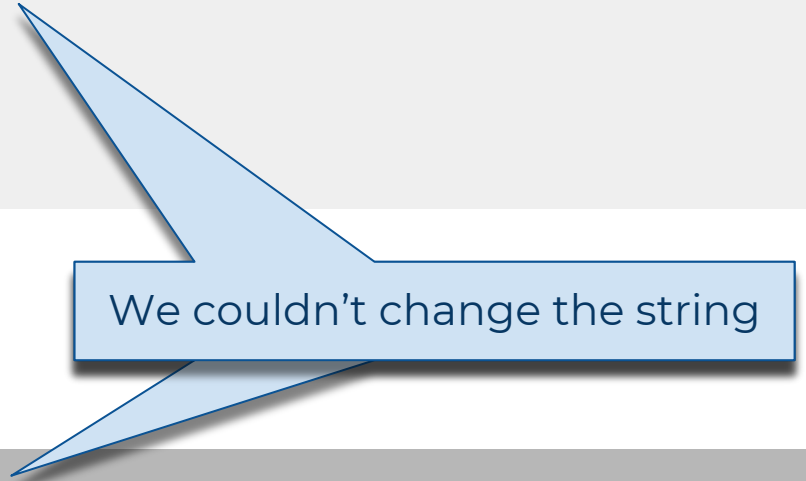
Introduction

```
var_str = 'In God we Trust'
var_str.lower()
print(var_str)
```

What is the output? Try to figure out in your mind...

Introduction

```
var_str = 'In God we Trust'
var_str.lower()
print(var_str)
```




```
In God we Trust
```

2 Searching a String

Searching a String

In & Not in operators

Operation	Result
`x in s`	`True` if an item of *s* is equal to *x*, else `False`
`x not in s`	`False` if an item of *s* is equal to *x*, else `True`

```
e_mail = 'bulent@clarusway.com'
print ('@' in e_mail)
```

Searching a String

- To search patterns in a string there are two useful methods called `.startswith()` and `.endswith()` that search for the particular pattern in the immediate beginning or end of a string and return `True` if the expression is found.

Searching a String

- To search patterns in a string there are two useful methods called `.startswith()` and `.endswith()` that search for the particular pattern in the immediate beginning or end of a string and return `True` if the expression is found.

  - `string.startswith()`

    Starts searching from the **beginning** to the end.

  - `string.endswith()`

    Starts searching from the **very end** to the beginning.

Searching a String(review pre-class)

- Let's take a look these pre-class examples :

```
1  text = 'www.clarusway.com'
2  print(text.endswith('.com'))
3  print(text.startswith('http:'))
4
```

What is the output? Try to figure out in your mind...

Searching a String(review pre-class)

- Let's take a look these pre-class examples :

```
1  text = 'www.clarusway.com'
2  print(text.endswith('.com'))
3  print(text.startswith('http:'))
4
```

```
1  True
2  False
3
```

Searching a String(review pre-class)

- Let's take a look these pre-class examples :

```
1  text = 'www.clarusway.com'
2  print(text.endswith('.com'))
3  print(text.startswith('http:'))
4
```

```
1  True
2  False
3
```

```
1  text = 'www.clarusway.com'
2  print(text.endswith('om'))
3  print(text.startswith('w'))
4
```

What is the output? Try to figure out in your mind...

Searching a String(review pre-class)

- Let's take a look these pre-class examples :

```
1  text = 'www.clarusway.com'
2  print(text.endswith('.com'))
3  print(text.startswith('http:'))
4
```

```
1  True
2  False
3
```

```
1  text = 'www.clarusway.com'
2  print(text.endswith('om'))
3  print(text.startswith('w'))
4
```

```
1  True
2  True
3
```

Searching a String(review pre-class)

- These methods have optional arguments `start` and `end`. We can specify the search by adding arguments so that the area of search is delimited by `start` and `end` arguments.

> **The formula syntaxes are :**
>
> - `.startswith(prefix[, start[, end]])`
> - `.endswith(suffix[, start[, end]])`

Searching a String(review pre-class)

- These methods have optional arguments `start` and `end`. We can specify the search by adding arguments so that the area of search is delimited by `start` and `end` arguments.

Tips:

- Remember! Characters of string count from left to right and start with zero.

- `.startswith(prefix[, start[, end]])`
- `.endswith(suffix[, start[, end]])`

Searching a String(review pre-class)

- These methods have optional arguments `start` and `end`. We can specify the search by adding arguments so that the area of search is delimited by `start` and `end` arguments.

Tips:

- Remember! Characters of string count from left to right and start with zero.

- `.startswith(prefix[, start[, end]])`
- `.endswith(suffix[, start[, end]])`

`end`s not included

Searching a String(review pre-class)

- Consider this pre-class example :

```
1  email = "clarusway@clarusway.com is my e-mail address"
2  print(email.startswith("@", 9))
3  print(email.endswith("-", 10, 32))
4
```

What is the output? Try to figure out in your mind...

Searching a String(review pre-class)

- Consider this example :

```
1  email = "clarusway@clarusway.com is my e-mail address"
2  print(email.startswith("@", 9))
3  print(email.endswith("-", 10, 32))
4
```

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
c	l	a	r	u	s	w	a	y	@	c	l	a	r	u	s	w	a	y	.	c	o	m
	i	s		m	y		e	-	m	a	i	l		a	d	d	r	e	s	s		
23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42			

Searching a String

- Consider this example :

```
1  email = "clarusway@clarusway.com is my e-mail address"
2  print(email.startswith("@", 9))
3  print(email.endswith("-", 10, 32))
4
```

```
1  True
2  True
3
```

"clarusway@clarusway.com is my e-mail address"

@ is the 9th and m is the 32nd letter starting from zero

Searching a String

- Try to figure out the output of this code :

```
1 text = 'www.clarusway.com'
2 print(text.endswith('.co'))
3 print(text.startswith('w.'))
4
5
6
```

Searching a String

- The output :

```
1 text = 'www.clarusway.com'
2 print(text.endswith('.co'))
3 print(text.startswith('w.'))
4
5
6
```

Output

```
False
False
```

Searching a String

- `str.find( ):` The `find()` method returns the index of the first occurence of a substring in the given string (case-sensitive). If the substring is not found it returns **-1**.
- `also str.rfind( ), starts the search from the right.`

- `str.index()`: Like `find()`, but raise `ValueError` when the substring is not found.
- `also str.rindex()`, Like `rfind()` but raises `ValueError` when the substring *sub* is not found.

Searching a String

```
1   text = 'www.clarusway.com'
2   print(text.index('com'))
3   print(text.find('com'))
```

```
14
14
```

3 Changing a String

Changing a String

- The changing a string methods return the copy of the `str` with some changes made.
- How does the syntax work?
- A string is given first (or the name of a variable that represents a string), then comes a period followed by the method name and parentheses in which arguments are listed.
- The formula syntax 👇

```
string.method(arguments)
```

Changing a String

- The summary of some common and the most important methods are as follows 👇

  - `str.replace(old, new[, count])` replaces all occurrences of old with the new.

    The count argument is optional, and if the optional argument count is given, only the first count occurrences are replaced. `count`: Maximum number of occurrences to replace. **-1** (the default value) means replace all occurrences.

  - `str.swapcase()` converts upper case to lower case and vice versa.

  - `str.capitalize()` changes the first character of the string to the upper case and the rest to the lower case.

  - `str.upper()` converts all characters of the string to the upper case.

  - `str.lower()` converts all characters of the string to the lower case.

  - `str.title()` converts the first character of each word to upper case.

Changing a String

- The summary of some common and the most important methods are as follows 👇

str. join( ) : The join() function takes all items in an iterable and joins them into one string. We have to specify a string as the separator.

str.split( ): The `split()` method splits the string from the specified separator and returns a list object with string elements.

Changing a String

- Let's grasp these methods through the examples 👇

```
1  sentence = "I live and work in Virginia"
2
3  print(sentence.upper())
4
5  print(sentence.lower())
6
7  print(sentence.swapcase())
8
9  print(sentence)  # note that, source text is unchanged
10
```

What is the output? Try to figure out in your mind...

Changing a String

- Let's grasp these methods through the examples 👇

```
1  sentence = "I live and work in Virginia"
2
3  print(sentence.upper())
4
5  print(sentence.lower())
6
7  print(sentence.swapcase())
8
9  print(sentence)  # note that, source text is unchanged
10
```

```
1  I LIVE AND WORK IN VIRGINIA
2  i live and work in virginia
3  i LIVE AND WORK IN vIRGINIA
4  I live and work in Virginia
5
```

Changing a String

💡 Note that,

All these methods return `str` type.

So we can use the following syntax.

```
string.method1().method2().method3()...
```

Changing a String

- Let's grasp these methods through the examples 👇

```
1  sentence = "I live and work in Virginia"
2  title_sentence = sentence.title()
3  print(title_sentence)
4
5  changed_sentence = sentence.replace("i", "+")
6  print(changed_sentence)
7
8  print(sentence)  # note that, again source text is unchanged
9
```

What is the output? Try to figure out in your mind...

Changing a String

- Let's grasp these methods through the examples 👇

```
1  sentence = "I live and work in Virginia"
2  title_sentence = sentence.title()
3  print(title_sentence)
4
5  changed_sentence = sentence.replace("i", "+")
6  print(changed_sentence)
7
8  print(sentence)  # note that, again source text is unchanged
9
```

```
1  I Live And Work In Virginia
2  I l+ve and work +n V+rg+n+a
3  I live and work in Virginia
4
```

Changing a String

- **Task** 👇
  - Let's change the **first letters** of **each words** to **uppercase** of the following text 👇

```
text = 'the better the family, the better the society'
```

Changing a String

- **The code may look like 👇**

```
text = text.title()
print(text)
```

```
The Better The Family, The Better The Society
```

Changing a String

- Let's review the pre-class examples 👇

```
1  sentence = "I live and work in Virginia"
2  swap_case = sentence.swapcase()
3  print(swap_case)
4  print(swap_case.capitalize())  # changes 'i' to uppercase and
5  # the rest to lowercase
6
```

What is the output? Try to figure out in your mind...

Changing a String

- Let's review the pre-class examples 👇

```
1  sentence = "I live and work in Virginia"
2  swap_case = sentence.swapcase()
3  print(swap_case)
4  print(swap_case.capitalize())  # changes 'i' to uppercase and
5  # the rest to lowercase
6
```

```
1  i LIVE AND WORK IN vIRGINIA
2  I live and work in virginia
3
```

Changing a String

- **Task** 👇
  - In the `text` below, accidentally the number 0(zero) is used instead of the letter ‘o’ (oh). Fix them using `.replace()` method and **change** the **value of the variable** considering the new text and print the result.

```
text = 'S0d0me and G0m0re'
```

Changing a String

- **The code may look like 👇**

```
text = 'S0d0me and G0m0re'
text = text.replace('0', 'o')
print(text)
```

```
Sodome and Gomore
```

4 Editing a String

Editing a String

- The editing a string methods remove the trailing characters (i.e. characters from the right side).
- The default for the argument chars is also whitespace. If the argument chars aren't specified, trailing whitespaces are removed.
- The formula syntax 👇

```
string.method(arguments)
```

Editing a String

- The summary of some common and the most important methods are as follows 👇

- `string.strip()` : removes all spaces (or specified characters) from both sides.
- `string.rstrip()` : removes spaces (or specified characters) from the right side.
- `string.lstrip()` : removes spaces (or specified characters) from the left side.

Editing a String

```
string.strip(arg)
```

- Let's review the pre-class examples 👇

```
1  space_string = "      listen first       "
2  print(space_string.strip())  # removes all spaces from both sides
3
```

Editing a String

```
string.strip(arg)
```

- Let's review the pre-class examples 👇

```
space_string = "      listen first       "
print(space_string.strip())  # removes all spaces from both sides

```

```
listen first

```

Editing a String

```
string.strip(arg)
```

- Let's review the pre-class examples 👇

```
space_string = "     listen first      "
print(space_string.strip())  # removes all spaces from both sides

```

```
listen first

```

```
source_string = "interoperability"
print(source_string.strip("yi"))
# removes trailing "y" or "i" or "yi" or "iy" from both sides

```

Editing a String

```
string.strip(arg)
```

- Let's review the pre-class examples 👇

```
space_string = "     listen first      "
print(space_string.strip())  # removes all spaces from both sides

```

```
listen first

```

```
source_string = "interoperability"
print(source_string.strip("yi"))
# removes trailing "y" or "i" or "yi" or "iy" from both sides

```

```
nteroperabilit

```

Editing a String

```
string.lstrip(arg)
string.rstrip(arg)
```

- Let's review the pre-class examples 👇

```
1  source_string = "interoperability"
2  print(source_string.lstrip("in"))
3  # removes "i" or "n" or "in" or "ni" from the left side
4
```

What is the output? Try to figure out in your mind...

Editing a String

```
string.lstrip(arg)
string.rstrip(arg)
```

- Let's review the pre-class examples 👇

```
1  source_string = "interoperability"
2  print(source_string.lstrip("in"))
3  # removes "i" or "n" or "in" or "ni" from the left side
4
```

```
1  teroperability
2
```

Editing a String

```
string.lstrip(arg)
string.rstrip(arg)
```

- Let's review the pre-class examples 👇

```
1  source_string = "interoperability"
2  print(source_string.lstrip("in"))
3  # removes "i" or "n" or "in" or "ni" from the left side
4
```

```
1  teroperability
2
```

```
1  space_string = "     listen first      "
2  print(space_string.rstrip())  # removes spaces from the right side
3
```

What is the output? Try to figure out in your mind...

Editing a String

```
string.lstrip(arg)
string.rstrip(arg)
```

- Let's review the pre-class examples 👇

```
source_string = "interoperability"
print(source_string.lstrip("in"))
# removes "i" or "n" or "in" or "ni" from the left side

```

```
teroperability

```

```
space_string = "     listen first      "
print(space_string.rstrip())  # removes spaces from the right side

```

```
     listen first

```

Editing a String

```
string.lstrip(arg)
string.rstrip(arg)
```

- Let's review the pre-class examples 👇

```
1  source_string = "interoperability"
2  print(source_string.rstrip("yt"))
3  # removes "y" or "t" or "yt" or "ty" from the right side
4
```

What is the output? Try to figure out in your mind...

Editing a String

```
string.lstrip(arg)
string.rstrip(arg)
```

- Let's review the pre-class examples 👇

```
1  source_string = "interoperability"
2  print(source_string.rstrip("yt"))
3  # removes "y" or "t" or "yt" or "ty" from the right side
4
```

```
1  interoperabili
2
```

Editing a String

```
string.lstrip(arg)
string.rstrip(arg)
```

- Let's review the pre-class examples 👇

```
1  source_string = "interoperability"
2  print(source_string.rstrip("yt"))
3  # removes "y" or "t" or "yt" or "ty" from the right side
4
```

```
1  interoperabili
2
```

```
1  source_string = "interoperability"
2  print(source_string.rstrip("ty"))
3
```

What is the output? Try to figure out in your mind...

Editing a String

```
string.lstrip(arg)
string.rstrip(arg)
```

- Let's review the pre-class examples 👇

```
1  source_string = "interoperability"
2  print(source_string.rstrip("yt"))
3  # removes "y" or "t" or "yt" or "ty" from the right side
4
```

```
1  interoperabili
2
```

Either ty or yt works

```
1  source_string = "interoperability"
2  print(source_string.rstrip("ty"))
3
```

```
1  interoperabili
2
```

Editing a String

- **Task** 👇
  - In the `text` below, accidentally there are additional letters. Remove the additional letters and make the all words uppercase.
  - Except for the `print()` line, your code should consist of a single line.

```
text = 'tyou can learn almost everything in pre-classz'
```

desired output

```
YOU CAN LEARN ALMOST EVERYTHING IN PRE-CLASS
```

Editing a String

- **The code may look like 👇**

```
text = text.rstrip('z').lstrip('t').upper()
print(text)
```

```
YOU CAN LEARN ALMOST EVERYTHING IN PRE-CLASS
```

Editing a String

- **Task** 👇
  - In the `text` below, accidentally the number the word “**we**” is wrong written. Remove the additional “**e**” letter and print the correct text.
  - You can also use *indexing/slicing/methods* of string.

```
text = 'In God wee Trust'
```

Editing a String

- **The code options might be like : 👇**

```
1  text = 'In God wee Trust'
2
3  print(text.replace("ee", "e"))
4
5  text1 = text[:9]
6  text2 = text[10:]
7  print(text1 + text2)
8
9
10
11
```

Output

```
In God we Trust
In God we Trust
```

THANKS!

End of the Lesson

(Main String Operations)

next Lesson

Lists

click above

CLARUSWAY©
WAY TO REINVENT YOURSELF