

Course	
Term	
Week	
Date	
Chapter. Topic	8. More About Strings

String Processing

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Revisiting Strings

Consider this string.
country = "java"

Operations	Result
What is the length of string?	5
Give me the first three characters of the string?	jav
Convert the string to upper case	JAVA
Convert the string to lower case	java
Does the string contain the character "x"?	False
Does the string contain the substring "JA"?	False (if it is all upper case) True (if it is lower case)
Split the string at the character "a"	['j', 'v']

Revisiting Strings

There are numerous built-in functions in Python for processing the strings.

https://www.w3schools.com/python/python_strings.asp

The screenshot shows the w3schools.com website with the URL `w3schools.com/python/python_strings.asp` in the browser address bar. The navigation menu includes links for HTML, CSS, JAVASCRIPT, SQL, PYTHON (highlighted), PHP, and MORE. The left sidebar lists various Python topics, with 'Python Strings' currently selected. The main content area is divided into two sections, each titled 'Example'. The first section demonstrates the `lower()` method with the code `a = "Hello, World!"` and `print(a.lower())`. The second section demonstrates the `upper()` method with the code `a = "Hello, World!"` and `print(a.upper())`. Both sections include a green 'Try it Yourself »' button.

Strings : Recap

What we already covered before!

- Taking inputs
- Converting Strings to other datatypes
- Converting other data types to Strings
- String formatting, printing
- Single, Double, and Triple Quotes
- Multi-Line Strings
- Escaping the strings



More About Strings

- Strings are character sequences (aka lists)
- Strings support Index Notation
- String slicing
- Strings are immutable
- Membership Operations (in) (not in)
- Traversing the string
- String Methods (Querying / Testing / Asking)
- String Methods (Modification)

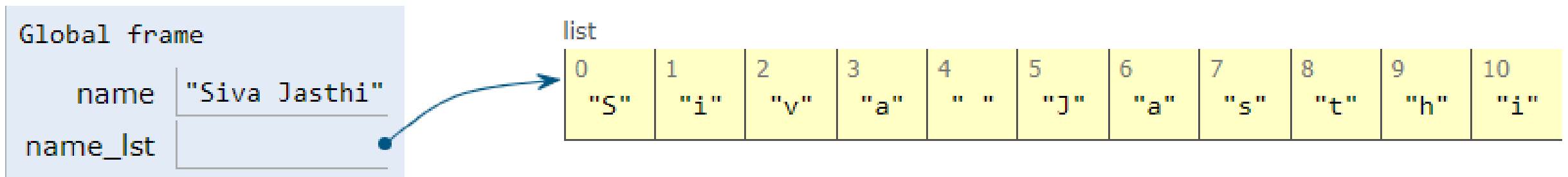
Strings = character lists

Apply list() function on the string.

```
1 name = 'Siva Jasthi'
2 print(type(name))
3
4 name_lst = list(name)
5 print(type(name_lst))
```

Frames

Objects



Strings support index notation

```
lang = 'PYTHON'
```

```
lang[0] →
```

```
lang[5] →
```

```
lang[-1] →
```

```
lang[-6] →
```

IndexError

```
lang[6] →
```

```
lang[-7] →
```

Strings support Slicing

```
text = 'Programming'
```

```
print(text[1:3])  
print(text[:3])  
print(text[-2:])  
print(text[:])  
print(text[1:5:2])  
print(text[1:6:2])  
print(text[1::2])  
  
print(text[::-1])
```


Strings: Membership Operations

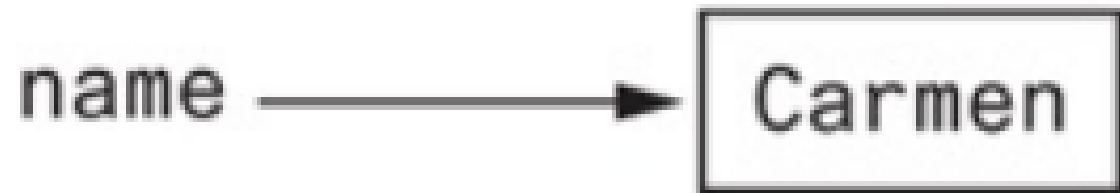
```
text = 'Python programming is cool'
```

```
print('python' in text)
```

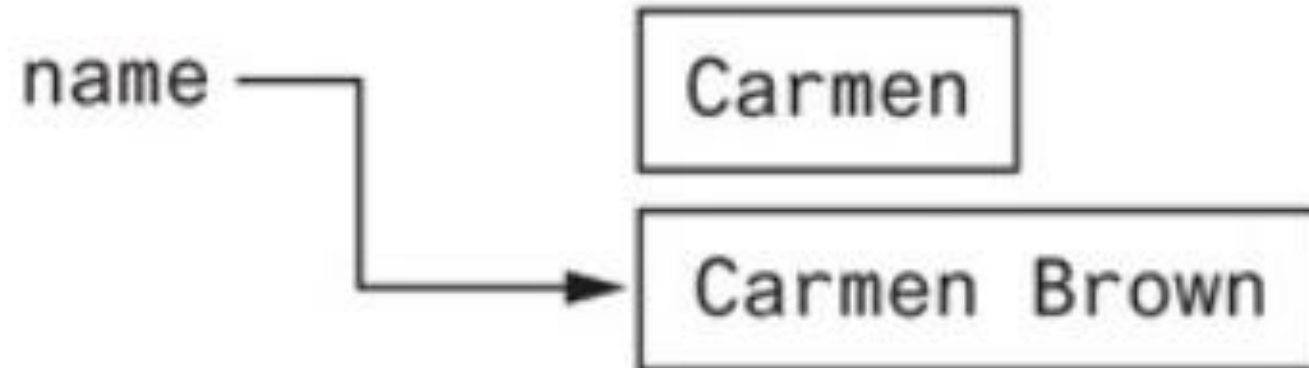
```
print('python' not in text)
```

Strings are immutable

```
name = 'Carmen'
```



```
name = name + ' Brown'
```



Traversing the strings

```
1 name = 'Python Programming'
2 print(type(name))
3
4 name_list = list(name)
5 print(type(name_list))
6
7
8 print("traversing the list of characters")
9 for x in name_list:
10     print(x, end = ' ')
11
12 print("\n\ntraversing the string")
13 for x in name:
14     print(x, end = ' ')
```

String testing methods

Table 8-1 Some string testing methods

Method	Description
<code>isalnum()</code>	Returns true if the string contains only alphabetic letters or digits and is at least one character in length. Returns false otherwise.
<code>isalpha()</code>	Returns true if the string contains only alphabetic letters and is at least one character in length. Returns false otherwise.
<code>isdigit()</code>	Returns true if the string contains only numeric digits and is at least one character in length. Returns false otherwise.
<code>islower()</code>	Returns true if all of the alphabetic letters in the string are lowercase, and the string contains at least one alphabetic letter. Returns false otherwise.
<code>isspace()</code>	Returns true if the string contains only whitespace characters and is at least one character in length. Returns false otherwise. (Whitespace characters are spaces, newlines (<code>\n</code>), and tabs (<code>\t</code>).
<code>isupper()</code>	Returns true if all of the alphabetic letters in the string are uppercase, and the string contains at least one alphabetic letter. Returns false otherwise.

String Modification Methods

Table 8-2 String Modification Methods

Method	Description
<code>lower()</code>	Returns a copy of the string with all alphabetic letters converted to lowercase. Any character that is already lowercase, or is not an alphabetic letter, is unchanged.
<code>lstrip()</code>	Returns a copy of the string with all leading whitespace characters removed. Leading whitespace characters are spaces, newlines (<code>\n</code>), and tabs (<code>\t</code>) that appear at the beginning of the string.
<code>lstrip(char)</code>	The <i>char</i> argument is a string containing a character. Returns a copy of the string with all instances of <i>char</i> that appear at the beginning of the string removed.
<code>rstrip()</code>	Returns a copy of the string with all trailing whitespace characters removed. Trailing whitespace characters are spaces, newlines (<code>\n</code>), and tabs (<code>\t</code>) that appear at the end of the string.
<code>rstrip(char)</code>	The <i>char</i> argument is a string containing a character. The method returns a copy of the string with all instances of <i>char</i> that appear at the end of the string removed.
<code>strip()</code>	Returns a copy of the string with all leading and trailing whitespace characters removed.
<code>strip(char)</code>	Returns a copy of the string with all instances of <i>char</i> that appear at the beginning and the end of the string removed.
<code>upper()</code>	Returns a copy of the string with all alphabetic letters converted to uppercase. Any character that is already uppercase, or is not an alphabetic letter, is unchanged.

Search and Replace Methods

Table 8-3 Search and replace methods

Method	Description
<code>endswith(substring)</code>	The <i>substring</i> argument is a string. The method returns true if the string ends with <i>substring</i> .
<code>find(substring)</code>	The <i>substring</i> argument is a string. The method returns the lowest index in the string where <i>substring</i> is found. If <i>substring</i> is not found, the method returns -1.
<code>replace(old, new)</code>	The <i>old</i> and <i>new</i> arguments are both strings. The method returns a copy of the string with all instances of <i>old</i> replaced by <i>new</i> .
<code>startswith(substring)</code>	The <i>substring</i> argument is a string. The method returns true if the string starts with <i>substring</i> .

String methods (built-in)

https://www.w3schools.com/python/python_ref_string.asp

Note: All string methods returns new values. They do not change the original string.

Method	Description
<u>capitalize()</u>	Converts the first character to upper case
<u>casefold()</u>	Converts string into lower case
<u>center()</u>	Returns a centered string
<u>count()</u>	Returns the number of times a specified value occurs in a string
<u>encode()</u>	Returns an encoded version of the string
<u>endswith()</u>	Returns true if the string ends with the specified value
<u>expandtabs()</u>	Sets the tab size of the string
<u>find()</u>	Searches the string for a specified value and returns the position of where it was found
<u>format()</u>	Formats specified values in a string
<code>format_map()</code>	Formats specified values in a string
<u>index()</u>	Searches the string for a specified value and returns the position of where it was found
<u>isalnum()</u>	Returns True if all characters in the string are alphanumeric

String methods (built-in)

https://www.w3schools.com/python/python_ref_string.asp

Note: All string methods returns new values. They do not change the original string.

Method	Description
isalpha()	Returns True if all characters in the string are in the alphabet
isascii()	Returns True if all characters in the string are ascii characters
isdecimal()	Returns True if all characters in the string are decimals
isdigit()	Returns True if all characters in the string are digits
isidentifier()	Returns True if the string is an identifier
islower()	Returns True if all characters in the string are lower case
isnumeric()	Returns True if all characters in the string are numeric
isprintable()	Returns True if all characters in the string are printable
isspace()	Returns True if all characters in the string are whitespaces
istitle()	Returns True if the string follows the rules of a title
isupper()	Returns True if all characters in the string are upper case
join()	Converts the elements of an iterable into a string

String methods (built-in)

https://www.w3schools.com/python/python_ref_string.asp

Note: All string methods returns new values. They do not change the original string.

Method	Description
<u>ljust()</u>	Returns a left justified version of the string
<u>lower()</u>	Converts a string into lower case
<u>lstrip()</u>	Returns a left trim version of the string
<u>maketrans()</u>	Returns a translation table to be used in translations
<u>partition()</u>	Returns a tuple where the string is parted into three parts
<u>replace()</u>	Returns a string where a specified value is replaced with a specified value
<u>rfind()</u>	Searches the string for a specified value and returns the last position of where it was found
<u>rindex()</u>	Searches the string for a specified value and returns the last position of where it was found
<u>rjust()</u>	Returns a right justified version of the string
<u>rpartition()</u>	Returns a tuple where the string is parted into three parts
<u>rsplit()</u>	Splits the string at the specified separator, and returns a list
<u>rstrip()</u>	Returns a right trim version of the string

String methods (built-in)

https://www.w3schools.com/python/python_ref_string.asp

Note: All string methods returns new values. They do not change the original string.

Method	Description
<u>split()</u>	Splits the string at the specified separator, and returns a list
<u>splitlines()</u>	Splits the string at line breaks and returns a list
<u>startswith()</u>	Returns true if the string starts with the specified value
<u>strip()</u>	Returns a trimmed version of the string
<u>swapcase()</u>	Swaps cases, lower case becomes upper case and vice versa
<u>title()</u>	Converts the first character of each word to upper case
<u>translate()</u>	Returns a translated string
<u>upper()</u>	Converts a string into upper case
<u>zfill()</u>	Fills the string with a specified number of 0 values at the beginning

Strings: Summary

1. string = character list

2. we use subscript notation
x[0], x[1] and so on.

3. you can use for loop to iterate a string

4. You get IndexError when you go out of bounds

5. len = length of a list, length of a string

6. You can add strings using + sign

7. Strings can NOT be changed.

Strings are immutable

name = 'Brown'

name[0] = 'C' --> You can not change a string

8. String formatting:

- Strings can be formatted using f'' strings and { }

9. String slicing

string[:]

string[a:b] slice from a to b

string[a:] slide from a to the end of the list

string[:b] slice from beginning till b

string[-a:] slice from a spots from the end till the end

10. in or not in

are useful to check the presence of a sub-string

name = "John Hopkins"

x = 'J' in name

y = 'X' in name

z = 'X' not in name

11. Many string methods

→ For querying

→ For modification

→ For searching

→ For splitting / tokenizing

12. Repetition Operator (*)

Thank You.

PYTHON PROGRAMMING

by SIVA JASTHI