

# strings

## PROGRAMMING AND INFORMATION SYSTEMS - 1<sup>o</sup> THEATRE GPSI TECHNICAL PROFESSIONAL COURSE

*"Older people only learn when they accept that, in order to educate others, it is necessary, first of all, to want to learn from them. AND this is only possible when, in the intentions of education, the acquisition of knowledge is replaced by affection for wisdom."*

(Sah, Edward)



### Module 04

#### Static Data Structures: Operations with Strings



#### Introduction

A String is a sequence of characters. An object of type `str` stores a set of characters sequentially. A string is delimited by the characters `"` or `'`. The String class has a series of methods, which are used for formatting, concatenation, dismemberment, substring, etc. In this challenge, we are going to analyze some of these methods of the String class.



#### Some websites...

- Python Resources <http://excript.com/python/intro-as-string-python.html>
- Manipulating Strings (Most Used Methods and Functions) [https://www.w3schools.com/python/python\\_strings.asp](https://www.w3schools.com/python/python_strings.asp)



DEFINITIONS	DESCRIPTION
<b>str</b>	Type <code>str</code> (string - string). It can be treated as an array of characters.
<b>lower()</b> <b>upper()</b>	returns the same <i>string</i> , but in lowercase (uppercase)
Example: <code>name="Tacílio Loureiro";</code> <code>print(name.upper())</code> <code>// TACÍLIO LOUREIRO</code>	
<b>len(s)</b>	Function that returns the size of the <i>string</i> , that is, the number of characters that make up the <i>string</i> .
Example:	

<pre>name = "Mary Joseph"; tamName=len(name) # 10</pre>	
<p><b>in</b></p> <pre>txt = "The best things in life are free!" print("things" in txt)</pre>	To check if a certain phrase, word or character is present in a string, we can use the keyword <b>in</b> .
<p><b>not in</b></p> <pre>txt = "The best things in life are free!" print("expensive" not in txt)</pre>	To check if a certain phrase, word or character does not count in a string, we can use the keywords <b>not in</b> .
<p><b>substring</b></p> <p>Example:</p> <pre>b = "Hello, World!" print(b[2:5]) #llo  print(b[:5]) #Hello print(b[2:])#llo, World!  print(b[-5:-2]) #orl</pre>	<p>Returns a partial string of the current string that starts at position and has a total of characters.</p> <p>The start index and the end index must be specified, separated by colons, so that part of the string is returned.</p> <p>The character corresponding to the final index is not included in the substring.</p> <p>If the starting position is not mentioned, by default, the substring will start at position 0.</p> <p>If the final position is not mentioned, by default, the substring will end in the last character of the initial string.</p> <p>When indices contain negative values, the substring starts from the end to the beginning.</p>
<p><b>strip()</b></p> <p>Example:</p> <pre>a = " Hello, World!" print(a.strip()) #Hello,World!</pre>	The <b>strip()</b> method removes whitespace from a string.
<p><b>replace(oldvalue, newvalue)</b></p> <p>Example:</p> <pre>a = "Hello, World!" print(a.replace("H", "J")) #Jello, World!</pre>	Returns a string that results from replacing all occurrences of one string with another.
<p><b>split(separator);</b></p> <p>Example:</p> <pre>a = "Hello, World!" print(a.split(",")) # ['Hello', 'World!']</pre>	Method splits a string into substrings if it finds instances of the separator.
<p><b>+ (operator)</b></p> <p>Example:</p> <pre>a = "Hello" b = "World" c = a + " " + b print(c) #"Hello World!"</pre>	Concatenates (joins) two or more strings.

**index(value, start, end)**

This method returns the position of the first occurrence of a given string.

Example:

```
txt = "Hello, welcome to my  
world."  
x = txt.index("e", 5, 10)  
print(x) # 8
```



## Activities proposal

1. The name of the teachers in Navarez is "Solrac" Do you know how to spell yours?

To find out, make a program that reads the username and writes it in the order reverse.

2. Refine the previous program to indicate if the word that was written is a capicua.

3. Write a program that reads a string and writes the number of vowels in it and remaining characters.

**For example:**

Write a sentence: How many vowels does this sentence have?

Number of vowels: 11

Number of other characters: 18

4. Write a program that, given two strings, str1 and str2, concatenate them, returning the resulting string in str1. For example, if str1 is "Class" and str2 is "practice" the program should return "Aulapratica" in str1.

5. Write a program that reads the full name of the user and at the end displays only the your first and last name in capital letters.

6. Write a program that encodes a sentence written by the user. The program must follow the following letter matching to encode the text:

<b>AB</b>	<b>Ç</b>	<b>D</b>	<b>AND F</b>	<b>G</b>	<b>H</b>	<b>I</b>	<b>J</b>	<b>K</b>	<b>L</b>	<b>M</b>	
EX	W	R	THE T	P	s	u	D	Q	G	H	
<b>No</b>	<b>THE P</b>	<b>Q</b>	<b>R</b>	<b>s</b>	<b>T</b>	<b>u</b>	<b>V</b>	<b>W</b>	<b>X</b>	<b>Y</b>	<b>Z</b>
J	I K	L	Z	M	Ç	Y	B	No	F	THE V	

**Example:**

Write a sentence: This sentence will be encoded!  
OMCE TZEMO BEU MOZ WIRUTUWERE!

Note that non-existing characters in the code must be kept without change (eg spaces and punctuation). Suggestions: consider only letters capital letters. Use an array indexed by the 26 letters of the alphabet and in each cell of the array put the respective conversion. Change the program to perform the inverse operation, that is, the decoding.

7. Write a program that removes all A's and displays the text on the monitor after modified.

Example: Yesterday was late      =>      Yesterday j er trde

8. Write a program that calculates and displays the number of times the string AB appears in a text.

9. Given a text, write a program that calculates and displays the number of times each one of the letters of the alphabet in this text.

10. Given a circle C and a point p in the plane, we want to determine whether p is in the inside or outside of C. If the point p is on the boundary of the circle C consider that is on your outside (BUTTON Problem).

**Input data:**

on the first line are the coordinates (xp, yp) of point p. The second line contains the coordinates of the center point of the circle (xc, yc). In the third line is indicated the radius r of the circumference.

**Output data:**

The output data is composed of a single line. This line must contain the text 1 or 0 depending on whether the point is inside or outside the circle, respectively.

**Example of input data 1**

4 2

5 0

3

**Output data example 1**

1

Example of input data 2

5 0

5 3

3

Output data example 2

0

**GOOD WORK! YOU ARE ABLE! BUILD YOUR KNOWLEDGE...**

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