String Operations

Your Tasks (Mark these off as you go)
☐ Define key vocabulary
☐ Print formatted text to the console
☐ Implement functions from the JavaScript String library
☐ Receive credit for this lab guide

☐ Define key vocabulary

String variable

Concatenate

☐ Print formatted text to the console

Some characters in Python are reserved for code. For example, we use quotes to define String type variables. What if we want to print quotes, however? To do this requires that we escape the characters that we want to print. Escaping tells Python to ignore the character as code. To escape a character in Python we use the backslash.

Below are some commonly used escape sequences in JavaScript

\t: Inserts a tab

This sequence inserts a *tab* in the text where it's used.

\n: Inserts a new line

This sequence inserts a *new line* in the text where it's used.

\': Inserts a single quote

This sequence inserts a *single quote* character in the text where it's used.

\": Inserts a double quote

This sequence inserts a *double quote* character in the text where it's used.

\\: Inserts a backslash

This sequence inserts a *backslash* character in the text where it's used.

Below are a few examples of how escape sequences can be implemented,

Code	Output
`var msg = "Here is one line \n and here is another"` `console.log(msg)`	`Here is one line` ` and here is another`
`console.log("What is the \"right\" way?")`	`What is the "right" way?`
`var msg2 = "Everything\t\tis\t\ttabbed";` `console.log(msg2)`	`Everything     is      tabbed`

Write code that could be used to print the alphabet to the console exactly as shown – using just ONE console.log statement.

```
A          B
C          D
```

Write code that will print the following to the console.

"Woo Hoo!"

Note, the quotes must display when printed.

□ Implement functions from the JavaScript String library

The String object class in JavaScript provides a library of functions which are useful for manipulating *String* type variables. To access these functions, we can use the "dot" notation. How to implement several useful functions from the String JavaScript library are illustrated below.

.length

Code	Output	Explanation

`var theName = "Donald Duck";`
`var len = theName.length;`
`console.log(len);`
	11	The length of the String including white space is printed.

.substring()

The substring() function can be used to indicate the portion of the String we want to retrieve. In computer science counting begins at 0. In the String "Sparky the dog", the character assignments are as follows,

Position	0	1	2	3	4	5	6	7	8	9	10	11	12	13
Letter	S	p	a	r	k	y		t	h	e		d	o	g

The substring function can accept one or two parameters. Both implementations are illustrated below.

Code	Output	Explanation

```var myPet = "Sparky the dog";```
 ```var smallPart = myPet.substring(4);```
 ```console.log(smallPart);```
	ky the dog	Everything starting at index 4 is printed

```var smallPart2 = myPet.substring(4,12);``` ```console.log(smallPart2);```	ky the d	Everything between index and 4 and 12 (not inclusive is printed.

.toLowerCase()

The function "toLowerCase()" converts all characters to lower case (small letters)

Code	Output

```var phrase ="Where is my car?";```
 ```var phraseLower = phrase.toLowerCase();```
 ```console.log(phraseLower);```
	where is my car?

.toUpperCase()

The function "toUpperCase()" converts all characters to upper case (capital letters)

Code	Output

```var phrase ="Where is my car?";```
 ```var phraseUpper = phrase.toUpperCase();```
 ```console.log(phraseUpper);```
	WHERE IS MY CAR?

.charAt

The charAt function can be applied to return a character at a specified index. Consider the following example,

Code

```var somePhrase = "Sparky the dog";```
 ```var firstLetter = somePhrase.charAt(0);```
 ```var lastLetter = somePhrase.charAt(somePhrase.length-1);```
 ```console.log("The first letter is " + firstLetter + ". The last letter is " + lastLetter + ".");```

Output
The first letter is S. The last letter is g.

Consider the words below,

Bicycle
Car
Popcorn

Write a function called `wordScramble` that extracts the first half and second half of each word, then recombines the halves such that the last half is printed first followed by the first half.

The result that should appear when your program is ran is shown below. **NOTE**: the final result should be all lower case.

```
* yclebic
* arc
* cornpop
```

The .replace method can be used to replace the first instance of a part of a string with a different part. Consider the examples below,

word	part1	part2	word.replace(	result	Explanation
TIMBERLINE	N	T	word.replace(part1, part2)	TIMBERLITE	replaces first N with T
TIMBERLINE	L	E	word.replace(part1, part2)	TIMBEREINE	replaces first L with E
TIMBERLINE	I	E	word.replace(part1, part2)	TEMBERLINE	replaces first I with E
TIMBERLINE	T	I	word.replace(part1, part2)	IIMBERLINE	replaces first T with I

Write a function that could be used to select two random letters from a word (use Math.random() for this). Then use the .substring and .replace methods to swap the locations of the letters. Your function should return the final word with the letters swapped.

The examples below illustrate how your function should work for several calls.

function call	num1	num2	result	Explanation
swapLetters("Timberline")	9	7	TEMBIRLINE	Num1 corresponds to letter E and num2 corresponds to letter I, the first instances of these letters are swapped
swapLetters("Timberline")	8	4	TIMBNRLIEE	Num1 corresponds to letter N and num2 corresponds to letter E, the first instances of these letters are swapped
swapLetters("Timberline")	5	4	TIMBRELINE	Num1 corresponds to letter R and num2 corresponds to letter E, the first instances of these letters are swapped

The swapLetters function, which swaps two random letters in a word.