



**TASK**

# String Handling

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# Introduction

## Welcome to the Strings Handling Task!

One of the most crucial concepts to grasp when it comes to programming is string handling. Strings have already been introduced in the Strings Task. In this task, you will briefly recap some key points and then learn to create more advanced programs with strings which use more functions and programming techniques.



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## A note from the Hyperion Team

### The Best Qualification for Programmers.

[This article](#) on the Hyperion Hub serves to answer the question we get asked time and time again - 'What degree should I study if I want to become a software developer?' We previously published an article on the high-level differences between IT and CS. In this article, we'll compare and contrast the employability, salaries and career paths for IT versus CS qualifications and answer which qualification is the best for programmers.

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### INDEXING STRINGS

You can think of the string 'Hello world!' as a list and each character in the string as an item with a corresponding index.

'	H	e	l	l	o		w	o	r	l	d	!	'
0	1	2	3	4	5		6	7	8	9	10	11	

The space and exclamation point are included in the character count, so 'Hello world!' is 12 characters long, from 'H' at index 0 to '!' at index 11.

```
String = "Hello"  
print(String[0]) # H  
print(String[1]) # e  
print(String[2]) # l  
print(String[3]) # l  
print(String[4]) # o
```

Remember that if you specify an index, you'll get the character at that position in the string. You can also slice strings by specifying a range from one index to another, the starting index is included and the ending index is not.

**Note** that slicing a string does not modify the original string. You can capture a slice from one variable in a separate variable. Try typing the following into the interactive shell:

```
newString = 'Hello world!'
fizz = newString[0:5]
print(fizz)
```

By slicing and storing the resulting substring in another variable, you can have both the whole string and the substring handy for quick, easy access.

**Note:** The split method above returns a **list**. A list is a data type that can be thought of as a container that holds a number of other items, such as Strings, Integers or Floats. A list is created by placing all the items inside a square bracket [ ] and separating them by commas. For example, a list of Integers can be created as follows:

```
int_list = [1, 2, 3, 4]
```

To add an item to the end of your list, you use the `append()` method. For example, `list.append(item)` adds the single item within the brackets to the end of a list. You will learn more about lists later on in this course.

## STRING METHODS

Once you understand strings and their indexing, the next step is to master using some of the common string methods. These are built-in modules of code that perform certain operations on strings. These methods are useful as they save time since there is no need to write the code over and over again to perform certain operations. The most common of these methods are:

- **s.lower()** and **s.upper()** - these convert a string to either uppercase or lowercase.
- **s.strip()** - removes any whitespaces from the beginning or end of a string.
- **s.find('text')** - this will search for a specific text and return its position in the string you are searching.
- **s.replace('oldText', 'newText')** - This will replace any occurrence of 'oldText' with 'newText'.
- **s.split('word')** - This breaks down a string into a list of smaller pieces. The string is separated based on what is called a delimiter. This is a string or char value that is passed to the method. If no value is given it will automatically split the string using whitespace as the delimiter.

Examine 'example.py' to see how each of these methods can be used.

## ESCAPE CHARACTER

Python uses the backslash (\) as an escape character. The backslash (\) is used as a marker character to tell the compiler/interpreter that the next character has some special meaning. The backslash, together with certain other characters, is known as an escape sequence.

Some useful escape sequences are listed below:

- `\n` - Newline
- `\t` - Tab
- `\s` - Space

The escape character can also be used if you need to include quotation marks within a string. You can put a backslash (\) in front of a quotation mark so that it doesn't terminate the string. Put a backslash in front of another backslash to include a backslash in a string.



### A note from our coding mentor **Jared**

Hey again, have you ever wondered where a string variable gets its name from? According to an [article on StackOverflow](#):

"The 1971 OED (p. 3097) quotes an 1891 Century Dictionary on a source in the Milwaukee Sentinel of 11 Jan. 1898 (section 3, p. 1) to the effect that this is a compositor's term. Printers would paste up the text that they had generated in a long strip of characters."

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# Instructions

First, read 'example.py'. Open it using IDLE.

- 'example.py' should help you understand some simple Python. Every task will have example code to help you get started. Make sure you read all of 'example.py' and try your best to understand.
- You may run 'example.py' to see the output. Feel free to write and run your own example code before doing the Task to become more comfortable with Python.

## Compulsory Task 1

Follow these steps:

- Create a program called 'alternative.py' that reads in a string and makes each alternate character an uppercase character and each other alternate character a lowercase character.
- For example, the string "Hello World" would become "HeLlO WoRlD"

## Compulsory Task 2

Follow these steps:

- Write a Python program called 'counting.py' to count the number of times a character occurs (character frequency) in a string.
- Store each letter followed by the number of occurrences in a list and print it out.
- Sample String : 'google.com'
- Expected Result : {'o': 3, 'g': 2, '!': 1, 'e': 1, 'l': 1, 'm': 1, 'c': 1}

## Compulsory Task 3

Follow these steps:

- Write a program called 'seperation.py' which inputs a sentence and then displays each word of the sentence on a separate line.

## Compulsory Task 4

Follow these steps:

- Write a Python program called 'disappear.py' that strips a set of characters from a string.
- Ask the user to input a string and then ask the user which characters they would like to make disappear.
- For example:
  - The quick brown fox jumps over the lazy dog.
  - After stripping a,e,i,o,u
  - Th qck brwn fx jmps vr th lzy dg.

## Optional Task

Follow these steps:

- Create a new Python file in this folder called 'Optional\_task.py'
- Create a program that determines whether a String is a palindrome.
- A palindrome is a string which reads the same backwards as forward. Some examples of palindromes are: racecar, dad, level and noon.
- Ask the user to enter a word and check if that word is a palindrome. If it is a palindrome, print out 'Your word is a palindrome'. If it is not a palindrome, print out 'Your word is not a palindrome'.



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