

Chapter 6 - Strings

Strings

String Iteration

Learning Objectives - String Iteration

- **Define string iteration**
- **Identify two ways to iterate over a string**
- **Explain the inner workings of string iteration**

Iteration - For Loop

Iterating Over Strings

You have seen how you can make a copy of individual characters in a string with their index. Iterating over a string allows you to deal with each character of a string individually. You start with the character at index 0 and move through the end of the string.

String to iterate over	Variable for each character	Action for each character
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```
my_string = "Hello world"  
for char in my_string:  
    print(char)
```

String Iteration

```
my_string = "Hello world"  
for char in my_string:  
    print(char)
```

challenge

What happens if you:

- Change the value of `my_string` to "10, 11, 12, 13, 14"?
- Change the value of `my_string` to "\u25A3\u25A8\u25D3\u25CC\u25A2"?
- Change the print statement to `print(my_string)`?

Behind the Scenes

Use the code visualizer below and step through the code. Notice how the variable `char` is the value of the character. The index of the string is never referenced.

Iteration - While Loop

While Loop

String iteration is most often done with a for loop. However, a while can be used as well.

```
my_string = "Calvin and Hobbes"
length = len(my_string)
i = 0

while i < length:
    print(my_string[i])
    i += 1
```

Code Visualizer

challenge

What happens if you:

- Change the loop to `while i <= length:?`
- Change the print statement to `print(i)?`
- Remove `i += 1`?

Comparing While & For Loops

While Loop

```
my_string = "Hello"
length = len(my_string)
i = 0

while i < length:
    print(my_string[i])
    i += 1
```

For Loop

```
my_string = "Hello"

for char in my_string:
    print(char)
```

Compare While & For Loops

The for loop is more efficient than a while loop when iterating over a string. You do not need to declare variables for the length of the string (red

text), declare a variable for the index of the string (blue text), or increment the index variable (orange text). All of this is handled by the `in` statement. In for loops, you can use the iteration variable to reference the string character. With a while loop, however, you need to use the string and index to reference the character (purple text).