Chapter 6 - Strings

Strings

String Iteration

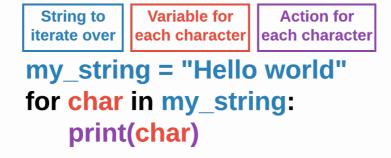
Learning Objectives - String Iteration

- 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 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</pre>
```

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</pre>
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).