Chapter 7 & 8

Strings and Arrays

Chapter 7 Strings

Chapter Breakdown

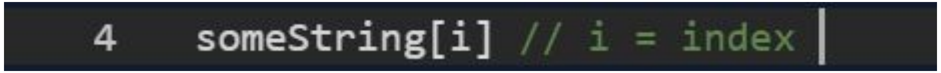
- 7.1 Strings as Collections
- 7.2 Bracket Notation
- 7.3 Strings as Objects
- 7.4 String Immutability
- 7.5 String Methods
- 7.6 Encoding Character
- 7.7 Special Characters
- 7.8 Template Literals

7.1 Strings as Collections

- Strings are a collection of characters
  - Can be treated as a single entity or broken down and accessed
  - Composed of smaller parts known as characters
- A character is a string that contains exactly one element
- Collections types that allow elements to be ordered are ordered collections

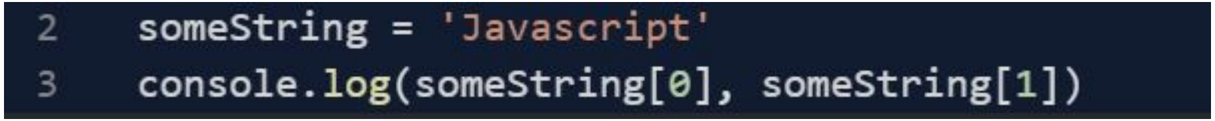
7.2 Bracket Notation

- Special Syntax
- Allows access to individual characters that make up a string

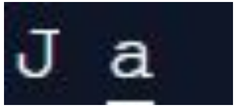


```
someString[i] // i = index
```

- Utilizes zero based indexing
  - The way of numbering in which the initial element of a sequence is assigned the index of 0 instead of 1



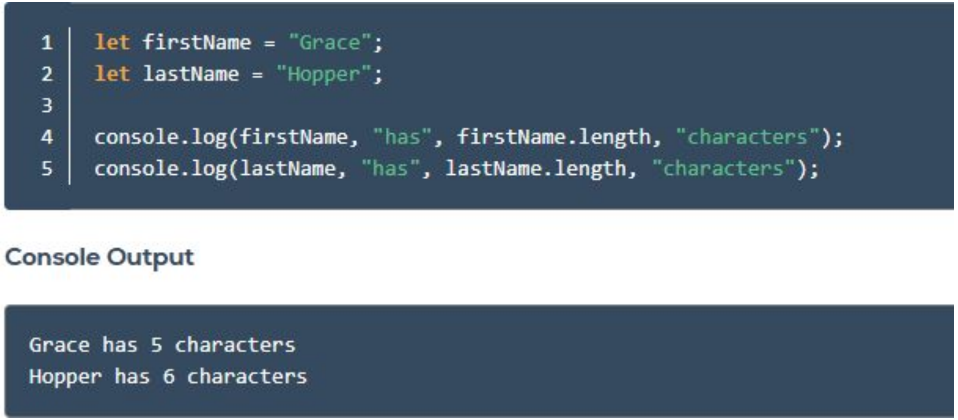
```
someString = 'Javascript'
console.log(someString[0], someString[1])
```



```
J a
```

7.3 Strings as Objects

- Strings are objects!
- Objects are collections of related data and operations.
    - Operations carried out on an object is known as a method
        - Think of methods as a function for that object
    - A piece of data associated with an object is known as a property
        - This of a property as a variable for that object
    - We will dive into this more in Chapter 12



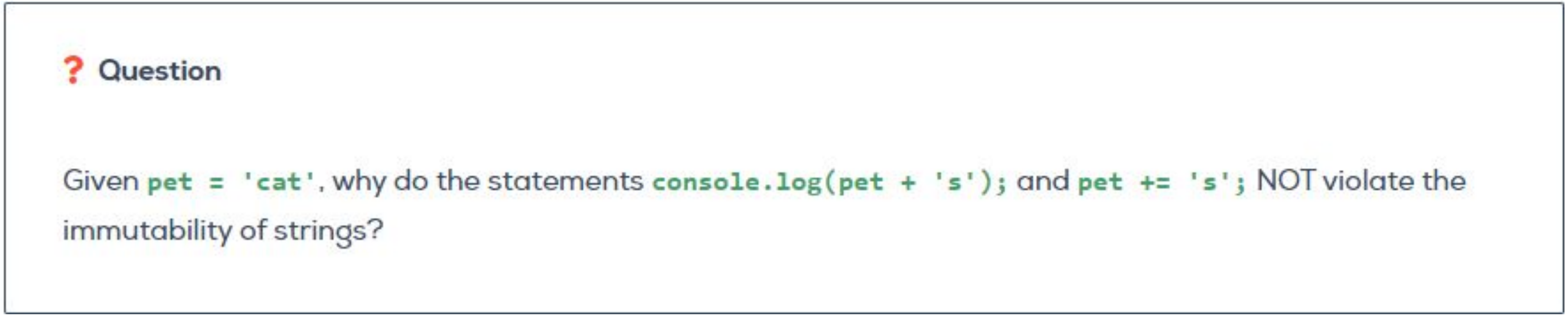
```
let firstName = "Grace";
let lastName = "Hopper";

console.log(firstName, "has", firstName.length, "characters");
console.log(lastName, "has", lastName.length, "characters");
```

Console Output

```
Grace has 5 characters
Hopper has 6 characters
```

7.4 String Immutability

- Immutable - **unchanging over time or unable to be changed.**
- Can’t change individual Characters within the given string
- You can however change the whole string (aka setting the variable containing a string to a different value)

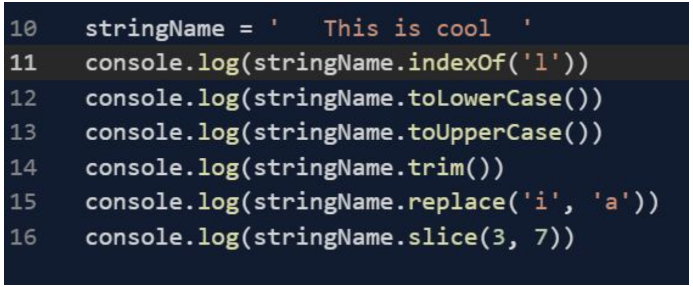


? Question

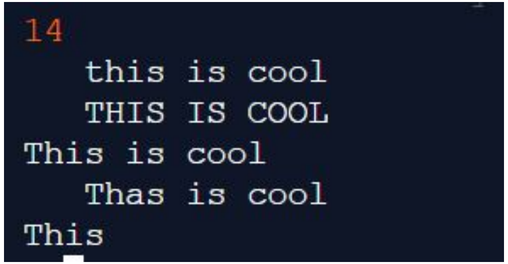
Given `pet = 'cat'`, why do the statements `console.log(pet + 's');` and `pet += 's';` NOT violate the immutability of strings?

7.5 String Methods

- Method - function that belongs to a specific object



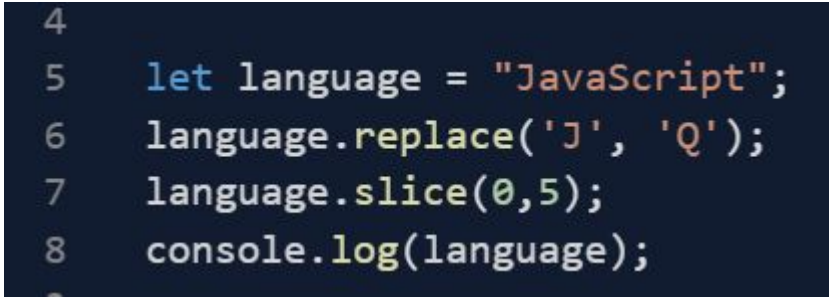
```
stringName = '   This is cool   '
console.log(stringName.indexOf('l'))
console.log(stringName.toLowerCase())
console.log(stringName.toUpperCase())
console.log(stringName.trim())
console.log(stringName.replace('i', 'a'))
console.log(stringName.slice(3, 7))
```



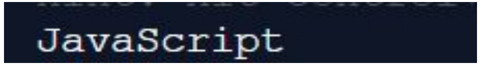
```
14
   this is cool
   THIS IS COOL
This is cool
   Thas is cool
This
```

String Methods do not change the string itself.

EX:



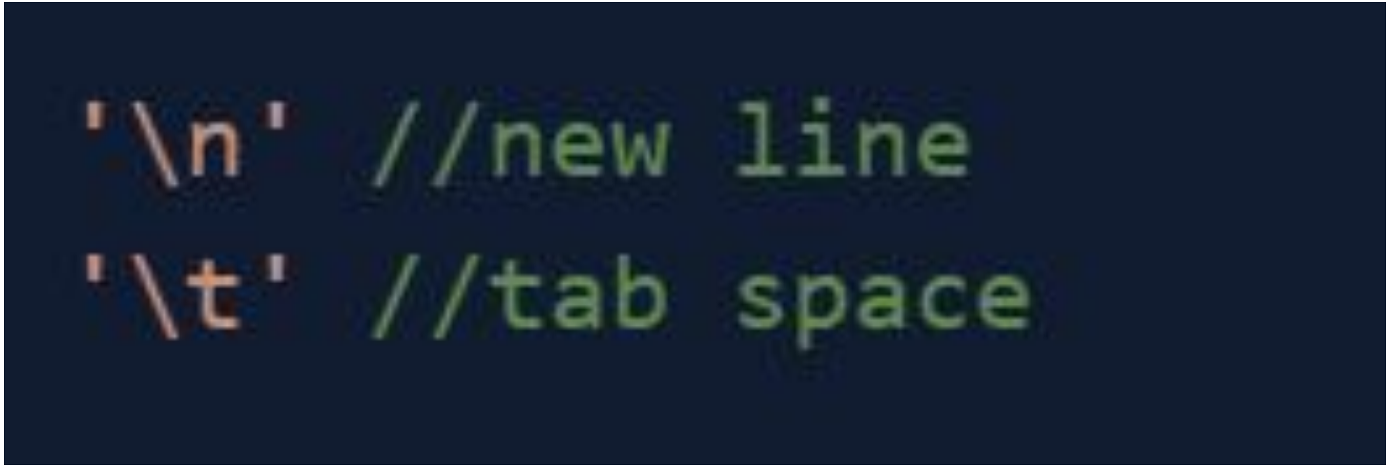
```
let language = "JavaScript";
language.replace('J', 'Q');
language.slice(0,5);
console.log(language);
```



```
JavaScript
```

7.6/7.7 Encoding and Special Characters

https://www.w3schools.com/charsets/ref_html_ascii.asp



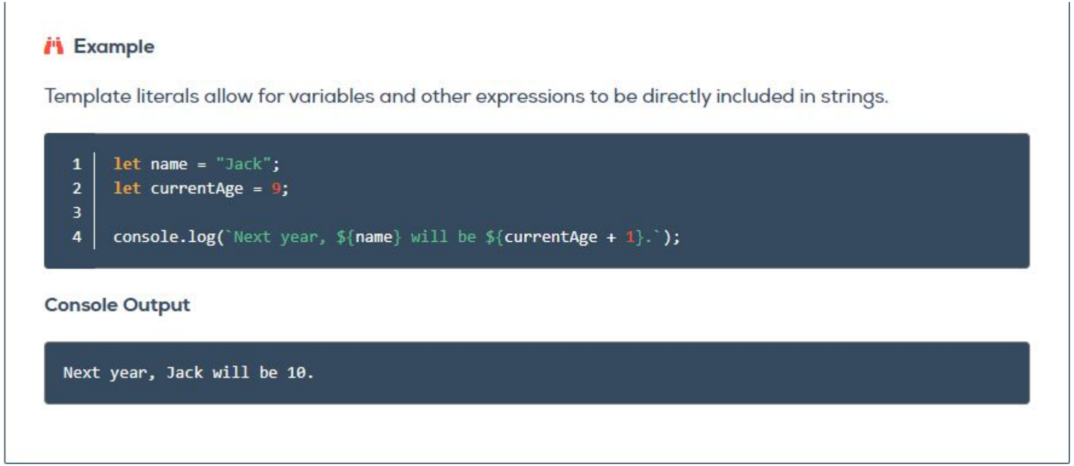
```
'\n' //new line
'\t' //tab space
```

7.8 Template Literals

Template literals allow for the automatic insertion of expressions (including variables) into strings.

Utilizes the back tick (`) to enclose the the string

When utilized allows for a cleaner, more readable way to create multi line strings.



Example

Template literals allow for variables and other expressions to be directly included in strings.

```
let name = "Jack";
let currentAge = 9;

console.log(`Next year, ${name} will be ${currentAge + 1}.`);
```

Console Output

```
Next year, Jack will be 10.
```

Chapter 8 Arrays

Chapter Breakdown

- 8.1 Arrays are like Strings
- 8.2 Working with Arrays
- 8.3 Array Methods
- 8.4 Multi-Dimensional Arrays

8.1 Arrays are like Strings

How Arrays are like a String:

- Arrays hold sequence of values that can be accessed via an ordered index
- You can call methods on the them just like a string

How Arrays are not like strings:

- They can store data of any type
- Declared with [ ]
- Can be declared on multiple lines
- Arrays are Mutable

8.2 Working with Arrays

- Utilizes bracket notation and Indexes
- Indexes are zero based going from 0 to array.length - 1
- Arrays will print ‘undefined’ when an index is out of an arrays index range
  - We will go more into ‘undefined’ later
- Arrays are mutable

8.3 Array Methods

As with strings, JavaScript provides us with useful **methods** for arrays. These methods will either *alter* an existing array, *return* information about the array, or *create and return* a new array.

COMMON ARRAY METHODS

● That return info about Things ○ Includes ○ indexOf ● That Rearrange Things ○ Reverse ○ Sort	● That adds or removes Things ○ Pop ○ Push ○ Shift ○ Splice ○ Unshift	● That adds or removes Things ○ Concat ○ Join ○ Slice ○ Split

8.4 Multi-Dimensional Arrays

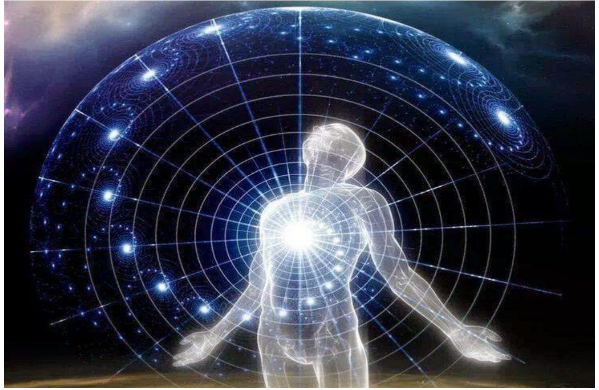
Arrays of arrays! Value inside of an array are also arrays.

- Simplest form of a multi-dimensional array is a two dimensional array.

- To access items in a 2d array use bracket notation and two indexes (ex: array[0][0])

- First index is the outer array (or the row)
- Second index is the inner array (or the column)

*You can go larger than 2d arrays but it is rare.



QUESTIONS?