



Institute of  
Data

## Module 3 Labs

### JS Intermediate

1. Create a function that takes a string as a parameter and returns the string with the first character of each word changed into a capital letter, as in the example below. Test it with different strings.

```
console.log(ucFirstLetters("los angeles") ) //Los Angeles
```

2. Create a function `truncate(str, max)` that truncates a given string of text if its total length is greater than the `max` length. It should return either the truncated text, with an ellipsis (...) added to the end if it was too long, or the original text otherwise.  
b) Write another variant of the `truncate` function that uses a conditional operator.

```
console.log(truncate('This text will be truncated if it is too long', 25))  
// This text will be truncat...
```

3. Use the following `animals` array for the below tasks. Test each one by printing the result to the console. Review the following link for tips:  
[https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global\\_Objects/Array](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Array)
  - a) Add 2 new values to the end
  - b) Add 2 new values to the beginning
  - c) Sort the values alphabetically
  - d) Write a function `replaceMiddleAnimal(newValue)` that replaces the value in the middle of the `animals` array with `newValue`
  - e) Write a function `findMatchingAnimals(beginsWith)` that returns a new array containing all the animals that begin with the `beginsWith` string. Try to make it work regardless of upper/lower case.

```
const animals = ['Tiger', 'Giraffe']  
console.log(animals)
```

4. Write a function `camelCase(cssProp)` that changes dash-separated CSS properties like `'margin-left'` into camel-cased `'marginLeft'`.

The function should remove all dashes, and uppercase the first letter of each word after a dash.

- b) Create variants of the `camelCase` function that use different types of `for` loops, and  
c) with and without the conditional operator.

```
console.log(camelCase('margin-left')) // marginLeft
console.log(camelCase('background-image')) // backgroundImage
console.log(camelCase('display')) // display
```

5. Decimal number operations in JavaScript can lead to unexpected results, as in the following:

```
let twentyCents = 0.20
let tenCents = 0.10

console.log(`${twentyCents} + ${tenCents} = ${twentyCents + tenCents}`)
// 0.2 + 0.1 = 0.30000000000000004
```

We can sometimes avoid this using the `toFixed` function to force the number of decimal places as below, but it's not always useful:

```
let fixedTwenty = twentyCents.toFixed(2);
let fixedTen = tenCents.toFixed(2);

console.log(fixedTwenty + fixedTen) //why is this not working?
```

- a) Explain why the above code returns the wrong answer  
b) Create a function `currencyAddition(float1, float2)` which safely adds the two decimal numbers `float1` and `float2` and returns the correct float result.  
c) Create a function `currencyOperation(float1, float2, operation)` which safely performs the given operation (either `+`, `-`, `/` or `*`) on the two numbers and returns the correct float result. <https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Statements/switch> may be useful.  
d) (Extension) Extend the above function to include a fourth argument `numDecimals` which allows the operation to support different amounts of decimal places from 1 to 10.

HINT: Assume 2 decimal places for b) and c) and use a multiplication factor. Test with different values as well as the below:

```
console.log(0.3 == currencyAddition(0.1, 0.2)) // true
console.log(0.3 == currencyOperation(0.1, 0.2, '+')) // true
```

6. Create a function `unique(duplicatesArray)` which takes an array parameter that may include duplicates. Your function should return an array containing only the unique values from `duplicatesArray`.

Test with the following arrays and create another one of your own.

```
const colours = ['red', 'green', 'blue', 'yellow', 'orange', 'red', 'blue', 'yellow']
const testScores = [55, 84, 97, 63, 55, 32, 84, 91, 55, 43]

console.log(unique(colours)) // [ 'red', 'green', 'blue', 'yellow', 'orange' ]
console.log(unique(testScores)) // [ 55, 84, 97, 63, 32, 91, 43 ]
```

7. Use the following array of book objects to practice the array functions for `map`, `find` and `filter`. Test each of your answers to the below tasks.

```
const books = [
  { id: 1, title: 'The Great Gatsby', author: 'F. Scott Fitzgerald', year: 1925 },
  { id: 2, title: 'To Kill a Mockingbird', author: 'Harper Lee', year: 1960 },
  { id: 3, title: '1984', author: 'George Orwell', year: 1949 },
  { id: 4, title: 'Brave New World', author: 'Aldous Huxley', year: 1932 },
  { id: 5, title: 'The Catcher in the Rye', author: 'J.D. Salinger', year: 1951 },
];
```

- Write a function `getBookTitle(bookId)` that uses the `find` function to return the title of the book object with the matching `id`.
  - Write a function `getOldBooks()` that uses the `filter` function to return all book objects written before 1950.
  - Write a function `addGenre()` that uses the `map` function to add a new `genre` property to all of the above books, with the value 'classic'.
  - (Extension) Write a function `getTitles(authorInitial)` that uses `map` and `filter` together to return an array of book titles for books written by authors whose names start with `authorInitial`.
  - (Extension) Write a function `latestBook()` that uses `find` and `forEach` to get the book with the most recent publication date.
8. The following code creates a new `Map` object for storing names beginning with A, B, or C with their phone numbers.

```
const phoneBookABC = new Map() //an empty map to begin with
phoneBookABC.set('Annabelle', '0412312343')
phoneBookABC.set('Barry', '0433221117')
phoneBookABC.set('Caroline', '0455221182')
```

- Create a new `phoneBookDEF` `Map` to store names beginning with D, E or F
- Initialise the contents of `phoneBookDEF` by passing in an array of keys/values
- Update the phone number for Caroline
- Write a function `printPhoneBook(contacts)` that prints the names and phone numbers in the given `Map`
- Combine the contents of the two individual `Maps` into a single `phoneBook` `Map`
- Print out the full list of names in the combined phone book

9. Given the below salaries object, perform the following tasks.

```
let salaries = {  
  "Timothy" : 35000,  
  "David" : 25000,  
  "Mary" : 55000,  
  "Christina" : 75000,  
  "James" : 43000  
};
```

- a) Write a function `sumSalaries(salaries)` that calculates and returns the total of all salaries
- b) Write a function `topEarner(salaries)` that calculates and returns the name of the person earning the highest salary

10. The following code uses the `Date` object to print the current time and the number of hours that have passed today so far. Extend the code to do the following:

```
const today = new Date();  
console.log('Current time is ' + today.toLocaleTimeString())  
  
console.log(today.getHours() + ' hours have passed so far today')
```

- a) Print the total number of minutes that have passed so far today
- b) Print the total number of seconds that have passed so far today
- c) Calculate and print your age as: 'I am x years, y months and z days old'
- d) Write a function `daysInBetween(date1, date2)` which calculates and returns the amount of days in between the two given dates.