



Assignment: [Assignment] Javascript Exercises

[Next Module \(/sections/day-11-advanced-javascript-i-1/modules/challenge-ninja-vs-samurai-attack-block-3\)](/sections/day-11-advanced-javascript-i-1/modules/challenge-ninja-vs-samurai-attack-block-3)

Question 1: Ruby Hashes

Implement a Ruby like Hash in Javascript. You will be able to use Object as a base to get most of the behaviour.

- Name the class `Hash`.
- Its constructor will take an object as argument.
- It should add support for the following ruby `Hash` methods as prototype methods:
 - `.empty` (name it `.isEmpty` in Javascript)
 - `.merge` (merges both hashes into a new hash and returns it)
 - `.hasKey` (checks if key is in hash)
 - `.invert` (returns a new Hash with keys & their values and vice versa)
 - `.inspect` (display the hash ruby style as a string)
 - `.keys` (returns all hash keys in an array)
 - `.values` (returns all hash values in an array)
- All methods that return a hash must return a new Hash object.

Don't overthink this. Javascript Objects and Ruby Hashes are similar.

Example usage:

```
let emptyHash = new Hash({});
let hash = new Hash({a: 1, b: 2, c: 3});

hash.isEmpty() // returns false
emptyHash.isEmpty() // returns true

let merged = hash.merge(new Hash({bob: 'yo', jane: 'ya'}));
// returns Hash {a: 1, b: 2, c: 3, bob: 'yo', jane: 'ya'}
// should not mutate original hash

merged !== hash // should be true

hash.hasKey('a') // returns true
hash.hasKey('bob') // returns false
merged.hasKey('bob') // returns true

// Values will have to be made into strings
hash.invert() // returns Hash {'1': 'a', '2': 'b', '3': 'c'}

hash.inspect() // returns "{a => 1, b => 2, c => 3}"

hash.keys() // returns ['a', 'b', 'c']
hash.values() // returns [1, 2, 3]
```

Question 2: Stacks & Queues

Implement a Stack and a Queue data structure in Javascript.

- Explain the difference between a stack and a queue.
- Write a Javascript constructor called `Stack` and another Javascript class called `Queue`.
- Each should have a prototype method, `add`, that adds an element to the stack or queue and returns it.
- Each should have a prototype method, `remove`, that removes an element from the stack or queue and returns it.
- Make sure that each constructor/class behaves properly as per definitions of stacks and queues.

Question 3: Digit Product Sequence

A digit product sequence is a type of sequence where the next number in the sequence is calculated by adding the product of each digit of the number and the number.

For example:

1, 2, 4, 8, 16, 22, 26, 38, 62

The above are the first 9 numbers of the sequence.

Write a function, `digitProduct`, that takes a number, `n`, as an argument and calculates the nth number in the sequence.

```
digitProduct(3) // returns 4
digitProduct(6) // returns 22
digitProduct(9) // returns 62
```

- Implement it iteratively
- Implement it recursively
- Benchmark the results

This assignment has not been marked

Submissions

Submission	Comments	Corrected By	Files
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There are no submissions.

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