Programming Fundamental

JS

Exploring

#10 Algorithms

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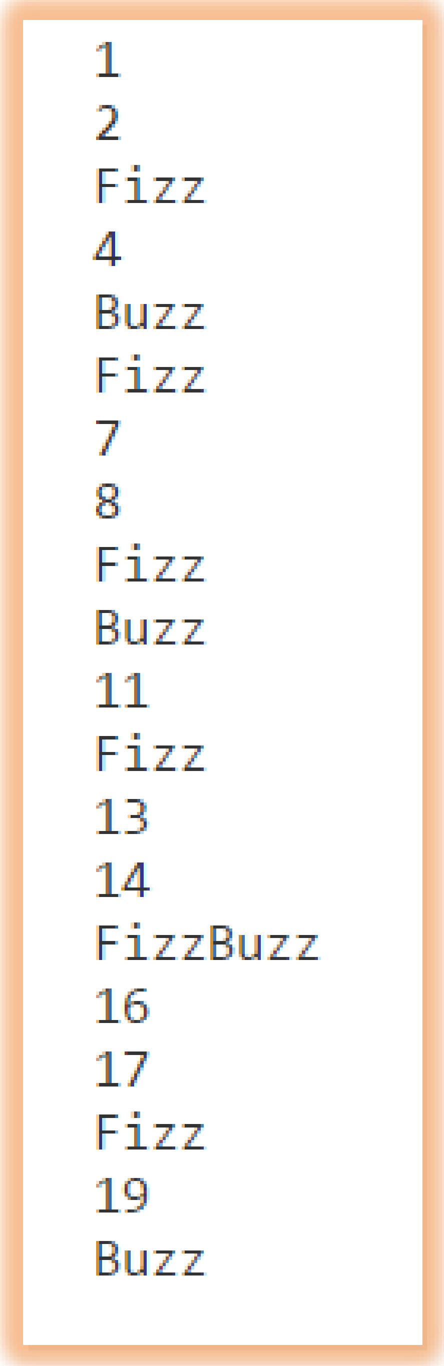
Fizz Buzz

- Fizz Buzz is an algorithm function that will log out to the console every number from 1 to “num”.
- For each number, if the number is divisible by 3, it’ll log out the word ***“Fizz”*** instead of that number.
- Next, if the number is divisible by 5, it’ll log out the word ***“Buzz”*** instead of that number.
- And finally, if a number is divisible by both 3 and 5, we want to logout the word ***“FizzBuzz”*** instead of that number.
- Beside is the result of ***fizzBuzz(20)***



```
1
2
Fizz
4
Buzz
Fizz
7
8
Fizz
Buzz
11
Fizz
13
14
FizzBuzz
16
17
Fizz
19
Buzz
```

Fizz Buzz

```
const fizzBuzz = (num) => {
  for (let i = 1; i <= num; i++) {
    if (i % 15 === 0) {
      console.log('FizzBuzz');
    } else if (i % 3 === 0) {
      console.log('Fizz');
    } else if (i % 5 === 0) {
      console.log('Buzz');
    } else {
      console.log(i);
    }
  }
};

fizzBuzz(20);
```

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Fibonacci

Fibonacci sequence characterized by the fact that every number after the first two is the sum of the two preceding ones:

1, 1, 2, 3, 5, 8, 13, 21,
34, 55, 89, 144…

```
input= fibo(6) then output= 8
```

Fibonacci

```
const fibo = (urut) => {
if (urut < 3) {
return 1;
}
else {
return fibo(urut-1) + fibo(urut-2);
}
}
console.log(fibo(6));
```

Palindrome

Palindrome is a word or phrase that is spelled the same way both backward and forward. Note that we’ll ***ignore*** any punctuation character such as commas, apostrophes, etc.

Example of Palindrome:

- Malam
- Katak
- Turut
- Asa
- Kakak
- Kasur rusak
- Race car
- Madam, I’m Adam

```
input=
Palindrome('Asa')
output=
true
```

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Palindrome

```
const Palindrome = (kata) => {
   const karakter =
   kata.toLowerCase().replace(/[^a-z]/g, '')
   .split('');

   if (karakter.join('') ===
   karakter.reverse().join('')) {
      return true;
      } else {
      return false;
   }
}

const hasil = Palindrome("Malam");
console.log(hasil);
```

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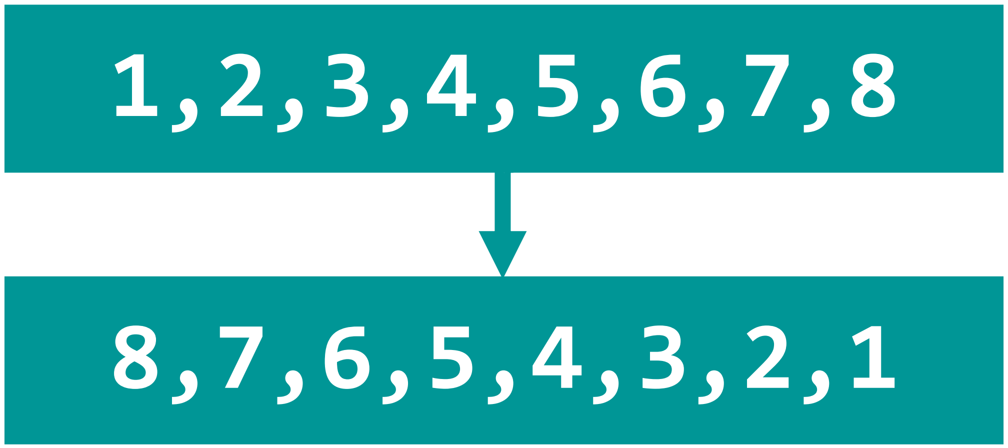
Reverse Array In Place

This algorithm function will take in an array as a parameter, then it'll reverse that array and return us the reversed array.

```
reverseArray([1,2,3,4,5,6,7,8])
```



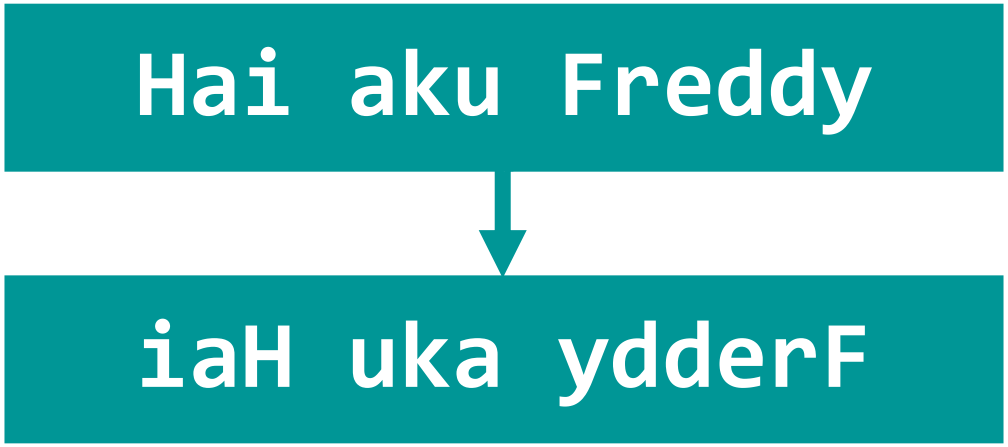
Reverse Array In Place

```
const reverseArray = arr => {
    for (let i = 0; i < Math.floor(arr.length / 2); i++)
{
        const tempArr = arr[i];
        arr[i] = arr[arr.length - 1 - i];
        arr[arr.length - 1 - i] = tempArr;
    }
    return arr;
};
console.log(reverseArray([1, 2, 3, 4, 5, 6, 7, 8]));
```

Reverse Words

This algorithm function will take in a string as parameter, then it’ll reverse every word in that string and return the new string.

reverseWords(‘Hai aku Freddy’)



Reverse Words

```
const reverseWords = string => {
    const wordsArr = string.split(" ");
    let reversedWordsArr = [];
    wordsArr.map(word => {
        let reversedWord = "";
        for (let i = word.length - 1; i >= 0; i--) {
            reversedWord += word[i];
        }
        reversedWordsArr.push(reversedWord);
    });
    return reversedWordsArr.join(" ");
};
console.log(reverseWords("Hai aku Freddy"));
```

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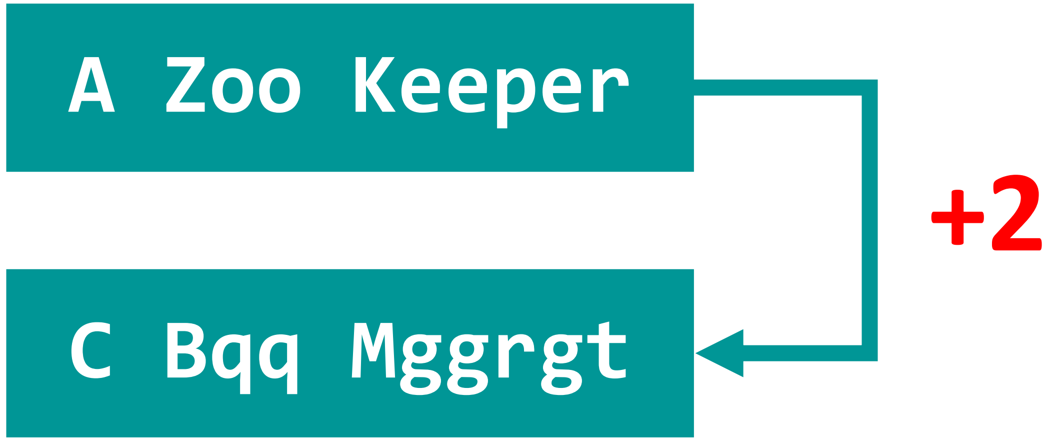
Caesar Cipher

Caesar Cipher algorithm will take 2 parameters on its function: a string and a number. The objective of Caesar Cipher algorithm is to shift every letter in the given string by the number that is passed in.

caesarCipher(‘A Zoo Keeper', 2)



Caesar Cipher

```
const caesarCipher = (str, num) => {
  num = num % 26;
  const lowerCaseString = str.toLowerCase();
  const alphabet = "abcdefghijklmnopqrstuvwxyz".split("");
  let newString = "";
  for (let i = 0; i < lowerCaseString.length; i++) {
    const currentLetter = lowerCaseString[i];
    if (currentLetter === " ") {
      newString += currentLetter;
      continue;
    }
    const currentIndex = alphabet.indexOf(currentLetter);
    let newIndex = currentIndex + num;
    if (newIndex > 25) {
      newIndex = newIndex - 26;
    } else if (newIndex < 0) {
      newIndex = newIndex + 26;
    }
    if (str[i] === str[i].toUpperCase()) {
      newString += alphabet[newIndex].toUpperCase();
    } else {
      newString += alphabet[newIndex];
    }
  }
  return newString;
};
console.log(caesarCipher("A Zoo Keeper", 2));
```

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Bubble Sort

```
var x = [6000, 34, 203, 3, 746, 200, 984, 198, 764, 9, 1];
const bubbleSort = array => {
    for (let i = array.length; i > 0; i--) {
        for (let j = 0; j < i; j++) {
            if (array[j] > array[j + 1]) {
                const temp = array[j];
                array[j] = array[j + 1];
                array[j + 1] = temp;
            }
        }
    }
    return array;
};
console.log(bubbleSort(x));
```

Mean, Median & Mode

- ***Mean*** is the average value of a dataset.
- ***Median*** is the middle number of a dataset.
- ***Mode*** is the most frequent number of a dataset.

[1,2,3,2,5,2,7,2]

Mean = 3 | Median = 2 | Mode = 2

Mean

```
var x = [1, 2, 3, 2, 5, 2, 7, 2];

const getMean = array => {
    let sum = 0;
    array.forEach(num => {
        sum += num;
    });
    const mean = sum / array.length;
    return mean;
};

console.log(getMean(x));
```

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Median

```
var x = [1, 2, 3, 2, 5, 2, 7, 2];

const getMedian = array => {
    array.sort((a, b) => a - b);
    let median;
    if (array.length % 2 !== 0) {
        median = array[Math.floor(array.length / 2)];
    } else {
        const mid1 = array[array.length / 2 - 1];
        const mid2 = array[array.length / 2];
        median = (mid1 + mid2) / 2;
    }
    return median;
};

console.log(getMedian(x));
```

Mode

```
var x = [1, 2, 3, 2, 5, 2, 7, 2];

const getMode = array => {
    var modeObj = {};
    // create modeObj
    array.forEach(num => {
        if (!modeObj[num]) {
            modeObj[num] = 0;
        }
        modeObj[num]++;
    });
    // create array of mode/s
    var maxFrequency = 0;
    var modes = [];
    for (let num in modeObj) {
        if (modeObj[num] > maxFrequency) {
            modes = [num];
            maxFrequency = modeObj[num];
        } else if (modeObj[num] === maxFrequency) {
            modes.push(num);
        }
    } // if every value appears same amount of times
    if (modes.length === Object.keys(modeObj).length) {
        modes = [];
    }
    return modes;
};

console.log(getMode(x));
```

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