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JS FUNCTION Challenge I

Challenge 1:

```
function calculateSum(arr) {
  let sum = 0;
  for (let i = 0; i < arr.length; i++) {
    sum += arr[i];
  }
  return sum;
}

let numbers = [1, 2, 3, 4];
console.log("Sum:", calculateSum(numbers));
```

VARIABLE	VALUE
numbers	[1, 2, 3, 4]
sum	0 → 1 → 3 → 6 → 10
i	0 → 1 → 2 → 3

OUTPUT:

Sum: 10

Each number is added to sum one by one and after the loop finishes the function returns 10.

Challenge 2:

```
function isEven(num) {
  if (num % 2 === 0) {
    return true;
  } else {
    return false;
  }
}

console.log(isEven(4));
console.log(isEven(7));
console.log(isEven(0));
```

VARIABLE	VALUE
num	4 – 7 – 0
num % 2	0 – 1 – 0
return	True – false – true

OUTPUT:

isEven(4) = true

isEven(4) = false

isEven(4) = true

The function checks if a number is divisible by 2 and it will return false if the result is an odd number.

Challenge 3:

```
function greet(name) {
  return "Hello, " + name + "!";
}

function personalizedGreeting(names) {
  for (let i = 0; i < names.length; i++) {
    console.log(greet(names[i]));
  }
}

let friends = ["Alice", "Bob", "Charlie"];
personalizedGreeting(friends);
```

VARIABLE	VALUE
i	0 → 1 → 2
name	"Alice" → "Bob" → "Charlie"
friends	["Alice", "Bob", "Charlie"]
greet	"Hello, Alice!" → "Hello, Bob!" → "Hello, Charlie!"

OUTPUT:

Hello, Alice!

Hello, Bob!

Hello, Charlie!

The personalizedGreeting function loops through the friend's array.
For each name, it calls the greet function, which returns a greeting message

Challenge 4:

```
function reverseArray(arr) {
  let reversed = [];
  for (let i = arr.length - 1; i >= 0; i--) {
    reversed.push(arr[i]);
  }
  return reversed;
}

let originalArray = [10, 20, 30];
console.log(reverseArray(originalArray));
console.log(originalArray);
```

VARIABLE	VALUE
originalArray	[10, 20, 30]
i	2 → 1 → 0
reversed	[] → [30] → [30, 20] → [30, 20, 10]

OUTPUT:

[30, 20, 10]

[10, 20, 30]

The function creates a new empty array called reversed. It loops through the original array from the last element to the first, pushing each value into reversed.

Challenge 5:

```
function multiplyMatrix(matrix) {
  for (let i = 0; i < matrix.length; i++) {
    for (let j = 0; j < matrix[i].length; j++) {
      matrix[i][j] *= 2;
    }
  }
  return matrix;
}

let matrix = [
  [1, 2],
  [3, 4],
];
console.log(multiplyMatrix(matrix));
```

VARIABLE	VALUE
matrix	[[1, 2], [3, 4]]
i	0 → 1
j	0 → 1

OUTPUT:

[[2, 4], [6, 8]]

The function uses nested loops to access every element of the matrix. Each value is multiplied by 2 and updated directly in the matrix.