}

FUNCTION ARGUMENTS AND PARAMETERS

Arguments and Parameters in JavaScript

In JavaScript, **parameters** and **arguments** are related but distinct concepts:

Parameters vs Arguments

Parameters are the variable names listed in a function's definition.
Arguments are the actual values passed to the function when it's called.

```
function greet(name, age) {  // name and age are parameters
  console.log(`Hello ${name}, you are ${age} years old`);
}

greet('Alice', 25);  // 'Alice' and 25 are arguments
```

Types of Parameters

Default Parameters - You can assign default values to parameters:

```
function multiply(a, b = 1) {
  return a * b;
}

multiply(5);     // 5 (b defaults to 1)
multiply(5, 3);  // 15
```

Rest Parameters - Collect multiple arguments into an array:

```
function sum(...numbers) {
  return numbers.reduce((total, num) => total + num, 0);
}

sum(1, 2, 3, 4);  // 10
```

Destructured Parameters - Extract values from objects or arrays:

```
function createUser({name, email, age = 18}) {
  return {name, email, age};
}

createUser({name: 'Bob', email: 'bob@email.com'});
```

The arguments Object

Inside non-arrow functions, there's a special arguments object containing all arguments passed:

```
function showArgs() {
  console.log(arguments);  // Array-like object
  console.log(arguments.length);
}

showArgs(1, 2, 3);  // Logs all three arguments
```

Note that arguments is array-like but not a real array, and it doesn't exist in arrow functions. Rest parameters are generally preferred in modern JavaScript.

Passing Arguments

JavaScript allows flexibility when calling functions. You can pass fewer or more arguments than parameters defined, though extra arguments are ignored unless you use rest parameters or the arguments object.