

Functions

Arrow Functions (ES6)

Arrow function expressions were introduced in ES6. These expressions are clean and concise. The syntax for an arrow function expression does not require the `function` keyword and uses a fat arrow `=>` to separate the parameter(s) from the body.

There are several variations of arrow functions:

Arrow functions with a single parameter do not require `()` around the parameter list.

Arrow functions with a single expression can use the concise function body which returns the result of the expression without the `return` keyword.

```
// Arrow function with two arguments
const sum = (firstParam, secondParam) =>
{
    return firstParam + secondParam;
};
console.log(sum(2,5)); // Prints: 7

// Arrow function with no arguments
const printHello = () => {
    console.log('hello');
};
printHello(); // Prints: hello

// Arrow functions with a single argument
const checkWeight = weight => {
    console.log(`Baggage weight : ${weight} kilograms.`);
};
checkWeight(25); // Prints: Baggage weight : 25 kilograms.

// Concise arrow functions
const multiply = (a, b) => a * b;
console.log(multiply(2, 30)); // Prints: 60
```

Functions

Functions are one of the fundamental building blocks in JavaScript. A *function* is a reusable set of statements to perform a task or calculate a value. Functions can be passed one or more values and can return a value at the end of their execution. In order to use a function, you must define it somewhere in the scope where you wish to call it.

The example code provided contains a function that takes in 2 values and returns the sum of those numbers.

```
// Defining the function:
function sum(num1, num2) {
    return num1 + num2;
}

// Calling the function:
sum(3, 6); // 9
```

Anonymous Functions

Anonymous functions in JavaScript do not have a name property. They can be defined using the `function` keyword, or as an arrow function. See the code example for the difference between a named function and an anonymous function.

```
// Named function
function rocketToMars() {
  return 'BOOM!';
}

// Anonymous function
const rocketToMars = function() {
  return 'BOOM!';
}
```

Function Expressions

Function *expressions* create functions inside an expression instead of as a function declaration. They can be anonymous and/or assigned to a variable.

```
const dog = function() {
  return 'Woof!';
}
```

Function Parameters

Inputs to functions are known as *parameters* when a function is declared or defined. Parameters are used as variables inside the function body. When the function is called, these parameters will have the value of whatever is passed in as arguments. It is possible to define a function without parameters.

```
// The parameter is name
function sayHello(name) {
  return `Hello, ${name}!`;
}
```

return Keyword

Functions return (pass back) values using the `return` keyword. `return` ends function execution and returns the specified value to the location where it was called. A common mistake is to forget the `return` keyword, in which case the function will return `undefined` by default.

```
// With return
function sum(num1, num2) {
  return num1 + num2;
}
```

```
// Without return, so the function
// doesn't output the sum
function sum(num1, num2) {
  num1 + num2;
}
```

Function Declaration

Function *declarations* are used to create named functions. These functions can be called using their declared name. Function declarations are built from:

The `function` keyword.

The function name.

An optional list of parameters separated by commas enclosed by a set of parentheses `()`.

A function body enclosed in a set of curly braces `{}`.

```
function add(num1, num2) {  
    return num1 + num2;  
}
```

Calling Functions

Functions can be *called*, or executed, elsewhere in code using parentheses following the function name. When a function is called, the code inside its function body runs. *Arguments* are values passed into a function when it is called.

```
// Defining the function  
function sum(num1, num2) {  
    return num1 + num2;  
}
```

```
// Calling the function  
sum(2, 4); // 6
```