JavaScript Programming in 1 day

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1.JavaScript Introduction

- **JavaScript** is a lightweight programming language commonly used by web developers to add dynamic interactions to web pages, applications, servers, and even games.
- **JavaScript** was initially created to “make web pages alive”.
- The programs in this language are called scripts. They can be written right in a web page’s HTML and run automatically as the page loads.
- Scripts are provided and executed as plain text. They don’t need special preparation or compilation to run.
- In this aspect, JavaScript is very different from another language called **Java**.

1.JavaScript Variables

Variables are Containers for Storing Data

JavaScript Variables can be declared in 4 ways:

- Automatically
- Using var
- Using let
- Using const

2.JavaScript Variables

When to Use var, let, or const?

1. Always declare variables
2. Always use const if the value should not be changed
3. Always use const if the type should not be changed (Arrays and Objects)
4. Only use let if you can't use const
5. Only use var if you MUST support old browsers.

Note

The var keyword was used in all JavaScript code from 1995 to 2015.

The let and const keywords were added to JavaScript in 2015.

The var keyword should only be used in code written for older browsers.

3.JavaScript DataTypes

There are 8 basic data types in JavaScript.

- **Seven primitive data types:**
  - number for numbers of any kind: integer or floating-point, integers are limited by ±(2^{53}-1).
  - bigint for integer numbers of arbitrary length.
  - string for strings. A string may have zero or more characters, there’s no separate single-character type.
  - boolean for true/false.
  - null for unknown values – a standalone type that has a single value null.
  - undefined for unassigned values – a standalone type that has a single value undefined.
  - symbol for unique identifiers.
- **And one non-primitive data type:**
  - object for more complex data structures.

4.JavaScript HTML DOM

What is the HTML DOM?

The HTML DOM is a standard object model and programming interface for HTML.
It defines:

- The HTML elements as objects
- The properties of all HTML elements
- The methods to access all HTML elements
- The events for all HTML elements

In other words: The HTML DOM is a standard for how to get, change, add, or delete HTML elements.

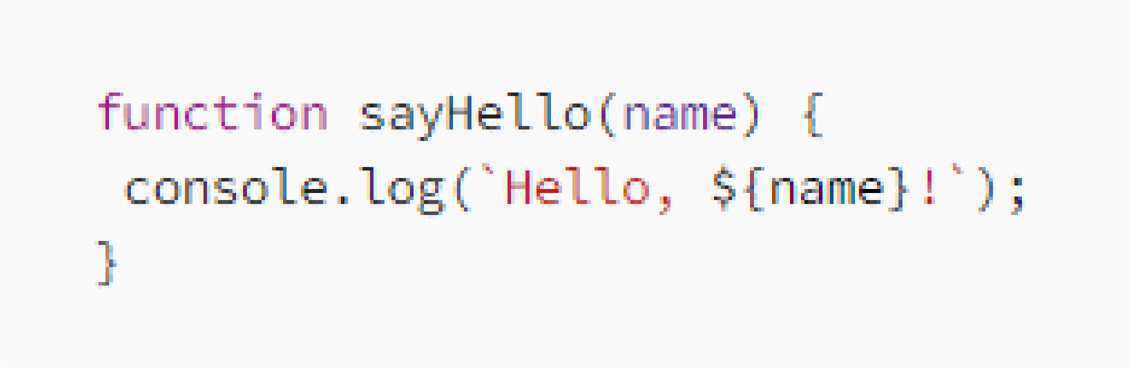
Finding HTML Elements

Method	**Description**
document.getElementById(*id*)	Find an element by element id
document.getElementsByTagName(*name*)	Find elements by tag name
document.getElementsByClassName(*name*)	Find elements by class name

5.JavaScript Functions

Function declaration

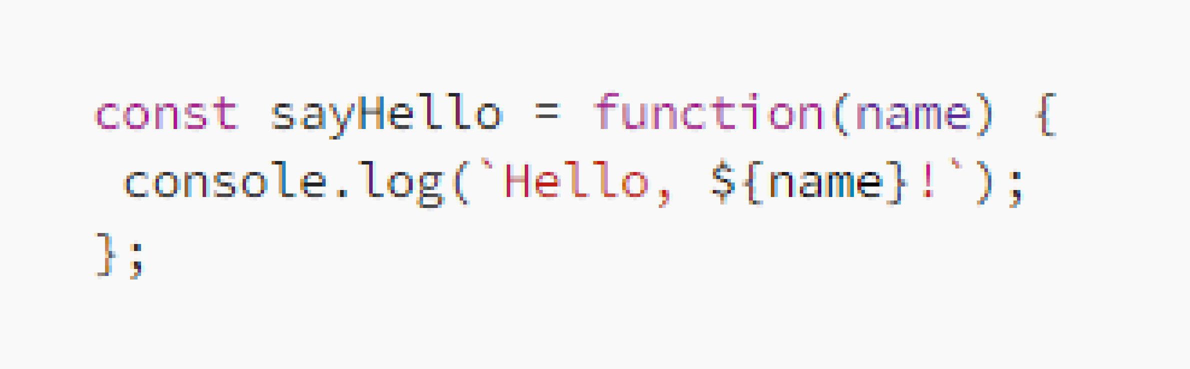
A function declaration tells the JavaScript engine about a function's name, return type, and parameters. When a function has been declared, it can be used anytime inside a class or development scope whenever it's been called/invoked.



```
function sayHello(name) {
 console.log(`Hello, ${name}!`);
}
```

Function expression

A function expression is a way to define a function as a value, which can be stored in a variable or passed as an argument to another function.

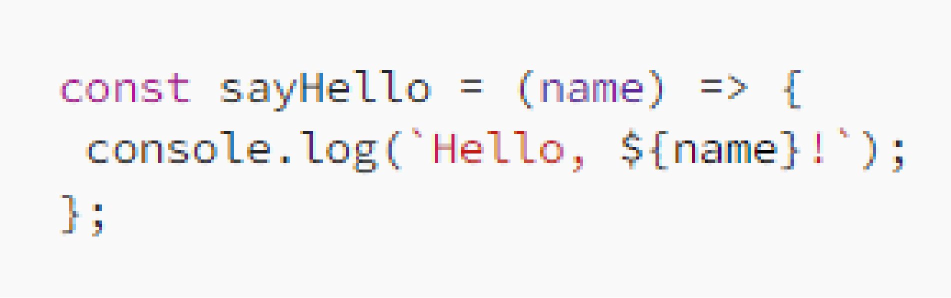


```
const sayHello = function(name) {
 console.log(`Hello, ${name}!`);
};
```

5.1.JavaScript Functions

Arrow function

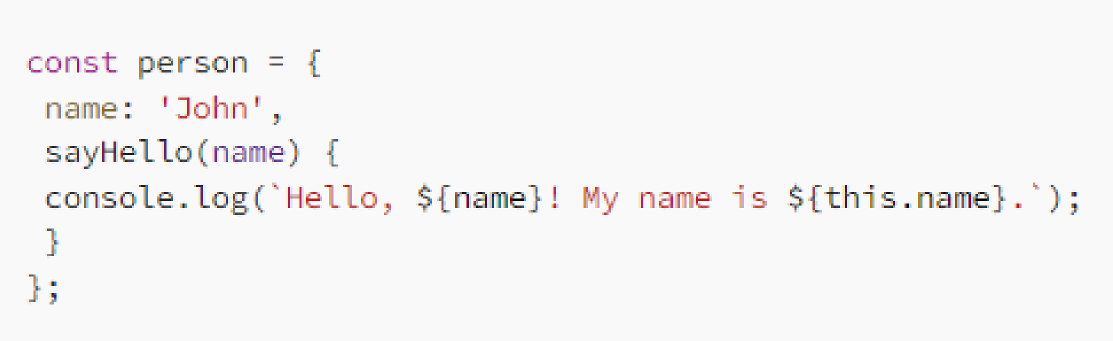
Arrow functions reduce the size of the code. The return statement and function brackets are optional for single-line functions. It increases the readability of the code. Arrow functions provide a lexical this binding. of the code. Arrow functions provide a lexical this binding.



```
const sayHello = (name) => {
 console.log(`Hello, ${name}!`);
};
```

Method definition

A method is a function that is defined as a property of an object.



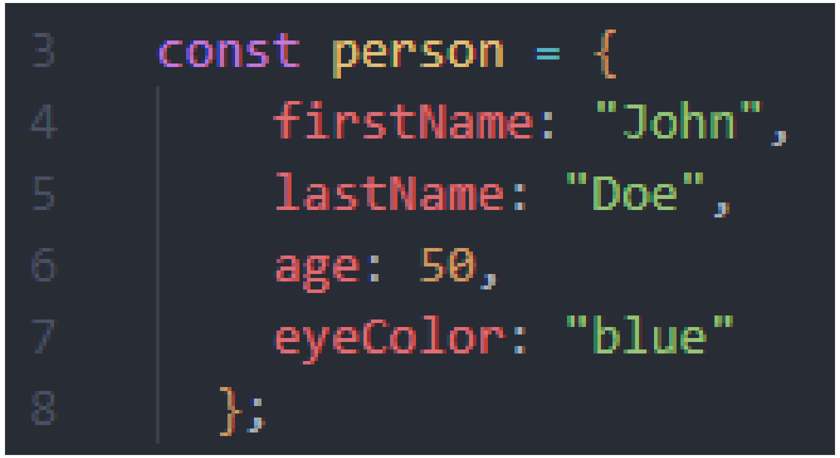
```
const person = {
 name: 'John',
 sayHello(name) {
 console.log(`Hello, ${name}! My name is ${this.name}.`);
 }
};
```

6.JavaScript Objects

An object is a collection of properties, and a property is an association between a name (or key) and a value. A property's value can be a function, in which case the property is known as a method.

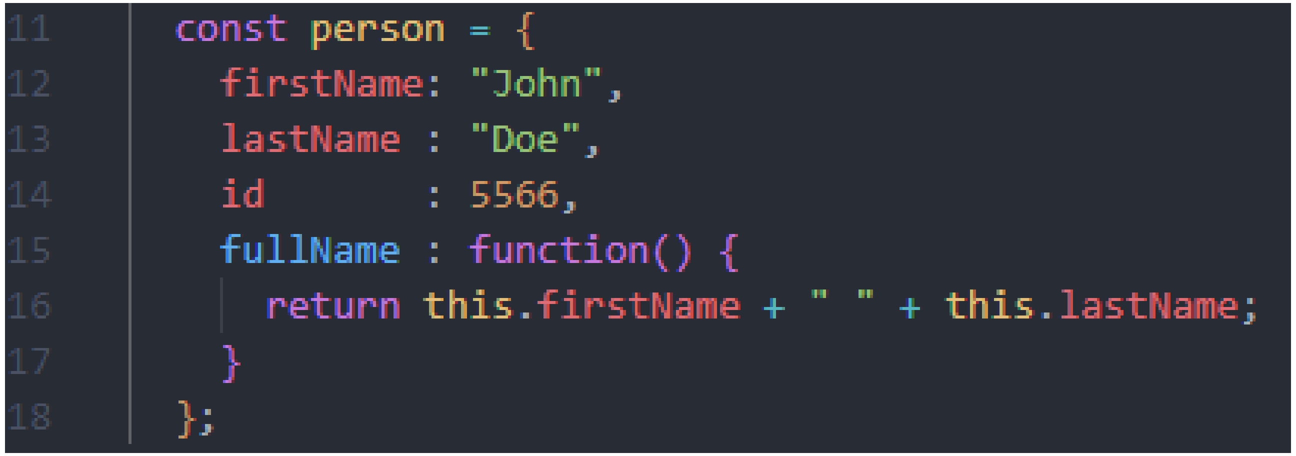
Example:

Object Definition



```
const person = {
    firstName: "John",
    lastName: "Doe",
    age: 50,
    eyeColor: "blue"
  };
```

Object Method



```
const person = {
  firstName: "John",
  lastName : "Doe",
  id       : 5566,
  fullName : function() {
    return this.firstName + " " + this.lastName;
  }
};
```

7.JavaScript Events

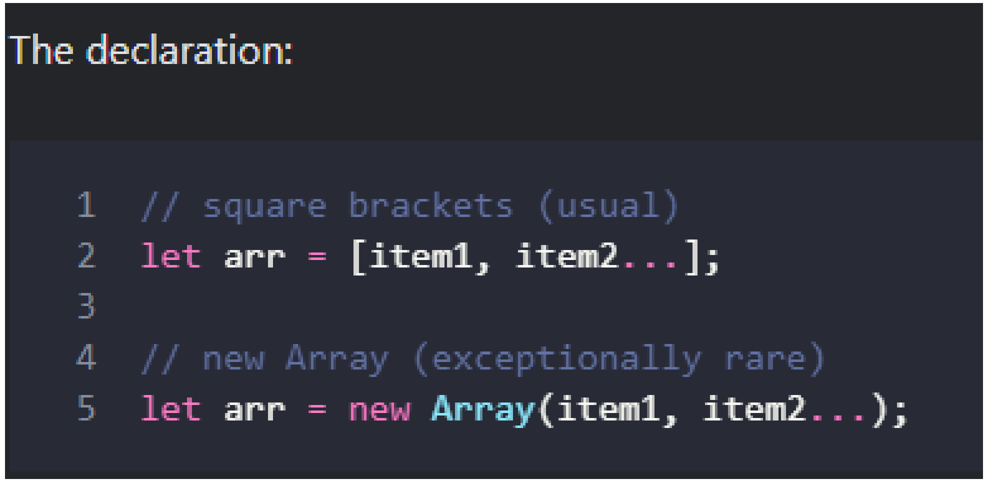
Common HTML Events

Here is a list of some common HTML events:

onchange	An HTML element has been changed
onclick	The user clicks an HTML element
onmouseover	The user moves the mouse over an HTML element
onmouseout	The user moves the mouse away from an HTML element
onkeydown	The user pushes a keyboard key
onload	The browser has finished loading the page

8.JavaScript Arrays

In coding and programming, an array is a collection of items, or data, stored in contiguous memory locations, also known as database systems . The purpose of an array is to store multiple pieces of data of the same type together.



The declaration:

```
// square brackets (usual)
let arr = [item1, item2...];

// new Array (exceptionally rare)
let arr = new Array(item1, item2...);
```

Array Methods

- push appends an element to the end.
- pop takes an element from the end.
- shift get an element from the beginning, advancing the queue, so that the 2nd element becomes the 1st.
- length property returns the length (size) of an array
- concat method creates a new array by merging (concatenating) existing arrays

Thank you