

Tutorial 5

Introduction to JavaScript

SOEN 287

What is JavaScript?

lightweight - Small memory footprint, easy to implement

interpreted - No compilation. Instructions executed directly

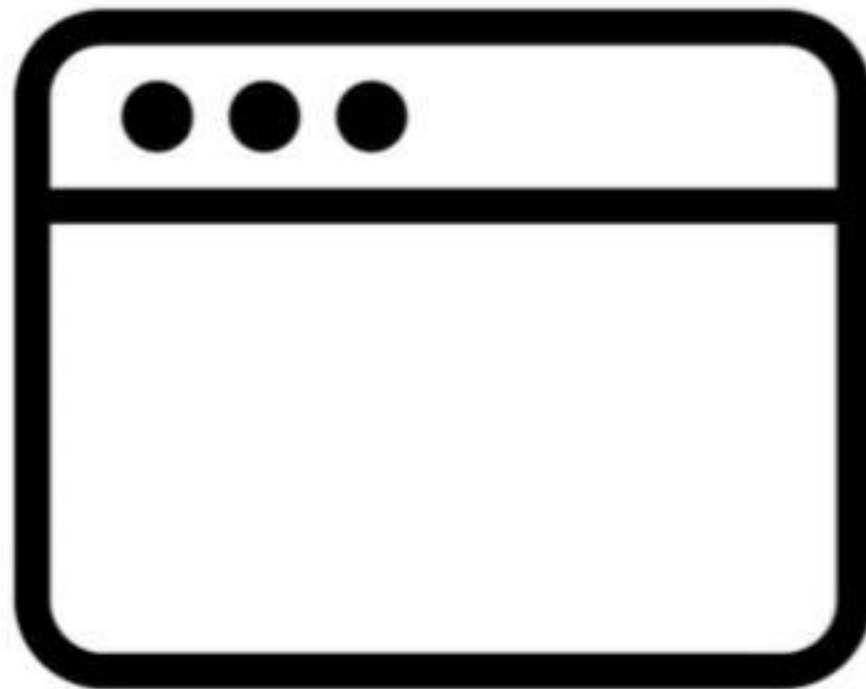
object-oriented - Modeled around objects

first-class functions - Functions as values

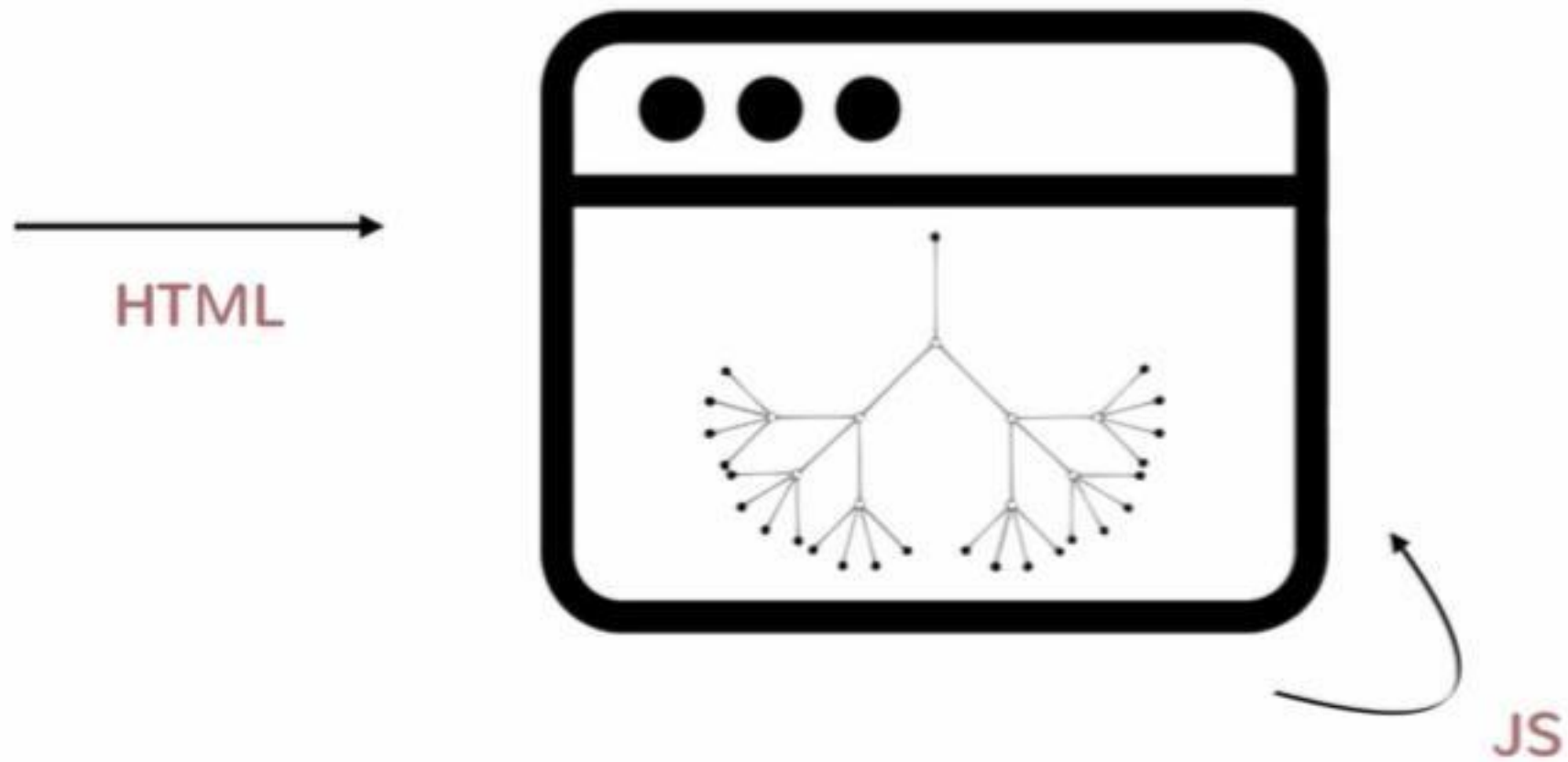
scripting language - Instructions written for a runtime environment

Development environment

A web browser



Runtime environment



Why Study JavaScript?

JavaScript is one of the 3 languages all web developers must know

1. **HTML** to define the content of web pages
2. **CSS** to specify the layout of web pages
3. **JavaScript** to program the behavior of web pages

Primitive Types

- Number
- String
- Boolean
- undefined
- null

Number

Numbers in JavaScript are "double-precision 64-bit
format IEEE 754 values"

String

Sequences of Unicode characters (16-bit)

(No Character type! A character is just a String of length 1)

Boolean : True and False in javaScript similar to other classical languages

Undefined: When a variable value is not yet defined, its datatype is undefined

Null: When value of the variable is deliberately set to null

Undefined and Null

You can think of application form.

Suppose a person does not have a middle name , he writes it as 'Not Applicable'. He deliberately specifies the value of Null.

On the other hand, when the field is left blank, it is still undefined. We don't know whether a person has middle name or not.

Variable declaration

```
var value = 42;
```

or

```
var value;  
value = 42;
```

Declaration and Definition

```
var value;
```

declaration

```
value = 42;
```

definition

undefined

```
var value;
```

value is "undefined"

```
value = 42;
```

Types and Variables

- No need to declare variable type
- The same variable can be assigned values of different types.
- No scoping information in variable declarations
- Variables and values can be “interrogated”

JavaScript Function Declaration

```
function addNumbers(a, b) {  
    return a + b;  
}
```

```
var number = 1;  
var result = addNumbers(number, number);
```

JavaScript Function Expression

```
var additionFn = function addNumbers(a, b) {  
    return a + b;  
};
```

```
result = additionFn(number, number);
```


JavaScript Functions

- Flexible argument count
- No function overloading
- Default arguments
- The `arguments` argument

```
<!DOCTYPE html>
<html>
<head><title>My Page</title></head>
<body>
<script language="JavaScript">
document.write(' <h1>This is my first JavaScript
Page</h1>');
</script>
</body>
</html>
```

```
<!DOCTYPE html>
<html>
<head>
<script>
function tags() {
    x = 42;
    x = 420;
    alert('JS between script tags');
}
</script>
<script src="myScript.js"></script>
</head>
```