# MODULE 01

## OVERVIEW OF JAVASCRIPT AND TYPESCRIPT DEVELOPMENT

## MODULE TOPICS

ECMAScript vs JavaScript
JavaScript Compared to Other Programming Languages
JavaScript Engines
Web based JavaScript Development
Other types of JavaScript Development
TypeScript Development
TypeScript is a Superset of JavaScript functionality
Transpiling TypeScript

## ECMASCRIPT VS JAVASCRIPT

JS
TC
39
ES

## ECMASCRIPT VS JAVASCRIPT

- ECMA stands for the European Computer Manufacturers Association
- ECMA is a standards board among other things
- ECMAScript is the standard for the JavaScript language
- JavaScript is the implemetation of this standard
- TC39 is Technical Committee 39, in charge of developing ECMA-262 (ECMAScript)

## ECMASCRIPT VERSIONS

| ES Version | Year | ES Version | Year |
|---|---|---|---|
| 1 | 1997 | 6 / ES2015 | 2015 |
| 2 | 1998 | 7 / ES2016 | 2016 |
| 3 | 1999 | 8 / ES2017 | 2017 |
| 4 | Abandoned | 9 / ES2018 | 2018 |
| 5 | 2009 | 10 / ES2019 | 2019 |
| 5.1 | 2011 | | |

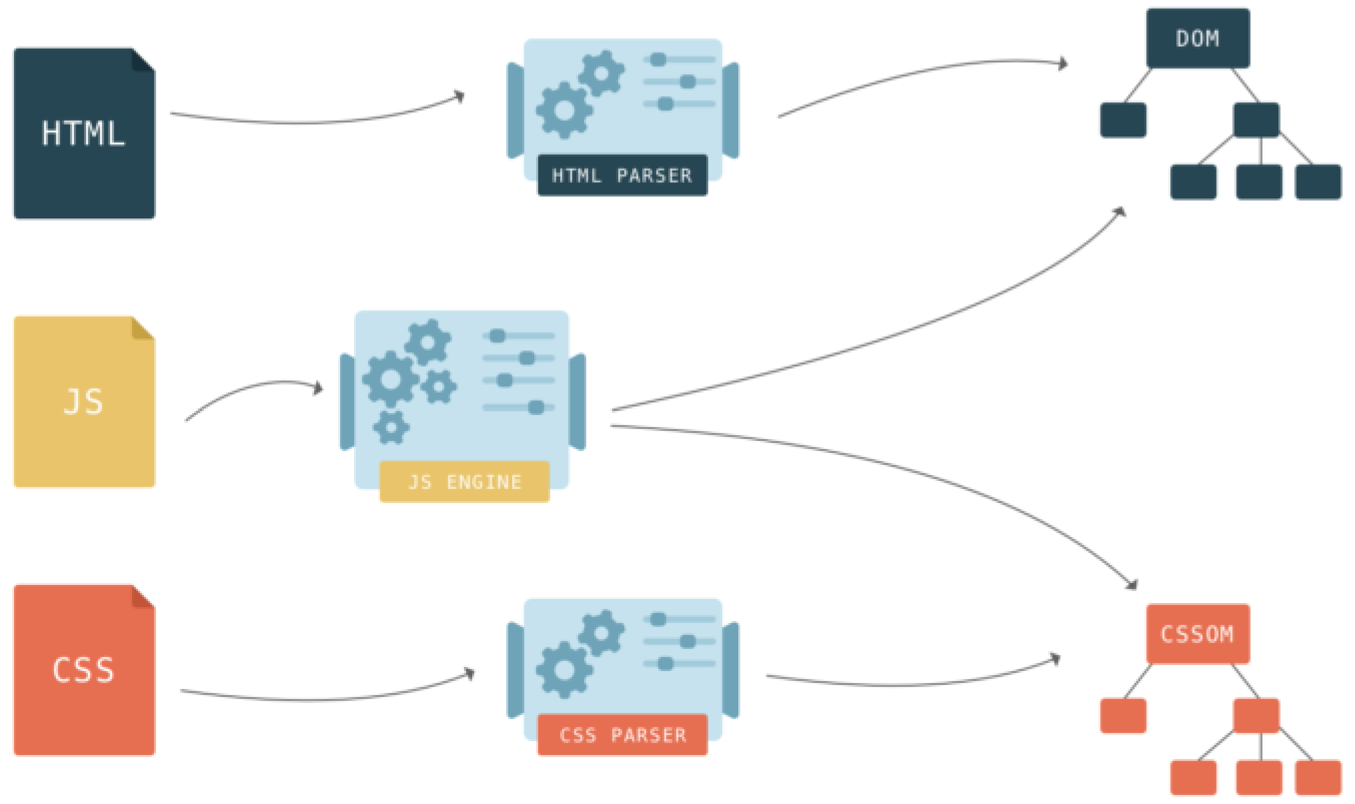
## JAVASCRIPT COMPARED TO OTHER PROGRAMMING LANGUAGES

- Dynamically Typed
- Prototypical Inheritance
- Dynamically compiled by JavaScript Engine
- Functions are first class citizens

## JAVASCRIPT ENGINES

| **Engine** | **Used By** |
|---|---|
| V8 | Chrome and Node.js |
| Chakra | Microsoft IE & Edge |
| JavaScriptCore | Safari / WebKit |
| SpiderMonkey | FireFox |
| TraceMonkey | FireFox 3.5+ |
| Rhino | Mozilla Server Side |

# WEB BASED JAVASCRIPT DEVELOPMENT



## OTHER TYPES OF JAVASCRIPT DEVELOPMENT

- Node.js
  - Asynchronous, non-blocking, JavaScript server implementation
  - Based on Chrome's V8 engine
- Server Side JavaScript
  - Engines like Rhino and SpiderMonkey can also be used on the back end
  - Allows for one language to be used for Full Stack Development
  - Angular, React and other JavaScript frameworks also support server side rendering

## TYPESCRIPT DEVELOPMENT

- Used to add static typing to JavaScript
- Allow new features to be used earlier, before wide spread adoption by JavaScript engines
- TypeScript code gets transpiled into JavaScript for use in production applications
- What version of ECMAScript to transpile into is configurable on the TypeScript compiler

## TYPESCRIPT IS A SUPERSET OF JAVASCRIPT FUNCTIONALITY

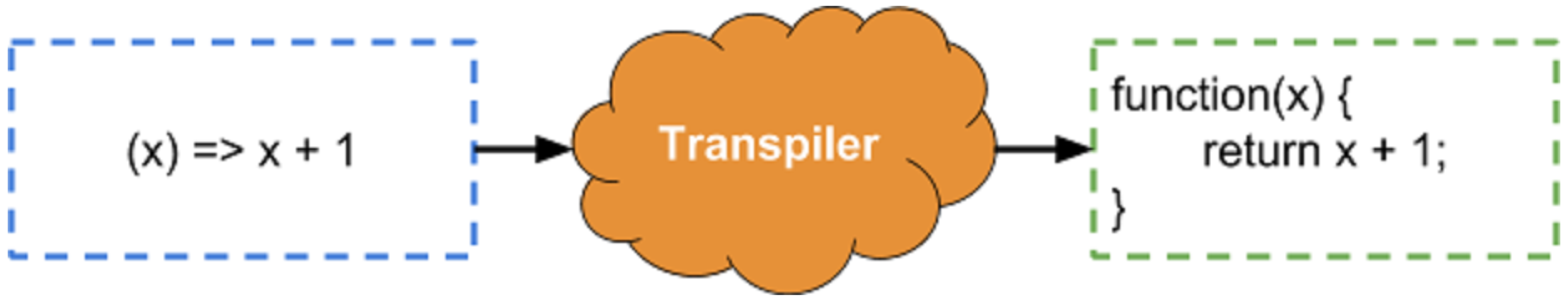
- Renaming a .js file to .ts should work fine if the JavaScript is well written
- Static type checking happens when TypeScript is transpiled into JavaScript
- Errors and warnings provide feedback of potential issues
- TSLint can also be used to provide syntax style and language evolution feedback

## TRANSPILING TYPESCRIPT

## TRANSPILING TYPESCRIPT

- TypeScript compiler (tsc) transpiles to JavaScript
  - Compiling converts from one language to a lower level language
  - Transpiling converts from one language to an equally abstracted language

## TRANSPILING TYPESCRIPT

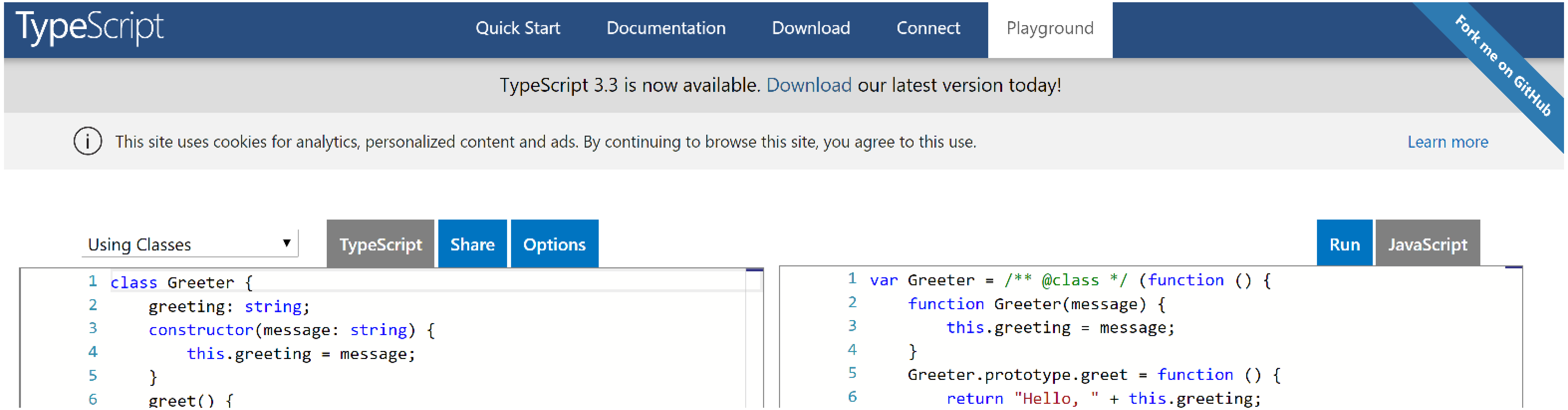


ANY QUESTIONS?

# WALKTHRU

## Playgrounds

```
https://www.typescriptlang.org/play/
```



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```
class Greeter {
    greeting: string;
    constructor(message: string) {
        this.greeting = message;
    }
    greet() {
```

```
var Greeter = /** @class */ (function () {
    function Greeter(message) {
        this.greeting = message;
    }
    Greeter.prototype.greet = function () {
        return "Hello, " + this.greeting;
```