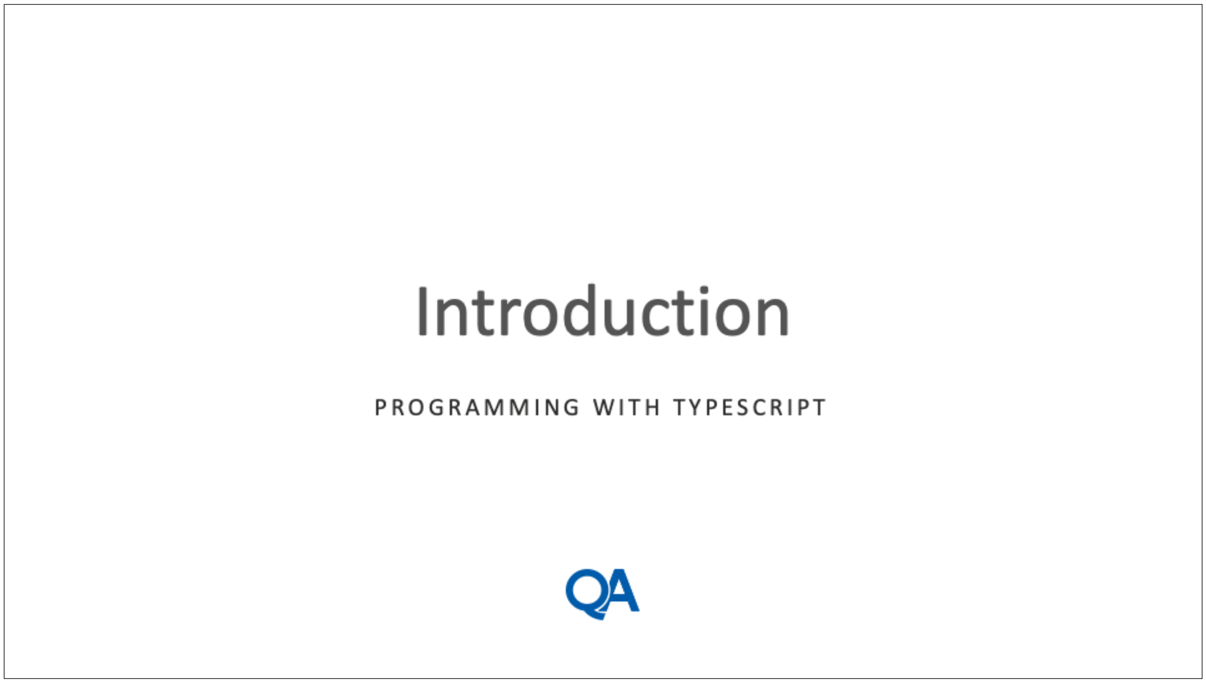
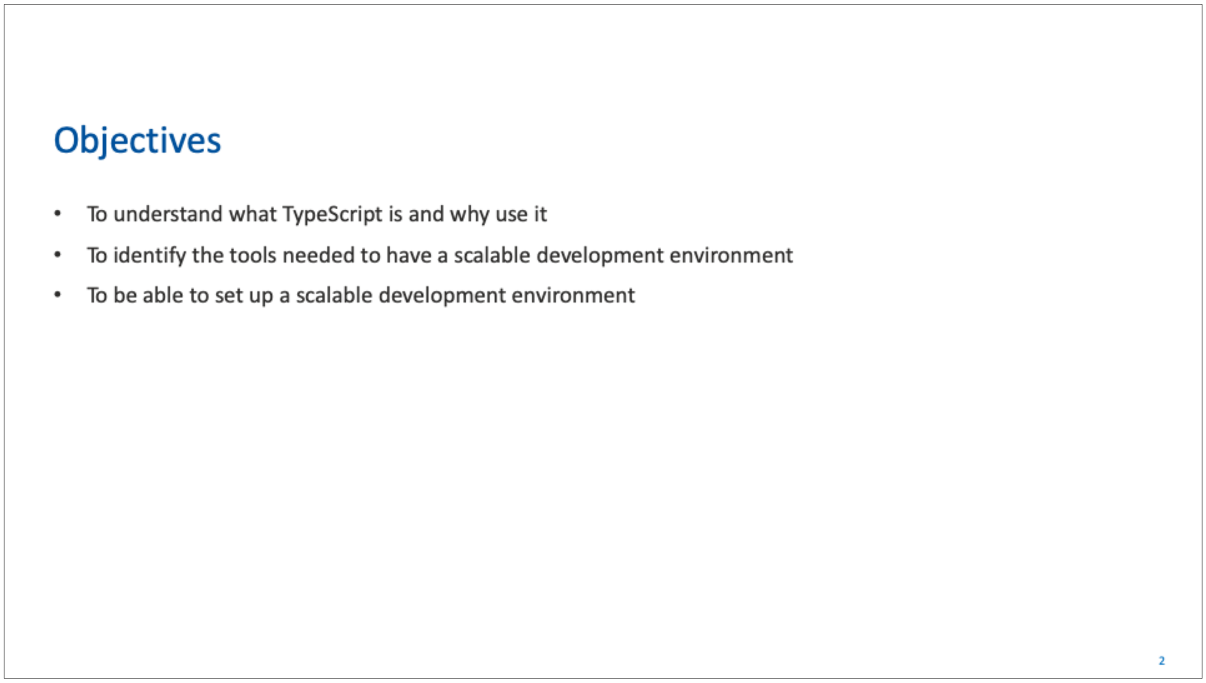


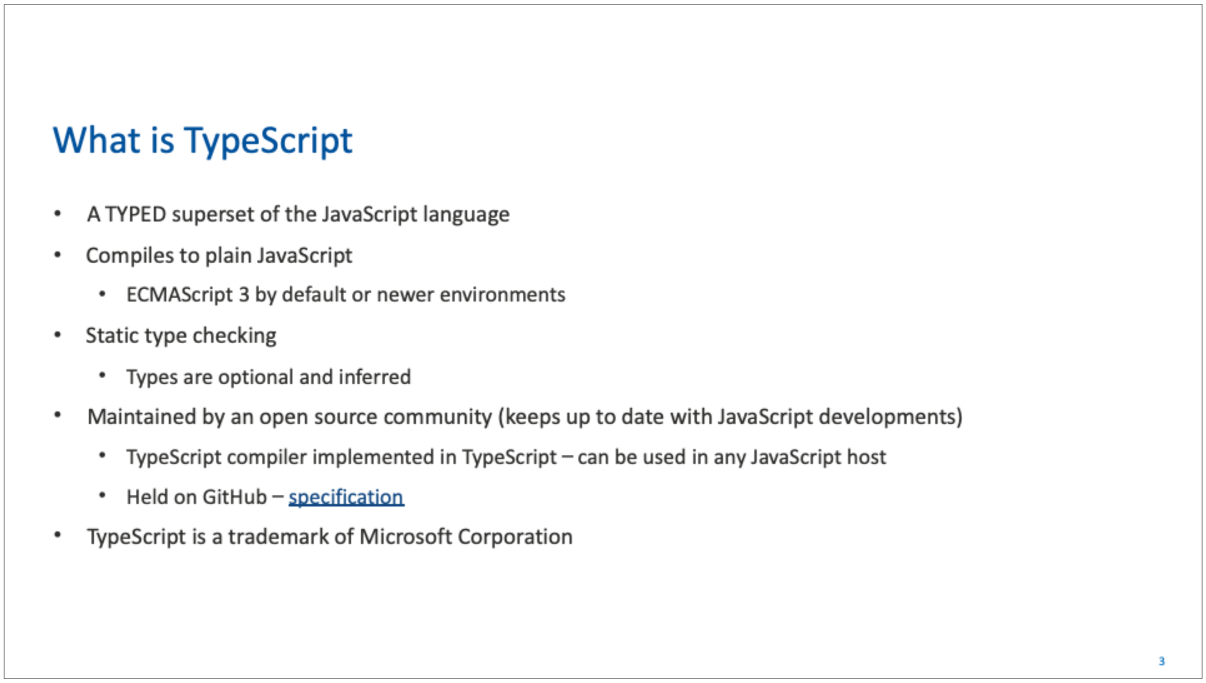
Introduction

PROGRAMMING WITH TYPESCRIPT



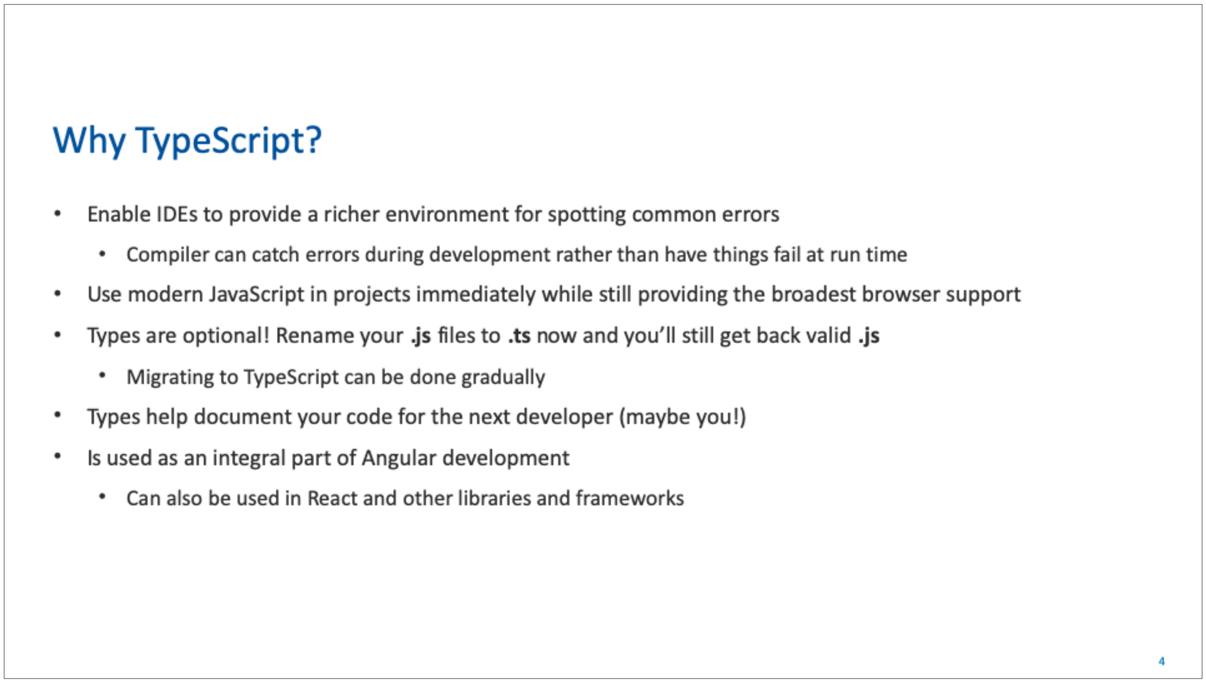
Objectives

- To understand what TypeScript is and why use it
- To identify the tools needed to have a scalable development environment
- To be able to set up a scalable development environment



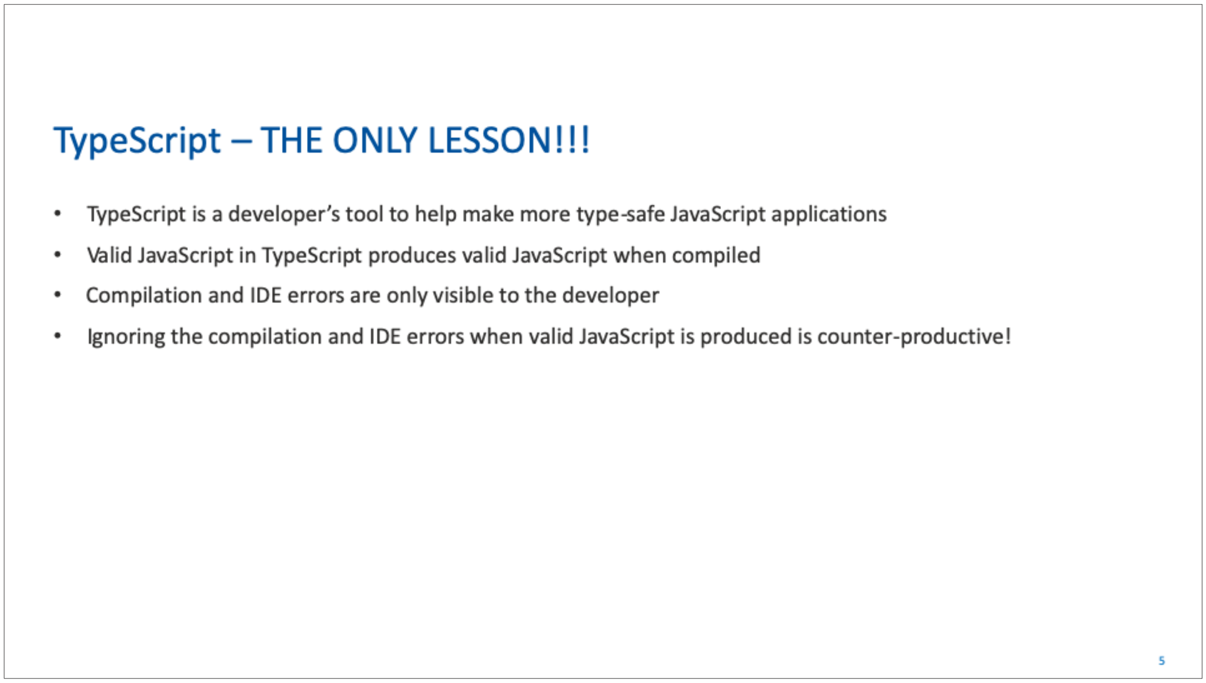
What is TypeScript

- A TYPED superset of the JavaScript language
- Compiles to plain JavaScript
  - ECMAScript 3 by default or newer environments
- Static type checking
  - Types are optional and inferred
- Maintained by an open source community (keeps up to date with JavaScript developments)
  - TypeScript compiler implemented in TypeScript – can be used in any JavaScript host
  - Held on GitHub – specification
- TypeScript is a trademark of Microsoft Corporation



Why TypeScript?

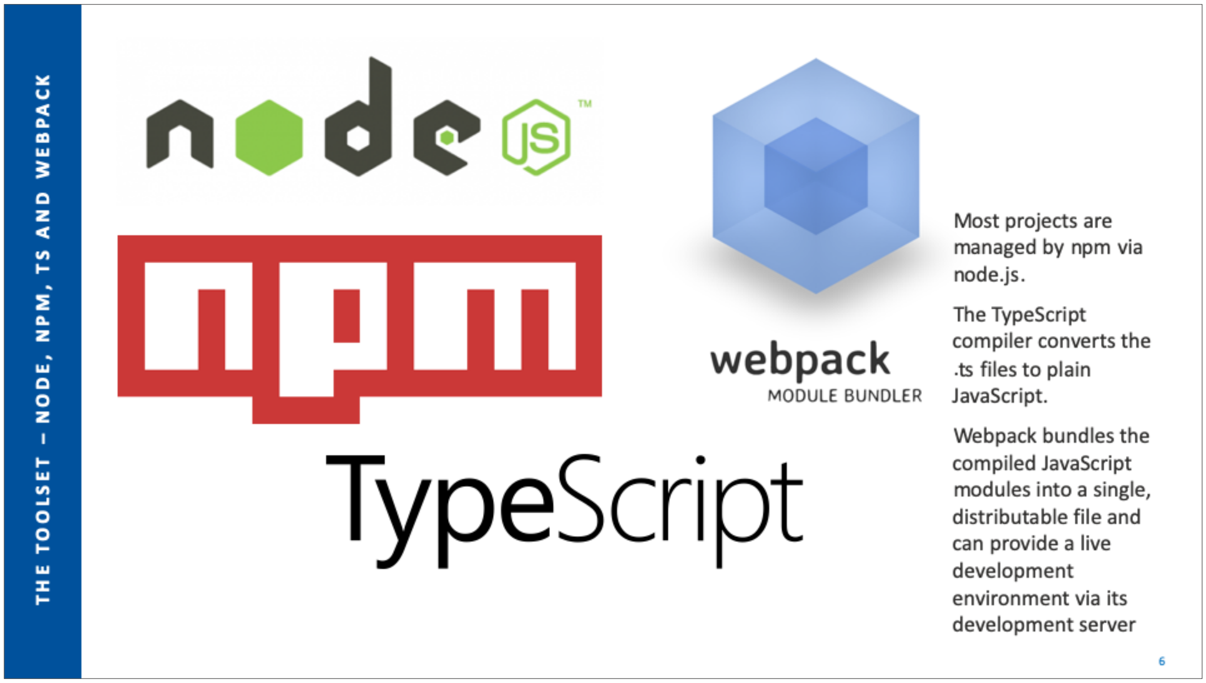
- Enable IDEs to provide a richer environment for spotting common errors
  - Compiler can catch errors during development rather than have things fail at run time
- Use modern JavaScript in projects immediately while still providing the broadest browser support
- Types are optional! Rename your **.js** files to **.ts** now and you'll still get back valid **.js**
  - Migrating to TypeScript can be done gradually
- Types help document your code for the next developer (maybe you!)
- Is used as an integral part of Angular development
  - Can also be used in React and other libraries and frameworks



TypeScript – THE ONLY LESSON!!!

- TypeScript is a developer's tool to help make more type-safe JavaScript applications
- Valid JavaScript in TypeScript produces valid JavaScript when compiled
- Compilation and IDE errors are only visible to the developer
- Ignoring the compilation and IDE errors when valid JavaScript is produced is counter-productive!

5



node JS
npm
TypeScript
webpack
MODULE BUNDLER

THE TOOLSET – NODE, NPM, TS AND WEBPACK

Most projects are managed by npm via node.js.

The TypeScript compiler converts the .ts files to plain JavaScript.

Webpack bundles the compiled JavaScript modules into a single, distributable file and can provide a live development environment via its development server

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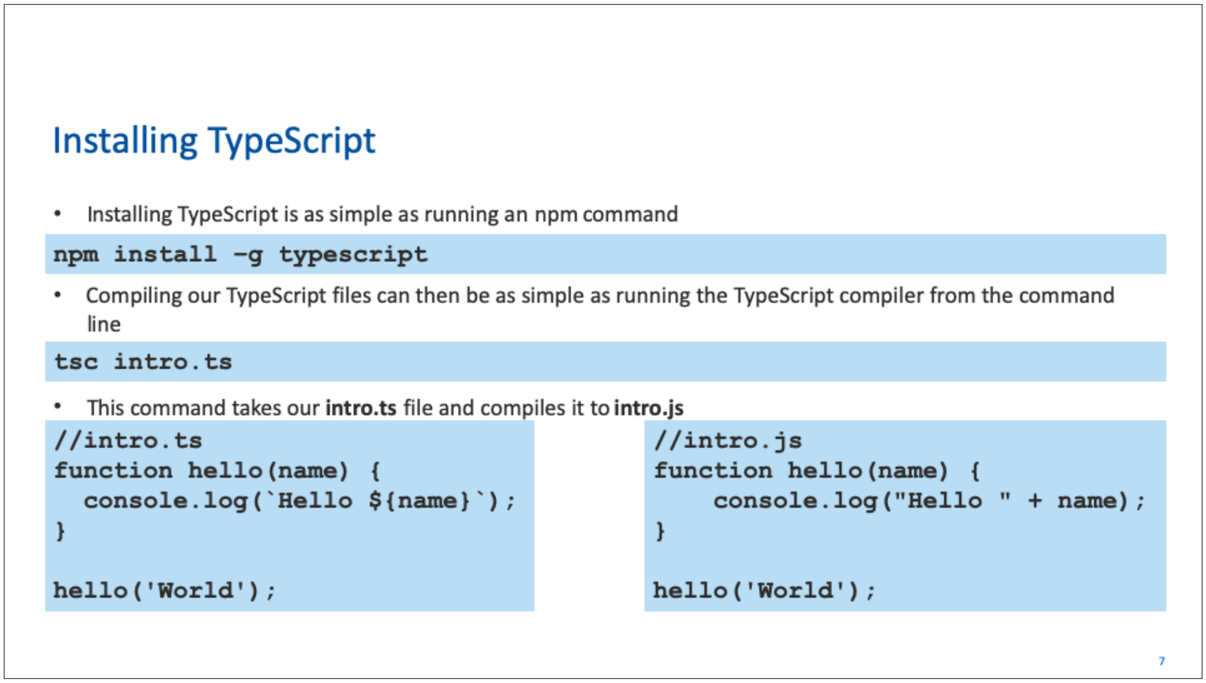
Node.js is an open source command line tool for server side JS

The script is executed by the V8 Javascript engine

NPM manages decencies for an application via the command line



Installing TypeScript

- Installing TypeScript is as simple as running an npm command

```
npm install -g typescript
```

- Compiling our TypeScript files can then be as simple as running the TypeScript compiler from the command line

```
tsc intro.ts
```

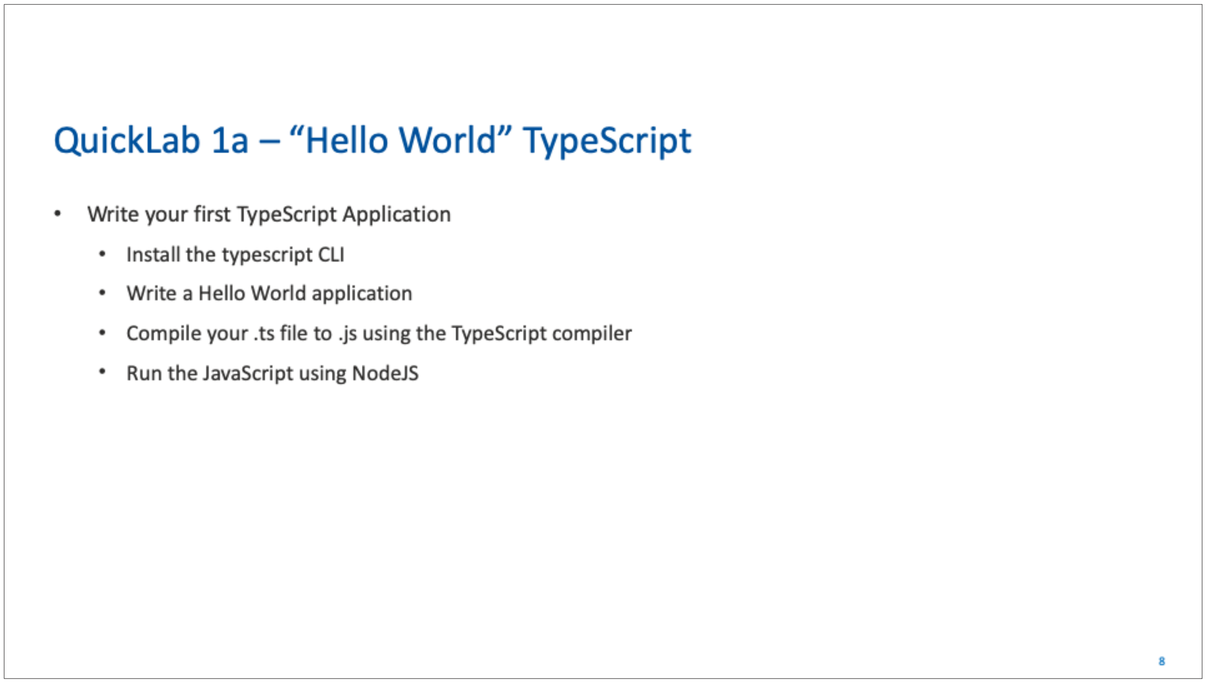
- This command takes our **intro.ts** file and compiles it to **intro.js**

```
//intro.ts
function hello(name) {
  console.log(`Hello ${name}`);
}

hello('World');
```

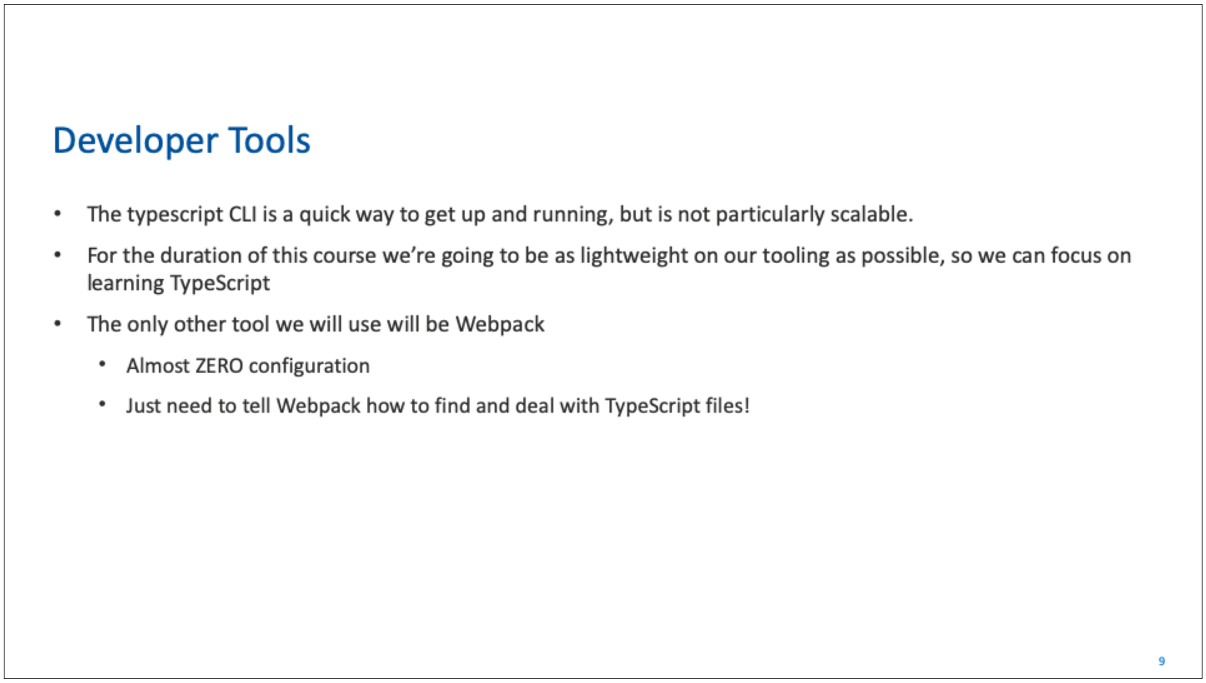
```
//intro.js
function hello(name) {
    console.log("Hello " + name);
}

hello('World');
```



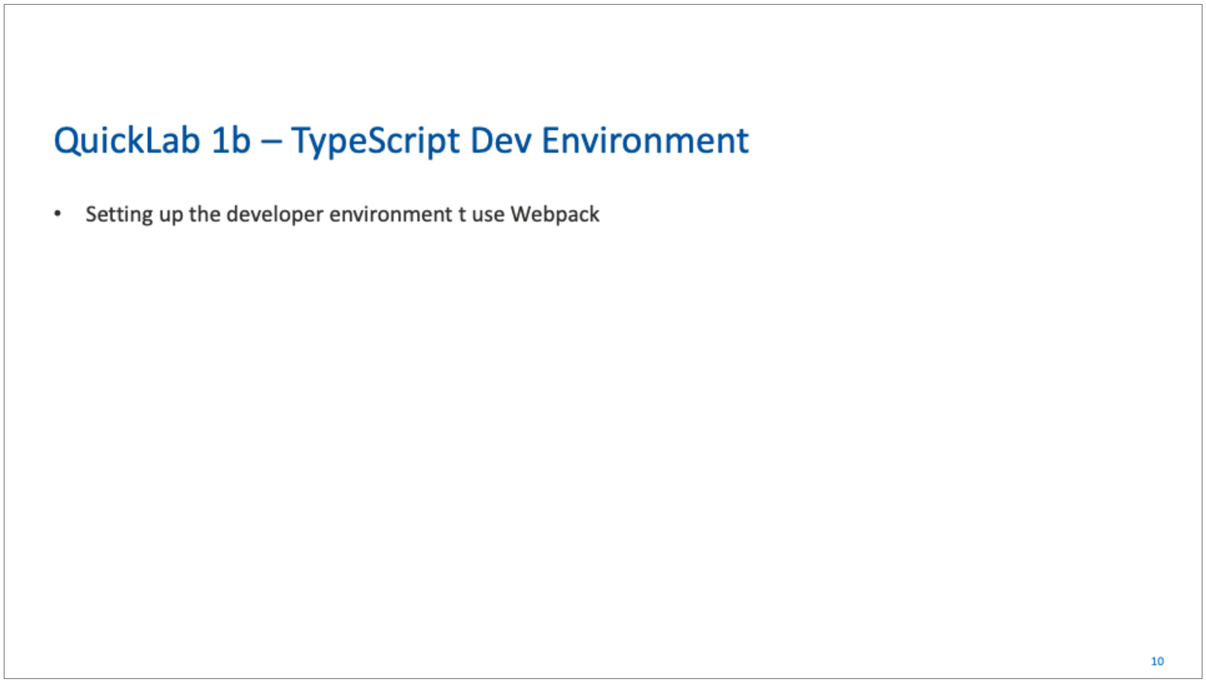
QuickLab 1a – “Hello World” TypeScript

- Write your first TypeScript Application
  - Install the typescript CLI
  - Write a Hello World application
  - Compile your .ts file to .js using the TypeScript compiler
  - Run the JavaScript using NodeJS



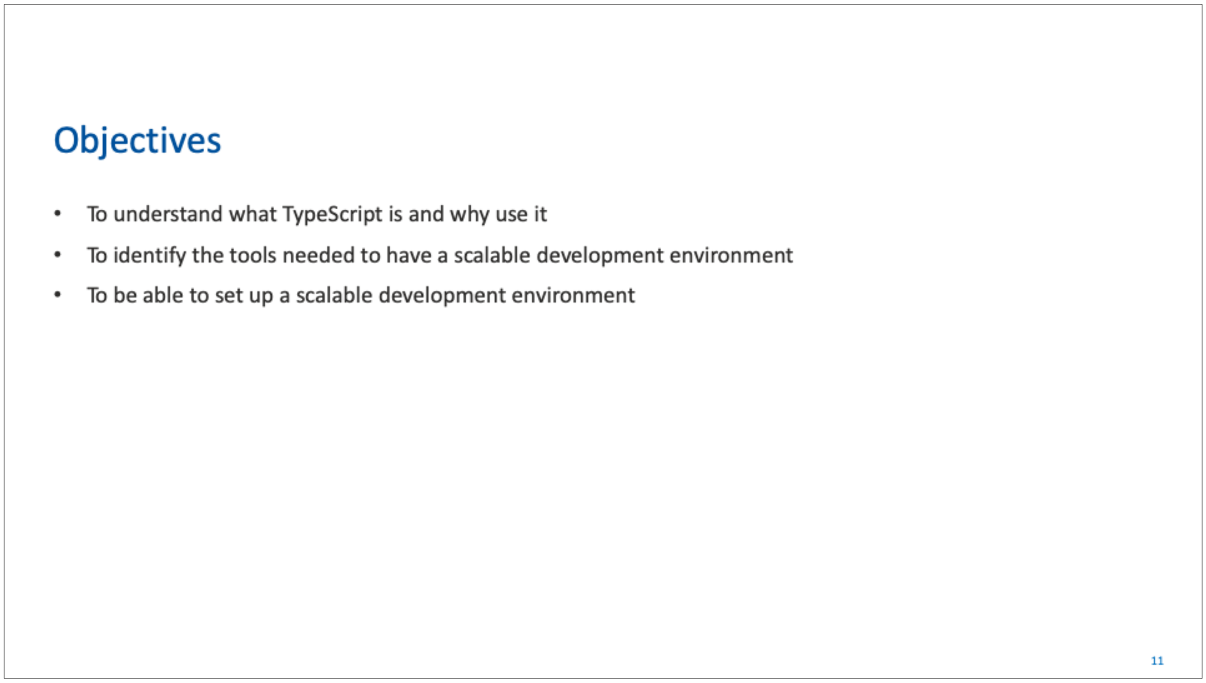
Developer Tools

- The typescript CLI is a quick way to get up and running, but is not particularly scalable.
- For the duration of this course we're going to be as lightweight on our tooling as possible, so we can focus on learning TypeScript
- The only other tool we will use will be Webpack
  - Almost ZERO configuration
  - Just need to tell Webpack how to find and deal with TypeScript files!



QuickLab 1b – TypeScript Dev Environment

- Setting up the developer environment t use Webpack



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