



# Tools for Modern Web Development

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## Ben Hoelting

In truth, he's just a big kid. He loves designing systems that solve real world problems. There is nothing more satisfying than seeing something you helped develop being used by the end users. Ben is also involved in the technology community and runs the South Colorado .NET user group. He also enjoys speaking at tech groups and events around the country.



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## Agenda

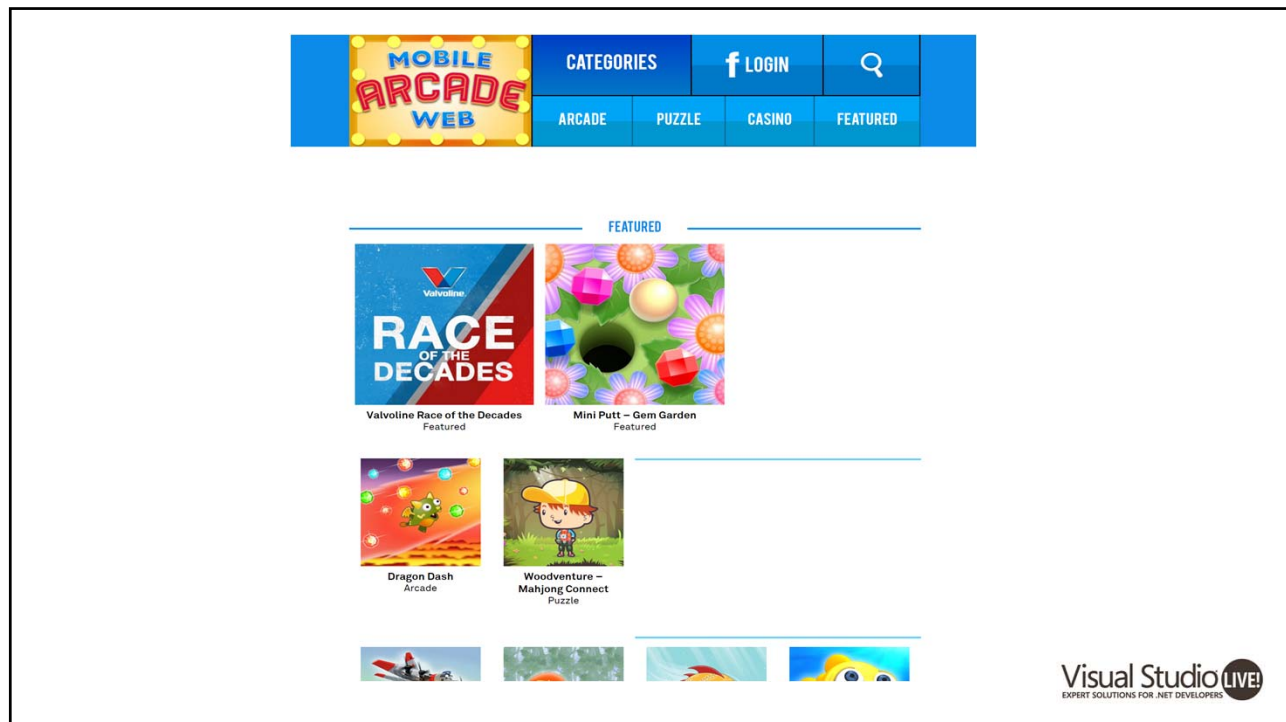
- What is modern web development?
- What are NPM, Bower, Grunt and Gulp, Webpack and Yeoman?
- Using these tools with existing applications in ASP.NET
- Using these tools with ASP.NET Core

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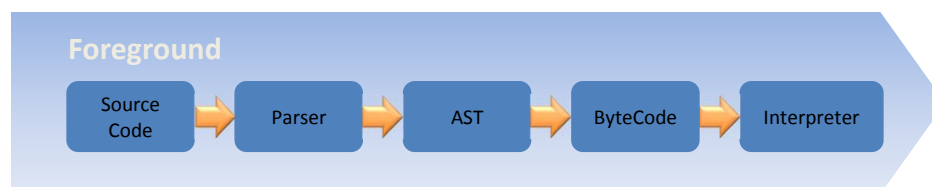
## Modern Web Development (MWD)

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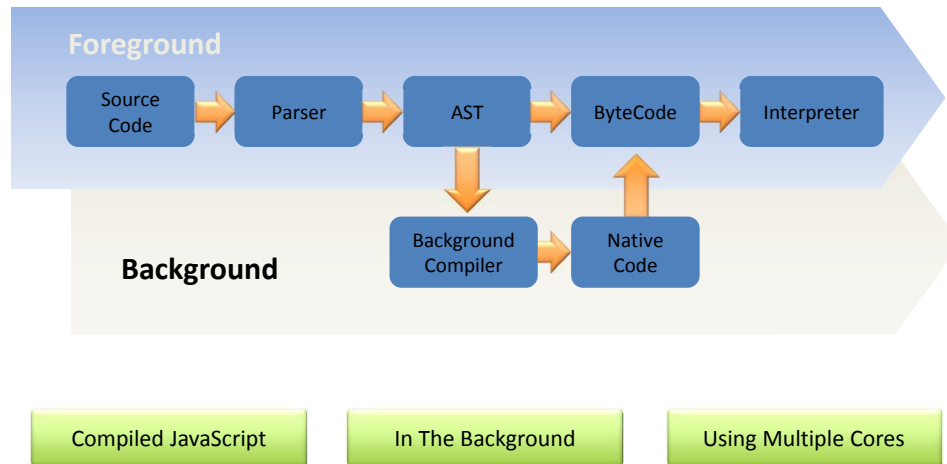




## The Old JavaScript Engine



## New JavaScript Engines



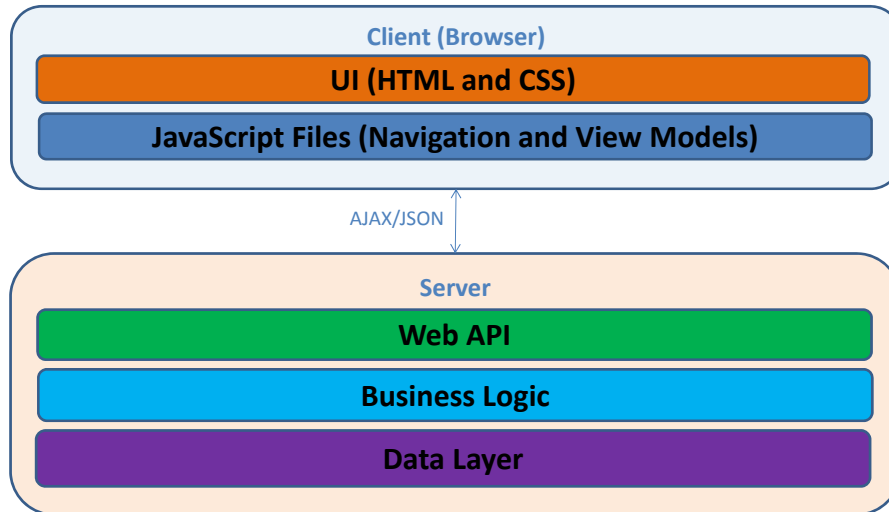
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## Modern Web Development

- Runs on the local machine
- Takes advantage of modern browsers
- Modern browsers compile\support the latest HTML, ECMAScript and CSS Standards
- Moderns browsers take advantage of local hardware on the client

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## Single Page Applications (SPA)



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## Modern Web Development Tools

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## So, We Need Tooling

- C# code is “built” before execution
- HTML, CSS and JavaScript are “built” by the browser
- We need a build process for developing these types of apps
- NPM, Gulp, Webpack and Bower can help



## Node Package Manager (NPM)

- Used to install developer tools
- Can also be used to execute some tasks using scripts
- Runs on NodeJS
- Can also run scripts



## Bower

- Used to download front-end libraries
- Think of Nuget for the front-end
- Also understands dependencies
  - This used to be the only technology that did dependencies. NPM does that now.



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## Gulp/Grunt

- Automation using JS Code or Configuration
  - Compile Typescript, Less, Sass, etc.
  - Pre-parse your JS for errors
  - Run unit tests

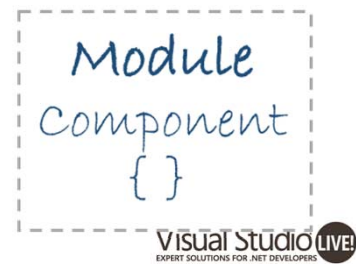


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## RequireJS and SystemJS

- Module Loaders
- Maps and Determines Dependencies and dynamically pulls them for use.
- RequireJS used the most
- SystemJS is used by Angular2



## Browserify vs. Webpack vs. JSPM

- Mature Products (Some Over 4 Years Old)
- Can do all the stuff Gulp and Grunt does using plug-ins or loaders
- Uses CommonJS, AMD or SystemJS to load modules at build time



# Demo with Visual Studio



## Bundling in ASP.NET Core\MVC 6

- JSON Bundling.config file
- Use the new Environment tag to switch between bundled and unbundled files
- New Asp tags that help with versioning and fallback for CDN use.



# Demo ASP.NET Core



## Yeoman

- What if I'm not using Visual Studio?
- Some people like GUI, Others like CLI
- Scaffolding for the web
- Is used to create boiler plate code for web projects
- "File – New" for non VS people.



# Demo with VS Code

## MWD Tools

### Browsers are the new runtimes

Modern browsers use the full power of the client to JIT compile your JavaScript locally. That means there is no “build” process. Your JS is simply text downloaded from the server.

### Tooling is needed to be productive

The build process used for server side apps helps identify issues before runtime. Tooling is needed to replace the build process for MWD. This tooling identifies issues, “compiles” helper languages, runs load tests and minifies.

### The tooling for MWD is maturing quickly

NodeJS, NPM, Bower, Yeoman, Gulp and Webpack are all great tools for executing repetitive tasks for MWD. Helper languages like TypeScript, CoffeeScript, Sass and Less also make MWD more productive.

## Resources:

- <http://www.asp.net/vnext>
- <https://docs.microsoft.com/en-us/aspnet/core/client-side/bundling-and-minification>
- <https://www.sitepoint.com/beginners-guide-to-webpack-2-and-module-bundling/>
- <https://www.keycdn.com/blog/webpack/>
- <https://www.contentful.com/blog/2017/04/04/es6-modules-support-lands-in-browsers-is-it-time-to-rethink-bundling/>

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A stylized, handwritten signature of Ben Hoelting in black ink.

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