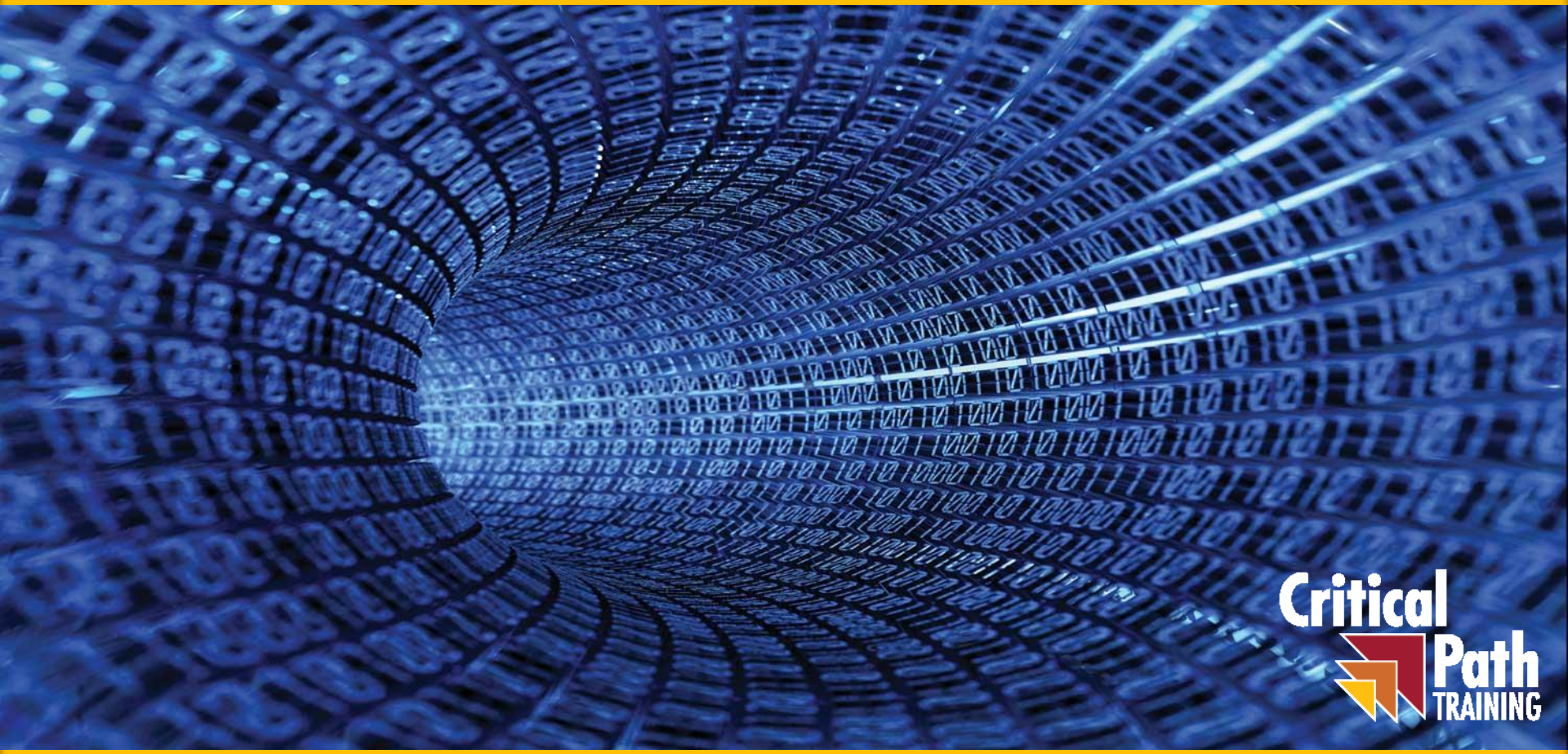
Getting Started with Node.js and NPM

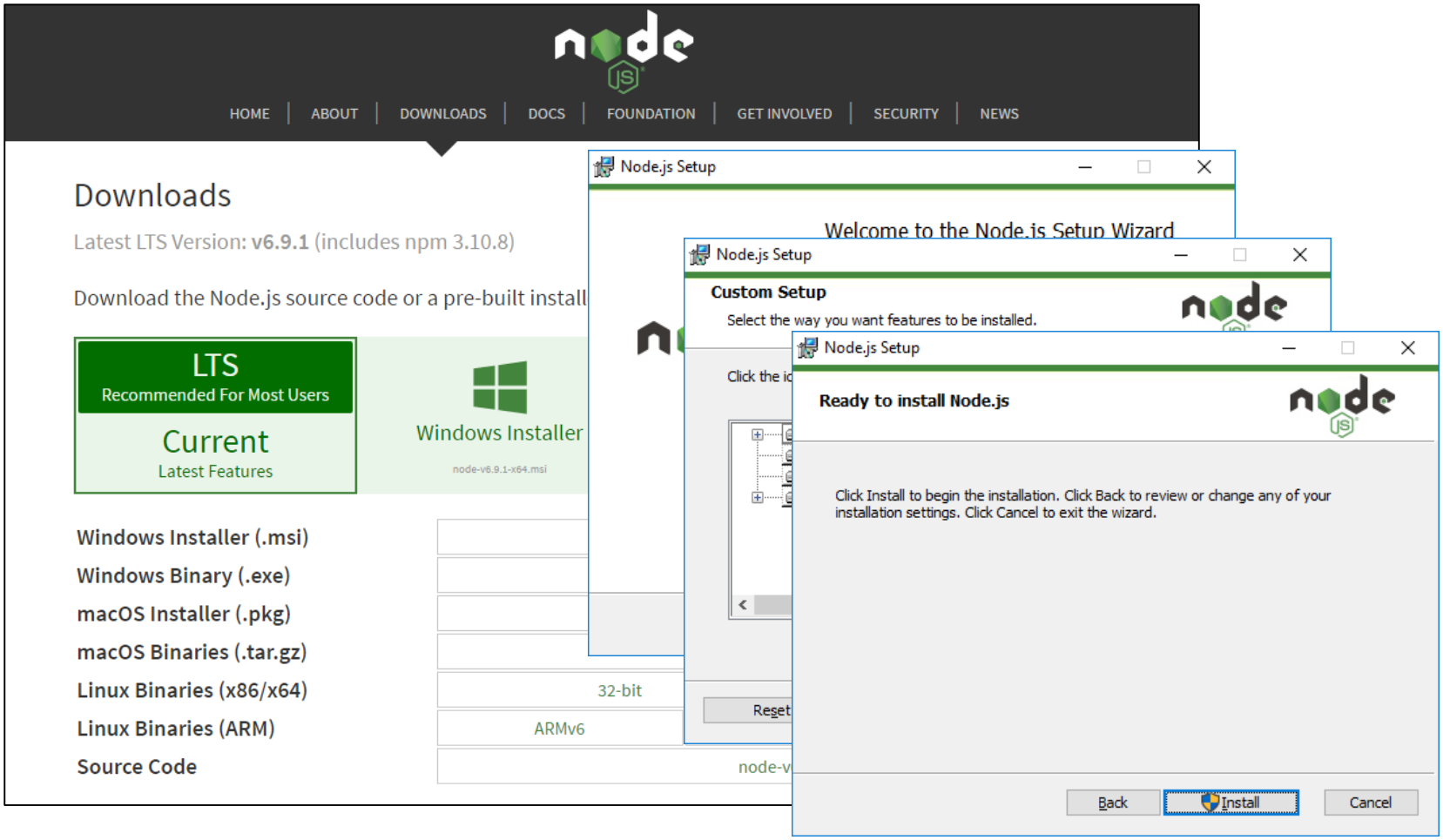


Agenda

- Introduction to Node.JS and Visual Studio Code
- Installing and Updating NPM packages
- Configuring Server-side Debugging Support
- Node.JS Development with TypeScript
- Using Gulp to Automate Running Tasks
- Bundling the Source Files using WebPack

Installing node.js

- https://nodejs.org/en/download/

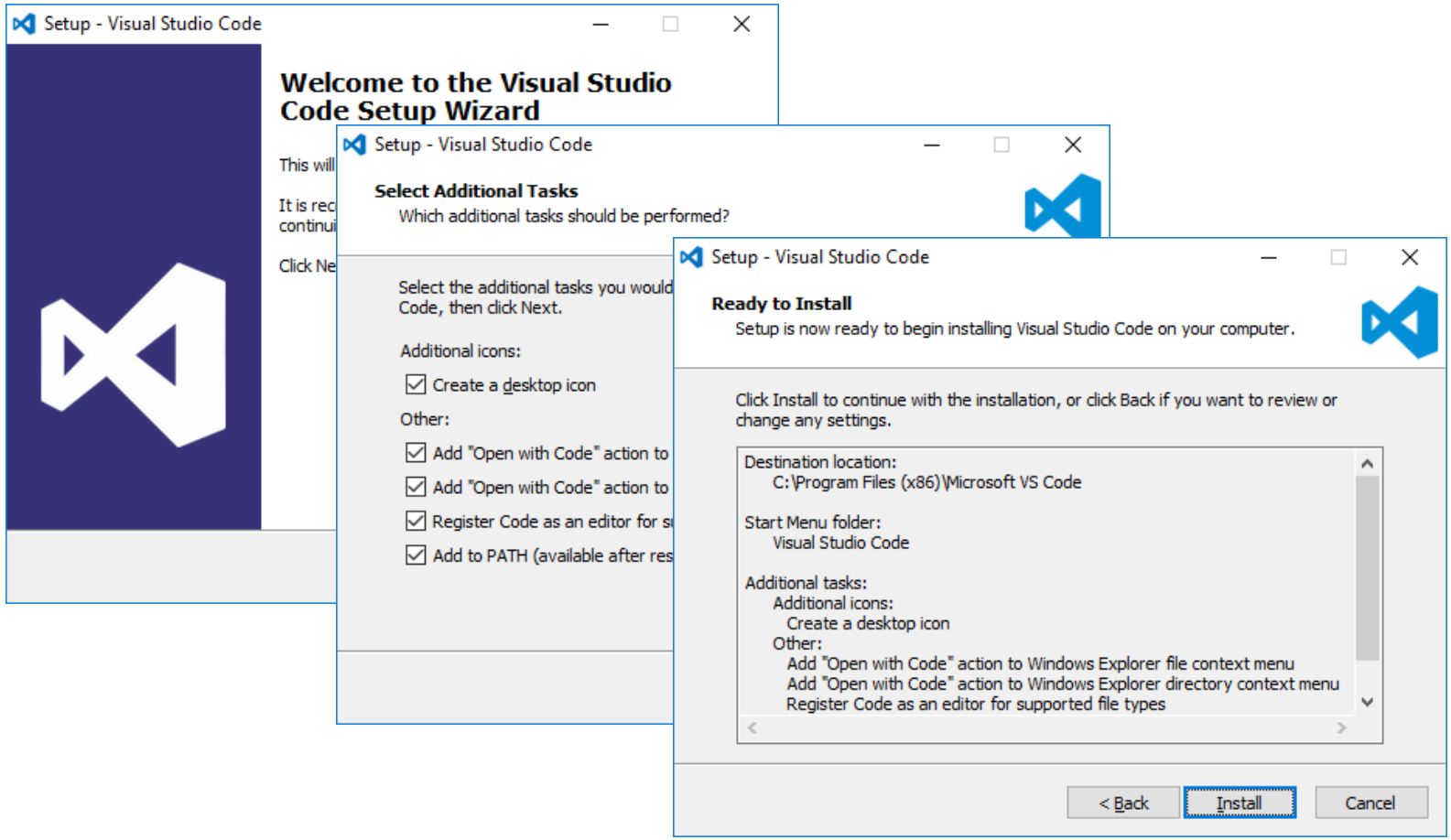


Cross-platform Toolchain

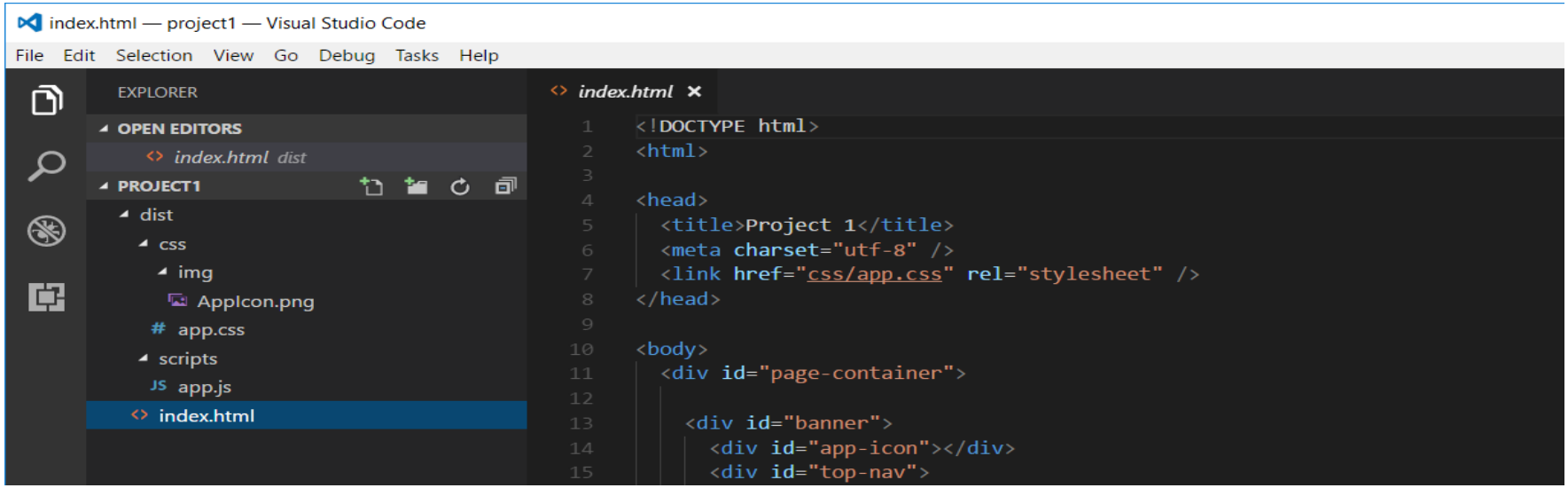
- Node.js
- Node Package Manager (npm)
- TypeScript
- Yeoman
- Webpack
- Gulp
- git

Install Visual Studio Code

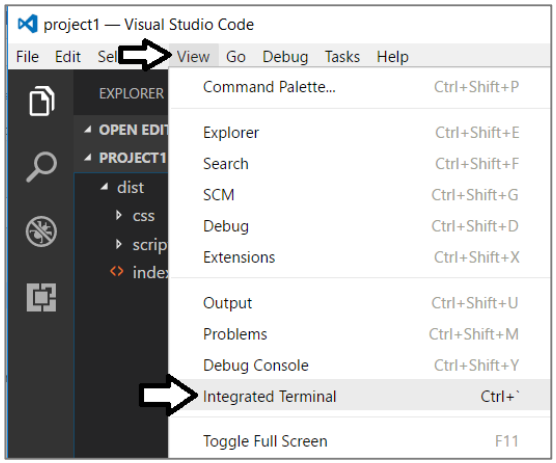
- http://code.visualstudio.com/

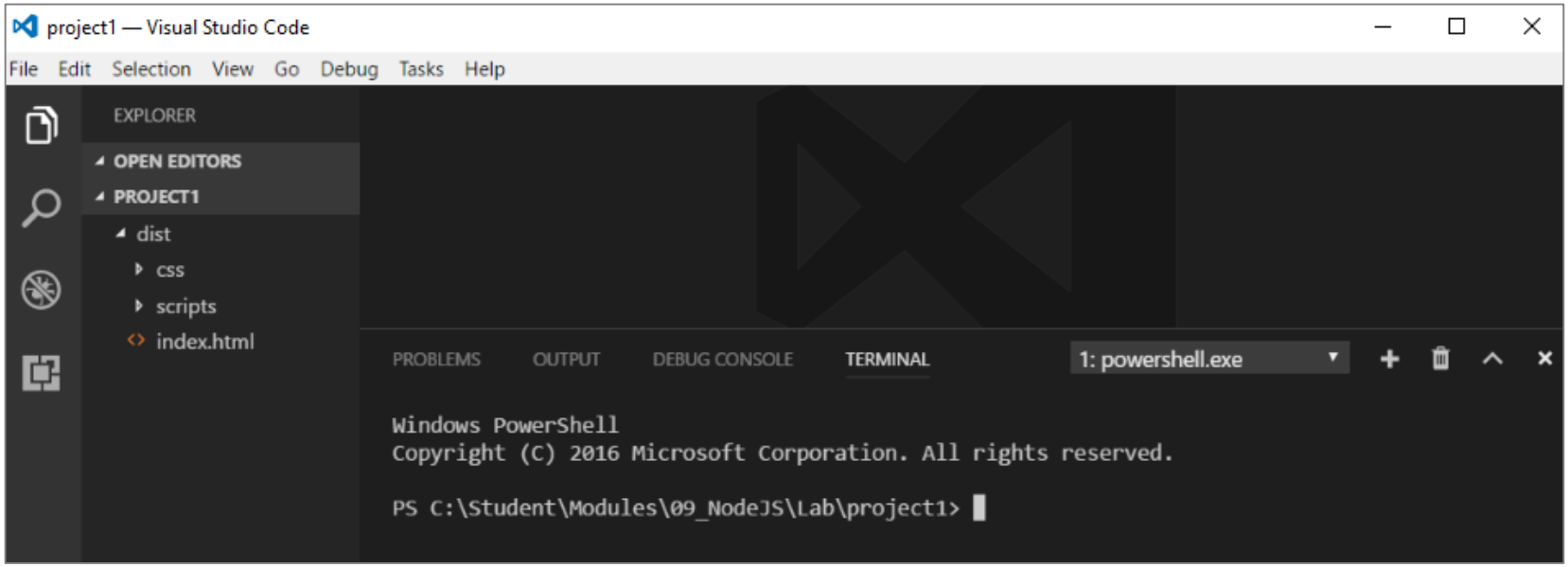


Developing with Visual Studio Code



Integrated Terminal





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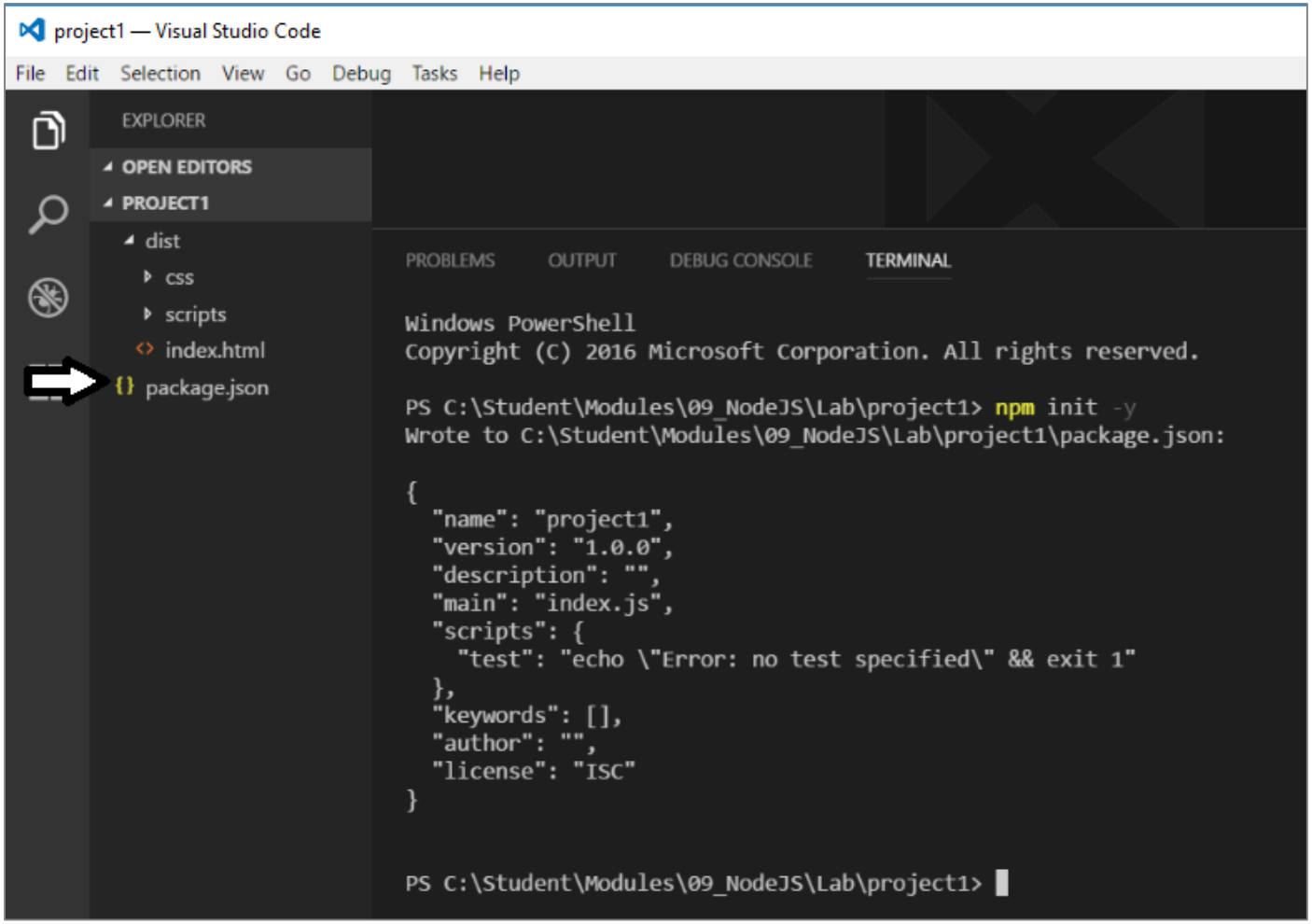
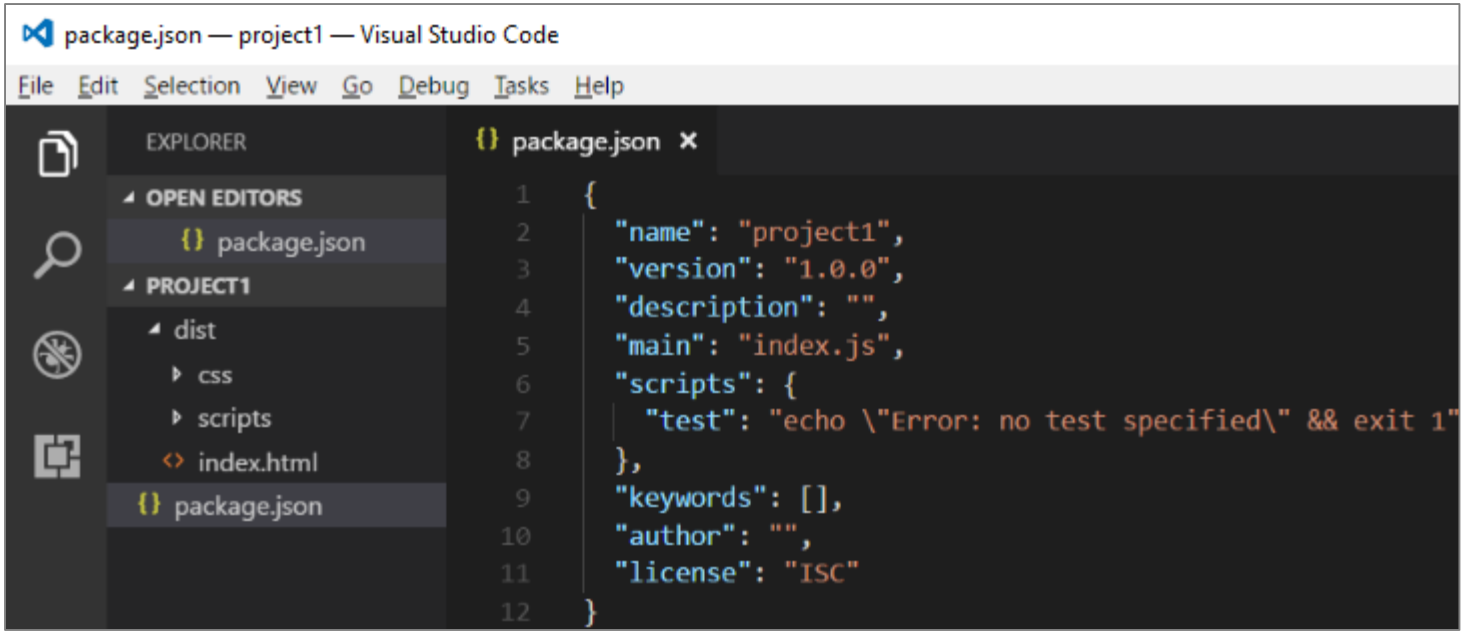
npm init


project1 — Visual Studio Code
File Edit Selection View Go Debug Tasks Help
EXPLORER
OPEN EDITORS
PROJECT1
dist
css
scripts
index.html
package.json
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
Windows PowerShell
Copyright (C) 2016 Microsoft Corporation. All rights reserved.
PS C:\Student\Modules\09_NodeJS\Lab\project1> npm init -y
Wrote to C:\Student\Modules\09_NodeJS\Lab\project1\package.json:
{
"name": "project1",
"version": "1.0.0",
"description": "",
"main": "index.js",
"scripts": {
"test": "echo \"Error: no test specified\" && exit 1"
},
"keywords": [],
"author": "",
"license": "ISC"
}
PS C:\Student\Modules\09_NodeJS\Lab\project1>

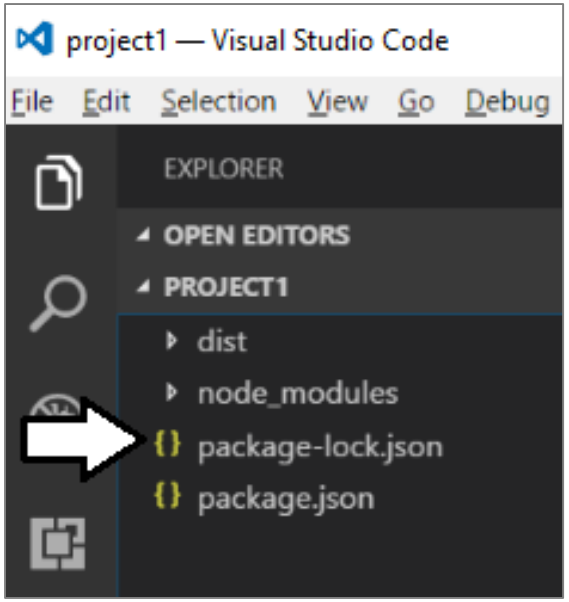
package.json



Installing Packages

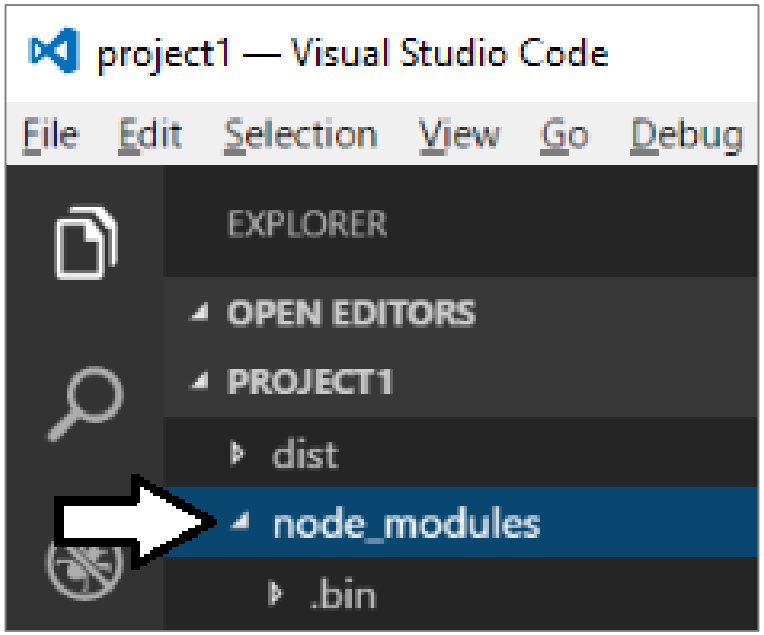
```
npm install browser-sync --save-dev
```

```
"devDependencies": {
  "browser-sync": "^2.18.12"
}
```



node_modules folder

- Package files copied into **node_modules** folder
  - This folder often contain 100s of packages for a project
  - Contents of folder not saved into source control
  - Contents can be restored with **npm install** command



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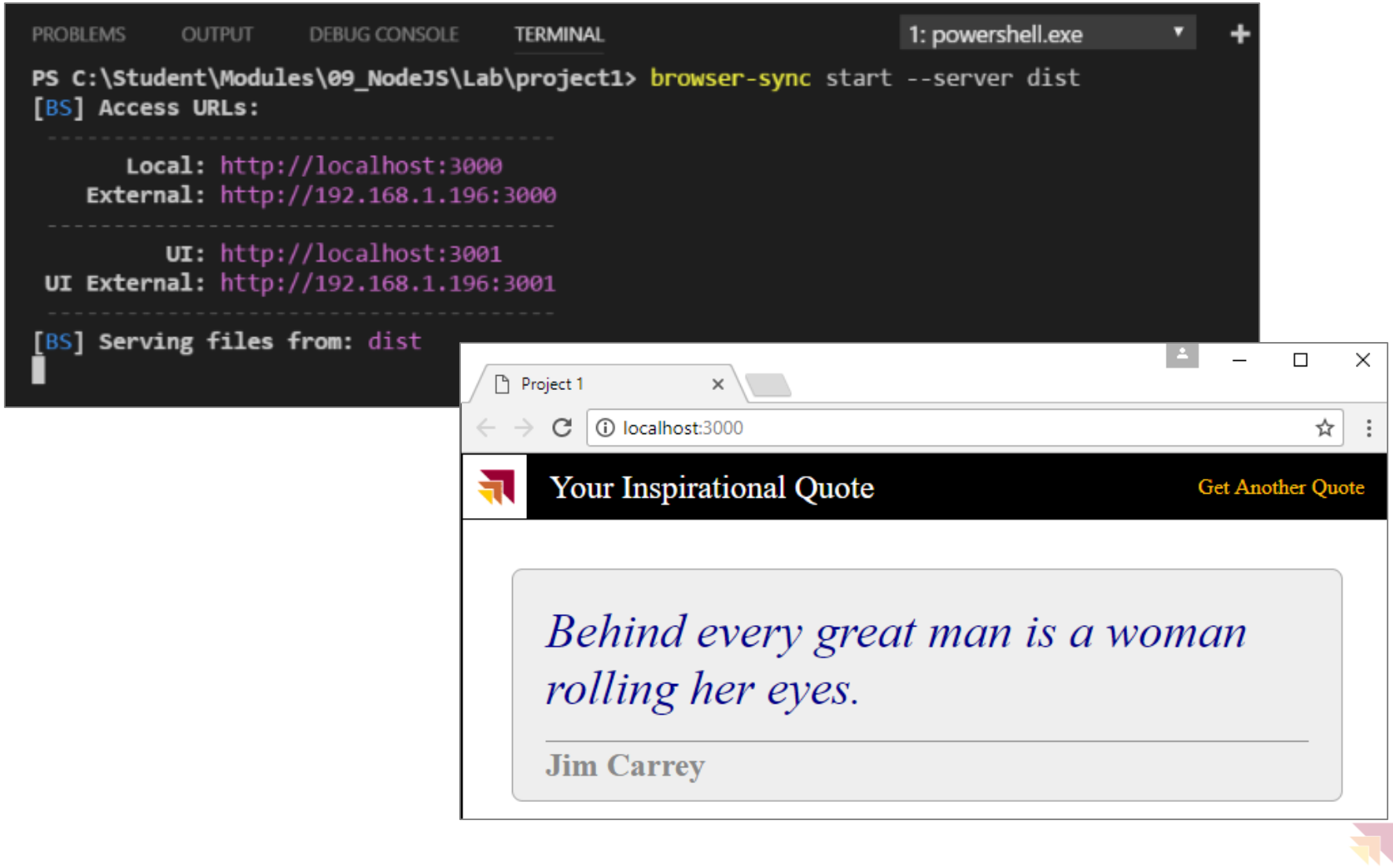
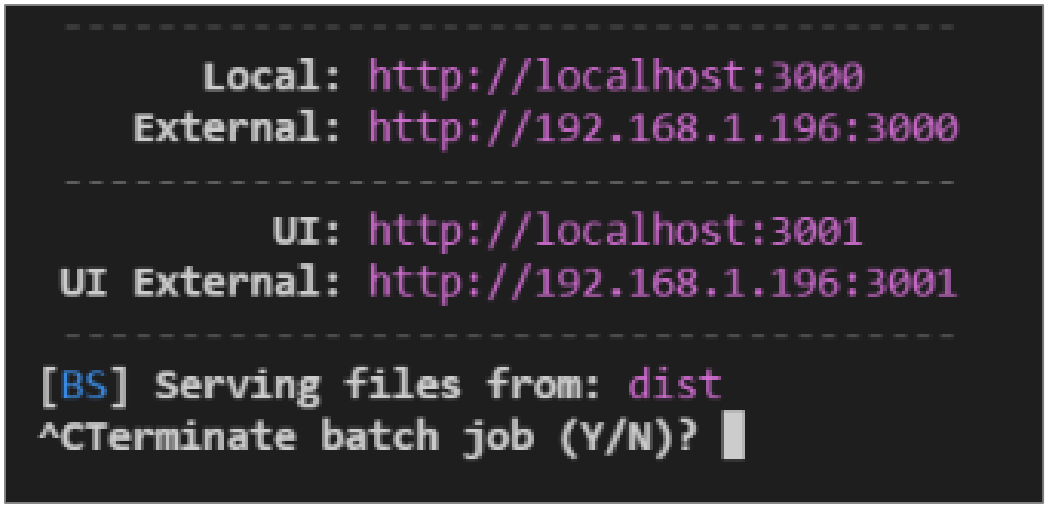
Using browser-sync to Serve Content



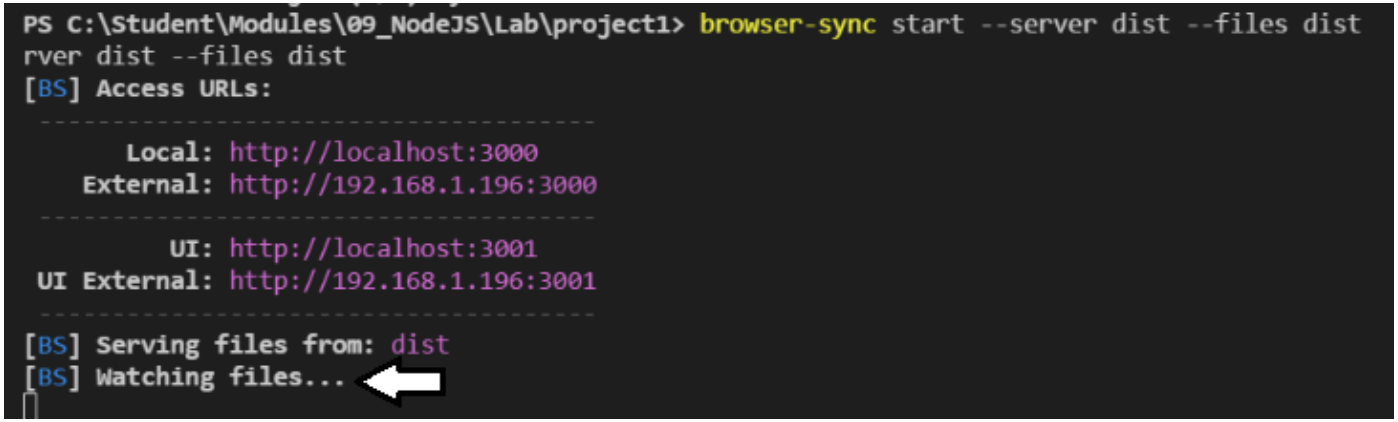
Stopping the Web Server Session

- Type CTRL + C into console to interrupt session

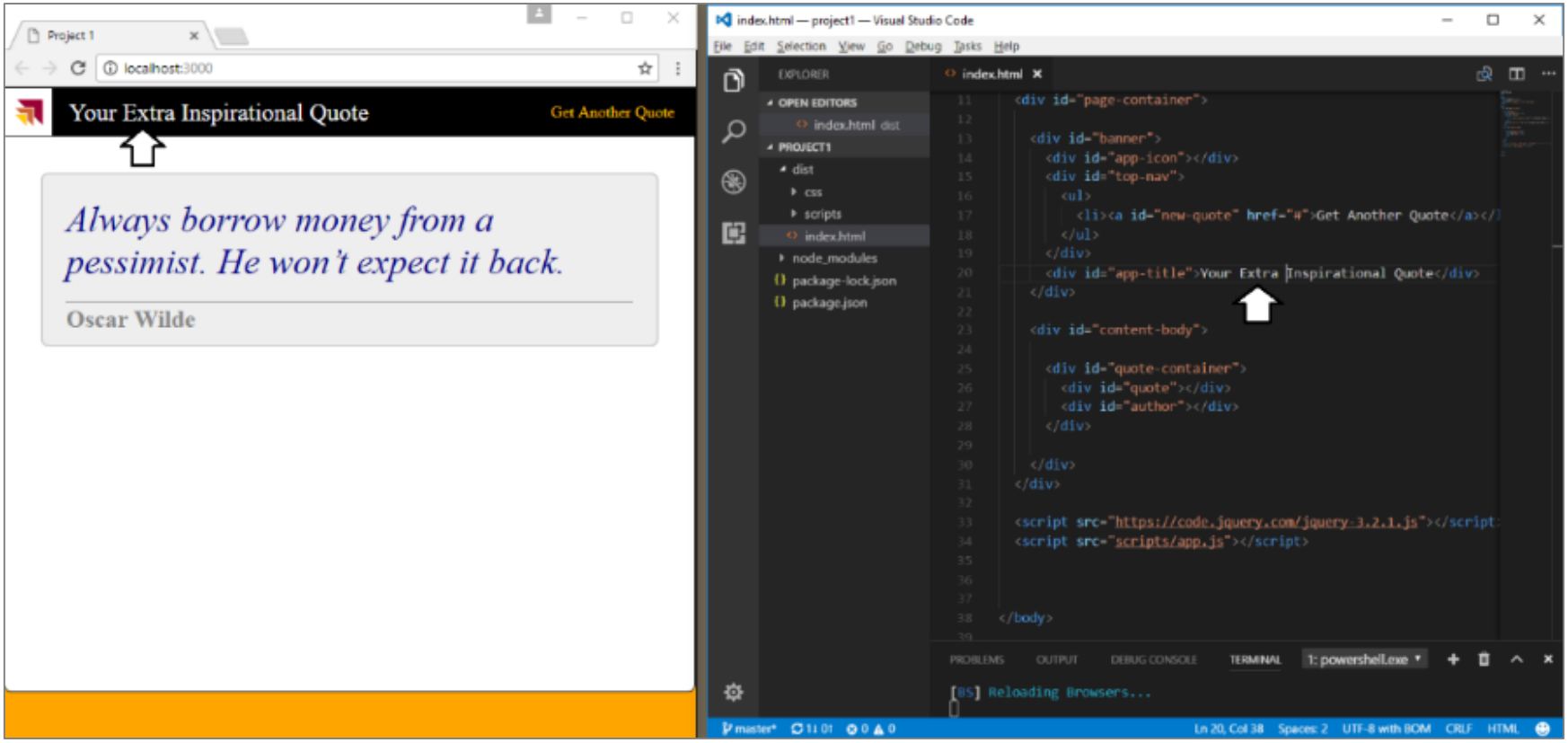


Watching Files

- Issue this command
  - browser-sync start --server dist --files dist



Automatic Updates



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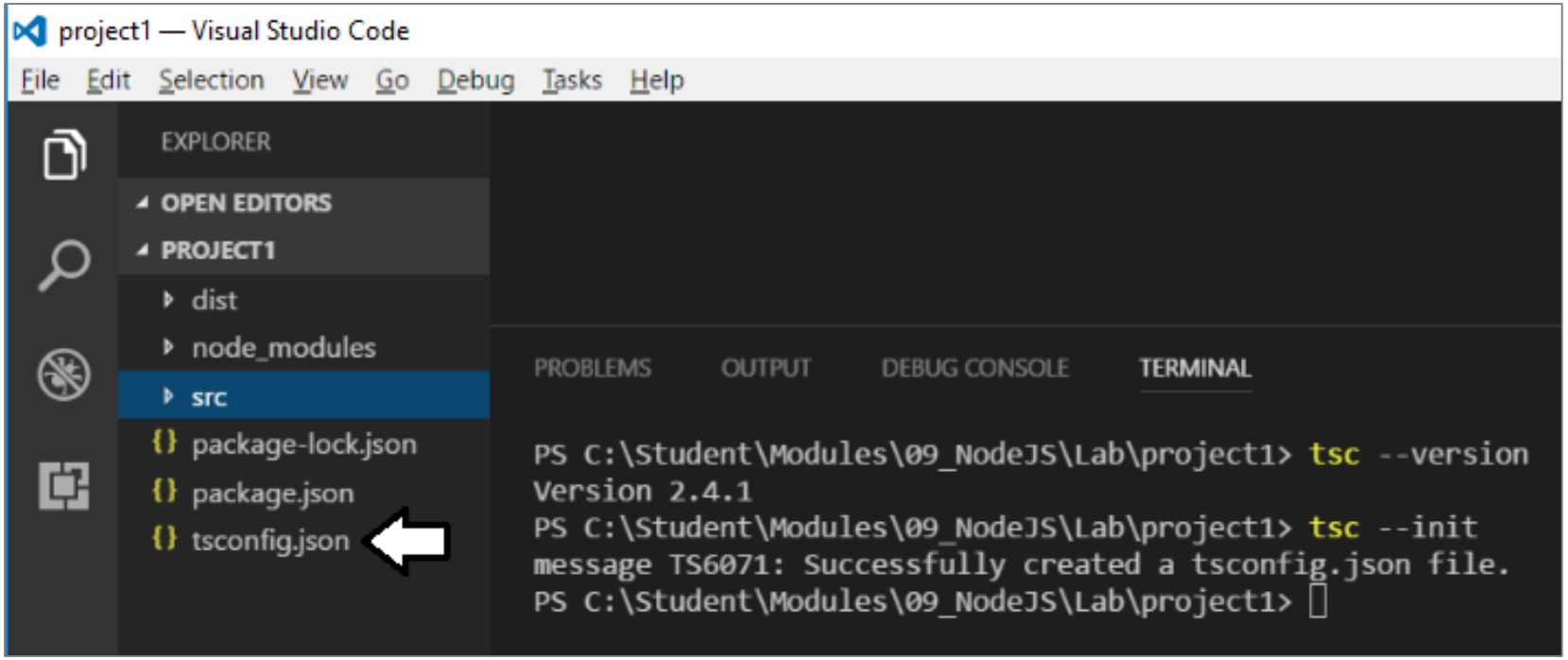
Installing the TypeScript Package

```
npm install typescript --save-dev
```

```
PS C:\Student\Modules\09_NodeJS\Lab\project1> tsc --version
Version 2.4.1
PS C:\Student\Modules\09_NodeJS\Lab\project1>
```

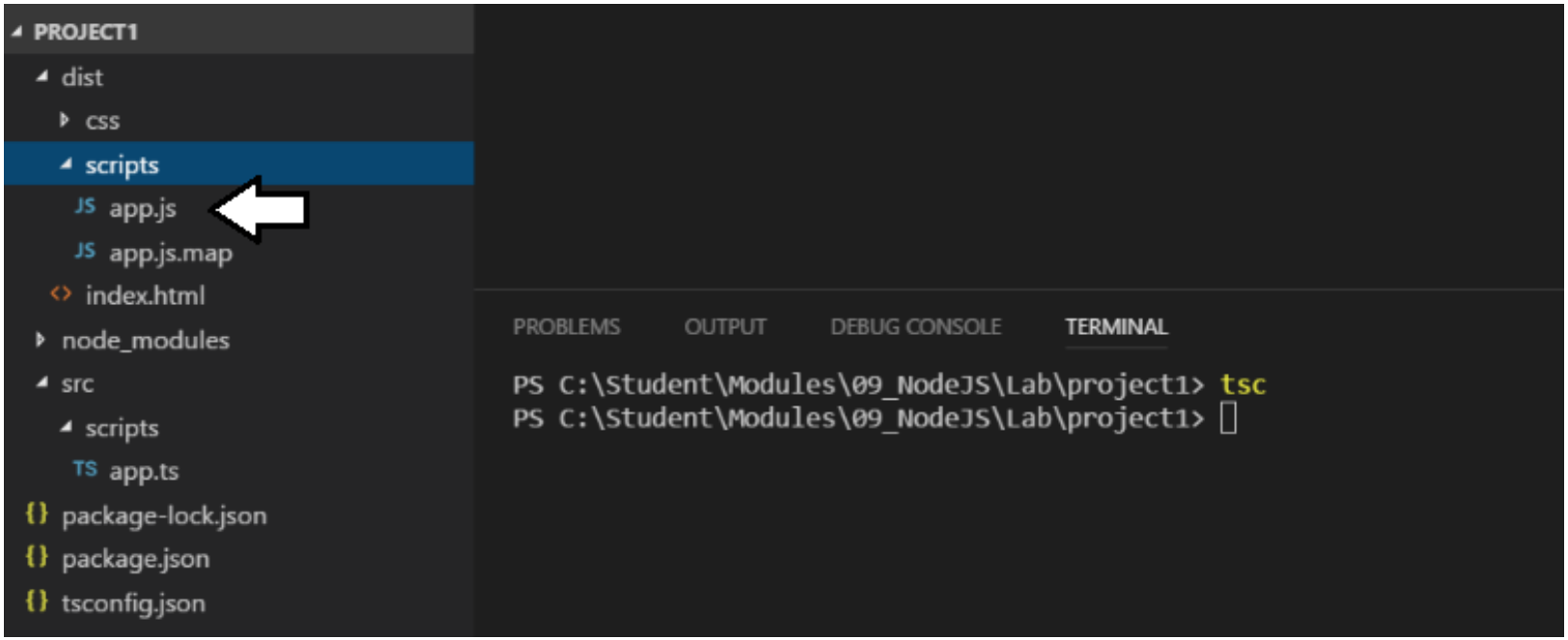
Generating tsconfig.json



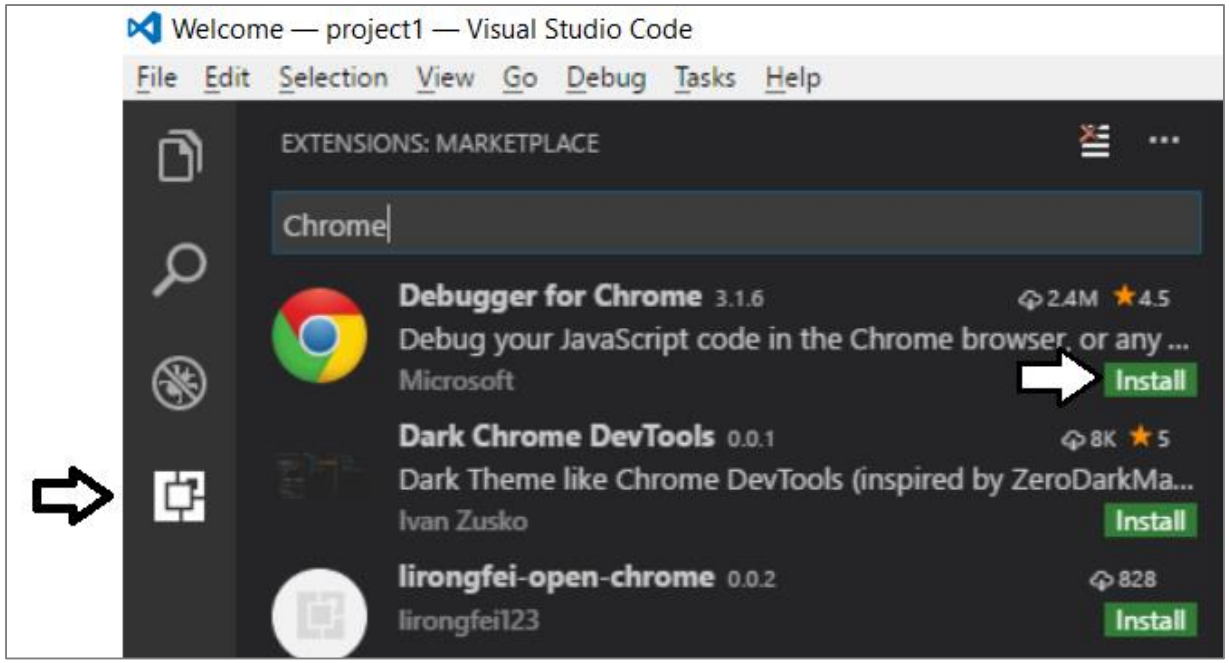
tsconfig.json

```
{
  "compilerOptions": {
    "noImplicitAny": true,
    "removeComments": true,
    "preserveConstEnums": true,
    "outFile": "./dist/scripts/app.js",
    "sourceMap": true,
    "lib": [ "dom", "es6" ]
  },
  "files": [
    "./src/scripts/app.ts"
  ],
  "exclude": [
    "node_modules"
  ]
}
```

Running tsc

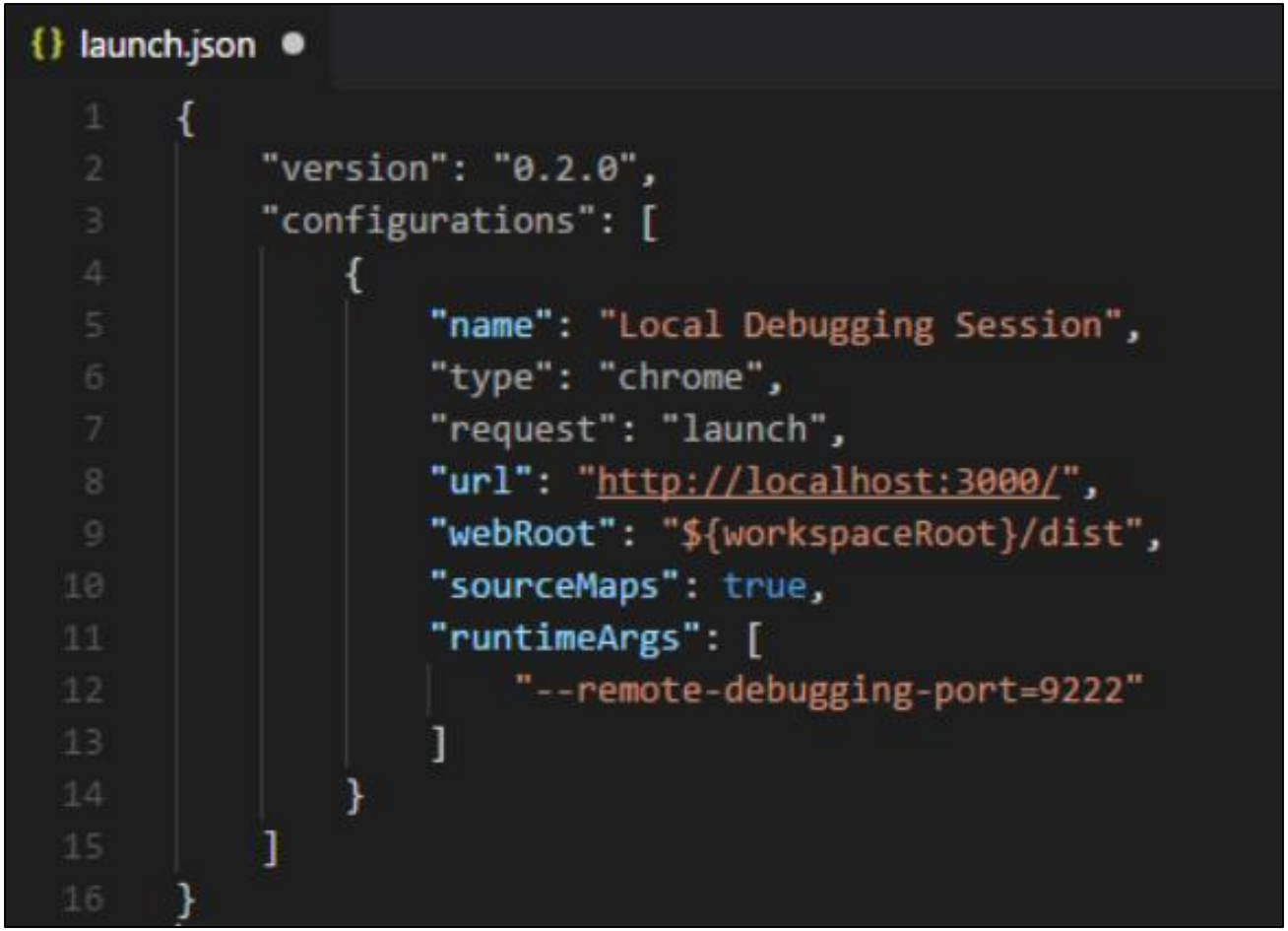

PROJECT1
dist
css
scripts
app.js
app.js.map
index.html
node_modules
src
scripts
app.ts
package-lock.json
package.json
tsconfig.json
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PS C:\Student\Modules\09_NodeJS\Lab\project1> tsc
PS C:\Student\Modules\09_NodeJS\Lab\project1>

Chrome Debugging Support

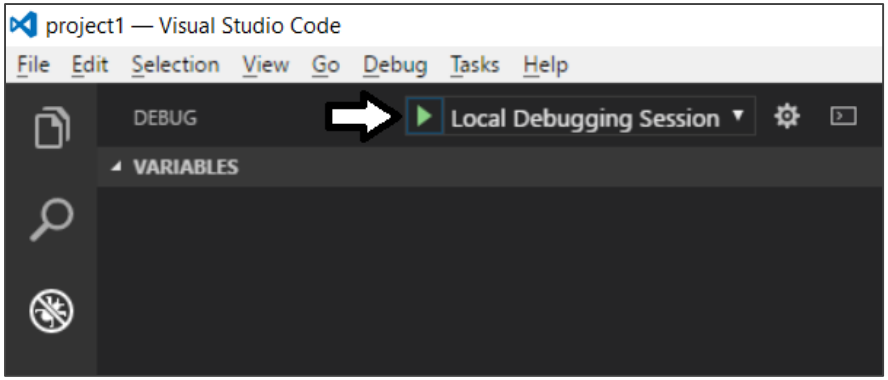


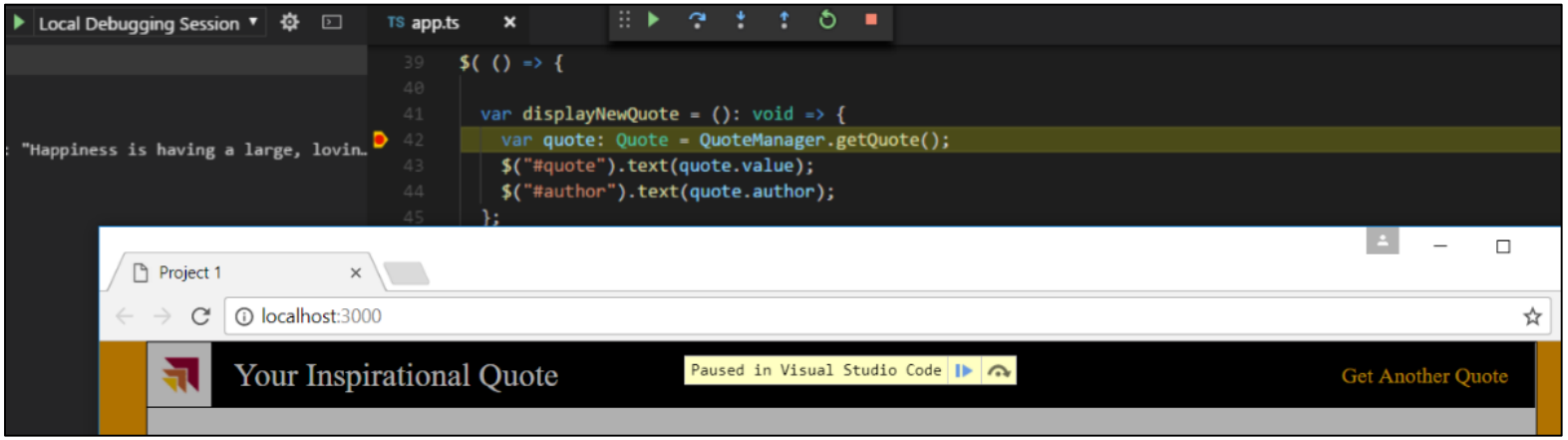
Visual Studio Debugging Support

- Debugging configurations tracked in launch.json



Running the Debugger





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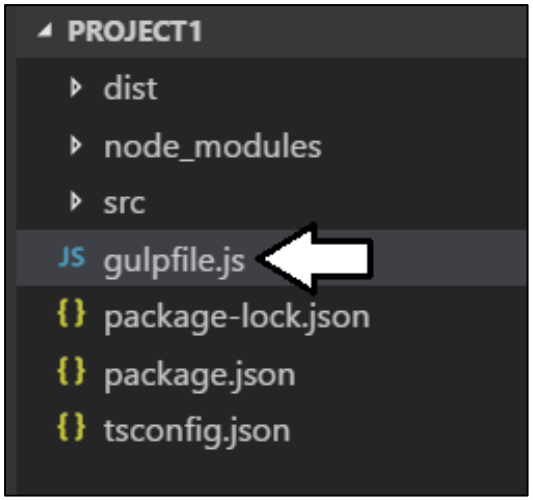
Gulp as a Task Runner

- Gulp serves as a Task Runner
  - Compiles TypeScript files to JavaScript
  - Compiles SASS files to CSS
  - Bundles and minifies JavaScript and CSS files

```
npm install gulp --save-dev
```

gulpfile.js




```
var gulp = require('gulp');

gulp.task('default', function() {
  console.log("Running my very first gulp task")
});
```

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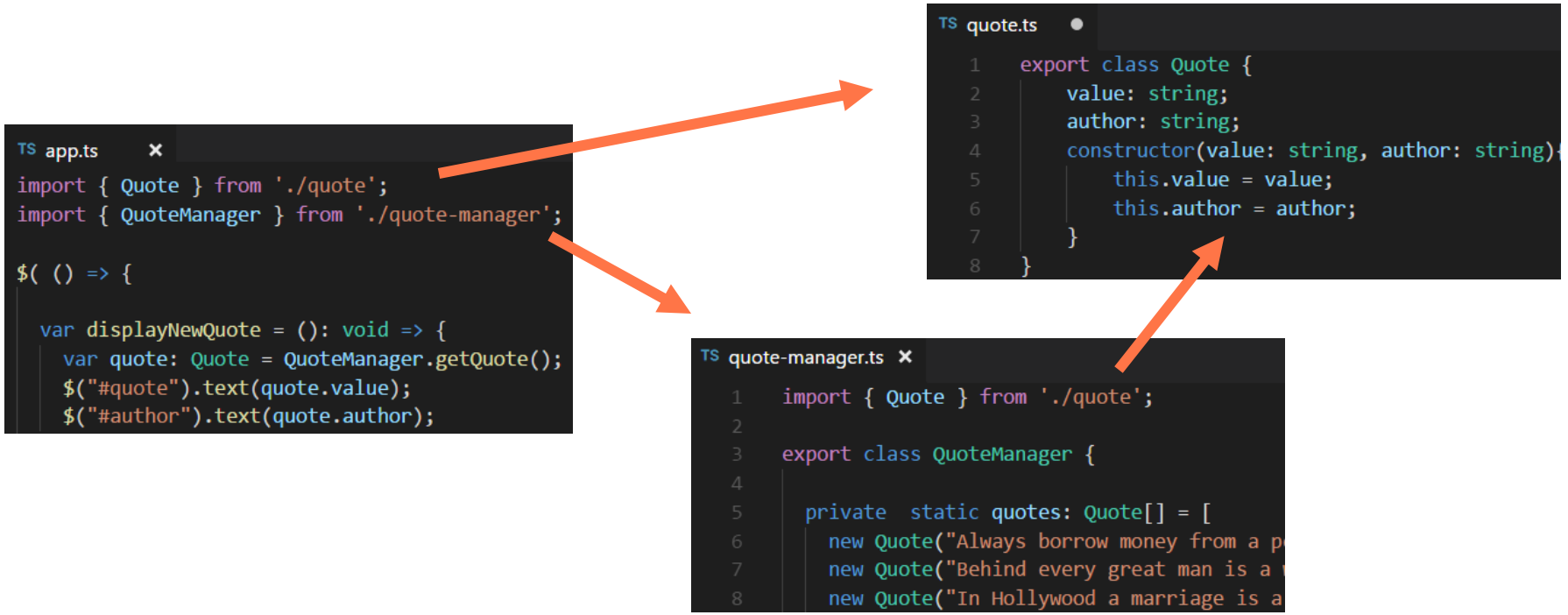
WebPack

- WebPack serves as a bundling utility
  - Bundles many js/ts files into a single file
  - Can handle dynamic module loading
  - Provides a dev server for testing and debugging

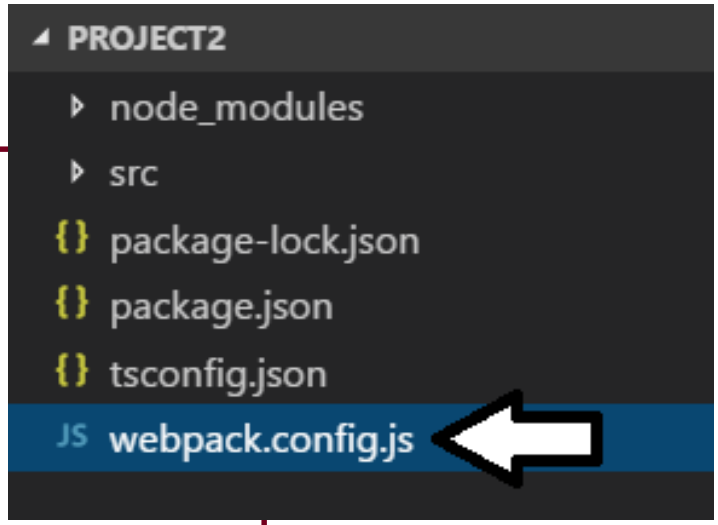
Dynamic Module Loading



webpack.config.js

```
const path = require('path');

module.exports = {
  entry: {
    'app': './src/scripts/app.ts'
  },
  output: {
    path: __dirname + '/dist',
    filename: './scripts/bundle.js'
  },
  resolve: {
    extensions: ['.ts', '.js']
  },
  module: {
    rules: [{
      test: /\.ts$/,
      use: 'ts-loader'
    }]
  }
};
```

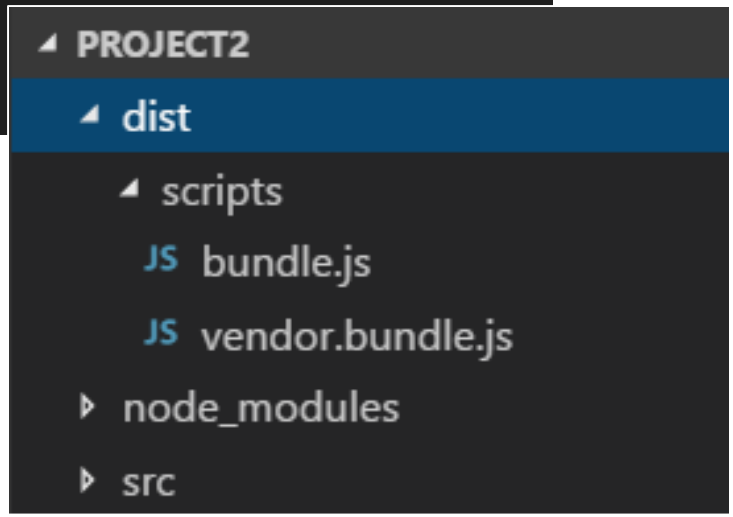


WebPack Builds

```
PS C:\Student\Modules\09_NodeJS\Lab\project2> npm run build

> project2@1.0.0 build C:\Student\Modules\09_NodeJS\Lab\project2
> webpack

ts-loader: Using typescript@2.4.2 and C:\Student\Modules\09_NodeJS\Lab\project2\tsconfig.json
Hash: 2620a7c45f47a0cc754e
Version: webpack 2.7.0
Time: 1573ms
                    Asset     Size  Chunks                    Chunk Names
       ./scripts/bundle.js  3.43 kB       0  [emitted]         app
./scripts/vendor.bundle.js   275 kB       1  [emitted]  [big]  vendor
   [0] ./~/jquery/dist/jquery.js 268 kB {1} [built]
   [1] ./src/scripts/quote-manager.ts 2.42 kB {0} [built]
   [2] ./src/scripts/app.ts 475 bytes {0} [built]
   [3] ./src/scripts/quote.ts 261 bytes {0} [built]
   [4] ./src/scripts/vendor.ts 111 bytes {1} [built]
PS C:\Student\Modules\09_NodeJS\Lab\project2>
```



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