Creating and Consuming Modules

Brice Wilson

@brice_wilson www.BriceWilson.net

Overview

- Why use modules?
- Supporting technologies
- Import and export syntax
- Module resolution

Why Use Modules?

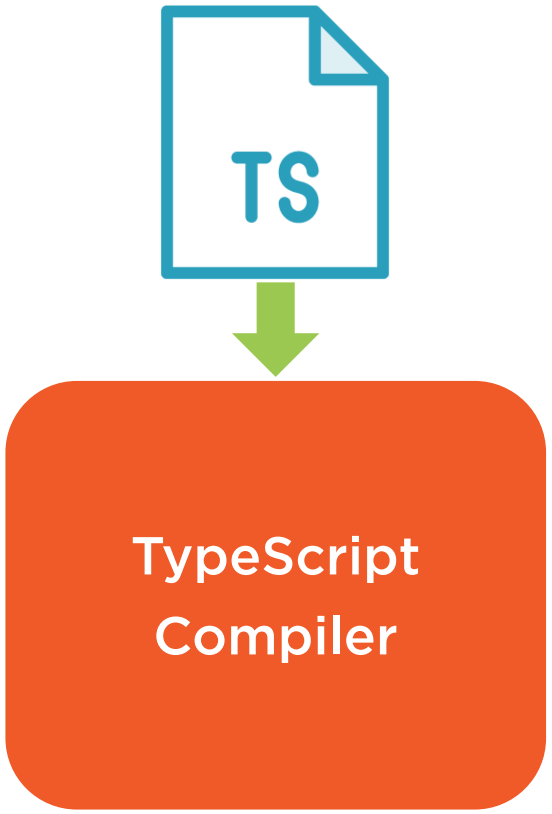
Encapsulation

Reusability

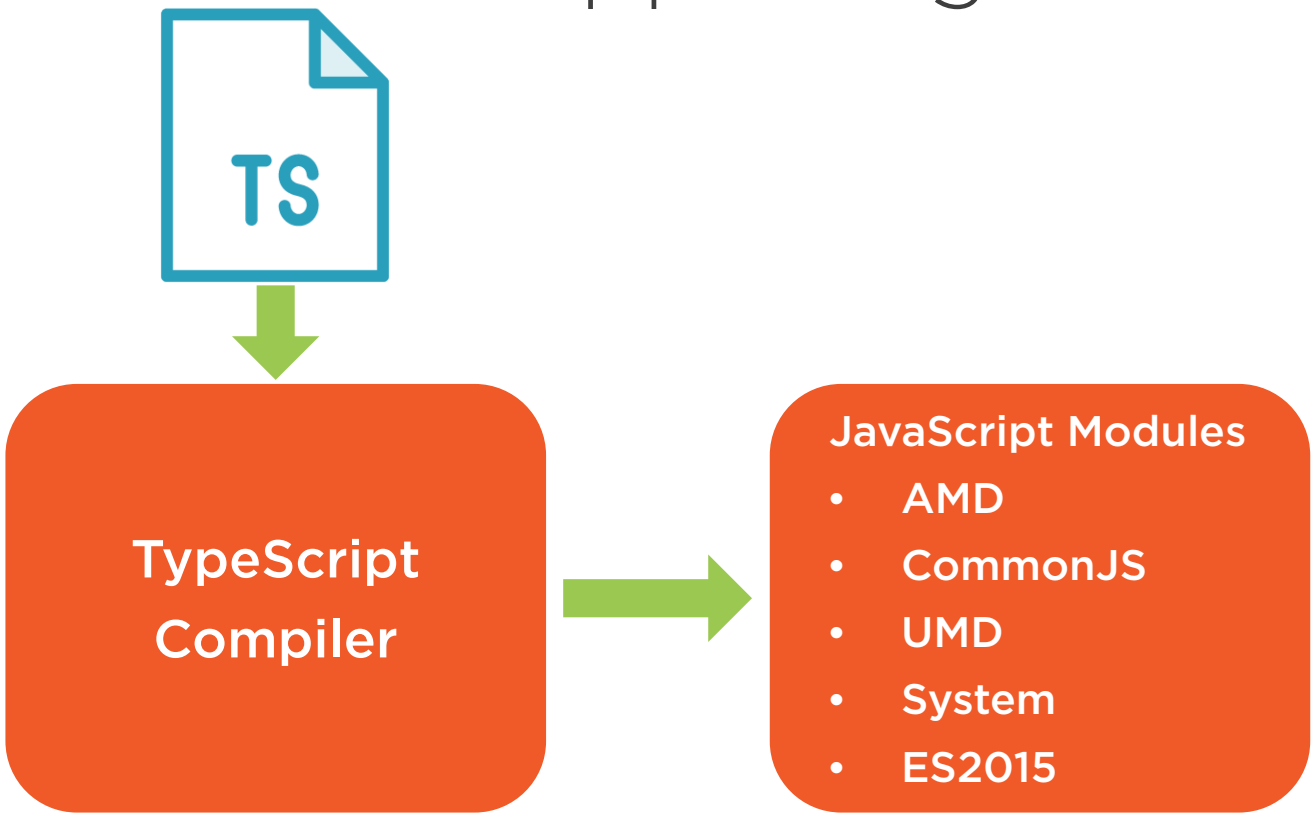
Create higher-level abstractions

Supporting Technologies

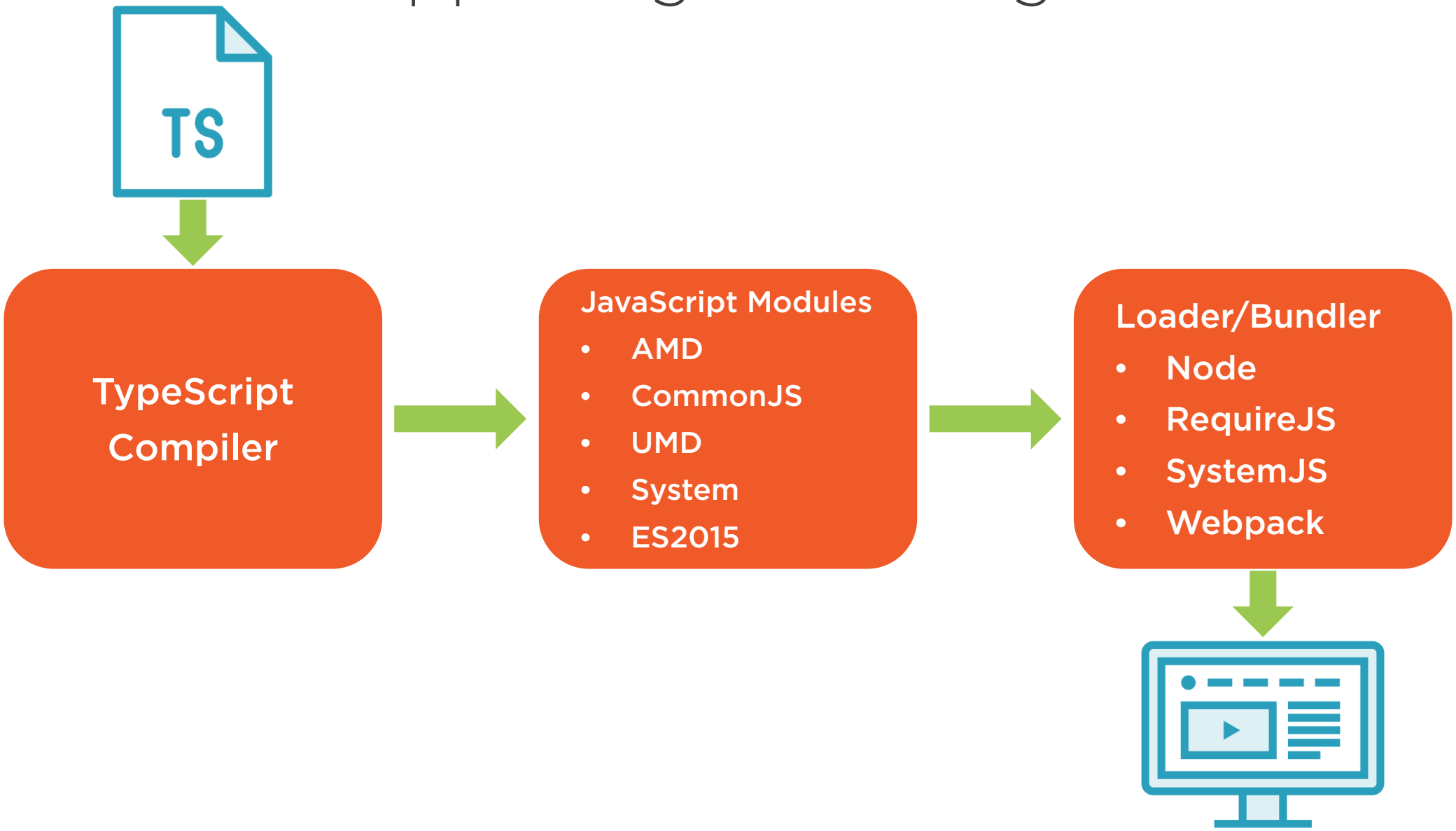
Supporting Technologies



Supporting Technologies



Supporting Technologies



JavaScript Module Fundamentals

by Brice Wilson

JavaScript applications have grown increasingly complex. This course will teach you the basics of writing modular, maintainable JavaScript using popular formats, loaders, and bundlers.

Resume Course | Bookmark | Add to Channel | Live mentoring

Table of contents | Description | Transcript | Exercise files | Discussion | Recommended

Expand all

Course Overview	✓	1m 30s
Why Modules Matter in JavaScript		13m 50s
Module Patterns in ES5		26m 36s
Module Formats and Loaders		38m 24s
Modules in ES2015		31m 38s
Module Bundlers		24m 41s

Course author

Brice Wilson

Brice has been a professional developer for over 20 years and loves to experiment with new tools and technologies. Web development and native iOS apps currently occupy most of his time.

Course info

Level	Beginner
Rating	★★★★★ (203)
My rating	★★★★★
Duration	2h 16m
Released	10 Jun 2016

Share course

Exporting a Declaration

```
// person.ts

export interface Person { }
```

Exporting a Declaration

```
// person.ts

export interface Person { }

export function hireDeveloper(): void { }

export default class Employee { }
```

Exporting a Declaration

```
// person.ts

export interface Person { }

export function hireDeveloper(): void { }

export default class Employee { }

class Manager { } // not accessible outside the module
```

Export Statements

```
// person.ts
interface Person { }
function hireDeveloper(): void { }
class Employee { }
class Manager { } // not accessible outside the module

export { Person, hireDeveloper, Employee as StaffMember };
```

Export Statements

```
// person.ts
interface Person { }
function hireDeveloper(): void { }
class Employee { }
class Manager { } // not accessible outside the module

export { Person, hireDeveloper, Employee as StaffMember };
```

Export Statements

```
// person.ts
interface Person { }
function hireDeveloper(): void { }
class Employee { }
class Manager { } // not accessible outside the module

export { Person, hireDeveloper, Employee as StaffMember };
```

Importing from a Module

```
// player.ts

import { Person, hireDeveloper } from './person';
```

Importing from a Module

```
// player.ts

import { Person, hireDeveloper } from './person';
```

Importing from a Module

```
// player.ts

import { Person, hireDeveloper } from './person';
```

Importing from a Module

```
// player.ts

import { Person, hireDeveloper } from './person';
```

Importing from a Module

```
// player.ts

import { Person, hireDeveloper } from './person';

let human: Person;

import Worker from './person';

let engineer: Worker = new Worker();

import { StaffMember as CoWorker } from './person';
```

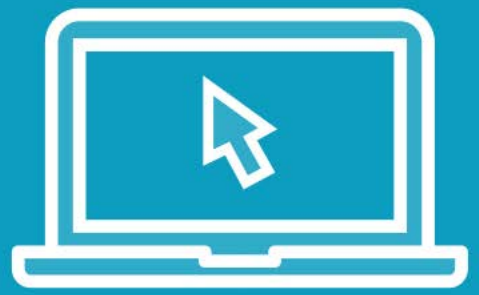
Importing from a Module

```
// player.ts

import { Person, hireDeveloper } from './person';

let human: Person;

import Worker from './person';

let engineer: Worker = new Worker();

import { StaffMember as CoWorker } from './person';

let emp: CoWorker = new CoWorker();

import * as HR from './person';
```

Importing from a Module

```
// player.ts

import { Person, hireDeveloper } from './person';

let human: Person;

import Worker from './person';

let engineer: Worker = new Worker();

import { StaffMember as CoWorker } from './person';

let emp: CoWorker = new CoWorker();

import * as HR from './person';

HR.hireDeveloper();
```

Demo



Converting the demo app to use modules

Relative vs. Non-relative Imports

```
// relative imports

import { Laptop } from '/hardware';
```

Relative vs. Non-relative Imports

```
// relative imports

import { Laptop } from '/hardware';

import { Developer } from './person';

import { NewHire } from '../HR/recruiting';
```

Relative vs. Non-relative Imports

```
// relative imports
import { Laptop } from '/hardware';
import { Developer } from './person';
import { NewHire } from '../HR/recruiting';

// non-relative imports
import * as $ from 'jquery';
import * as lodash from 'lodash';
```

Module Resolution Strategies

```
tsc --moduleResolution Classic | Node
```

Module Resolution Strategies

```
tsc --moduleResolution Classic | Node
```

Module Resolution Strategies

```
tsc --moduleResolution Classic | Node
```

Classic	Node
Default when emitting AMD, System, or ES2015 modules	Default when emitting CommonJS or UMD modules
Simple	Closely mirrors Node module resolution
Less Configurable	More configurable

Resolving Classic Relative Imports

```
// File: /Source/MultiMath/player.ts

import { Developer } from './person';
```

Resolving Classic Relative Imports

```
// File: /Source/MultiMath/player.ts
import { Developer } from './person';
```

/Source/MultiMath/person.ts

/Source/MultiMath/person.d.ts

Resolving Classic Non-relative Imports

```
// File: /Source/MultiMath/player.ts

import { Developer } from 'person';
```

Resolving Classic Non-relative Imports

```
// File: /Source/MultiMath/player.ts
import { Developer } from 'person';
```

```
/Source/MultiMath/person.ts
/Source/MultiMath/person.d.ts
/Source/person.ts
/Source/person.d.ts
(continue searching up the directory tree)
```

Resolving Node Relative Imports

```
// File: /Source/MultiMath/player.ts
import { Developer } from './person';
```

/Source/MultiMath/person.ts

/Source/MultiMath/person.tsx

/Source/MultiMath/person.d.ts

/Source/MultiMath/person/package.json (with "typings" property)

Resolving Node Relative Imports

```
// File: /Source/MultiMath/player.ts
import { Developer } from './person';
```

```
/Source/MultiMath/person.ts
/Source/MultiMath/person.tsx
/Source/MultiMath/person.d.ts
/Source/MultiMath/person/package.json (with "typings" property)
/Source/MultiMath/index.ts
/Source/MultiMath/index.tsx
/Source/MultiMath/index.d.ts
```

Resolving Node Non-relative Imports

```
// File: /Source/MultiMath/player.ts

import { Developer } from 'person';
```

/Source/MultiMath/node_modules/person.ts (person.tsx, person.d.ts)

Resolving Node Non-relative Imports

```
// File: /Source/MultiMath/player.ts

import { Developer } from 'person';
```

/Source/MultiMath/node_modules/person.ts (person.tsx, person.d.ts)

/Source/MultiMath/node_modules/person/package.json (with "typings" property)

Resolving Node Non-relative Imports

```
// File: /Source/MultiMath/player.ts

import { Developer } from 'person';
```

/Source/MultiMath/node_modules/person.ts (person.tsx, person.d.ts)

/Source/MultiMath/node_modules/person/package.json (with "typings" property)

/Source/MultiMath/node_modules/index.ts (index.tsx, index.d.ts)

Resolving Node Non-relative Imports

```
// File: /Source/MultiMath/player.ts

import { Developer } from 'person';
```

/Source/MultiMath/node_modules/person.ts (person.tsx, person.d.ts)

/Source/MultiMath/node_modules/person/package.json (with "typings" property)

/Source/MultiMath/node_modules/index.ts (index.tsx, index.d.ts)

/Source/node_modules/person.ts (person.tsx, person.d.ts)

Resolving Node Non-relative Imports

```
// File: /Source/MultiMath/player.ts
import { Developer } from 'person';
```

/Source/MultiMath/node_modules/person.ts (person.tsx, person.d.ts)

/Source/MultiMath/node_modules/person/package.json (with "typings" property)

/Source/MultiMath/node_modules/index.ts (index.tsx, index.d.ts)

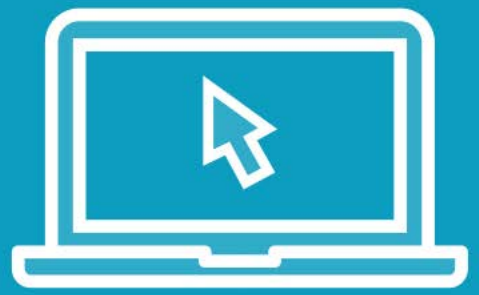
/Source/node_modules/person.ts (person.tsx, person.d.ts)

/Source/node_modules/person/package.json (with "typings" property)

/Source/node_modules/index.ts (index.tsx, index.d.ts)

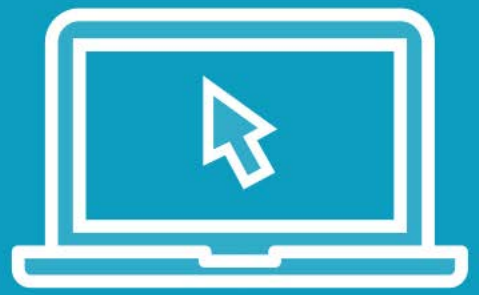
(continue searching up the directory tree)

Demo



Configuring module resolution

Demo



Configuring a module loader

Summary

- Modules provide higher-level abstractions
- Simple syntax
- Flexible usage
- Configurable resolution strategies