Creating and Using Custom Types

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Overview

Interfaces

Classes

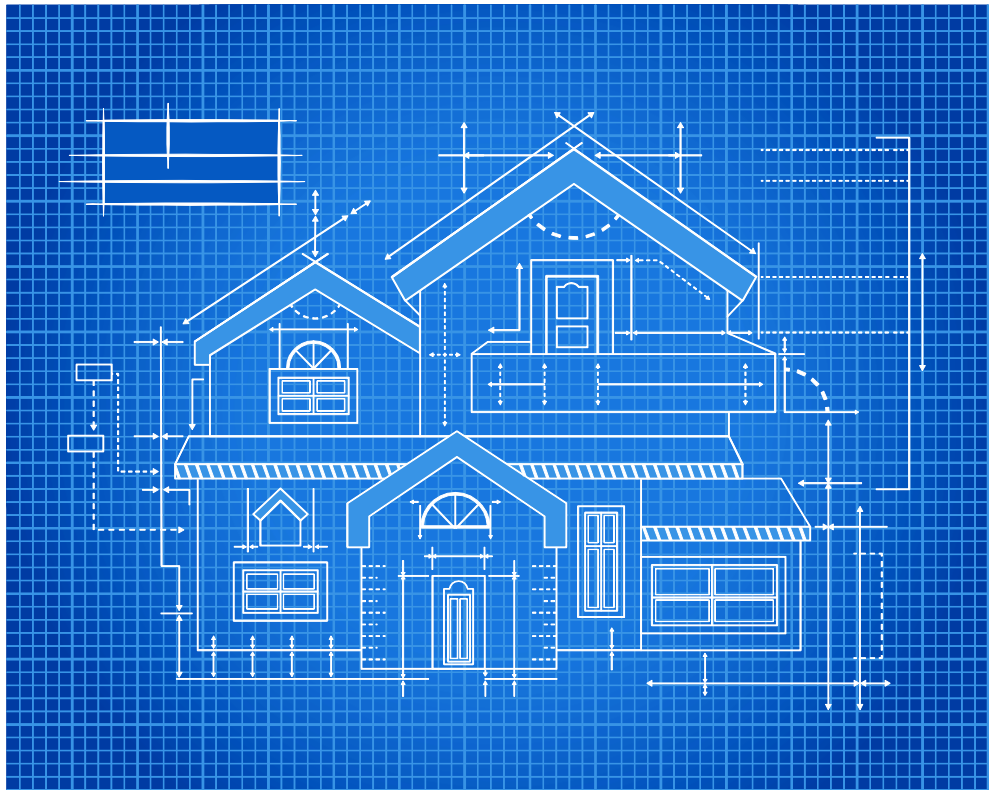
Supporting multi-file projects

Interfaces vs. Classes

Interfaces	Classes
Define a new type	Define a new type
Properties (signatures)	Properties (with implementation)
Methods (signatures)	Methods (with implementation)
Cannot be instantiated	Can be instantiated

Interfaces vs. Classes

Interface



Class

Creating an Interface

```
interface Employee {

}
```

Creating an Interface

```
interface Employee {
    name: string;
    title: string;
}
```

Creating an Interface

```
interface Employee {
    name: string;
    title: string;
}
interface Manager extends Employee {
    department: string;
    numOfEmployees: number;


}
```

Creating an Interface

```
interface Employee {
    name: string;
    title: string;
}
interface Manager extends Employee {
    department: string;
    numOfEmployees: number;


}
```

Creating an Interface

```
interface Employee {
    name: string;
    title: string;
}
interface Manager extends Employee {
    department: string;
    numOfEmployees: number;
    scheduleMeeting: (topic: string) => void;
}
```

TypeScript's Structural Type System

```
interface Employee {
    name: string;
    title: string;
}
let developer = {
    name: 'Michelle',
    title: 'Senior TypeScript Developer',
    editor: 'Visual Studio Code'
}
```

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interface Employee {
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TypeScript's Structural Type System

```
interface Employee {
    name: string;
    title: string;
}
let developer = {
    name: 'Michelle',
    title: 'Senior TypeScript Developer',
    editor: 'Visual Studio Code'
}
let newEmployee: Employee = developer;
```

Demo

Creating interfaces

Class Members

Method implementations

Property implementations

Accessors (getters and setters)

Access modifiers

- Public
- Private
- Protected

Class Members

```
class Developer {
    department: string;
    private _title: string;



}
```

Class Members

```
class Developer {
    department: string;
    private _title: string;
    get title(): string {
        return this._title;
    }
    set title(newTitle: string) {
        this._title = newTitle.toUpperCase();
    }
    documentRequirements(requirements: string): void {
        console.log(requirements);

}
```

Class Members

```
class Developer {
    department: string;
    private _title: string;
    get title(): string {
        return this._title;
    }
    set title(newTitle: string) {
        this._title = newTitle.toUpperCase();
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}
```

Class Members

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class Developer {
    department: string;
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    documentRequirements(requirements: string): void {
        console.log(requirements);

}
```

ECMAScript Private Fields

```
class Developer {

    department: string;

    private title: string;


}
```

ECMAScript Private Fields

```
class Developer {

    department: string;

    private title: string;

    #salary: number;
}
```

ECMAScript Private Fields

```
class Developer {

    department: string;

    private title: string;

    #salary: number;
}
```

Extending a Class

```
class WebDeveloper extends Developer {

}
```

Extending a Class

```
class WebDeveloper extends Developer {
    favoriteEditor: string;
    writeTypeScript(): void {
        // write awesome code
    }
}
```

Extending a Class

```
class WebDeveloper extends Developer {
    favoriteEditor: string;
    writeTypeScript(): void {
        // write awesome code
    }
}
let webdev: WebDeveloper = new WebDeveloper();
```

Extending a Class

```
class WebDeveloper extends Developer {
    favoriteEditor: string;
    writeTypeScript(): void {
        // write awesome code
    }
}
let webdev: WebDeveloper = new WebDeveloper();
webdev.department = 'Software Engineering';
webdev.favoriteEditor = 'Visual Studio Code';
```

Implementing an Interface

```
interface Employee {
    name: string;
    title: string;
    logID: () => string;
}
```

Implementing an Interface

```
interface Employee {
    name: string;
    title: string;
    logID: () => string;
}
class Engineer implements Employee {
    name: string;
    title: string;



}
```

Implementing an Interface

```
interface Employee {
    name: string;
    title: string;
    logID: () => string;
}
class Engineer implements Employee {
    name: string;
    title: string;



}
```

Implementing an Interface

```
interface Employee {
    name: string;
    title: string;
    logID: () => string;
}
class Engineer implements Employee {
    name: string;
    title: string;
    logID() {
        return `${this.name}_${this.title}`;
    }
}
```

Demo

Creating classes

Demo

Configuring a project with multiple source files

Static Members

```
class WebDeveloper extends Developer {
    static jobDescription: string = 'Build cool things!';
    static logFavoriteProtocol() {
        console.log('HTTPS, of course!');
    }



}
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Static Members

```
class WebDeveloper extends Developer {
    static jobDescription: string = 'Build cool things!';
    static logFavoriteProtocol() {
        console.log('HTTPS, of course!');
    }
    logJobDescription(): void {
        console.log(WebDeveloper.jobDescription);
    }
}
```

Static Members

```
class WebDeveloper extends Developer {
    static jobDescription: string = 'Build cool things!';
    static logFavoriteProtocol() {
        console.log('HTTPS, of course!');
    }
    logJobDescription(): void {
        console.log(WebDeveloper.jobDescription);
    }
}
```

Static Members

```
class WebDeveloper extends Developer {
    static jobDescription: string = 'Build cool things!';
    static logFavoriteProtocol() {
        console.log('HTTPS, of course!');
    }
    logJobDescription(): void {
        console.log(WebDeveloper.jobDescription);
    }
}
WebDeveloper.logFavoriteProtocol();
```

Constructors

```
class Developer {
    constructor() {

    }
}
```

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    }
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```
class Developer {
    constructor() {
        console.log('Creating a new developer.');
    }
}
```

Constructors

```
class Developer {
    constructor() {
        console.log('Creating a new developer.');
    }
}
class WebDeveloper extends Developer {
    readonly favoriteEditor: string;
    constructor(editor: string) {
        super();
        this.favoriteEditor = editor;
    }
}
```

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```
class Developer {
    constructor() {
        console.log('Creating a new developer.');
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```

Demo

Refactoring the demo app with classes

Summary

Interfaces and Classes

Structural type system

Supporting multiple source files

Flexibility

Up Next:
Creating and Consuming Modules