Namespaces and Modules

SoftUni Team

Technical Trainers

Software University

Software University

http://softuni.bg

Have a Question?

sli.do

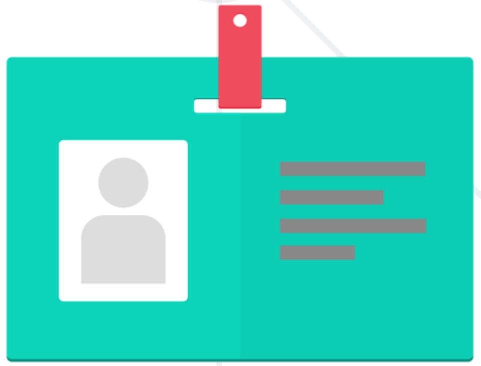
#TypeScript

Table of Contents

Intro to Namespaces

Definition

- Namespaces are used to **logically group** functionalities
- Previously referred as **internal modules** in TypeScript
- Defined with **namespace** keyword
- Namespaces may include **functions**, **classes**, **interfaces** and **variables**



Access

- The elements of the namespace that must be accessed from the outside must be marked with **export** keyword
- In order to access namespaces from different files we must use the reference syntax
  /// <reference path = "file.ts" />

Example: Namespace

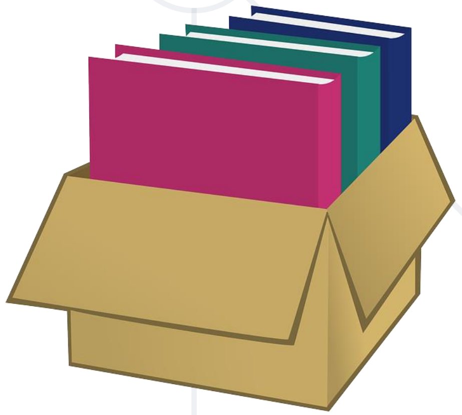
Namespace declaration

```
namespace printMessages {
    export function messenger(message: string | string[])
{
        return `${message}`;
    }
    export interface meetPerson {
        meetPerson(): string
    }
}
console.log(printMessages.messenger('Hello')); //Hello
```

export to use the interface outside

Multiple Files Namespaces

- In order to access namespaces from different files we must use the reference syntax
  /// <reference path = "file.ts" />
- In order to compile the file we must
  - Compile the ts file - **tsc fileName.ts**
  - Use the outFile - **tsc --outFile fileName.js fileName.ts**
  - Compile the js file - **node fileName**



Aliases

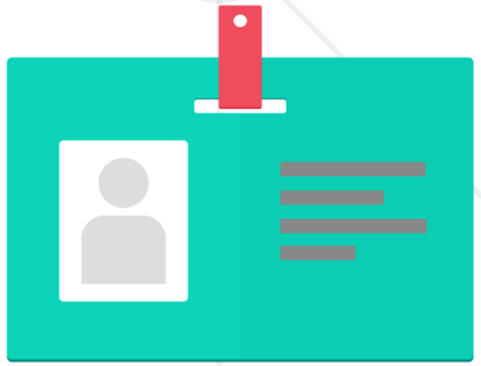
- Used to simplify the work with namespaces
- Used with `import` keyword
- Often used as nested namespaces

```
namespace Shops {
    export namespace TechStores {
        export class PCStore {}
        export class AudioStore {}
        export class TVStore {}
    }
}
--Name of file - app.ts
import stores = Shops.TechStores;
let pcStore = new stores.PCStore();
```

Intro to Modules

Definition

- Modules are executed in their **own scope**, not the global
- A **set of functions** to be included in applications
- Resolve name collisions
- In order to be accessed from the outside they need to be marked with **export** keyword



Access

- To consume a function, class, interface or variable exported from another module we must use an **import** form
  - **import** { name } from "./location" - import specific element
  - **import** * as variable from "./location"; - imports the entire module in single variable

Exporting and Importing

Export Statements

- There are three ways to use **export** statements:
  - A:
    ```
    export function numberValidation(num: number): number {…}
    ```
  - B:
    ```
    export { numberValidation };
    ```
  - C:
    ```
    export { numberValidation as isValidNum }; //isValidNum is alias
    ```
  - D:
    ```
    export default function stringValidations(string: string): string {…}
    ```
- In cases **A** and **B** there is **no difference** rather than syntax
- There might be only one **export default** in a file

Example: Export and Import Statements

```
--exports
export default function checkInput<T>(information: T): T {
    if (information) { return information; }
    else { throw new Error('The information passed is not valid')
}
}
export function stringValidations(string: string): string {
    if (string.length > 0 && string.length <= 20) { return
string; }
    else { throw new Error('String is not valid'); }
}
export function numberValidation(num: number): number {
    if (num > 0 && num <= 999) { return num; }
    else { throw new Error('Number is not valid'); }
}
export { numberValidation as isValidNum };
```

Import Statements and File Compilation

```
--Imports
import * as validations from './validations';
//validations is alias
import checkInput from "./validations";
import { isValidNum } from "./validations";

// Some code logic
```

- In order to compile the file we must
  - Compile the ts file - **tsc fileName.ts**
  - Use the outFile - **tsc --module commonjs fileName.ts**
  - Compile the js file - **node fileName**

Namespaces vs Modules

Namespaces vs Modules

- Namespaces: global containers for code organization
- Enclosed using namespace keyword
- Can be split across multiple files but combined during compilation
- Can contain variables, interfaces, functions, classes, etc.

```
namespace Shapes {
    export interface Circle {
        radius: number;
    }
}
```

Namespaces vs Modules

- Modules: modularize code into separate file
- Enclosed using export and import keywords
- Are more file-based and can be loaded asynchronously
- Can contain variables, functions, classes, etc., but not directly at the root level

```
export interface Circle {
    radius: number;
}

import { Circle } from ‘./circle’;
```

Summary

- Namespaces are logically grouped functionalities
- Modules are a set of functions to be included in applications
- Modules do not pollute the global scope

Software University

Questions?

SoftUni

Software University

SoftUni Creative

SoftUni Digital

SoftUni Foundation

SoftUni Kids

СофтУни БУДИТЕЛ

Finance Academy

SoftUni Diamond Partners

Software University

SmartIT

createX

VIVACOM

INDEAVR
Serving the high achievers

Coca-Cola HBC
Bulgaria

Postbank
Решения за твоето утре

AMBITIONED

SUPER
HOSTING
.BG

DRAFT
KINGS
THE CROWN IS YOURS

PHAR
VISION

Trainings @ Software University (SoftUni)

- Software University – High-Quality Education, Profession and Job for Software Developers
  - softuni.bg, about.softuni.bg
- Software University Foundation
  - softuni.foundation
- Software University @ Facebook
  - facebook.com/SoftwareUniversity

License