Taking Advantage of Built-in Types

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Overview

- Built-in TypeScript types
- Declarations with *let* and *const*
- Type annotations and type inference
- Managing null and undefined
- Control flow-based type analysis

Basic TypeScript Types

- Boolean
- Number
- String
- Array
- Enum

Declarations with *let* and *const*

```
console.log(someString);
var someString = 'Hello World';
```

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const someString = 'Hello World';
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```
console.log(someString);
var someString = 'Hello World';
```

```
let someString = 'Hello World';
console.log(someString);
```

```
const someString = 'Hello World';
console.log(someString);
```

Type Annotations and Type Inference

```
let x: string = 'I will forever be a string.';
```

Type Annotations and Type Inference

```
let x: string = 'I will forever be a string.';
x = 42;
```

Type Annotations and Type Inference

```
let x: string = 'I will forever be a string.';
x = 42;

let y = 'I will also forever be a string.';
```

Type Annotations and Type Inference

```
let x: string = 'I will forever be a string.';
x = 42;

let y = 'I will also forever be a string.';
y = 42;
```

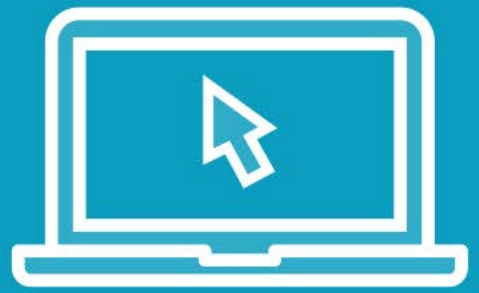
Type Annotations and Type Inference

```
let x: string = 'I will forever be a string.';
x = 42;

let y = 'I will also forever be a string.';
y = 42;

let z = GetSomeValue();
```

Type Annotations and Type Inference

```
let x: string = 'I will forever be a string.';
x = 42;

let y = 'I will also forever be a string.';
y = 42;

let z = GetSomeValue();
let z: number = GetSomeValue();
```

Demo



Using *let* and *const* with type annotations

Additional Built-in Types

Void

Null

Undefined

Never

Any

Union Types

```
let someValue: number | string;
```

Union Types

```
let someValue: number | string;

someValue = 42;

someValue = 'Hello World';

someValue = true;
```

Using the *--strictNullChecks* Compiler Option

Using the *--strictNullChecks* Compiler Option

```
let basicString: string;
basicString = null;
basicString = undefined;
```

Using the *--strictNullChecks* Compiler Option

```
let basicString: string;
basicString = null;
basicString = undefined;

let nullableString: string | null;
```

Using the *--strictNullChecks* Compiler Option

```
let basicString: string;
basicString = null;
basicString = undefined;

let nullableString: string | null;
nullableString = null;
nullableString = undefined;
```

Using the *--strictNullChecks* Compiler Option

```
let basicString: string;
basicString = null;
basicString = undefined;

let nullableString: string | null;
nullableString = null;
nullableString = undefined;

let mysteryString: string | null | undefined;
mysteryString = null;
mysteryString = undefined;
```

Type Assertions

```
let value: any = 5;
```

Type Assertions

```
let value: any = 5;

let fixedString: string = (<number>value).toFixed(4);
```

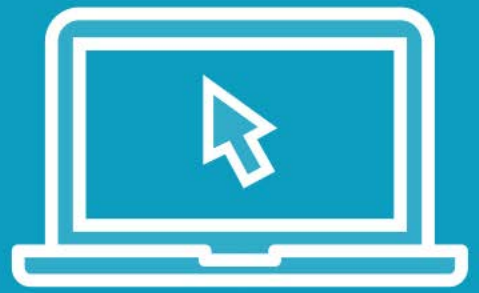
Type Assertions

```
let value: any = 5;

let fixedString: string = (<number>value).toFixed(4);
console.log(fixedString); // 5.0000

let fixedString: string = (value as number).toFixed(4);
```

Type Assertions

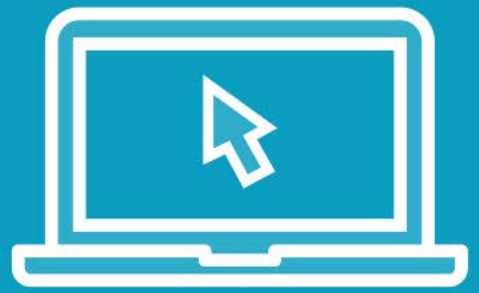
```
let value: any = 5;

let fixedString: string = (<number>value).toFixed(4);
console.log(fixedString); // 5.0000

let fixedString: string = (value as number).toFixed(4);
console.log(fixedString); // 5.0000
```

Demo



Writing better code with the *--strictNullChecks* option

Demo



Understanding control flow-based type analysis

Summary

Reduce confusion and increase clarity

Reduce unintended consequences and increase stability

Maintain flexibility