

## Strings in TypeScript

A **string** in TypeScript is a sequence of characters used to represent text. It can be declared using:

1. **Single quotes** 'like this'
2. **Double quotes** "like this"
3. **Backticks (Template literals)** `like this` – useful when embedding variables inside strings.

```
let str1: string = 'Single quote';
```


```
let str2: string = "Double quote";
```


```
let str3: string = `Backtick`;
```

### Why use Backticks?

Backticks allow **template literals**, which support **string interpolation** using `${}`:

```
let num: number = 10;
```

```
console.log(`Number is: ${num}`); //  Correct way
```

 'Number is: \${num}' or "Number is: \${num}" won't work as expected.

### Common String Methods

```
let greeting: string = "Hello, TypeScript!";
```

1. **.length** – Get the number of characters  
`greeting.length` → 18
2. **.toUpperCase()** / **.toLowerCase()** – Change case  
`greeting.toUpperCase()` → HELLO, TYPESCRIPT!  
`greeting.toLowerCase()` → hello, typescript!
3. **.charAt(index)** / **.indexOf(substring)** – Get a character or find a substring  
`greeting.charAt(4)` → o  
`greeting.indexOf("Type")` → 7
4. **.substring(start, end)** – Extract a part of the string  
`greeting.substring(7, 11)` → Type
5. **.includes(substring)** – Check if a substring exists  
`greeting.includes("Script")` → true

6. **.startsWith() / .endsWith()** – Check start or end of string  
greeting.startsWith("Hello") → true  
greeting.endsWith("!") → true
7. **.replace(old, new)** – Replace part of a string  
greeting.replace("TypeScript", "World") → Hello, World!
8. **.split(delimiter)** – Split into array  
greeting.split(" ") → [ 'Hello,', 'TypeScript!' ]
9. **.trim() / .trimStart() / .trimEnd()** – Remove extra spaces  
Removes spaces from start, end, or both.

## String Immutability

Strings are **immutable** – once created, they can't be changed. Methods return **new strings**:

```
let original = "Hello";  
  
let modified = original.concat(", World!");  
  
// original is still "Hello"
```

## Multi-line Strings

Using backticks allows strings to span multiple lines:

```
let multiLine = `Line one  
  
Line two  
  
Line three`;
```