TypeScript OOP Access Modifiers (Public, Protected, Private)

Access modifiers in TypeScript are used to control the visibility (scope) of class members (properties and methods).

```
| Modifier   | Inside Class | Subclass | Outside Class |
|-------------|--------------|-----------|----------------|
| public      | ■ Yes        | ■ Yes     | ■ Yes          |
| protected   | ■ Yes        | ■ Yes     | ■ No           |
| private     | ■ Yes        | ■ No      | ■ No           |
```

Example 1: Class with all modifiers

```
ts
class Person {
  public name: string;
  protected age: number;
  private salary: number;

  constructor(name: string, age: number, salary: number) {
    this.name = name;
    this.age = age;
    this.salary = salary;
  }

  public introduce(): void {
    console.log(`Hi, my name is ${this.name}.`);
    console.log(`I am ${this.age} years old.`);
  }

  private calculateBonus(): number {
    return this.salary * 0.1;
  }

  public showBonus(): void {
    console.log(`My yearly bonus is ${this.calculateBonus()} USD.`);
  }
}
```

Example 2: Using 'protected' in inheritance

```
ts
class Employee extends Person {
  private department: string;

  constructor(name: string, age: number, salary: number, department: string) {
    super(name, age, salary);
    this.department = department;
  }

  public getDetails(): void {
    console.log(`Employee: ${this.name}`);
    console.log(`Age: ${this.age}`);
    console.log(`Department: ${this.department}`);
  }
}
```

Example 3: Shortcut in Constructor

```
ts
class Car {
  constructor(
    public brand: string,
    private engineNumber: string,
```

```
    protected speed: number
  ) {}

  public showInfo(): void {
    console.log(`Brand: ${this.brand}, Speed: ${this.speed}`);
  }
}

class SportsCar extends Car {
  public accelerate(): void {
    this.speed += 50;
    console.log(`${this.brand} now at ${this.speed} km/h`);
  }
}
```

■ ■■■ ■■■■■■■■:

■■ ■■■■■■■ ■■■■■■■■ (OOP) ■■ TypeScript■ ■■■■■■ ■■■■■■ ■■ ■■ ■■■■■■ ■■■■■■ ■■■ ■■■■■■ ■■■■ ■■■■■■: **public**: ■■■■ ■■■■■■ ■■■■ ■■ ■■ ■■■■. **private**: ■■■■ ■■■■■■ ■■■■ ■■■ ■■■■ ■■■ ■■■■■■. **protected**: ■■■■ ■■■■■■ ■■■■ ■■■■ ■■■■■■ ■■■■■■ ■■ ■■■■■■■■ ■■■■■■■■ ■■■. ■■■ ■■■■■■■■ ■■■■■ ■■■ ■■■■■ ■■■■■■■■ ■■■■■■ ■■■■■ ■■■■ ■■■■■■■ ■■■■ ■■■■■■ ■■■■■■■ ■■■■■■■.