# Introduction to TypeScript



# Background



#### What is TypeScript?

TS is a superset of JS

TS code compiles to JS

→ only compile time safety, at runtime still JS

Generated JS can have different targets:

- Browser + different JS version
- Node

### Situation without TypeScript

One variable different types
let person = "Max";
// ...
person = { name: "Max", age: 20 };

### Situation without TypeScript

**Unclear functions** 

```
function registerPerson(name, age) {
    // ...
}
```

#### Situation without TypeScript

```
/**
 * JSDoc example
 * @param name {string}
 * @param age {number}
 * @return {Person}
 */
function registerPerson(name, age) {
    // ...
}
```

## Why Typescript?

Strict type safety

Self documenting code

 $\rightarrow$  better autocompletion

Adds features which are missing or complicated in JS

# Syntax



## Variable Types

```
Explicit
// explicit type number
let age: number;

Implicit
// implicit type string
let name = "Max";
```

## Types - Primitives

- string
- boolean
- number
- bigint
- symbol
- null
- undefined

## Types - Other

- any
- unknown
- never

#### Types - Arrays & Tuples

```
// array of type number
number[]

// Tuple
let person: [string, number];
person = ["Max", 20];
```

#### Types - Functions

```
let equals: (a: number, b: number) => boolean;
function equals(a: number, b: number): boolean {
    return a === b;
}
```

#### Much more

```
// unions
let direction: "north" | "east" | "south" | "west";
// enums
enum Direction {
    north, east, south, west
// type aliases
type Direction = "north" | "east" | "south" | "west";
let direction: Direction;
// casting
document.getElementById("main") as HTMLDivElement;
```

#### Interfaces

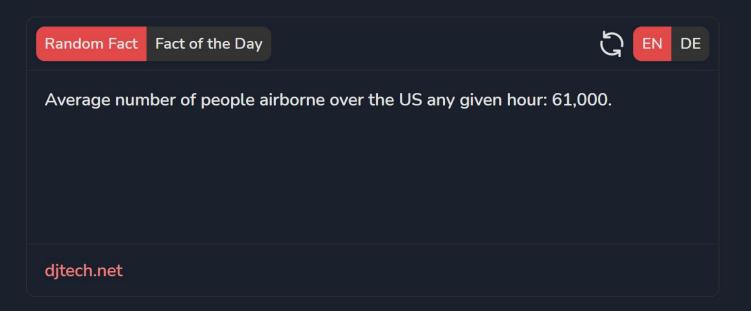
```
interface Person {
    name: string;
    age: number;
    other?: string
const max: Person = {
    name: "Max",
    age: 20
    // other is optional
```

## Hands on



#### **Useless Fact Generator**

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#### Random Useless Facts API

#### uselessfacts.jsph.pl

#### **Endpoints:**

https://uselessfacts.jsph.pl/random.json

https://uselessfacts.jsph.pl/today.json

#### Parameter:

language = "en" or "de"

#### Reponse

```
GET https://uselessfacts.jsph.pl/random.json?language=en
{
    "id": "668684e3-54a4-...",
    "text": "There is approximately one
chicken for every human being in the
world.",
    "source": "djtech.net",
    "source_url": "http://www.djtech...",
    "language": "en",
    "permalink": "https://uselessfacts..."
}
```

# github.com/...



The End

