Aliases with the Structural Behavior of TypeScript

This lesson demonstrates the foundamental aspect of TypeScript to rely on objects' structures.

WE'LL COVER THE FOLLOWING

The structural nature of TypeScript

TypeScript is a **structural language** and *not* a nominal language. This means that TypeScript compares the structure and not the name of an object to determine if the objects are similar.

The following code has a function that takes an anonymous type that has a property `name`. The example has three ways to call the function:

1. interface,
2. type, and
3. anonymous object.

It works in all three scenarios because they have the exact shape needed.

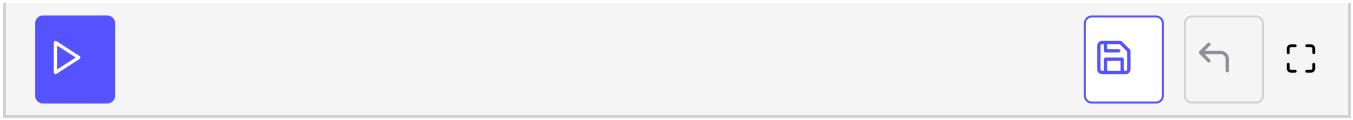
In the following code, there is `MyTypeA` that is defining a schema for an object with a single member `name` at **line 2**. At **line 4**, the type is the same which is also equivalent to the anonymous parameter at **line 6**.

Lines 10-11 define the two types and at **lines 12-13** invoke the function even if not the anonymous parameter. It works because they have the same structure. TypeScript is not nominal, but a structural language. Hence, at **line 14** the function can also be invoked.

```
interface MyTypeA {
  name: string; // Same property name-type than line 4 and 6
}
type MyTypeB = { name: string }; // Notice the name property is the same as the anonymous at

function ouputName(obj: { name: string }): void { // Anonymous type for first parameter
  console.log(obj.name);
}

let typeA: MyTypeA = { name: "A" }; // TypeA
let typeB: MyTypeB = { name: "B" }; // TypeB
ouputName(typeA);
ouputName(typeB);
ouputName({ name: "C" }); // Also anonymous
```



Adding an additional field

What is important to understand is that it does not need to match perfectly the desired type. The type must be at least structurally fully compatible but can have additional fields. The following example has `InterfaceB` having the additional `id` at **line** 7. Even if the field is not required at **line 13** the invocation compiles because of the structural behavior of TypeScript.

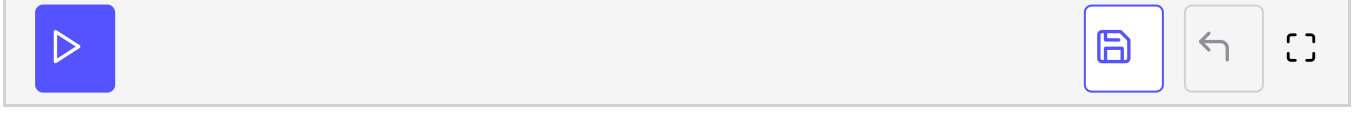
```
interface InterfaceA {
  name: string;
}

interface InterfaceB {
  name: string;
  id: number;
}

let intA: InterfaceA = { name: "A" };
let intB: InterfaceB = { name: "B", id: 2 };

function ouputName(obj: { name: string }): void {
  console.log(obj.name);
}

ouputName(intA);
ouputName(intB);
```



An alternative of the code above is:

```
interface InterfaceA {
```

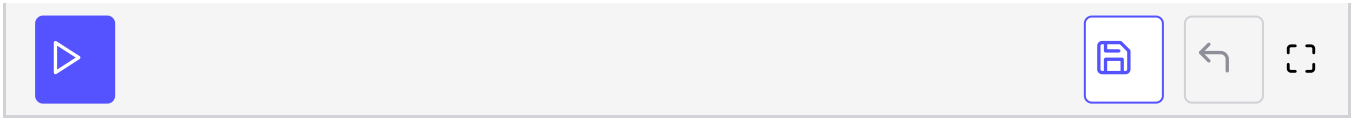
```
  name: string;
}

interface InterfaceB {
  name: string;
  id: number;
}

let intA: InterfaceA = { name: "A" };
let intB: InterfaceB = { name: "B", id: 2 };

function outputInterfaceA(obj: InterfaceA): void { // Not anonymous
  console.log(obj.name);
}

outputInterfaceA(intA);
outputInterfaceA(intB); // Interface B can substitute for Interface A
```



Even though the `InterfaceA` is required at **line 13** and that `InterfaceB` does not implement or extends `InterfaceA`, it transpiles because it has all the structural fields (`name: string`).

Improving our code

That being said, a better code would remove the redundancy by extending `InterfaceA`.

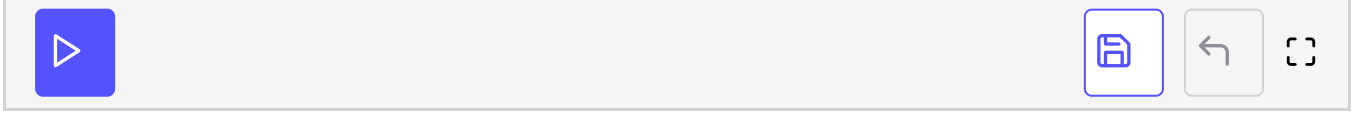
```
interface InterfaceA {
  name: string;
}

interface InterfaceB extends InterfaceA {
  id: number;
}

let intA: InterfaceA = { name: "A" };
let intB: InterfaceB = { name: "B", id: 2 };

function outputInterfaceA(obj:InterfaceA): void {
  console.log(obj.name);
}

outputInterfaceA(intA);
outputInterfaceA(intB);
```



In this lesson, we saw that what matter to TypeScript is to fulfill a structural

contract, not a nominal one. This means we can create an alias or a shortcut,

to different structures as we wish. In the upcoming lesson, we will see different kinds of aliases.