Aliases with Type

In this lesson, we will see how to create aliases for types.

WE'LL COVER THE FOLLOWING

Type aliases are the notion shortcut names for existing types, or many types under a single name. The goal of creating an alias is to increase the readability of the code as well as to have a reusable and common way to identify a type.

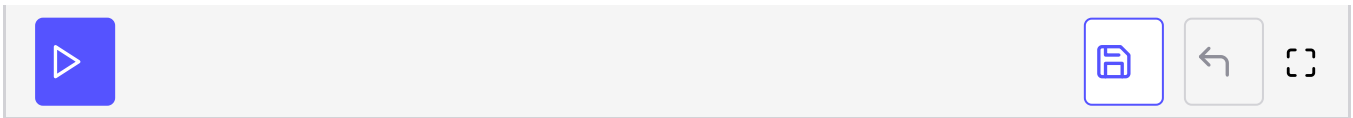
Type aliases for primitives

At its simplest, an alias can represent a single primitive. The alias will have the same properties as the underlying primitive type. The following example shows that the function takes an `IP` as the type, which is a `string` at **line 3**. The difference is that the readability of the code is better by self-documenting what we expect of that string to be – an IP address.

```
type IP = string;

function giveLenght(ip: IP): void {
  console.log(ip.length);
}

giveLenght("127.0.0.1"); // Works with a string that is an IP
giveLenght("NotI"); // Works with a string that is not an IP
const localHost:IP = "127.0.0.1";
giveLenght(localHost); // Works with IP
```



The output of the previous example are working with a real IP at **line 7** as

well as a string that is an invalid IP at **line 8** and also works (as expected) with the type `IP`.

Type aliases for unions

An everyday use case is to gather many primitive types under a type alias. This avoids repeating the union over and over.

For example, instead of writing:

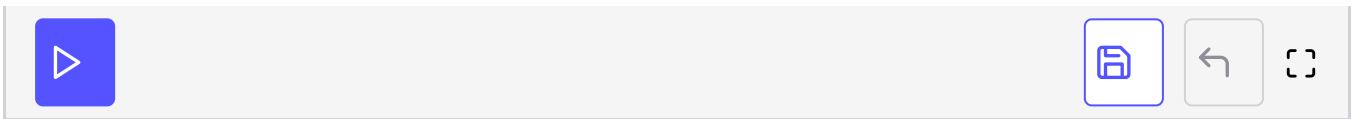
```
function setId(id: number | string | null): void { }
function getId(): number | string | null{ return null; }
function validId(id: number | string | null): void { }
```

You could write:

```
type ID = number | string | null;
function setId(id: ID): void { }
function getId(): ID { return null; }
function validId(id: ID): void { }
```

Not only does this have less repetition, it is also clearer about the ID and is easier to modify the type later. For example, removing `null` at **line 1** would be a single line change instead of many in the following code:

```
type ID = number | string | null;
function setId(id: ID): void { }
function getId(): ID { return null; }
function validId(id: ID): void { }
```



Alias with a function type

A type alias can be used for an array, other types, and even functions. If you are using a function in a parameter and it needs a specific arrangement of parameters, it is often clearer to use an alias.

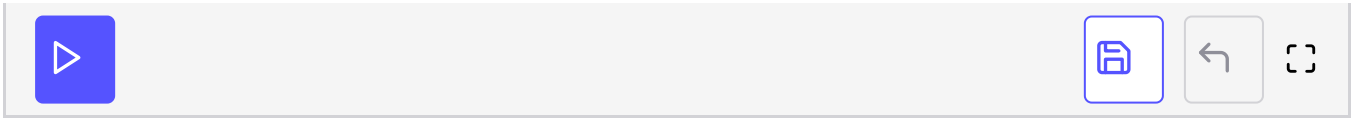
Instead of:

```
function execute(code: (id: number, name: string) => boolean, error: (message: string) => voi
  if (!code(1, "Name1")) {
    error("Does not work");
  }
}

const myAlgorithm: (id: number, name: string) => boolean = (id: number, name: string): boolea
  return false;
}

const errorHandling: (message: string) => void = (message: string): void => {
  console.log(message);
}

execute(myAlgorithm, (errorHandling));
```



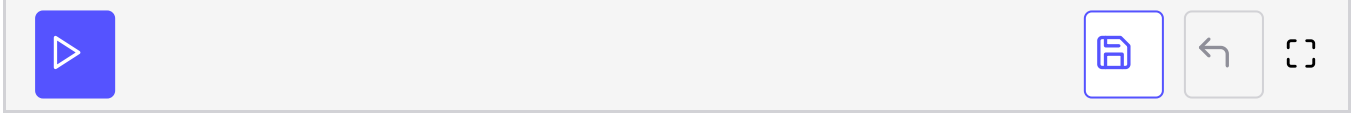
You could write with a function type alias that are defined at **line 1-2** in the following example. Compare the previous example **line 1** with the next **line 3**. The next example should be easier to read comparing to the previous example.

```
type Code = (id: number, name: string) => boolean;
type ErrorCallback = (message: string) => void;
function execute(code: Code, error: ErrorCallback): void {
  if (!code(1, "Name1")) {
    error("Does not work");
  }
}

const myAlgorithm: Code = (id: number, name: string): boolean => {
  return false;
}

const errorHandling: ErrorCallback = (message: string): void => {
  console.log(message);
}

execute(myAlgorithm, (errorHandling));
```



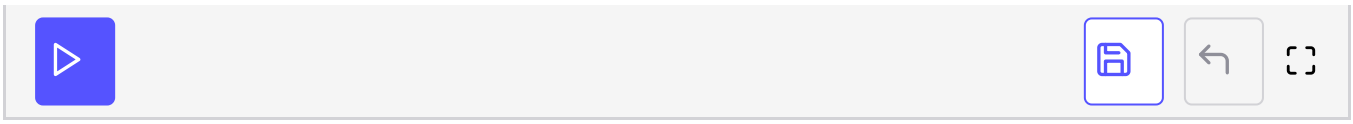
It is also possible to mix primitives and functions. Take a look at **line 3**. A use case that we see often with API is when a name can be provided or a dynamic way to find the name can be used.

```
type Name = string;
```

```
type DynamicName = () => string;
type NameFinder = Name | DynamicName; // Primitive and a function
function getName(name: NameFinder): Name {

  if (typeof name === "string") {
    return name;
  }
  else {
    return name();
  }
}

console.log(getName("Name1"));
console.log(getName(() => { return Math.random() > 0.5 ? "Random1" : "Random2" }));
```



Alias helps bridging the gap of comprehension by documenting in a qualitative way the expectation of a variable type.