

Week 4: Type manipulation

TypeScript's type system allows for expressing types in terms of other types. This allows for some very powerful manipulation.

Objectives

- Understand Generics
 - Implement own function for Generics
 - Ability to work with Generic Type variables
 - Identify use cases for Generics
- Mapped Types
- Setting up your own Typescript environment

Pework

None

Materials

Typescript basics

- [Documentation - Generics | TypeScript](#)
- [How To Use Generics in TypeScript | DigitalOcean](#)
- [Generics | Learn TypeScript](#)
- [Mapped Types | Typescript](#)
- [Mapped Types | Learn TypeScript](#)

Exercises

- [TypeScript Basic Generics | W3C](#)
(for the last exercise:
<https://www.typescriptlang.org/docs/handbook/utility-types.html#handbook-content>)

Tools

- [TS Playground - An online editor for exploring TypeScript and JavaScript](#)

Assessments

[Create a new repository on Github](#) on Github hyf-digitalents-typescript-week4. Clone your new repository locally on your computer and create the following in the project folders.



Attention: You need to set up your own environment for this assessment, make sure to use Typescript.

- assessment1

Please submit each assessment on Github and update your instructor about the submission.

Assessment 1: What's inside the box

Create a program that allows us to store objects in boxes.

There are two types of boxes: a small box (SmallBox) and a big box (BigBox). A small box can only hold small objects. A big box can hold big objects. At any given point there is only one small box and one big box.

You should be able to add an item to a box, remove an item or empty the entire box.

Items are stacked in the box, if you remove an item you can only remove the item on top of the stack.

The small box can only hold a total of 100 gram worth of items, the big box can hold 30 kilogram worth of items. Adding additional items when the box reaches its maximum capacity should not be possible.

Requirements

- Pay attention to using strict types
- Use at least one Generic in your solution.

Small Objects

Paper	
Size	Enum {A4, A5, A6, A7}

Weight (in gram)	number
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Pencil	
Weight (in gram)	number

Big Objects

TV	
Type	Enum {LCD, OLED}
Weight (in gram)	number

Speaker	
Capacity (in Watts)	number
Weight (in gram)	number

Sample output

BOXES	
Small Box	

empty	

Big Box	

empty	

With which box do you want to interact? (1) Small Box, (2) Big Box
1

What do you want to do? (1) add an item, (2) remove an item, (3)
empty the box
2

The box is currently empty!

Small Box

empty

Big Box

empty

With which box do you want to interact? (1) Small Box, (2) Big Box
1

What do you want to do? (1) add an item, (2) remove an item, (3)
empty the box
1

What item do you want to add? (1) Paper, (2) Pencil
1

What is the size?
A4

What is the weight?
1

Small Box

paper - a4 - 1g

Big Box

empty

With which box do you want to interact? (1) Small Box, (2) Big Box
1

What do you want to do? (1) add an item, (2) remove an item, (3)
empty the box
2

Small Box

empty

Big Box

empty



Hint: The boxes behave identical. You could say they are quite generic.