

HIGHER-ORDER FUNCTIONS

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Functions are first-class



Functions are values!

They can be passed as arguments or returned as values from other functions.

Functions that take functions as arguments are called higher-order functions.





Higher-Order Functions

map Method

filter Method

flatten Method*

flatMap Method





map Method

Iterates over a collection and applies a function to each element within the collection.

Map each element from the input collection to the corresponding element in the output collection.

```
def map[A, B](l: List[A])(f: A => B): List[B] = l match {  
  case Nil => Nil  
  case h :: t => f(h) :: map(t)(f)  
}
```





flatten Method*

**Returns a single collection by merging
child collections**

*** Not a higher-order function**





filter Method

Selects all elements of a collection that satisfy a given predicate

A predicate is a function that returns a boolean value.



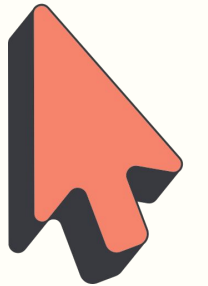


flatMap Method

Maps a collection and then flattens it



When to use



map

When you want to apply a function to every element in a collection

flatMap

When you want to apply a function to every element in a collection, but doing so results in mini collections within the output collection

THANK YOU!





CREDITS

SlidesCarnival for the presentation template

[Scala Tutorial 24 - map, flatMap, flatten, and filter](#) by ProgrammingKnowledge

Principles and Practice of Programming Languages Course Notes by Professor Bor-Yuh Evan Chang