

## Chapter 5 - List Comprehensions

→ In Haskell new lists can be constructed using old lists

Ex:  $[x^2 \mid x \in [1..5]] \rightarrow$  will square each of them

→ In list the order matters

→  $x \in [1..5]$  This is a generator, comprehensions can have multiple generators separated by commas.

→ Changing the order of generators changes the order in the final list

→ Multiple generators are like nested for loops.

→ Dependant generators rely on values from earlier generators

Ex:  $\text{concat} :: [[a]] \rightarrow [a]$

$\text{concat } xss = [x \mid xs \leftarrow xss, x \leftarrow xs]$

$\text{concat } [[1,2,3], [4,5], [6]]$

↳ returns  $[1,2,3,4,5,6]$

→ Guards can restrict values from earlier generators

Ex:  $[x \mid x \in [1..10], \text{even } x]$

↳ filter / remove

→ String comprehensions

Ex:  $"abc" :: \text{String} \rightarrow$  List of chars for Haskell

Exercise in List Comprehensions Exercises.hs