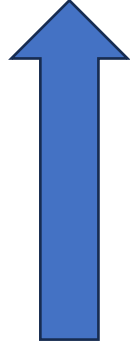


$\text{concat } xss = [x \mid xs \leftarrow xss, x \leftarrow xs]$

$[1,2,3]$  $[1,2,3]$

$[[1,2,3], [4,5], [6]]$

```
ghci> concat [ [1,2,3],[4,5],[6] ]  
[1,2,3,4,5,6]
```

`pairs xs = zip xs (tail xs)`

`[1,2,3,4] [2,3,4]`

`[(1,2),(2,3),(3,4)]`

`ghci> pairs [1,2,3,4]`

`[(1,2),(2,3),(3,4)]`

`sorted xs = and [x ≤ y | (x,y) ← pairs xs]`

`[(1,2),(2,3),(3,4)]`

`[(1,3),(3,2),(2,4)]`

`ghci> sorted [1,2,3,4]`

`True`

`[True, True, True]`

`ghci> sorted [1,3,2,4]`

`False`

`[True, False, True]`

positions x xs =

$$[i \mid (x', i) \leftarrow \text{zip } \textcolor{red}{xs} \textcolor{blue}{[0..]}, x == x']$$

[1,0,0,1,0,1,1,0] [0,1,2,3,4,5,6,7,..]

```
ghci> positions 0 [1,0,0,1,0,1,1,0]
[1,2,4,7]
```