CMPT 383: Vitamin #2

Anders Miltner
miltner@cs.sfu.ca

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Introduction

This Vitamin is here to get you accustomed to working with algebraic data types like product and sum types, and with higher order functions.

This submission will be autograded. There are some portions of the assignment that are ungraded, and some that will be graded. We provide a (partial) test suite for partial validation. You can run these tests by opening a terminal in the v2 directory, and running `stack test`.

We have included explicitly some imports, and have omitted some. If you import additional functions, you may get a zero on the assignment.

1 ListHOFs

The ListHOFs file contains some stubbed-out functions on lists. Some of these functions are higher order functions, some are not higher-order functions, and some are most easily implemented using higher-order functions.

You can implement these any way you wish. However, doing everything with pattern matching and recursion, rather than instantiating higher-order functions will become harder and harder as the class goes on – it is better to try using a relevant higher-order function when one is available.

Test based specifications are provided in the ListHOFsTests.hs file.

2 TreeHOFs

The TreeHOFs file contains an algebraic data type formalization for trees, and some stubbed-out functions on these trees.

Some of these are the tree analogues of list functions, like fold and map. Looking at the definitions of those list-based functions may be hepful for defining these functions on trees.

You can implement these any way you wish. However, doing everything with pattern matching and recursion, rather than instantiating higher-order functions will become harder and harder as the class goes on – it is better to try using a relevant higher-order function when one is available.

Test based specifications are provided in the TreeHOFsTests.hs file.