Module 7a: Two One-Of Types

CPSC 110

Peyton Seigo

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Learning goals

- Be able to produce the cross-product of type templates table for a function operating on two values with one-of types.
- Be able to use the table to generate examples and a template.
- Be able to use the table to simplify the function when there are equal answers in some cells.

Function Model: Cross Product of Type Comments Table

- Cases of the `one-of` type comments go along the axes
  - The two arguments don't have to be the same type, but both must be a `one-of`
- Generate tests for each cross product cell in the table

Example for `ListOfString ListOfString -> x`:

los1 (right) los2 (down)	**empty**	**(cons String ListOfString)**
empty	true	false
(cons String ListOfString)	true	and firsts are equal; natural recursion

In the video, we only had one test for each box, except for the bottom right. For "both lists are not empty," we generated several more tests to satisfy **2-deep**, los1 longer than los2, los1 shorter than los2, and a few more conditions where the function passes or fails with 2 or 3 deep lists.

Models

- Type comments predict the templates
  - A type comment is a **model** of the functions operating on that type
  - Non-code representation of the program
  - Tells us what the function will look like
- Using a cross product of type comments table: simplifying at a **model level**
  - Simplifying without looking at details of code