Naturals Module

Help

This module deals with functions operating on Natural numbers. We'll find that this comes naturally after the Self-Ref and Ref modules.

The last video in the module is a bit of brain candy. Or perhaps it's a brain http://en.wikipedia.org/wiki/Gobstopper. It's kind of wild, and intended to show you how much power you wield as a program designer. Have fun with it. But if it's too much feel free to come back to it later. If you do master it then avoid the temptation to tell people you meet about it at a party. You may find them smiling politely and backing away from you a bit.

The material in this module should take **approximately 3-5 hours** of dedicated time to complete, including working along with the lecture videos, doing the practice problems, doing the homework problems and the short quiz.

Learning Goals

- Be able to write functions that operate on naturals.
- Be able to design a simple alternative representation for natural numbers.

Lecture Videos, Notes and Starter Files

Topic	Length (mm:ss)	Starter File	Downloads
Naturals - Natural Numbers There are arbitrarily many natural numbers, so we can use a well-formed self-referential data definition to describe the type Natural. Doing so makes it easy to design functions that count down from a given natural number to 0.	12:55	naturals-starter.rkt	
Naturals - A Parlor Trick If DrRacket didn't have naturals numbers as a primitive type what would we do? Easy, use HtDD and HtDF to define them.	16:18	new-numerals-starter.rkt	

Lecture Problems

Module Kind #	Assignment	Duration	Difficulty	Code Files	Requires Lecture
Naturals L1	Design functions that operate on the Natural data definition.	25 min.	●	naturals-starter.rkt naturals-	Naturals - nat nums

				solution.rkt	
Naturals L2	Design functions that does arithmetic operations on the NATURAL data definition.	50 min.		new-numerals-starter.rkt new-numerals-solution.rkt	Naturals - parlor

Practice Problems

Module Kind #	Assignment	Duration	Difficulty	Code Files	Requires Lecture

Homework Problems

Module Kind #	Assignment	Duration	Difficulty	Code Files	Requires Lecture

Module Quiz

Be sure to complete the homework problems before you do the module quiz. The quiz itself can be found on the All Quizzes page.

Tips for Success

Practice writing functions on naturals!

Trust the method to guide you through these problems.

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