PLC: Workout 7 [90 points]

Due date: Wednesday, April 29th by midnight

About This Homework

This assignment is about inductive theorem proving in Agda. The theorems you will prove are about some operations on natural numbers, and some on trees. For inductive theorem proving, see the course materials for the week of April 13 - 17.

How to Turn In Your Solution (Updated)

Please submit your solution via ICON. Here are some new requests for the format of submissions:

- Please just submit a zip file for your whole `workout7` directory. This will make it easier to autograde.
- If you are working with a partner, only one of you should submit the workout, and
- that person should include a partners.txt file that lists both the partners' full names (not HawkIds)

Partners Allowed

You may work alone or with one partner. See previous subsection for how to indicate you worked with a partner.

How To Get Help

You can post questions in the `workouts` section on Piazza.

The course staff will be holding office hours by Zoom, at times to be announced on Piazza. Please check Piazza and the course calendar for these:

`https://calendar.google.com/calendar/embed?src=a5d6qokrert25ce093iksp8np0%40group.calendar.google.com&ctz=America%2FChicago`

1 Reading

Read Chapter 5 of Verified Functional Programming in Agda, available for free (on campus or VPN) here:

`https://dl-acm-org.proxy.lib.uiowa.edu/doi/book/10.1145/2841316`

2 Theorems about operations on natural numbers

There are four theorems to prove about operations on natural numbers, in `natThms.agda`. Each is worth 10 points. The file gives some hints.

3 Theorems about trees

There are five theorems to prove about operations on binary trees, in `treeThms.agda`. Each is worth 10 points. There are a few hints in the file.