

PLC: Homework 2 [100 points, 120 max]

Deadline

If the first letter of your HawkId is between 'a' and 'k' inclusive, then your solution is due by 9pm Wednesday, February 12th. Otherwise, it is due by 9pm Friday, February 14th. As mentioned in class, students with HawkIds between 'a' and 'k' inclusive will be submitting Wednesdays before Spring Break, and then they will be submitting Fridays after Spring Break.

Remember that late homework is **not** accepted, but we will use second-chance grading as for hw1.

Subversion, Partners

The same instructions as for hw1 apply for turning in your solution via subversion, and for extra files you need to submit if you are working with a single partner. Second-chance grading as for hw1 applies to this assignment.

For this assignment, you will check in a file to the `hw2` subdirectory of your personal repository (see hw1 instructions for how to check out this repository). If you look in your personal repository and do not see a `hw2` directory, then just do a “SVN Update” on your personal repository. On Windows with TortoiseSVN, just right-click on the directory for your personal repository and select “SVN Update”. On Linux/Mac, open a Terminal, change to the directory for your personal repository, and run “`svn update`”.

1 Reading

Read Chapter 3 of the book, which you can find as `book/book.pdf` in the class repository, or directly here:

<https://svn.divms.uiowa.edu/repos/clc/class/111-spring14/book/book.pdf>

I will likely still be working on Chapter 3 until February 5th, but there is already enough there to start studying.

2 Problems

Copy the file `nat-todo.agda` from the `hw/hw2/` subdirectory of the class repository to the `hw2` subdirectory (see above) of your personal repository, on your computer or in your account on the CS lab machines. You will be filling in code in this file `nat-todo.agda`, and then adding and committing it to your personal repository to turn it in, as for hw1.

The holes in `nat-todo.agda` are worth different numbers of points, roughly corresponding to how difficult I believe the problems are. I have not actually tried doing these proofs myself, and there may be some surprises. But hopefully problems worth less are easier.

Some hints or further explanations for some of the problems are given in comments in `nat-todo.agda`. You are free to use any functions or theorems from the library or that we proved in class, except that for one problem, `+’comm`, I am explicitly prohibiting you from using one particular theorem from the library, `+comm`. See the comment for that problem.

You are free to fill in any holes you want. A perfect score is 100. We will not give any more points after 120, however.

Very important: as for hw1, for any holes you choose not to fill in, you should remove those problems from the file before you submit. In the end, we are requiring the file you submit to check in Agda, and not to contain any holes. Your file may contain other Agda code or comments if you like. Do not change the names of any of the functions or theorems in the file.

Warning: this homework is substantially more difficult than hw1 was.

3 Grading, Help

As for hw1, we will first confirm that your file can be checked in Agda, and that it does not contain any holes. Then we will determine which problems you solved, in order to compute your grade. For holes 0 and 1 (the definition of the `pow` and `factorial` functions), we will just confirm that your code gives the correct output for a few test inputs. For the other holes, we will just check that what you proved indeed has the desired type.

As for hw1, you can post questions in the `hw2` section on Piazza. You can also post in the `agda/emacs` section if your question is more about just using Agda and `emacs`. If you have a `hw2` question which is generic, not revealing too much of the solution you are attempting, you can post it for everyone to see on Piazza. Otherwise, just post it for the instructors only. We may subsequently make your question (and our answer) public, if we feel it would help other students. For truly private questions about the homework or class in general, please just email us.

You are also welcome to come to our office hours. See the “Course Staff” section of the Piazza page for times and locations of office hours, which may change slightly for the week of February 10th through 14th.