

## CSCE 531 Spring 2022 Project 1

Due on Tuesday, February 22, 2022

### Part 1.

Install BNFC and the Haskell Platform on your computer.

Follow the steps described in sections 2.1 and 2.2 [R] and verify that you obtain the files described there for Haskell. For Haskell, continue to the end of “Running BNF for Haskell.” For Java, stop with the line before “make” on p.19.

Submit a pdf document with a script or screenshot showing the files in your directory of folder and, for Haskell, the result of running the example at the bottom of page 17. (One makefile will be renamed by BNFC; that is fine.)

### Part 2.

Implement a calculator in Haskell as described in Section 2.6 [R].

Submit a pdf document with scripts or screenshots showing the files in your directory of folder and the result of running the command line input in sections 2.6.

## Tips on how to complete PR1 successfully for CSCE 531 students, Spring 2022

Use a recent latest version of bnfc, version found at <http://bnfc.digitalgrammars.com/download/>, which includes other, older, versions. In turn, this site is linked to Arne Ranta’s textbook website, <http://www.grammaticalframework.org/ipl-book/>. (We refer to this textbook as [R].) (I use version 2.8.3.)

I strongly discourage use of Mac computers for this assignment. (I use Windows 10.)

Make sure to read the errata linked to <http://www.grammaticalframework.org/ipl-book/>. An error in the last line of Calculator.hs is described there.

If you install the Haskell Platform (<https://www.haskell.org/platform/>), the Haskell compiler ghc and the interpreter ghci will be installed. If you installed the full platform for a version before 8.8, the lexical analyzer generator Alex and the parser generator Happy will also be installed. If you use a later version, you will need to install them separately, using cabal (“cabal install alex”, for example, after “cabal update”). (I use version 8.10.1.)

Haskell uses implicit grouping by indentation. The book uses indentation properly. If you do not indent, you need to use braces.

The single quotes around `div` in program `Interpreter.hs` (middle of page 25 [R]) are single backquotes: ``div`` is correct, `'div'` is incorrect. (In Haskell, backquotes around a function turn it into an infix operator.)

Windows users need to be aware that they need to use Linux-style `echo` and `make`.

`echo` in Windows PowerShell (which is started by Windows-X) works the intended way; it does not work in the intended way in a Command Prompt terminal; I suspect that the same is true of pipe (`|`). So: run your Calculator as in the middle of page 26 [R] from PowerShell.

`make` can be installed as described in <https://stackoverflow.com/questions/2532234/how-to-run-a-makefile-in-windows> (entry of Jul 15 '19 at 15:05):

Step 1: Install the chocolatey package manager for WINDOWS (compatible to Windows 7+ / Windows Server 2003+) here (<https://chocolatey.org/install>)

Step 2: Run `choco install make`