CIS425: Getting Started with Haskell
Spring 2021

1 Overview

In the penultimate section of this class we will be using the Haskell programming language. Haskell is a lazily evaluated, statically typed, pure functional programming language. Its syntax is similar to SML's but unlike SML, Haskell has no (native) support for mutable data structures or uncontrolled effects. Though this property has its benefits for code readability and optimization, it makes writing practical applications (ie programs that access IO such as databases or the network) more difficult. Because a pure function must return the same output for a given input, one could not access a database using a pure function (records in a database change over time so the function might return different output for the same input) so this puts us in a pickle. Haskell's answer to this pickle is called the monad. Monads are a construct from category theory that when applied to Haskell, allows users to model impure computation within a pure context.

2 GHC (Glasgow Haskell Compiler) Installation

1. MacOs/*nix
   - Execute in terminal: `sudo curl -sSL https://get.haskellstack.org/ | sh`
   - Execute in terminal: `stack install ghc`
   - Navigate to ~`/.stack/programs/x8_64-osx` and see which version of ghc is installed.
   - Add to ~/.bash_profile or ~/.profile
     `export PATH=$PATH:~/.stack/programs/x86_64-osx/ghc-<version>/bin`
   - Quit and restart terminal or execute
2. Windows
   - Navigate to: `https://get.haskellstack.org/stable/windows-x86_64-installer.exe`
   - Execute installer
3. Test the installation
   - create a file called `main.hs` containing the following: `main = putStrLn "hello world"`
   - Open a terminal and navigate to the directory where `main.hs` is.
   - Invoke command: `ghci`
   - From inside the interactive compiler, run: `:l main.hs` then `:main`

3 IDE Support

Note: these packages only supports syntax highlighting and auto-completion but they will not build your code.

1. Sublime Text 3
   - Navigate to `Tools -> Command Palette`
   - Search for and select: `Package Control: Install Package`

- in the new text box, search for and install: `SublimeHaskell`
- Navigate to `SublimeText -> Preferences -> Package Settings -> SublimeHaskell -> settings`
- In the settings window scroll down to the `backends` section and change the `default` field of `hsdev` to `false` and the `default` field of `No Backend` to `true`

2. Visual Studio Code

- Navigate to extension page by clicking the second icon from the bottom on the left hand pane.
- Search for and install : `Simple GHC (Haskell) Integration`