

CPCS449 Tutorial

Si Zhang

si.zhang2@ucalgary.ca

University of Calgary

2021 Winter

Haskell environment setup

- ▶ Linux - run command: `sudo apt-get install haskell-platform`
- ▶ Windows
 1. install Chocolatey in powershell
 2. run command: `choco install haskell-dev; refreshenv`
- ▶ MacOS
 1. install Homebrew in terminal
 2. run command: `brew install ghc cabal-install`

Haskell programming IDE

- ▶ VSCode, Atom, Sublime, Vim + HIE
- ▶ Emacs + dante

- ▶ run interpreter: `ghci fileName.hs`
- ▶ run compiler: `ghc -o programName fileName.hs`
- ▶ first Haskell program: `putStrLn "Hello World"`

Free online resources

- ▶ Easy to read book
- ▶ API search engine
- ▶ Haskell Prelude

Haskell programming

- ▶ Computational model: λ calculus
- ▶ Define a list of functions and apply them to achieve effects.
- ▶ Mathematical function: $f :: \text{Domain} \rightarrow \text{Range}$
- ▶ Haskell function: Take values of specific type as input, and produce values of another type as output.
- ▶ Basic functions: Haskell Prelude

Built-in types

- ▶ Bool
- ▶ Char
- ▶ Int and Integer (bounded and unbounded)
- ▶ Float and Double

Use of let

```
roots a b c =  
  ((-b + sqrt(b * b - 4 * a * c)) / (2 * a),  
   (-b - sqrt(b * b - 4 * a * c)) / (2 * a))
```

For local declaration.

```
roots a b c =  
  let x = sqrt(b * b - 4 * a * c)  
      y = 2 * a  
  in ((-b + x) / y,  
      (-b - x) / y)
```


Participation question 01

How to install cabal and quickCheck?