INF1A FP Programming Competition 2024

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November 2024

Project Description:

This Haskell code generates an interactive animation of various Mandelbrot-like fractal sets using the Gloss library, sped-up using parallel processing. The animation allows users to pan and zoom using the keyboard (W/A/S/D for panning, E/Q for zooming). The core functionality is built around a flexible framework that supports different fractal-generating functions.

How to Run:

The program can be run from the command line by the following commands:

```
cabal update
cabal build
cabal run
```

directly. However, make sure to specify what function you are plugging into the main loop in the code.
There are many functions to choose from, but you are easily able to define your own and try them out!

Main Dependencies

The program primarily uses the following external Haskell libraries:

- `gloss` for the graphics rendering
- `complex` for complex number calculations
- `parallel` and `deepseq` for parallelization of computations

These dependencies are managed using Cabal. The .cabal file is included in the project directory.

Acknowledgments

The implementation and design choices are my own, but I've built upon the concepts and ideas presented in the following resources during the development of this project:

- Gloss library documentation[1]
- The Mandelbrot set[2]

Graphics

I have included some still screenshots of the simulation in action in the submission folder.

[1] `http://hackage.haskell.org/package/gloss`
[2] `https://en.wikipedia.org/wiki/Mandelbrot_set`