Gemini Web Browser

Assignment INF221 2024 - Halvor Brunt

Gemini Project is unfamiliar, but exciting. Getting to know protocols, the terminal, and parsing.

Might get inspired by features or structure of Amfora

Description of the program:

The Project allows users to browse Geminiweb in a Terminal Environment. It uses the Gemini protocol and renders the response in the terminal.

Overview of program design and libraries:

Libraries (from suggestions):

- Network ----------------- TCP-sockets
- Attoparsec -------------- parsing Gemini protocol responses
- Mega Parsec ------------- parsing data & user inputs
- Brick ------------------- Creating a TUI

File structure:

```
Main.hs                    -- Runs program
geminiResponseParser.hs    -- Parses protocol responses
geminiRenderer.hs          -- Formats text ready to render
geminiTUI.hs               -- TUI
networkProtocolHandling.hs -- Handles networks connections & protocols
```

Functional programming techniques:

With nothing specific in mind I will probably be utlizing:

- Pure functions (this is haskell after all)
- Immutable data structures
- Monads: State, IO, Either, ...
- Error handling: Either/ExceptT
- Pattern matching

  - Parsing
  - Render different Gemini Responses Types (text, image/pdf links, ...)

What I expect to complete by the deadline:

A lack of experience leaves this as a wild guess: An minial-browser with a search bar that can fetch and display raw documents in the terminal. Hopefully I have time to flesh it out with more features.

Expected:

- [ ] Network
  - [ ] Implement TCP connection & Gemini protocol
  - [ ] Error handling and error messages
- [ ] Parsing
  - [ ] Parse gemini response messages
  - [ ] Render "gemtext" formatted text to terminal
- [ ] TUI
  - [ ] Single Tab browser with Search bar & raw text data
  - [ ] Link navigation
- [ ] Decent enough docs to allow usability

Stretch goals

Hopefully I can implement some of these, and possibly extend it later:

- [ ] Extend TUI
  - [ ] Bookmarks & History
  - [ ] Keyboard and/or mouse navigation
  - [ ] Handle user input on pages. E.g. Comments, sign guest books, ...
  - [ ] Mouse clicks
  - [ ] Multiple tabs