INFORMATION SYSTEMS DEVELOPMENT (HOW TO BUILD A SOFTWARE COMPANY)

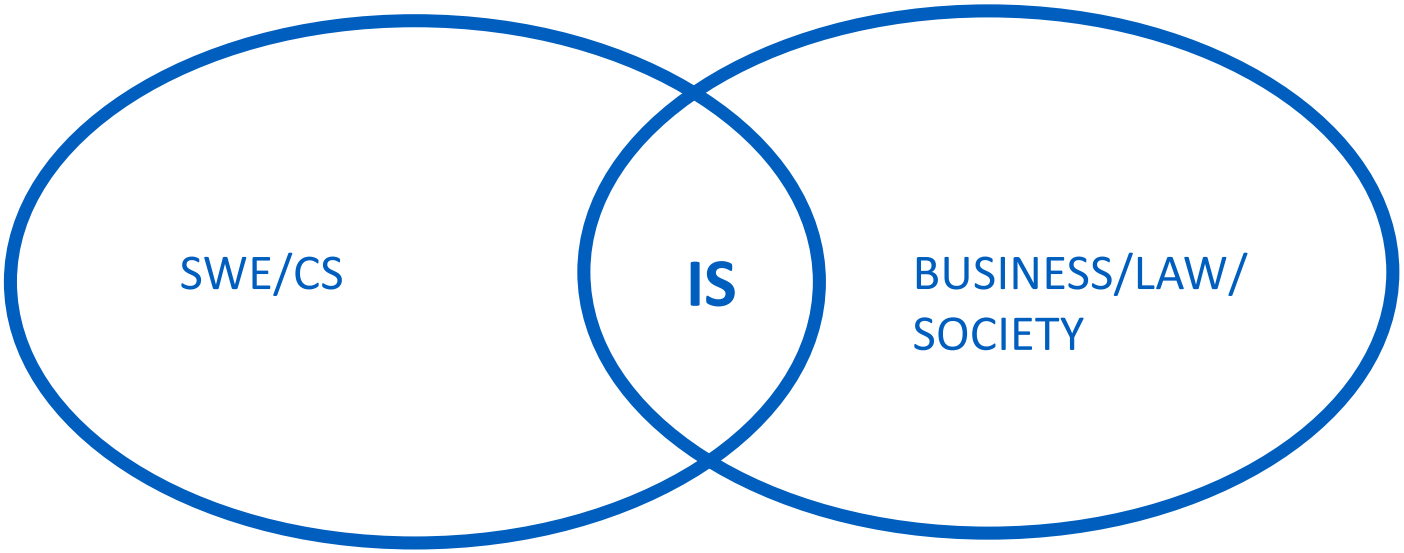
AGENDA

- Introduction
- Entrepreneurial journey
- What is information systems?
- Let’s build a startup!
  - Business model
  - Architecture/web scraper code walkthrough
  - Code review using ChatGPT
- Legal considerations

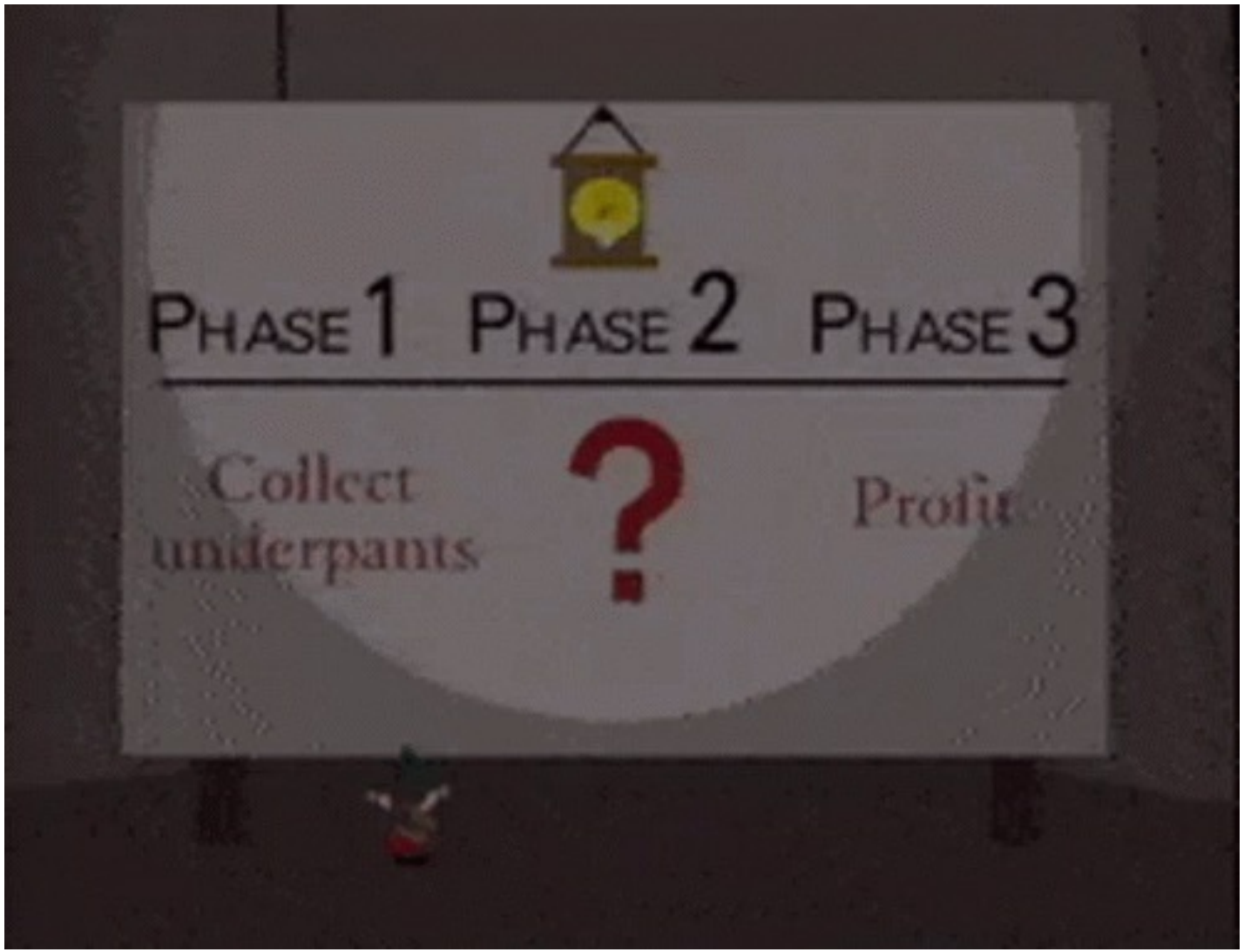
WHY QUIT ENTREPRENEURSHIP?

- Entrepreneurship is not right for everyone
  - Repetitive, innovation slows the bigger the company gets
  - Expectations, high pressure
  - Employee, customer management
  - Anxiety in maintaining employee well being
  - Agreeable people tend to not last long as entrepreneurs
  - **Lifestyle**
- My choice to return to academia
  - Family of academics
  - Low pressure (comparatively)
  - High innovation within subject matter
  - **Lifestyle**

HA HA!
BUSINESS


SWE/CS
IS
BUSINESS/LAW/
SOCIETY

REASONS FOR SUCCESS/FAILURE



LET'S BUILD A STARTUP

- Industry: tech recruiters, e.g., https://betterchoicestaffing.com/ https://www.roberthalf.ca/en/employers/technology
- Their "supply" of developers is manually maintained
- Github is a rich source of developer contact details that is by design automatically updated (i.e., developers are incentivized to keep their information up to date)
- Business model: create a database of developers in Victoria programmatically, and sell this database to tech recruiters
- Value proposition: "we build and maintain a comprehensive database of developers, saving you significant time and money in finding and vetting excellent candidates"

SALES FORECAST (YEAR 2 OR 3)

- Roughly 200 tech recruitment agencies in Seattle
- 1/4 buys a $7,000 yearly subscription to the web app containing the database
- Target other tech-heavy cities including LA, SF, PORTLAND, TOR, BOS, AUSTIN, NYC etc. even Vancouver/Victoria
- A conservative estimate of 10 cities, 50 customers/agencies from each would yield annual recurring revenue (ARR) of $3.5M
  - This compounds as you add more customers!
  - Very low opex: 2-3 developers and 2-3 salespeople are all you need
- Exit plan: typical software company exit is 8-12x EBITDA
  - In this case, assuming EBITDA of $2M, you'd get a $20M valuation

SAMPLE SALES E-MAIL/CALL

As a tech recruitment agency, you understand the importance of having access to the best and most talented software developers to fill your clients' job vacancies. Our database of software developers can help you achieve that goal.

Our database is meticulously curated and updated regularly, ensuring that you have access to the most up-to-date and relevant information on software developers. We have a wide range of software developers in our database with various skills, experience levels, and backgrounds.

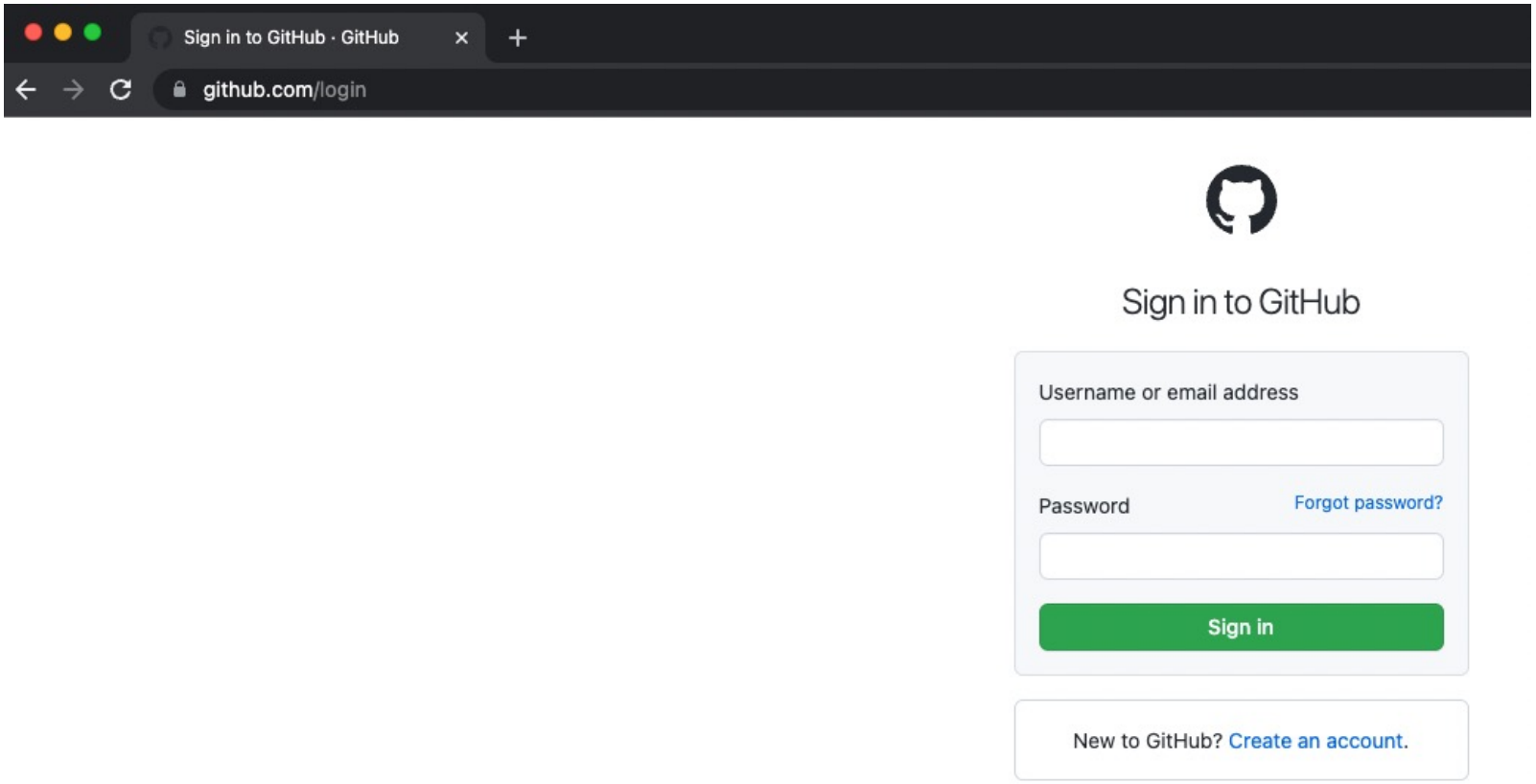
Our database includes developers with expertise in languages such as Java, Python, JavaScript, Ruby, C++, and many more. We also have developers with experience in different industries, including healthcare, finance, retail, and manufacturing.

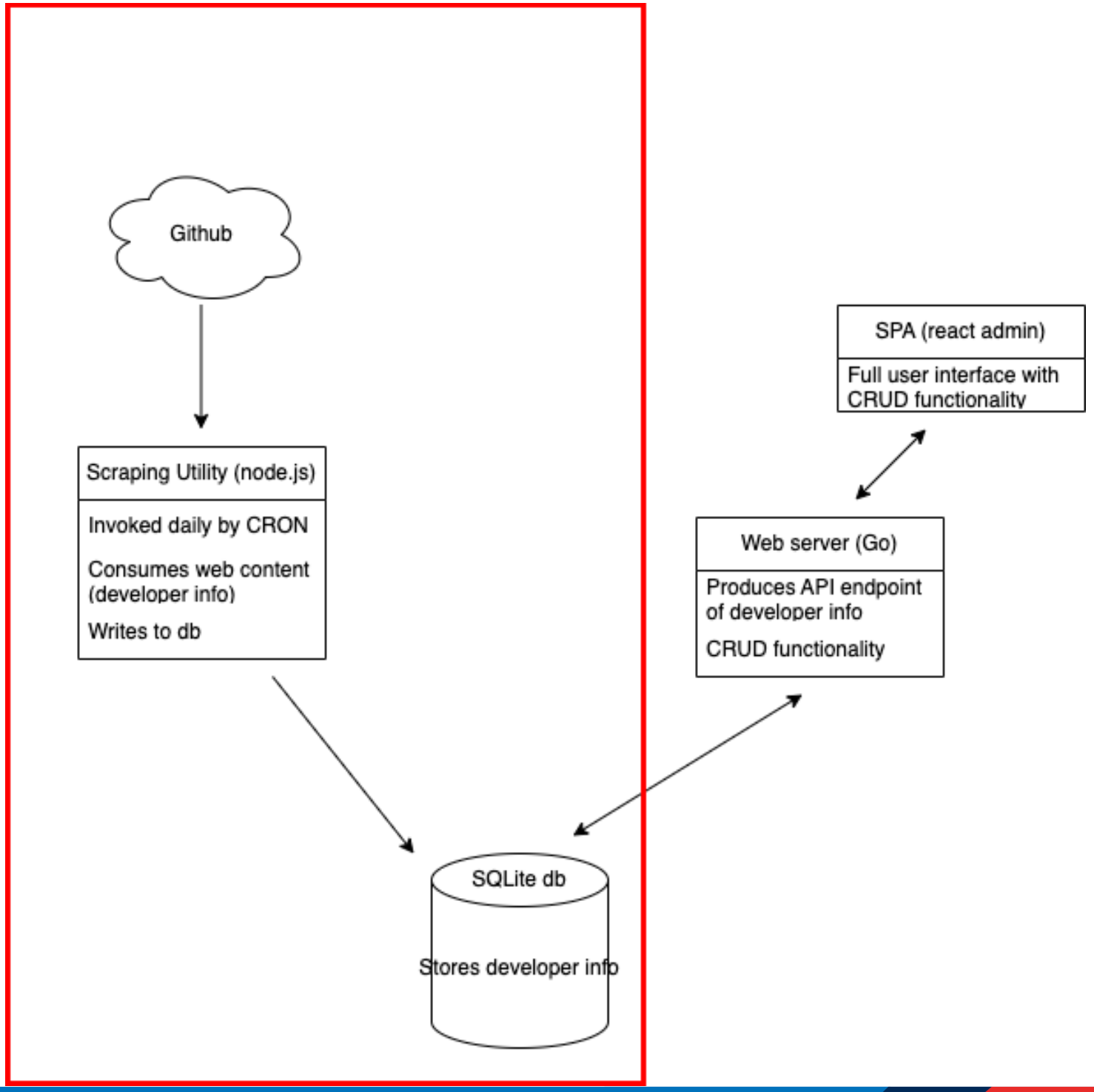
By using our database, you can save time and resources by finding suitable candidates quickly and efficiently. Our database also enables you to reach out to developers directly, increasing your chances of finding the best candidates for your clients' job vacancies.

In summary, our database of software developers provides you with a competitive advantage in the tech recruitment industry. By using our database, you can quickly and efficiently find suitable candidates for your clients, saving you time and resources while providing them with the best talent available.

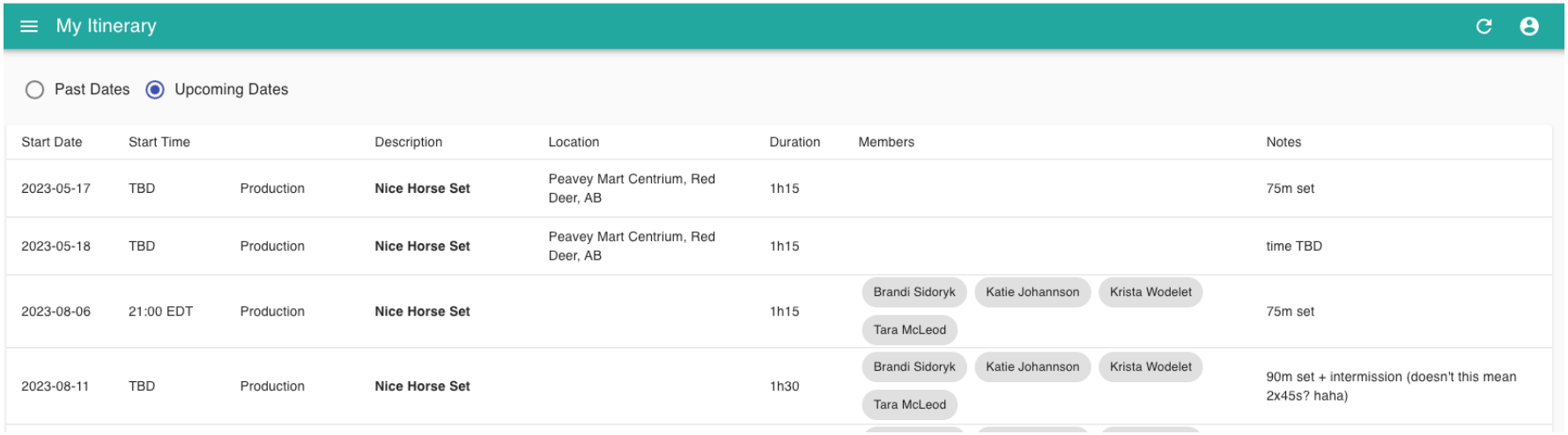
LET'S BUILD THE SOFTWARE

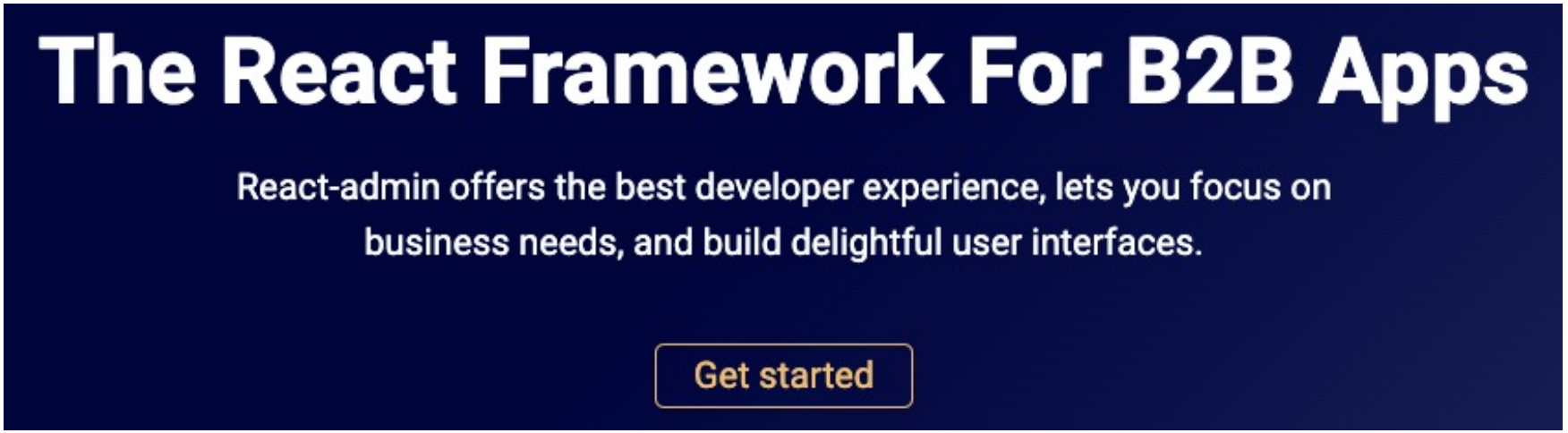
- Web scraping: You can programmatically type text, click buttons, scrape data, and interact with the browser




Github
Scraping Utility (node.js)
Invoked daily by CRON
Consumes web content (developer info)
Writes to db
SPA (react admin)
Full user interface with CRUD functionality
Web server (Go)
Produces API endpoint of developer info
CRUD functionality
SQLite db
Stores developer info

FRONT END EXAMPLE (REACT-ADMIN)





CODE REVIEW

A

how would you improve this code?

```
// This is a Node.js script that uses Puppeteer to scrape Github for a list of developers
based on a specific city. It then saves the results into a SQLite database.
const puppeteer = require("puppeteer");
```

Here are some suggestions to improve this code:

1. Use const instead of var to declare variables that are not reassigned.
2. Use Promise.all() to write to the database asynchronously instead of using forEach() with async/await. This will make the writes happen in parallel instead of serially, which will be faster.
3. Add error handling for database writes. If an error occurs during a write, the current behavior is to throw an error and stop writing. Instead, you could log the error and continue writing the remaining developers to the database.

CODE REVIEW

4. Use try/catch blocks to handle errors in the getUsers() and writeUsers() functions. Currently, if an error occurs in either function, the program will crash. Adding try/catch blocks will allow you to handle errors more gracefully.
5. Add error handling for Puppeteer actions. If any Puppeteer action fails, the current behavior is to crash the program. You could add error handling to log the error and continue with the rest of the program.
6. Use the const keyword to declare the signInUrl and url variables, since they are not reassigned.
7. Remove the headless: false option from the Puppeteer launch options, unless it's needed for debugging purposes.
8. Add a comment to explain what the RegExp in the numUsersText.replace() call is doing.

LEGAL

Justia Opinion Summary

LinkedIn Corp. sent hiQ Labs, Inc. ("hiQ") a cease-and-desist letter, asserting that hiQ violated LinkedIn's User Agreement. LinkedIn asserted that if hiQ accessed LinkedIn's data in the future, it would be violating state and federal law, including the CFAA, the Digital Millennium Copyright Act ("DMCA") and the California common law of trespass.

Security

Web scraping is legal, US appeals court reaffirms

LinkedIn Wins Latest Court Battle Against Data Scraping and the Misuse of User Information

Published Nov. 7, 2022

By Andrew Hutchinson
Content and Social Media Manager

hiQ and LinkedIn Reach Proposed Settlement in Landmark Scraping Case

Thursday, December 8, 2022

QUESTIONS?

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