

Quote Finder

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- University of Illinois Urbana-Champaign | Fall 2023
- CS 410: Text Information Systems | ChengXiang Zhai
- Code Repo | [github.com/.../quote-finder](https://github.com/wlttsai2/quote-finder)
- Demo Video | [final presentation](#)
- PPT slides | [final deck](#)

Overview

Quote Finder is a unique search engine / text retrieval tool specifically tailored for literature and quote enthusiasts. Users input a particular sentiment or emotion and then Quote Finder searches the catalog of famous quotes available on [goodreads.com/quotes](https://www.goodreads.com/quotes) to return a ranked list of quotes and respective authors resonating with the user's specified sentiment.

Self-Evaluation

We have completed four of our initially proposed goals with the implementation of a working web crawler, preprocessor, searcher, and web application. These tasks made up a bit more than the 20 hours of coding per team member that we had originally estimated due to cycles being spent on integrating the searcher with the web app and then debugging. Thus, we weren't able to complete our two stretch goals of implementing a feedback component as well as hosting the application on Azure. However, we were able to complete the core functionality of our application with a satisfactory set of initial results. In addition to applying the methods learned in this course, we also got to learn how to build a web crawler, leverage a sentiment library, and build a web application. Aside from our two stretch goals, the only other enhancements we would make given more time and resources are to extend sentiment analysis to the quotes themselves as well as tweaking the ranker to get further improvement in the quality of the results.

Architecture

The architecture consists of three main backend components: (1) web crawler, (2) preprocessor, (3) searcher, (4) web application, and (5) user interface. The web crawler collects raw quotes data from the Goodreads quotes website, which is then processed by the preprocessor to extract, normalize, and tokenize the quotes along with their corresponding metadata. The searcher parses the user sentiment input, builds an inverted index, then searches against the index to return a set of ranked quotes based on relevance to a given query. A web application (API) is built on top of these components, which is then fronted by a user interface for users to interact with the application.

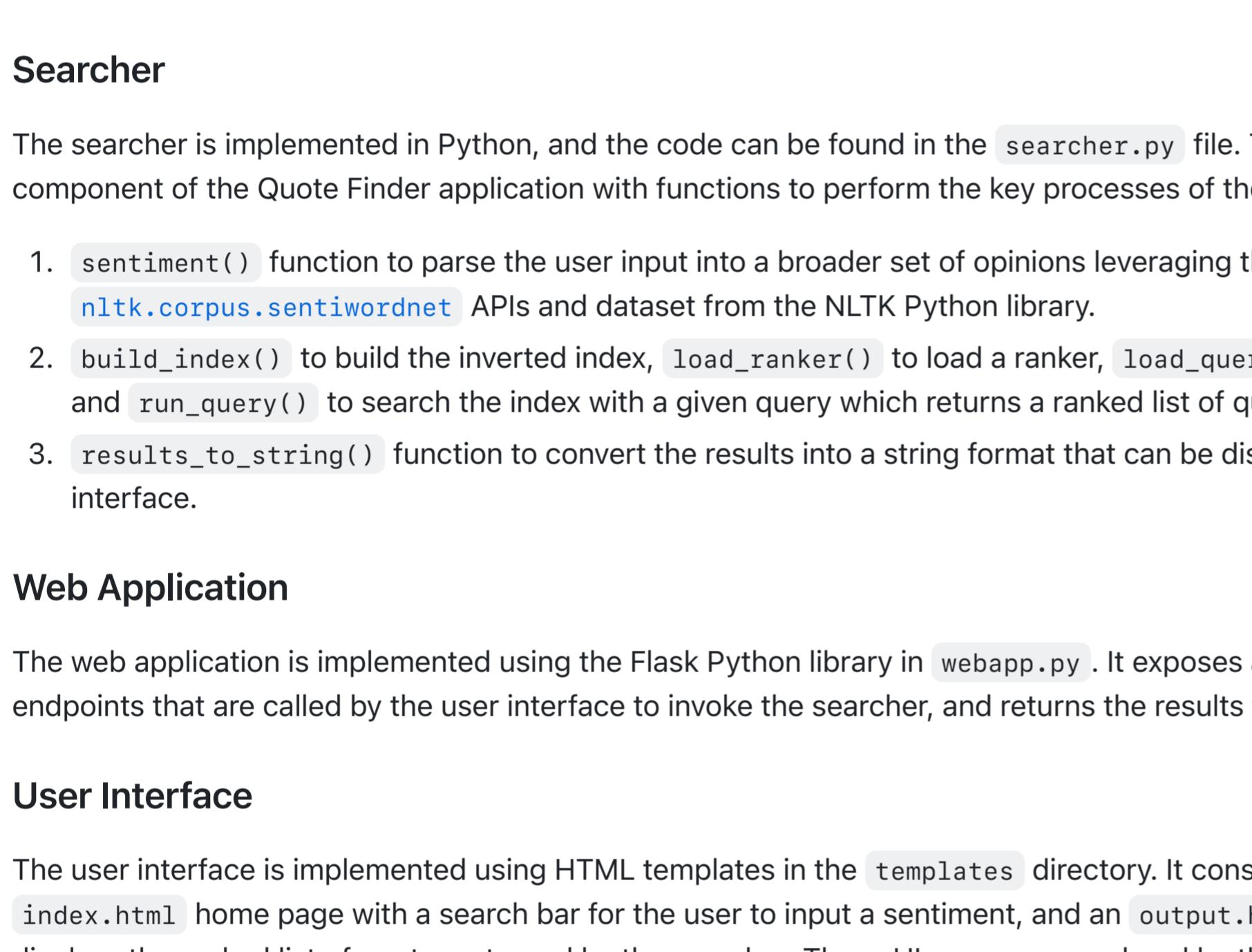


Figure 1: Overall architecture diagram for Quote Finder

Distribution of Work

Between the two team members, the coding and documentation work was distributed as follows:

- Manuel Suarez Lunar
 - Web crawler
 - Web application
 - User interface
 - Powerpoint presentation
- Wei-Lun (Will) Tsai
 - Preprocessor
 - Searcher
 - Code documentation

Web Crawler

The web crawler is implemented using the Scrapy Python library in `web_crawler.py`. It crawls the Goodreads quotes website and extracts quotes, authors, and tags for each quote, and then follows the "next" link to crawl subsequent pages. The quotes data is output to a JSON file that is picked up by the preprocessor.

Preprocessor

The preprocessor is implemented in Python, and the code can be found in the `preprocessor.py` file. It takes a raw quotes data file (in JSON format) as input, and outputs two data files: (1) a `quotes.dat` containing the processed quotes data, and (2) a `quotes_map.json` metadata file containing the metadata for each quote. The `quotes.dat` file is used by the searcher to build the inverted index, while the `quotes_map.json` file is used to display the metadata for each quote in the user interface.

Searcher

The searcher is implemented in Python, and the code can be found in the `searcher.py` file. This is the core component of the Quote Finder application with functions to perform the key processes of the application:

1. `sentiment()` function to parse the user input into a broader set of opinions leveraging the `nltk.corpus.sentiwordnet` APIs and dataset from the NLTK Python library.
2. `build_index()` to build the inverted index, `load_ranker()` to load a ranker, `load_query()` to load a query, and `run_query()` to search the index with a given query which returns a ranked list of quotes as the result.
3. `results_to_string()` function to convert the results into a string format that can be displayed in the user interface.

Web Application

The web application is implemented using the Flask Python library in `webapp.py`. It exposes a set of API endpoints that are called by the user interface to invoke the searcher, and returns the results to the user interface.

User Interface

The user interface is implemented using HTML templates in the `templates` directory. It consists of an `index.html` home page with a search bar for the user to input a sentiment, and an `output.html` page that displays the ranked list of quotes returned by the searcher. These UI pages are rendered by the `webapp.py` Flask web application.

Setup Instructions

1. Clone the code repository and navigate to the project directory:

```
git clone https://github.com/wlttsai2/quote-finder.git
cd quote-finder
```

2. Install Conda and Git if you don't already have them installed.

Note: if you are running this on an Apple Silicon Mac (e.g. M1, M2 chips), adjust your Conda config after installation:

```
conda config --env --set subdir osx-64
```

Note: if you are running this on a Linux machine, adjust your Conda environment variables after installation:

```
export CONDA_DIR=conda info | grep -i 'base environment'
source $CONDA_DIR/etc/profile.d/conda.sh
```

3. Create and activate a Python 3.5 Conda environment:

```
conda create -n py35 python=3.5
conda activate py35
```

4. Create and activate a Flask environment for the web application:

```
python -m venv .venv
. .venv/bin/activate
```

5. Install the project dependencies:

```
pip install -r requirements.txt
```

6. Run the web crawler and preprocessor to prepare the quotes data:

```
python web_crawler.py
python preprocessor.py
```

7. Run the web app:

```
python webapp.py
```

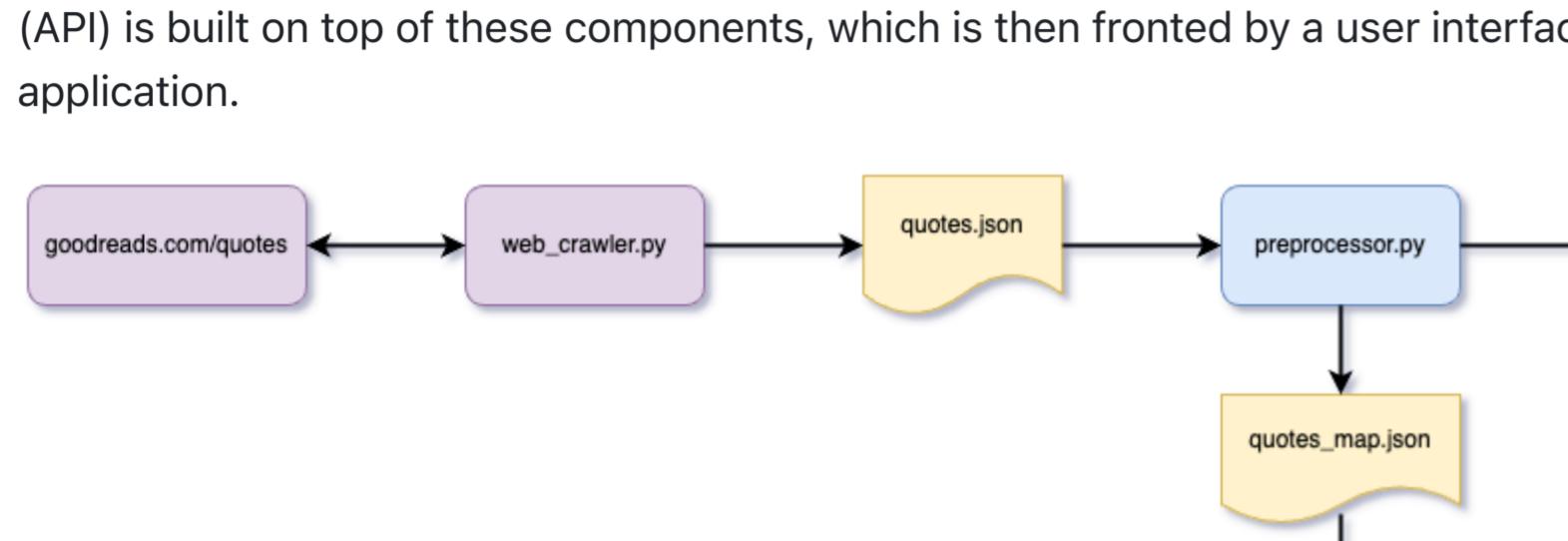
8. Navigate to <http://127.0.0.1:5000/> in a web browser to interact with the Quote Finder web application.

Example Test Cases

Here are some example queries to try out in the Quote Finder web application:

Test Case 1

Input: "inspirational and grateful"



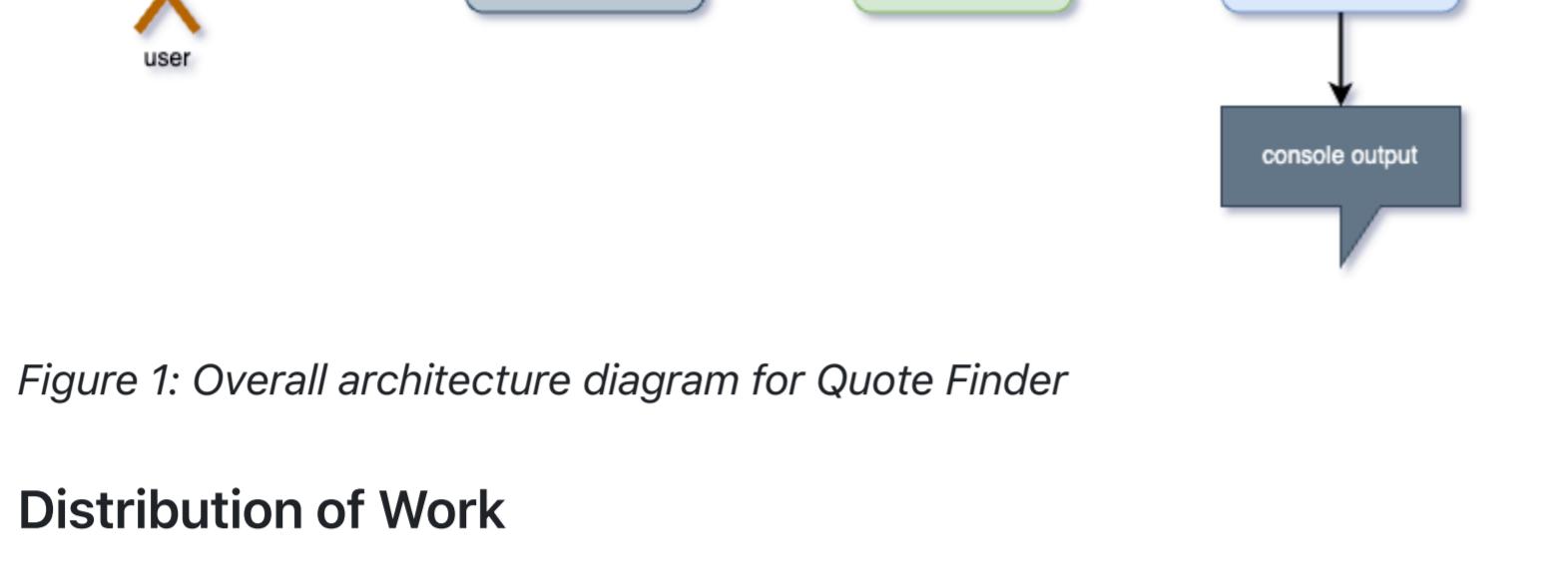
Welcome to Quote Finder

Your tool to find quotes from famous authors based on feelings.

inspirational and grateful

Find Quotes

Expected Output:



Famous quotes that reflect your feelings:

"You can't wait for inspiration. You have to go after it with a club." –Jack London

"Be grateful for what you already have while you pursue your goals." –Roy T. Bennett

"Be mindful. Be grateful. Be positive. Be true. Be kind." –Roy T. Bennett

"Start each day with a positive thought and a grateful heart." –Roy T. Bennett

"You gave me a forever within the numbered days, and I'm grateful." –John Green

"Great things happen to those who don't stop believing, trying, learning, and being grateful." –Roy T. Bennett

"Let us be grateful to the people who make us happy; they are the charming gardeners who make our souls blossom." –Marcel Proust

"The glory of friendship is not the outstretched hand, nor the kindly smile, nor the joy of companionship; it is the spiritual inspiration that comes to one when you discover that someone else believes in you and is willing to trust you with a friendship." –Ralph Waldo Emerson

"There are infinite numbers between 0 and 1. There's 1 and 1/2 and 1/3 and an infinite collection of others. Of course, there's a bigger infinity of numbers between 0 and 2, or between 0 and 3 and an infinite collection of others. Some infinities are bigger than other infinities. A writer we used to like taught us that. There are some infinities that are countable and some that are not." –Paulo Coelho

"I want more friends for Augustus Waters than he got. But, Gus, my love, I cannot tell you how thankful I am for our little infinity. I wouldn't trade it for the world. You gave me a forever within the numbered days, and I'm grateful." –John Green

Find Another Quote

Test Case 2

Input: "frustrated and disappointed"

Welcome to Quote Finder

Your tool to find quotes from famous authors based on feelings.

frustrated and disappointed

Find Quotes

Expected Output:

Famous quotes that reflect your feelings:

"If you expect nothing from somebody you are never disappointed." –Sylvia Plath

"Blessed is he who expects nothing, for he shall never be disappointed." –Alexander Pope

"Never marry at all, Dorian. Men marry because they are tired, women, because they are curious: both are disappointed." –Oscar Wilde

"Nobody likes being alone that much. I don't go out of my way to make friends, that's all. It just leads to disappointment." –Haruki Murakami

"You may encounter many defeats, but you must not be defeated. In fact, it may be necessary to encounter the defeats, so you can know who you are, what you can rise from, how you can still come out of it." –Maya Angelou

"The two hardest tests on the spiritual road are the patience to wait for the right moment and the courage not to be disappointed with what we encounter." –Paulo Coelho

"I fell in love with him. But I don't last stay with him by default as there's no one else available to me. I say with him because I choose to, every day that I wake up, every day that we fight or lie to each other or disappoint each other. I choose him over and over again, and he chooses me." –Veronica Roth

"Let me tell you this: if you meet a lover, no matter what they tell you, it's not because they enjoy solitude. It's because they have tried to blend into the world before, and people continue to disappoint them." –Jodi Picoult

"He was the crazy one who had painted himself black and defected the world." –Markus Zusak

Find Another Quote