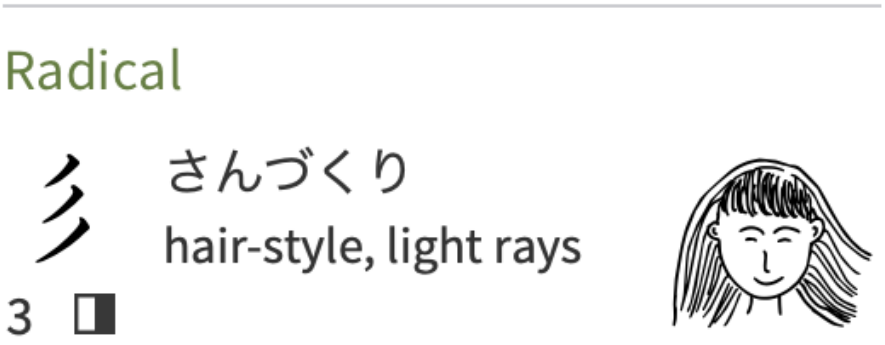
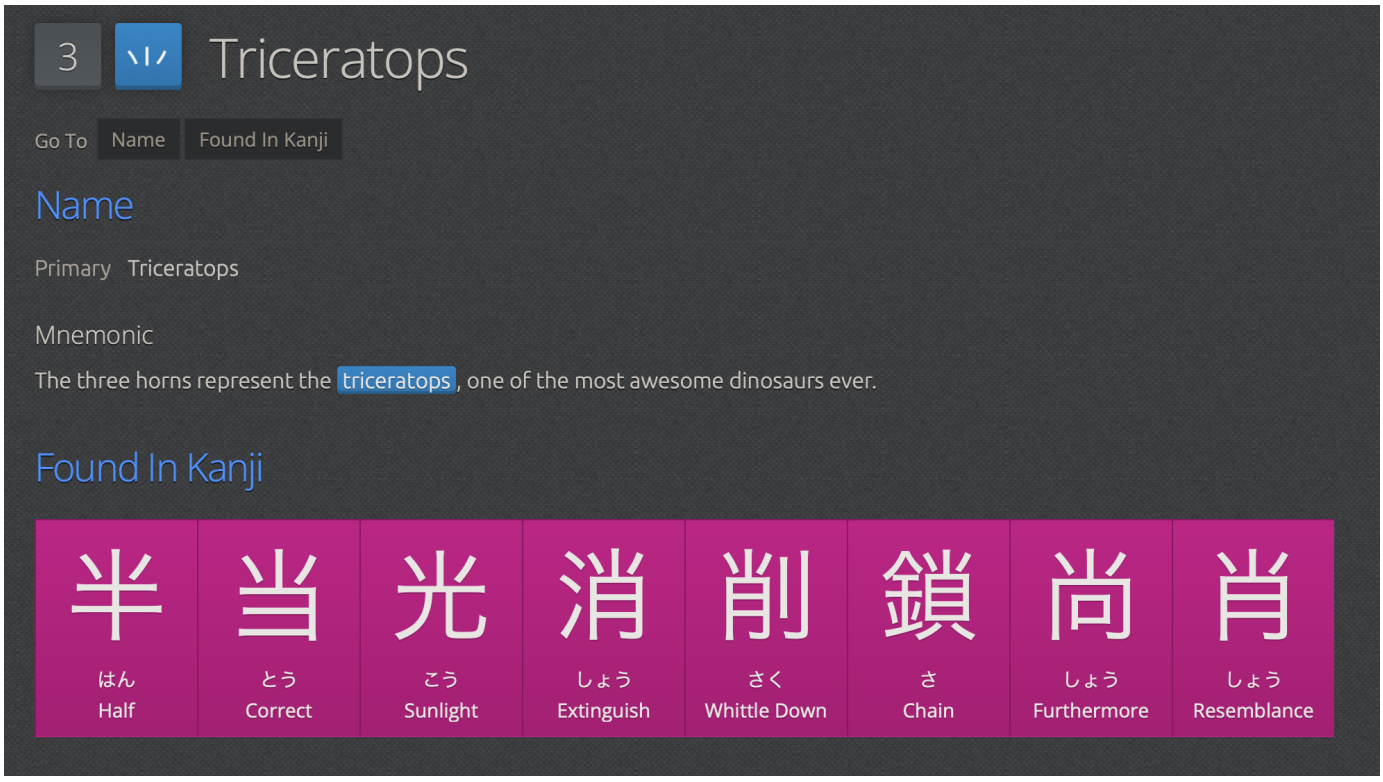
(Design) Essential Japanese words dictionary

Rationale

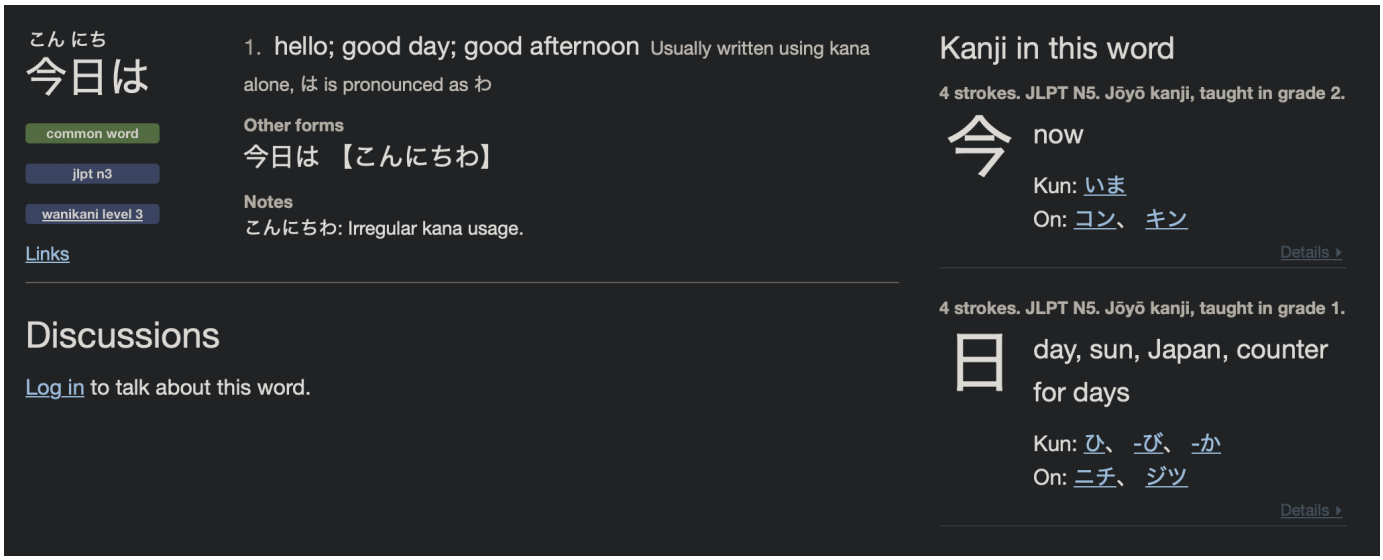
I want to learn Japanese.
Kanji and radicals are essential parts of the Japanese language.
The problem is kanji and radicals may have broad meanings.



Moreover, some learning platforms stray from Japanese rules.



And some others are too technical and lack features linking words by kanji or radicals.

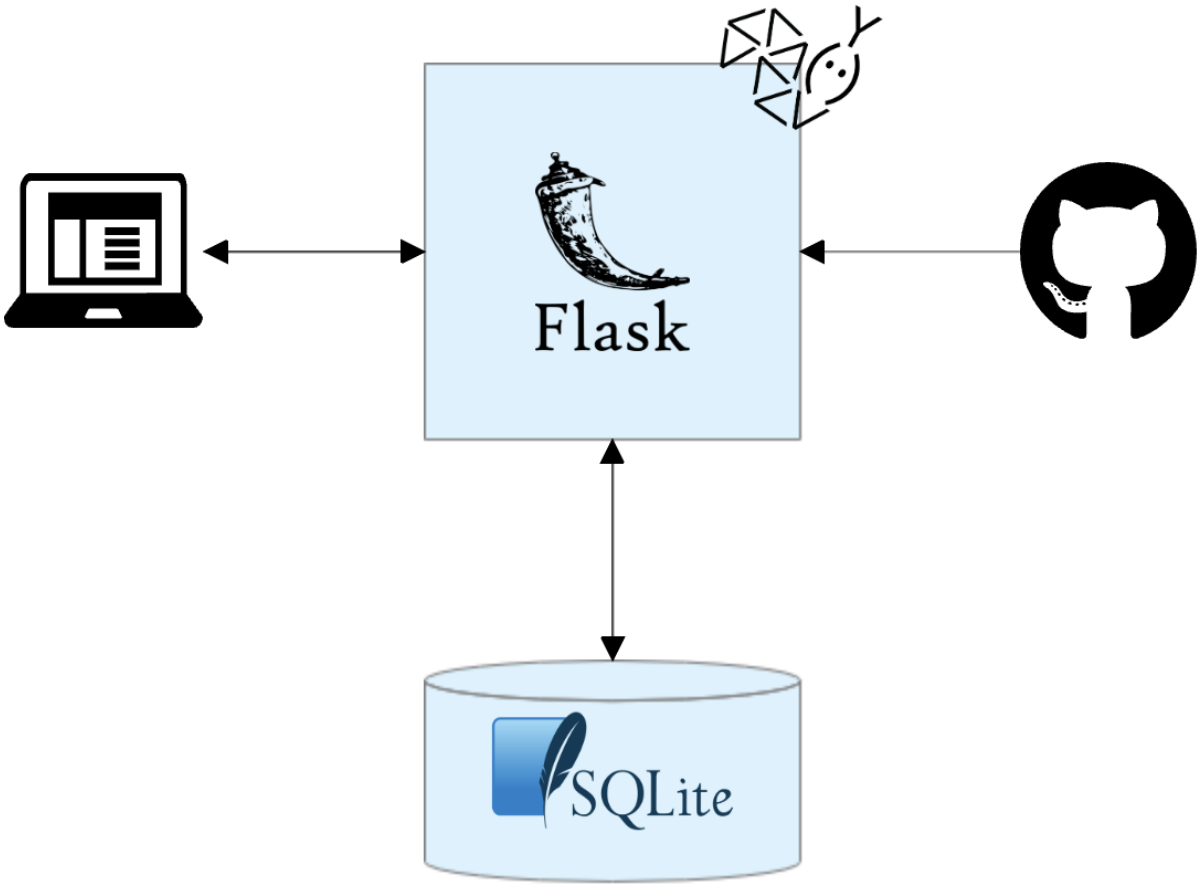


Luckily, Japanese words' definitions are more precise.
So, my solution is to create a simple word-indexed Japanese dictionary, where I can learn about essential words, their kanji, and their radicals. All in one page, so I can Cmd + F in English or Japanese at any moment.

八月	はちがつ	August	八 月	eight moon, month	八 月	ノ 乚 	eight moon, month, period
八時間	はちじかん	8 hours	八 時 間	eight time interval, between	八 日 門	ノ 乚  	eight sun, day, time gate, door
尺八	しゃくはち	bamboo flute	尺 八	shaku (unit of length, about 30 cm), measure eight	尸 八	 ノ 乚	corpse, awning eight

Design

- Pull word, kanji, and radical data from the Kanji alive data repository. https://github.com/kanjialive/kanji-data-media/tree/master.
- Create a Japanese dictionary as a SQLite database and display it via Flask.
- Display all 5812 words and their information in a single page.
- Deploy the Flask application on PythonAnywhere.



Implementation

- Pull radical data from the Kanji alive repository: https://github.com/kanjialive/kanji-data-media/blob/master/language-data/japanese-radicals.csv.
- Pull radical image data from the (forked and unzipped) Kanji alive repository: https://github.com/leonardo-blas/kanji-alive-data-media/tree/master/radical-animations.
- Pull word and kanji data from the Kanji alive repository: https://github.com/kanjialive/kanji-data-media/blob/master/language-data/ka_data.csv.
- Create Python dictionaries for radicals, kanji, and words.
- The radicals dictionary maps a radical to its radical and radical mnemonic image URLs.
- The kanji dictionary maps a kanji to its meanings and radical.
- The words dictionary maps a word to its hiragana spelling, English definition, and all the information in the kanji and radicals dictionaries.

- To populate the words dictionary, iterate over a word's characters to access the kanji dictionary in O(1). From the kanji dictionary, use a kanji's radical to access the radical's dictionary in O(1).
- Use the words dictionary to create a SQLite database. Only create it if it is not already created. Use a global flag.
- In the words database, one word may be mapped to many values, like kanji and radicals. These represent nested rows. Use `';'` to separate kanji within the kanji column, radicals within the radical column, etc.
    - JSON strings are an alternative to separators to add nested rows in the SQLite table. The character separator, nevertheless, is a simple and viable solution.
- Display the SQLite table as a word-indexed Japanese dictionary using an HTML template.

What's next

- Consider displaying words only vertically, appending hiragana characters where needed.
- Consider splitting the dictionary into different pages to minimize crashes and reduce load time.
- In the HTML template, align the text in nested rows.