TNPG: It's Friday!, Roster: Erica Li, Verit Li, Daniel He, Samson Wu
SoftDev
P01
2022-12-01
Time spent: 2 hrs
Target Ship Date: 2022-12-23

Anime Dating Love Calculator

Abstract: The Anime Dating Love Calculator web application aims to provide users with the ability to ascertain the compatibility between anime characters of their choosing. Users will be able to search for anime characters through the name or show title, view a character's "dating" profile, and match two characters to obtain a comprehensive breakdown of their compatibility results calculated through an algorithm. Previous match history can be viewed on the home page.

Program Components:
HTML:
- Jinja syntax to collaborate with Flask
- Templates to be served to the Flask app
- Skeleton for our Foundation framework

Flask:
- Our web server and delivery framework
- Utilizes database functions
- Calls from APIs
- Username and password check functions
- Manages information from forms (user input)

SQLite3:
- Table of users, their username, and their passwords
- Table of inputting user, timestamp, input quotes, and matched characters (History essentially)

Framework (Foundation):
- Will be used to style our website
- Chosen over Bootstrap since the tags are more understandable
- Makes our website more interactive and neat
- Provides grid system, pagination, navigation bar, cards.

APIs**:**
- Love Calculator: provides percentages of compatibility derived from names or numbers (https://github.com/stuy-softdev/notes-and-code/blob/main/api_kb/411_on_LoveCalculator.md)

- MyAnimeList: provides miscellaneous anime show information that may be useful (https://github.com/stuy-softdev/notes-and-code/blob/main/api_kb/411_on_MyAnimeList.md)
- Anime-Chan: provides a set of quotes from a character (https://github.com/stuy-softdev/notes-and-code/blob/main/api_kb/411_on_animechan.md)
- Kitsu: provides anime character information (https://github.com/stuy-softdev/notes-and-code/blob/main/api_kb/411_on_Kitsu.md)
- Hugging Face: provides text classification for quote analysis (https://github.com/stuy-softdev/notes-and-code/blob/main/api_kb/411_on_huggingface.md)
    - https://huggingface.co/j-hartmann/emotion-english-distilroberta-base?text=You%27re+right%2C+all+efforts+are+pointless...+If+you+don%27t+believe+in+yourself.
    - https://huggingface.co/joeddav/distilbert-base-uncased-go-emotions-student)

Site Map Explanation:

1. LOGIN PAGE (login.html)
    a. Register Button
        i. HTML Form to register to use the site
        ii. Sends user to the Register Page
        iii. After user register, user is sent to the HOME PAGE
    b. HTML form to login to the site
        i. Once logged in, user will be directed to the HOME PAGE

2. REGISTER PAGE (register.html)
    a. HTML Form to input a username & password
    b. New user information saved to database
    c. HTML template with CSS styling for the REGISTER page

3. HOME PAGE (homepage.html)
    a. List of popular anime character “dating profiles”
        i. Search for characters by name or show title
        ii. Information provided by Kitsu API
    b. List of all matches a user had made in the past

4. CHARACTER PROFILE PAGE (profile.html)
    a. Basic information: description, name, image from Kitsu API
    b. Quotes, provided by anime-chan API
        i. Quote analysis, facilitated by Hugging Face API

        ii. Quote analysis visualized via chart
    c. Match button leading to match page with first profile pre-selected

5. MATCHING PAGE (matching.html)
    a. User selection of two characters to calculate compatibility
        i. Search for and select characters by name or show title
    b. Display selected profiles
        i. First character selection prefilled if redirected from a profile page
        ii. No prefilled selection if redirected from home page
    c. Confirm button leading to compatibility page, prompting database update of character match history

6. COMPATIBILITY PAGE (compatibility.html)
    a. Summarized character profile of both characters
    b. Compatibility percentage provided by Love Calculator API
    c. Custom algorithm weighing both compatibility percentage and quote analysis

Custom Compatibility Algorithm:

- Provided data:
    - Percentage compatibility derived from names or numbers (Love Calculator)
    - Percentages of various sentiments derived from a set of quotes (Hugging Face, anime-chan)
- Assumptions/ observations:
    - Trait similarity is significant in 86% of relationships (2016 KU study), so the similarity of quote analyses should have a weight of 0.86 and the love calculator output percentage should have a weight of 0.14
    - Output of quote analyses usually have a small group of major, deterministic sentiments. Major sentiments can be defined as sentiments with a percentage greater than the mean
- Calculations:
    1. Find the mean of each sentiment given a list of quote analyses respective to a character.
    2. Isolate major sentiments from Hugging face Dataset for characters A and B
    3. Compare each major sentiment from character A to the same sentiment found in character B and find similarity of the two percentages through:
       $1 - \frac{|A-B|}{max(A,B)}$ (repeat for all major sentiments)
    4. Repeat previous step for character B
    5. Find the mean of all the similarity percentages calculated in steps 2,3
    6. Weigh the sentiment similarity and love calculator compatibility, add, then curve the result as needed

Task Distribution:

Samson:

- Foundation
- HTML
- Flask Helper

Erica:

- Database code
- Flask

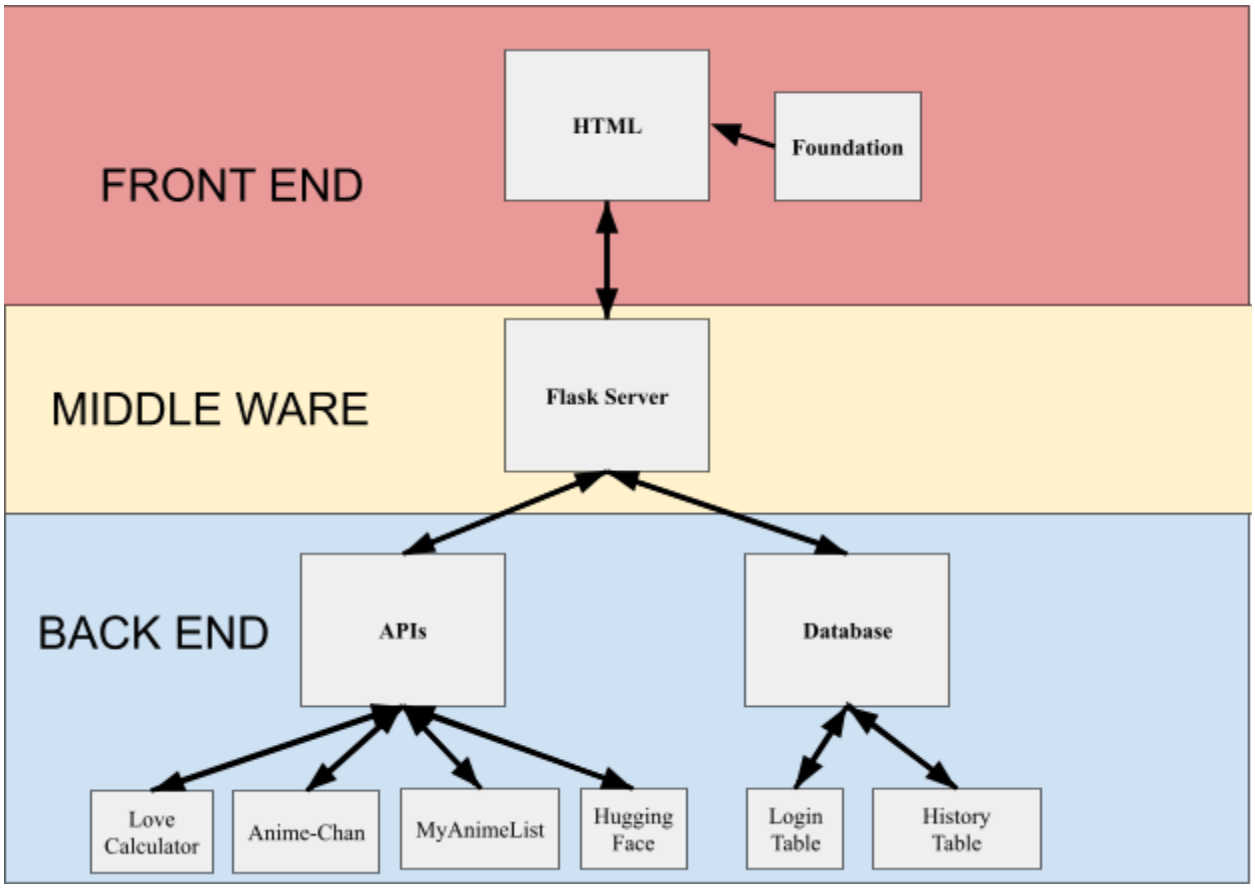
Daniel:

- Foundation
- HTML
- Flask Helper

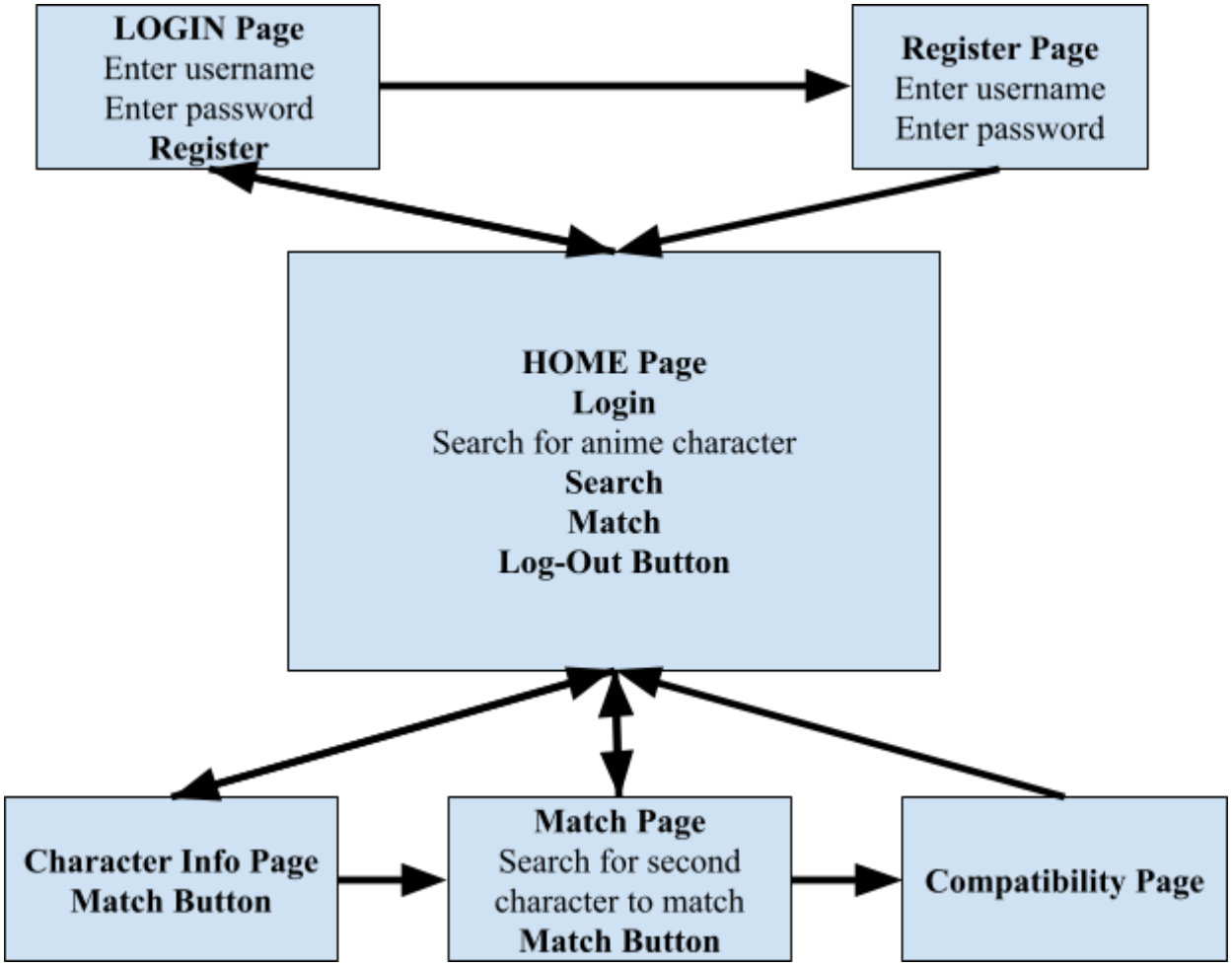
Verit:

- Flask

Component Map:



Site Map:


LOGIN Page
Enter username
Enter password
Register
Register Page
Enter username
Enter password
HOME Page
Login
Search for anime character
Search
Match
Log-Out Button
Character Info Page
Match Button
Match Page
Search for second
character to match
Match Button
Compatibility Page