P05: Le Fin
TNPG: The Chromatic BaNANAs
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TARGET SHIP DATE: 2025-06-06

Color Theory for Dummies by The Chromatic BaNANAs v.2

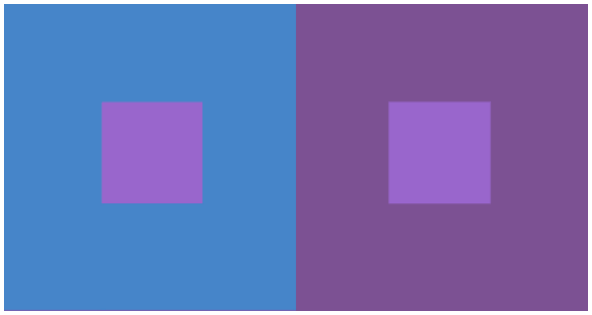
Description

Color Theory for Dummies is a website that uses interactive examples, games, and images to teach dummies about the elusive concept that is color theory. Is the dress white and gold or is it black and blue? Is the sneaker grey and teal or white and pink? How does context change the way we perceive color? We'll teach you some basics, and you'll put your newfound knowledge to the test in a couple of games. We present to you: Color Theory, made by dummies for dummies.

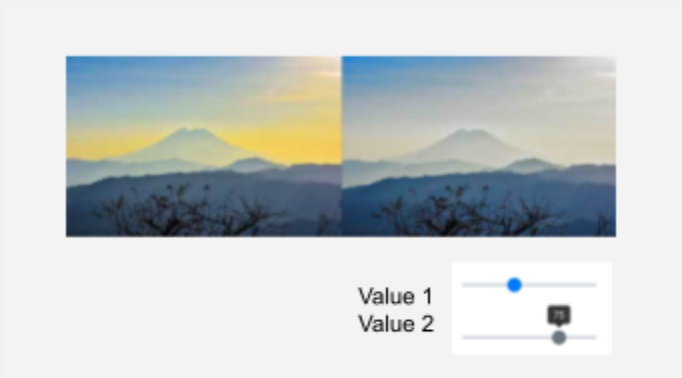

Program Components

- Register/login/logout:
    - Users do not need to log in to use the site
- Home:

    - Contains overall project purpose; introduces color theory alongside image examples
- Wheel:
    - Displays a color wheel that the user can click and drag to pick a color for the box next to the wheel
    - rgb value of selected color will also be displayed
- Color viewing:
    - Shows how colors look differently on differently-colored backgrounds, like this:



    - You'll be able to guess whether the inner squares are the same color or not. The inner and outer squares will be randomly generated upon pressing 'play again.' The inner squares will be either the same or similar colors
    - After guessing, we'll give the answer and your correct guesses stats will go to your profile.
        - Stats will only be available to logged in users
    - The inner squares will move towards each other once the user has guessed, allowing for easier viewing of similarities/differences between the two squares
        - You'll be able to use the 'shift colors' button to view the colors in their original position
- Random Adjustments:
    - An image is pulled from Unsplash API and random adjustments are applied (changing hue, saturation, and brightness)
    - Users guess what adjustments were made using range sliders
        - 0 to 359 degrees for hue
        - 50% to 150% for saturation and brightness
    - They can submit their answer and receive a score based on accuracy (sum of errors between user's guesses and actual answers)
        - If you are logged in, your score is saved

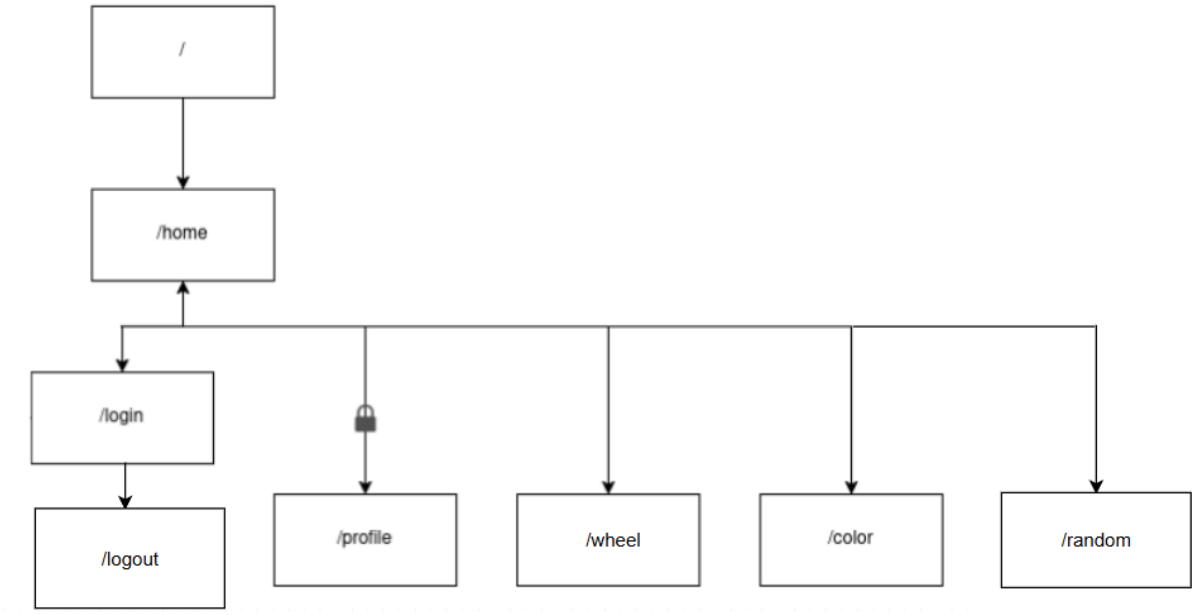


- Profile page (only available to logged-in users):
    - Users can update their profile background gradient
        - Users may select two colors and the direction of their gradient
    - View their past scores on the color viewing and random adjustments game

Component Map

```
Frontend
   |
   +-- HTML/CSS/Tailwind/SASS/JS
   |
   v
Backend
   |
   +-- Flask
   |      - Login, register, logout
   +-- Mongo Database
   |      - User table
   +-- API
   |      - Unsplash
```

Site Map



1. /: automatically redirects user to home page
2. /login: login
3. /logout: logout
4. /home: displays information about color theory
5. /wheel: color wheel with a picker for the user to explore
6. /color: a game where users guess whether two colors on different backgrounds are the same or different
7. /random: a game where users guess the random color adjustments applied to an image
   a. Includes leaderboard with the scores of users
8. /profile: displays user's game stats and personalized profile page based on favorite colors and preferred gradient
   a. only accessible to logged in users

Database Organization **(column names with grey background, entries without)**

- Document Database (MongoDB)

User table

_id	username	salt	password_hash	color1	color2	to	random_scores	color_scores
	String	String	String	String	String	int	int[]	int[]

APIs

We are planning on using the Unsplash API to access royalty-free, high-quality images for the user to partake in our color identification game.

https://unsplash.com/oauth/applications

https://github.com/stuy-softdev/notes-and-code/blob/main/kb/api/411_on_unsplash.md

Front-End Framework: Tailwind

Why

Tailwind is versatile and easy to use and comes with many predefined elements. Its designs automatically adjust to different screen sizes and are highly customizable.

How

We plan to use the following Tailwind elements:

- Carousel
- Gradient Background
- Range Sliders
- Image manipulation via filters

Task Breakdown

Amanda: PM and droplet host
Amanda and Naomi: Front-end (especially game + color viewing)
  - HTML/CSS/JS
  - Sass
  - Utilizing Tailwind
Anastasia: Backend
  - Database (MongoDB)
  - Python Flask
  - API
  - Random adjustments game
  - Profile page
Nia: Backend
  - Python Flask
  - JavaScript
  - Color viewing game
  - Color wheel and picker
  - Filling out the home page with information about color theory