P05: Le Fin
TNPG: The Chromatic BaNANAs
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Color Theory for Dummies by The Chromatic BaNANAs v.0

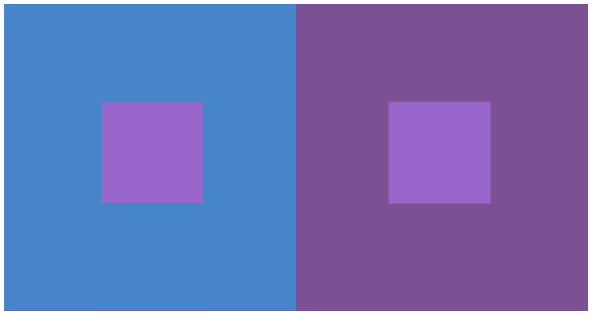
Description

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? Just as your brain can change how you perceive color, we'll challenge you to guess how the colors in different images have been manipulated. We present to you: Color Theory, made by dummies for dummies.

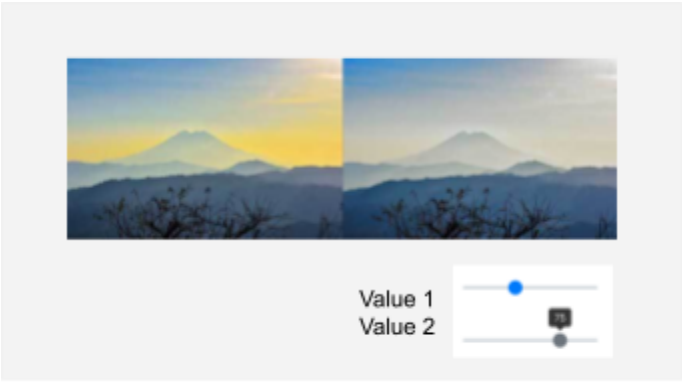

Program Components

- Login/register/logout:
    - Users do not need to log in to use the site
    - Registration asks for user's favorite color

- Home:
  - Contains overall project purpose; introduces color theory
- Color viewing:
  - Shows how colors look differently on light vs dark backgrounds, like this:



  - Can view multiple color combinations by cycling through a carousel with arrow keys
- Game:
  - An image is pulled from Unsplash API and random adjustments are applied (changing saturation, hue, etc.)
  - Users guess what adjustments were made using range sliders (-100 to 100, inclusive)
  - They can submit their answer and receive a score based on accuracy (sum of nonnegative differences between user's guess and actual answer)
    - If you are logged in, your score is saved
  - Leaderboard shows the top 10 lowest scores
    - If you are not logged in, you can view the leaderboard but you cannot appear on the leaderboard

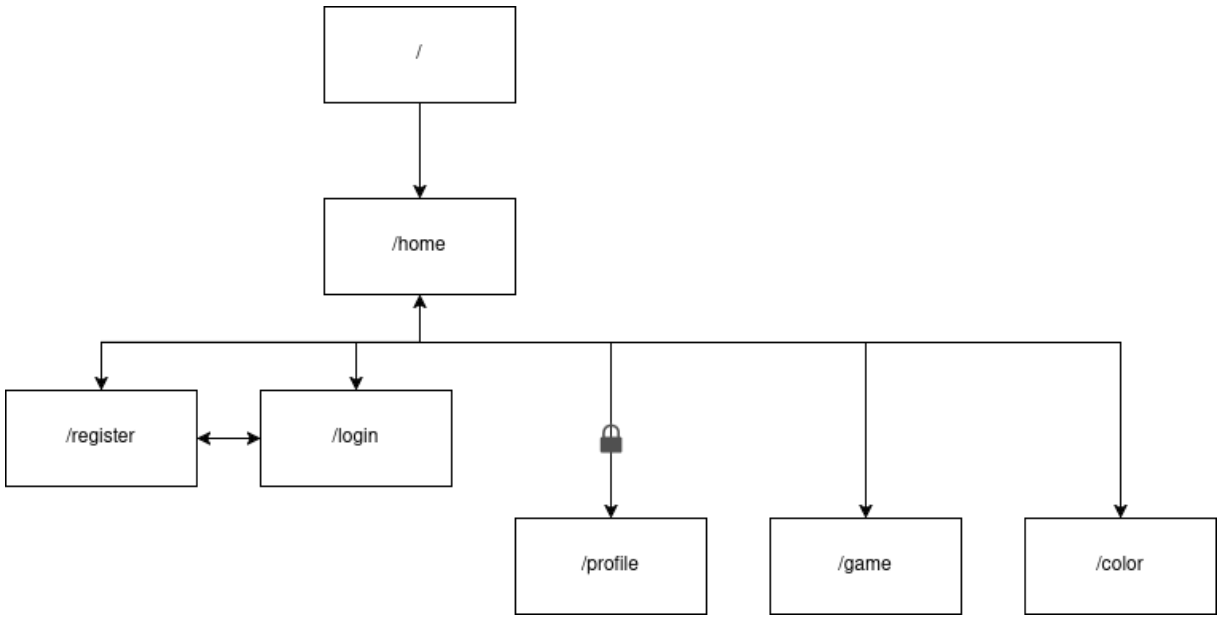


- Profile page (only available to logged-in users):
  - Users can update their favorite color by selecting from a color wheel
  - View their past scores on the guessing game
  - Gradient in the background based on user's favorite color

Component Map

```
Frontend
   |
   +-- HTML/CSS/Tailwind/React/JS
   |
   v
Backend
   |
   +-- Flask
   |      - Login, register, logout
   +-- Mongo Database
   |      - User table
   +-- API
   |      - Unsplash
   +-- Python Pillows
   |      - Image processing and manipulation
```

Site Map



1. /: automatically redirects user to home page
2. /home: displays information about color theory

3. /register: register
4. /login: login
5. /profile: displays user's personal information, ex. Favorite images, colors, and game statistics
    a. only accessible to logged in users
6. /game: a game where users guess the value adjustments applied to an image
7. /color: a view of how different colors appear differently on light vs. dark backgrounds

Database Organization (Column names with grey background, entries without)

- Document Database (MongoDB)

User table

_id	username	password	fav_color	scores
	String	String	String	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:

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

Task Breakdown

Amanda: PM and droplet host
Amanda and Naomi: Front-end (especially game + color viewing)
- HTML/CSS
- JavaScript React
- Utilizing Tailwind

Anastasia: Backend
- Database (MongoDB)
- Python Flask
- API
- Profile page

Nia: Backend
- Python/creating functions for the game, including:
    - random adjustments
    - creating user score, etc.
- Filling out the home page with information about color theory