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15-112
Fall 2020

Structural Plan

Animation File

This is the main file that will track the player's key presses and mouse clicks. It will pull together instances of objects from the map and characters file and ingredients file, and display the images associated with each object on the game screen. It will toggle between the different game modes: title screen, pantry mode, cooking mode, and judging mode. There will be a continuous timer that will transition between the game modes.

Map and Characters File

This is the file that will construct the different elements of the maps for each game mode. It will also contain the classes for the playable character avatar, as well as the class for the opponent class. It will contain the code for the game AI, including algorithms for automated movement and intelligent automated dish creation.

Ingredients File

This is the file containing all the ingredient objects, separated into different types of food. Each ingredient class has different attributes (e.g flavors, texture, if it's a base vs middle vs topping). It also contains a "recipe book" for common ingredient combinations, as well as a function that uses the attributes such as flavor and texture to evaluate a score of the ingredient combination. It will also contain the appliance classes that will need to be combined with the ingredients. It will call the web scraping file and contain the functions used for the final evaluation of each dish.

WebScraping File

This is the file using BeautifulSoup and Selenium to access www.supercook.com/#/recipes and check off the ingredients used in the final products of the character. It will automate clicks on the recipes and scrape the ratings. Using a combination of the number of applicable recipes and average rating, it will determine an average rating of the final dish.

Competitive Analysis

There are a lot of cooking-centered games out there; none, however, combine an intelligent knowledge of ingredient combinations with an intelligent computer-driven competitor.

Cooking Mama
Cooking Mama is a game that is similar in how it focuses on building up different dishes using both ingredients and the necessary equipment. However, there is no character interaction and movement on the map, and primarily focuses on the minigames to complete each task as the recipe and instructions are given to the player.

Papa's Pizzeria
Papa's Pizzeria, as well as the likes of Papa's Freezeria and Papa's Burgeria, emphasize the user in direct control of which ingredients and parts of the kitchen they need to interact with in order to build up an order. However, there is little creative freedom, as the order is dictated by the customer's desires.

Webkinz *Chef Challenge*
Deep within the Tournament of Webkinz, users could play against their friends or a computer and compete in combining three set foods for a final product to please a panel of judges. Surprisingly, this is the most conceptually similar to my game; however, the character cannot directly interact with the kitchen map, and the algorithm to determine the winner seems relatively naive and solely dependent on whether an ingredient the judge likes is used, thereby making the game highly unrealistic.

Algorithmic Plan

Game AI
In order to build the game AI, I aim to code a randomized controlled avatar that will move around the kitchen and develop a dish in tandem with the character-controlled avatar. I aim to use the depth-search algorithm to intelligently move the agent around the board to avoid obstacles and match the natural path of a chef in the kitchen. I aim to intelligently develop recipes by weighting optimal ingredient combinations and generating a dish using these weights.

Isometric Map
I hope, time permitting, to create an isometric-based board for the kitchen map, as opposed to my current top-down camera angle. In order to achieve this, I will need to write and apply a function that performs isometric projection and converts points from the 2D system to isometric.

I plan to still calculate all my character movements in a typical xy grid, but convert to the isometric system when displaying the code.

I plan to reference this guide (https://gamedevelopment.tutsplus.com/tutorials/creating-isometric-worlds-a-primer-for-game-developers--gamedev-6511) for the procedure, although I will write my own functions and algorithms.

Web Scraping
Utilizing BeautifulSoup and Selenium, I aim to input the user's final product's ingredients and materials used into this website--https://www.supercook.com/#/recipes--and then scrape the resulting page to see how many corresponding recipes pop up, and their respective ratings. I will use this as one of the evaluation metrics for judging.

Project Description

The project is a simulation game inspired by the highly popular Food Network cooking competition, *Chopped*, in which competitors are given a basket of several mystery ingredients and challenged to create a dish utilizing them.

Timeline Plan

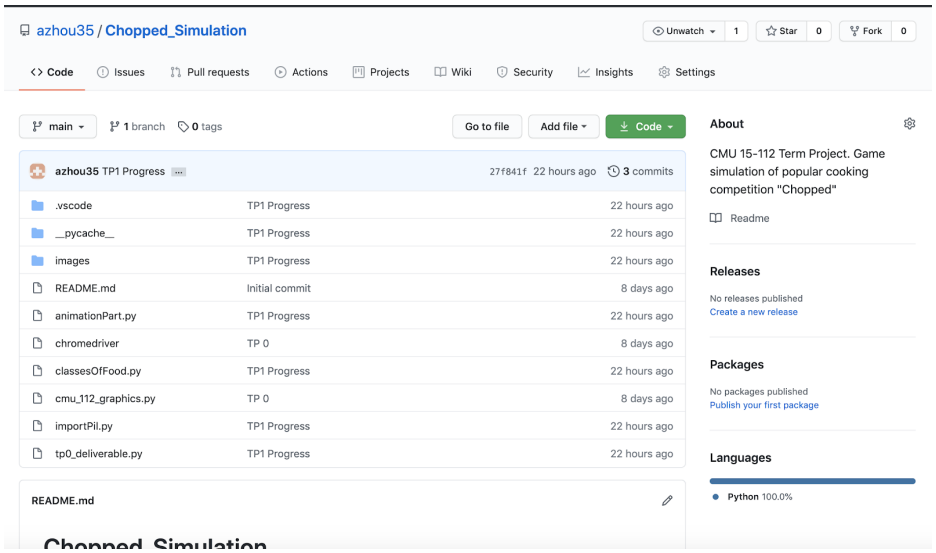
12/1/20: Finish implementing class-based ingredient complexity
12/3/20: Finish web scraping aspect
12/4/20: Finish Game AI
12/6/20: Finish Isometric Map
12/8/20: Finish graphics for game

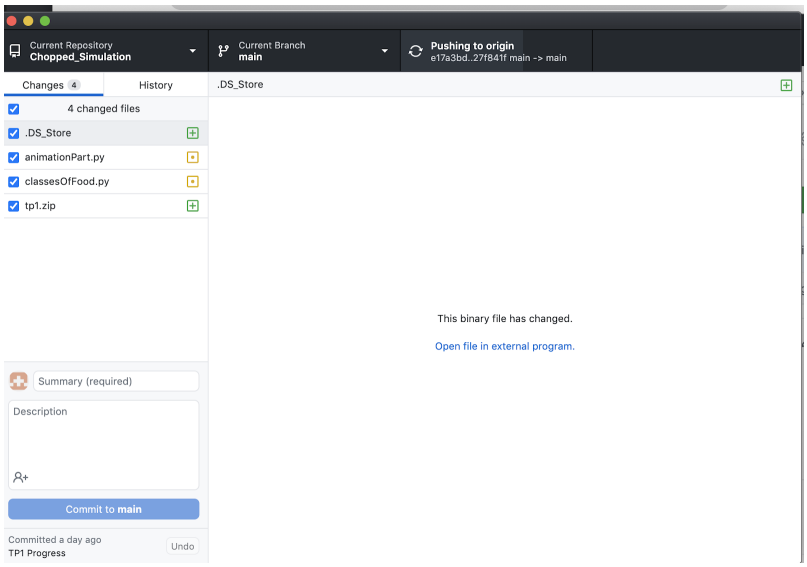
Module List

- BeautifulSoup
- Selenium
- Regex

Version Control Plan

I will utilize GitHub (specifically GitHub Desktop).
https://github.com/azhou35/Chopped_Simulation





TP2 Update

I now have all my ingredients and character classes in one file labeled as my classes file. I did not create a map and characters file. I implemented the animation framework using modal apps, to easily switch between different screens of the app.