



GADE7321__ PART2

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High Concept Statement:

The theme of our game is a cooking simulation that combines elements of blind selection, risk and reward, and competitive play. Two players battle out to create smoothies based on random ingredients they pick through randomised cards, the best and tastiest smoothie wins.

We bring a unique style to cooking simulations, with our mechanic to use random ingredients that are given to you with cards, and the competitive turn based multiplayer style gives a more competitive sense to our game.

Game Rules:

Setup Instructions

- You enter the game at the main menu.
- As soon as you enter the game, both players will be in a kitchen.
- It's will be split screen, player one being of the top screen and player two at the bottom, similar to an old arcade games called " Puyo Puyo".
- The game starts as soon as the cursor indicates who will first pick the secret ingredients.
- If the cursor is blue then it's player one, if its player two then the cursor is red.

Gameplay Sequence

- The ingredients are a set of 10 cards, placed down one row on the right-hand side of the game screen.
- 5 cards being good ingredients and 5 being bad.
- The cards show no information of what ingredient it is until chosen.
- Players will take turns in choosing their mystery ingredients, so if player 2 goes first they choose one card, then player one immediately chooses a card right after.
- When both players have chosen 5 ingredients, one of the players has to press the blend button at the bottom of the game, to make the smoothies.
- When the blending is completed the comparison between both smoothies to decide which one is better will start.

What players can do:

- Players can interact with the 10 cards they choose from.
- Interact with the Blender, to blend the ingredients in order to make their smoothie.

Victory Conditions

- Good and bad ingredients are determined, through what is necessarily used when making a smoothie, for example a person will not use toothpaste when making a smoothie, it's not a common ingredient, but peaches are a normal ingredient used in smoothies.
- In order to win one of the players has to make the best smoothie.
- Since half of the ingredients are good and the other half are bad.
- The winner is based on who has the most good ingredients in their smoothie.

Resolving conflicts and Interactions:

- Players can interact with the button that controls the blender, or the cards/Ingredients, on the right-hand side of the game view.
- The blender will not work until both players have 5 ingredients each.
- If the two players make smoothies that are mathematically the same in terms of how many good and bad ingredients they have. Then the game will end a draw.

Game State function:

We created a class called Game state which handles a data structure to hold information about the game state, such as player ingredients and ingredient availability.

Player Ingredients:

The game state includes two lists, player1Ingredients and player2Ingredients, to store the ingredients selected by each player, respectively. These lists are initially empty but are updated as players select ingredients during gameplay.

Ingredient Availability:

The game state also includes a dictionary named ingredient Availability. This dictionary keeps track of the availability of each ingredient on the game board. Each ingredient name serves as a key in the dictionary, with a corresponding Boolean value indicating whether the ingredient is available (true) or has been selected by a player (false).

By utilizing these data structures, the game can accurately represent and store information about the current state of gameplay. For example, after a player selects an ingredient, it is added to their respective ingredient list, and its availability is updated to reflect that it's no longer available for selection by other players. This representation allows the game to manage player actions, track ingredient availability, and ensure that the game state is updated and maintained throughout the gameplay loop.

Utility Function Equation:

The utility function to assign a numeric result based on the count of good and bad ingredients each player has selected. This approach allows us to quantify the quality of ingredients chosen by each player, making the evaluation more objective.

Utility Function:

Calculate the count of good ingredients and bad ingredients for each player.

We Assigned a numeric score based on the difference between the counts of good and bad ingredients. The player with a higher score wins and if the scores are equal, it's a tie.

Evaluation:

To determine which ingredients are considered good and bad are based on logic, for example a banana is considered a good ingredient and Toothpaste is considered a bad ingredient. Count the number of good and bad ingredients selected by each player. We then calculate the score for each player based on the difference between the counts of good and bad ingredients. The game declares the winner, or a tie based on the comparison of scores.

Example for a Tie

Player 1:

Good Ingredients: Strawberry, Mango, Blueberries

Bad Ingredients: Toothpaste, Tomato

Score:

$$\text{Good Ingredients} - \text{Bad Ingredient} = 3 - 2 = 1$$

Player 2:

Good Ingredients: Spinach, Pineapple, Cheese

Bad Ingredients: Banana, Toothpaste

Score:

$$\text{Good Ingredients} - \text{Bad Ingredients} = 3 - 2 = 1$$

In this example, both players have a score of 1, which means they have selected an equal number of good and bad ingredients. Therefore, the game would end in a tie.

Example for a Win

Player 1:

Good Ingredients: Strawberry, Mango, Blueberries, Pineapple

Bad Ingredients: Toothpaste, Tomato

Score:

$$\text{Good Ingredients} - \text{Bad Ingredients} = 4 - 2 = 2$$

Player 2:

Good Ingredients: Spinach, Pineapple, Cheese

Bad Ingredients: Banana, Toothpaste

Score:

$$\text{Good Ingredients} - \text{Bad Ingredients} = 3 - 2 = 1$$

In this scenario:

Player 1 has selected 4 good ingredients and 2 bad ingredients, resulting in a score of 2. Player 2 has selected 3 good ingredients and 2 bad ingredients, resulting in a score of 1. Which means player 1 has selected more of the good ingredients than player 2. Therefore, the game would end in a win.

References

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Github link

<https://github.com/Hakeemshaik/GADE7321part2>