Existing Code Questions

CODE: https://github.com/warpkid/BiscuitBattle

Introduction

You will have been given a link to an existing git repository that contains a rather boring implementation of Top Trumps using 'biscuit cards'. The game is made up of a number of components:

- An *IPlayer* interface that outlines a what a player of the game must implement to take part

- An *IGameController* that outlines what an object must implement to be able to run the game through.

- A Service Locator that serves default types

- A Factory that returns a random set of cards that make up each player's hands

We appreciate that you may find some of the concepts here new and some of the questions and tasks might seem difficult. We ask that if you can't write any code that you simply write down what you think you might do.

About the Game

Players both take a card from the top of their deck. They then take it in turns to pick an attribute from their card to compare against their opponent. If the score is higher for your selected attribute, you take the opponent's card. The player who runs out of cards first loses.

Questions

1. The game is currently two player only. How might you extend it to make it support more than one player? This would naturally mean changing the rules of Top Trumps a bit. Feel free to explain this in text. There is no need to write code.

2. What pattern is used to create the decks of cards for each player? Is this the best way?

3. A Service Locator is used to load dependencies at run time. How else might you do this? Think about dependency injection (or Google it!)

4. How might you modify the gameplay to make it more interesting?

Tasks

Pick any of the following THREE tasks to complete. You do not need to do them all.

1. Add a new biscuit type of your choosing to the game.
   a. We'd like you to create a new type of your choosing and all the required classes.
2. Create a Biscuit Builder. Currently the name and attributes of biscuits are predetermined at the point of creation. For example a Digestive biscuit currently has the stats Texture: 60, Moistness: 20, Snap: 40, Sweetness: 60 and Texture: 60.
   a. We'd like you to create a biscuit builder that will randomly generate stats from 0 to 100 for each attribute. Feel free to modify *IBiscuitCard* however you see fit.
   b. We'd like you to create a simple name builder to generate the biscuit's name, ideally it will take the attributes of the biscuit into account when generating a name.

3. Add a graphical element.
   a. This question is purposefully open ended. Feel free to add a graphical element as you see fit! Think about the output of the game. How might a biscuit card store something that could be written to the console to 'show itself'.
4. *IPlayer* represents an object that can play the game. You will find two implementations in the project, one human that reads and writes to the console and one AI that picks an attribute to play. Create a new AI Player with a different personality. Maybe it picks an attribute at random (crazy AI Player). Maybe it picks the lower (generous AI Player)
5. There is an empty unit test in the project with the name *game_picks_winning_player_correctly*. What might you test in here? Could you test the code as it currently stands? If not, why?
6. What other Unit Tests might you write for this type of game? You don't have to write any. Simply jot down some ideas and a reason to why they would be beneficial.