

1 Assignment

Implement a system that is designed to play the "Crazy Eights" card game. Specifically your system should implement the following:

1. A game engine that can compete four players against each other and report the result of the match
2. A simple player strategy to play the game
3. A main program that plays a match with 4 players using the player strategy and game engine

We will provide you with an implementation of a `Card` class to represent playing cards, `PlayerTurn` class to represent the actions taken by a player in a single turn, and an interface for player strategies, called `PlayerStrategy` that should be used in your implementation.

You should create your Github repository from this link:

<https://classroom.github.com/a/gLjm8XZz>

2 Crazy 8s

https://en.wikipedia.org/wiki/Crazy_Eights

There are several versions of this game. You must implement the following version:

The game is played with a standard 52 card deck which is shuffled before the start. At the start of the game 5 cards are dealt to each player and the rest of the deck is placed in a draw pile. The top card is then drawn from the draw pile and placed in the discard pile. If it is an eight shuffle it back into the draw pile and draw again.

Starting with the first player each player each player takes a turn. In the turn, they do one of the following:

1. Discard a card that matches the suit or value of the top of the discard pile
2. Discard an Eight card naming a suit that must be matched by the next player
3. Draw a card

Play continues in this manner until either the draw pile is empty or a player is able to win by discarding all of the cards in their hand. The player who won will gain the summed value of cards that the other three players have in their hands. In the case of a tie, all players should receive the summed value of the other three players' hands.

Card Values

- Eight = 50 points
- King, Queen, Jack, Ten = 10 points

- Ace = 1 points
- Other cards = numeric value

3 Player Strategy

You must implement at least one `PlayerStrategy` for this game. This strategy should only make legal plays but has no other restrictions on how they play.

4 Game Engine

Your game engine should take in strategies for four players and play a game of crazy eights using them. The game engine should keep playing until one player has a score of 200 points or more. Once a player has reached a score of 200 points or more, that player has won a single match. Players who have made invalid moves during a match should be “reported” and the match should end.

You must write a main function that uses your game engine to play a match of crazy eights reporting the cumulative scores for each game until the match is completed or a cheater is found.

5 Extra Credit

If you want to extend this assignment some suggestions include:

- Extend your game engine to support a number of players other than 4.
- Extend your program to allow a player to play from the command line or other interface
- Implement more than one player strategy