Mid-Project

Due November 2, 1:00pm

100 points

CS 2235

Data Structures and Algorithms

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1. Create a program to simulate the card game War. You may utilize the War, Card, Deck, and Player classes developed in class. Use appropriate data structures. Also use appropriate object-oriented programming.
    a. First create the game for two players. Allow an option to print the cards as they are played during the game (including wars); this should clearly differentiate each player's card(s) and identify which card won (ie bold or star the winning card).
    b. Also include an option to print the number of cards each player has left at each step.
    c. Keep track of the number of steps in the game and display this information at the end, along with which player won.
2. Expand your program to allow three players. Again include an option to print the cards played at each step and print how many cards each player has at each step. Again keep track of the number of steps in the game and print this information at the end along with which player won.
3. Again expand your program to keep track of the number of wars (tied cards) during the game. Also keep track of the number of double wars (tied cards twice). And for the 3-player version, count the number of 3-way wars (all players have same card). Print this information at the end of the game in the summary.
4. Play 1000 games of two-player war. Play 1000 games of three-player war (you will probably want to turn the per-step printing off). For both the 2-player and 3-player versions, use Java to find:
    a. The average number of steps per game.

b. The average number of wars per game.
c. The average number of double wars per game.
d. The average number of 3-way wars per game (for 3-player only).

Demonstrate that your program works. Submit your source code and output screenshots.