ITI 1120A – Assignment 4

Abdorrahim Bahrami

Due date: 21/11/2022, 12:00 PM

How to Submit?

Please follow the submission guideline for your assignment. You need to submit a single Python file, which you will name it Poker.py, for this assignment. You can also submit a zip file with the same name. **Only a zip file, do not use .rar or any other compression format.**

Make sure you have information of yourself and your partner in a comment at the beginning of the program in the following format.

 # firstname lastname student_ID

 # firstname lastname student_ID

You get a 0 if you do not follow the format. NO SECOND CHANCE.

The programming task

OK, we did a board game and a video game. Now, it is time for a card game. So, let's play some cards. You need to implement a class for a simplified version of the game poker. To make it simple and organized we show cards with simply using a string of length 2. The first letter is the rank of the card, which can be A, 2, 3, 4, 5, 6, 7, 8, 9, T, J, Q, K. We use T for 10, to be able to represent the cards with two letters. The second letter is the suit, which can be D for diamonds, C for clubs, S for spades, or H for hearts. All letters are capital.

You should have these numbers in the class to manage the game.

The number of players.

The list of cards in the hand of each player. (You need a list of a list for this)

The list of cards on the table.

You also need to hold the deck of cards.

You should have the following method in your class.

__init__ shuffles the deck of cards and initializes the arguments above.

The number of players, default is 2.

The empty list of cards for each player.

The empty list of cards on the table.

The method add_card, which receives the index of a player and adds the top card on the deck to the hand of that player.

The method add_to_table, which adds a card from top of the deck to the table.

The following methods receives a list of five cards and returns a Boolean

IsStraightFlush (Returns true if all cards are from the same suit and their ranks is in order)

Example: [AH, 2H, 3H, 4H, 5H] True

Example: [TS, JS, QS, KS, AS] True

Example: [7D, 9D, JD, TD, 8D] True (cards might not be given in the rank order)

Example: [8C, 9C, TC, 2C, 3C] False

IsFourofaKind (Returns true if there are four cards of the same rank)

Example: [9H, 6S, 9D, 9C, 9S] True

Example: [2H, 6S, 5H, 8C, 9S] False

IsFullHouse (Returns true if there are three cards of the same rank and two cards of another rank)

Example: [JH, 7S, 7D, JD, JC] True

Example: [2H, 6D, 5D, 8C, 8S] False

IsFlush (Returns true if all five cards have the same suit)

Example: [JH, 7H, 8H, 2H, 5H] True

Example: [3D, 6D, 3H, 8C, 8S] False

IsStraight (Returns true if the five cards are in the order of their rank, suits are not important)

Example: [AD, 2S, 3D, 4C, 5H] True

Example: [TS, JS, QH, KH, AC] True

Example: [7S, 9D, JD, TH, 8H] True (cards might not be given in the rank order)

Example: [8C, 9D, TC, 2D, 3H] False

IsThreeofaKind (Returns true if there are three cards of the same rank)

Example: [TH, 6S, TD, TC, QS] True

Example: [2H, 6S, KH, 8C, QS] False

IsTwoPairs (Returns true if there are two pairs of cards of the same rank)

Example: [TH, 6S, AS, TC, 6D] True

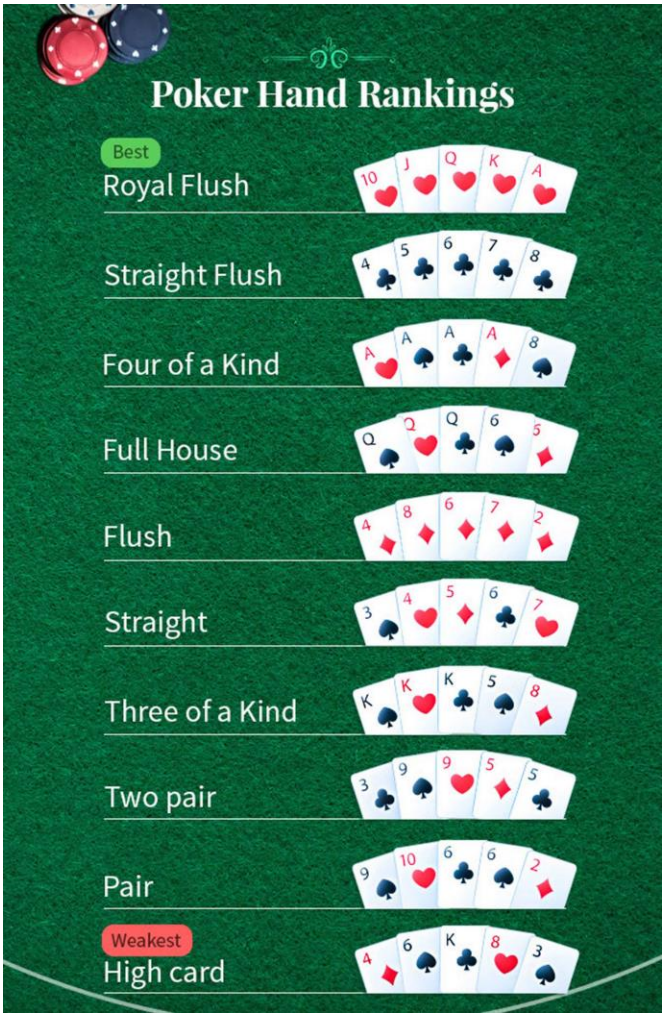
Example: [2H, 6S, 9H, 8C, QS] False

IsOnePair (Returns true if there is a pair of cards of the same rank)

Example: [TH, 6S, AS, KC, KD] True

Example: [2H, 6S, 9H, 8C, QS] False

The following picture shows how hands in Poker are formed. Note that here we mixed straight flush and royal flush in one. If none of the hands above is formed, the hand is called High Card.



Inherits a class from the PokerGame class above called TexasHoldem, which has the following methods.

__init__, which initializes the lists like the super class.

deal, which deals two cards to the hand of each player and five cards on the table.

hands, which returns a list of what each player has.

For each player, this method should choose five cards from the total seven cards on the table and two cards in the player's hand to form the best hand the player can have.

For example, if the first player has JD and KS in their hand and the second player has JH and TC in their hands and the cards on the table are 2C, JC, KD, 5C, AC, then this method should return ["Two Pairs", "Flush"].

Bonus marks

Inherits a class from the PokerGame class above called OmahaHoldem, which has the following methods.

__init__, which initializes the lists like the super class.

deal, which deals four cards to the hand of each player and five cards on the table.

hands, which returns a list of what each player has.

For each player, this method should choose exactly three cards from the cards on the table and exactly two cards from the player's hand to form the best hand the player can have.

For example, if the first player has JD, KS, 2D, KH in their hand and the second player has JH, JS, AH, and TC in their hands, and the third player has 3D, 4S, 6H, 9C and the cards on the table are 2C, JC, KD, 5C, 2H, then this method should return ["Full House", "Three of a Kind", "Straight"].

Rules

You can do this assignment in a group of two to learn team work. Make sure you collaborate both in thinking and brainstorming about this problem and programming with your partner. Any similarity between your programs to other groups is considered plagiarism. Yes, if you do not like team work, you can do it alone. Do not use any code or program from the Internet because it is also considered plagiarism. See the university policies for plagiarism in the following link.

https://www2.uottawa.ca/about-us/provost

Measures that we take to detect plagiarism

Teaching assistants have been instructed to report to the professor any suspicion of plagiarism they find when they mark assignments.

If plagiarism has been detected in any part or in the whole assignment, the professor will take appropriate measures. Recall that it is equally bad to copy a solution and to let someone else copy your solution.