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#this import is needed if you want to shuffle the deck.
import random

#this list includes the suits
#H = hearts
#D = diamonds
#S = spades
#C = clubs
suits = ["H", "D", "S", "C"]

#create the deck
deck = []

for suit in suits :
    for num in range(1, 14):
        value = str(num)

        #replace values 1, 11, 12, 13
        #with the letters from the cards
        if num == 1:
            value = "A"
        elif num == 11 :
            value = "J"
        elif num == 12 :
            value = "Q"
        elif num == 13 :
            value = "K"


        deck.append(value + suit)

#shuffle the deck - delete this line if you wanted a sorted deck
random.shuffle(deck)
print(deck)


#Giving a numeric value to the rank of each card
def def_rank(card):
    if card[0] == "A":
        return 14
    if card[0] == "2":
        return 2
    if card[0] == "3":
        return 3
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    if card[0] == "4":
        return 4
    if card[0] == "5":
        return 5
    if card[0] == "6":
        return 6
    if card[0] == "7":
        return 7
    if card[0] == "8":
        return 8
    if card[0] == "9":
        return 9
    if card[0:2] == "10":
        return 10
    if card[0] == "J":
        return 11
    if card[0] == "Q":
        return 12
    if card[0] == "K":
        return 13


#This function removes the top card from the deck
def draw_card():
    top_card = deck[0]
    deck.remove(top_card)
    return top_card

#Comparing card ranks and assigning the "dealer"
print("Let's assign the dealer of our game!")
def assign_starter():
    #Giving each player a card
    player_hand = []
    player_hand.append(draw_card())
    computer_hand = []
    computer_hand.append(draw_card())
    #displaying what both players got
    print("")
    print("Player's card: " + str(player_hand))
    print("Computer's card: " + str(computer_hand))
    dealer = ""
    if def_rank(player_hand[0]) > def_rank(computer_hand[0]):
        dealer = "player"
    while def_rank(player_hand[0]) == def_rank(computer_hand[0]):
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        player_hand.append(draw_card())
        computer_hand.append(draw_card())
        print("Player's card: " + str(player_hand))
        print("Computer's card: " + str(computer_hand))
        if def_rank(player_hand[-1]) > def_rank(computer_hand[-1]):
            dealer = "player"
        if def_rank(player_hand[-1]) < def_rank(computer_hand[-1]):
            dealer = "computer"
    if def_rank(player_hand[0]) < def_rank(computer_hand[0]):
        dealer = "computer"

    return dealer
dealer = assign_starter()
print("Dealer:" + dealer)
#shuffling cards to start the game
random.shuffle(deck)

#This function deals a certain number of cards to one hand
def deal_cards(deck, hand, num):
    for i in range(num):
        card = draw_card()
        hand.append(card)

#Creating an empty list to represent each player's hand
player_hand = []
computer_hand = []

#Dealing 7 cards
if dealer == "player":
    deal_cards(deck, computer_hand, 7)
    deal_cards(deck, player_hand, 7)
else:
    deal_cards(deck, player_hand, 7)
    deal_cards(deck, computer_hand, 7)

#Printing each player's hand
print("")
print("")
print("Let's start the game!")

#This function will display each player's current cards
def display_hand():
    print("Player's hand: " + str(player_hand))
    print("Computer has " + str(len(computer_hand)) + " cards.")
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display_hand()

#This function will check for books(4 of one kind) of cards
def check_for_books(hand, books):
    ranks_in_hand = []
    for card in hand:
        if card[0:2] == "10":
            ranks_in_hand.append("10")
        else:
            ranks_in_hand.append(card[0])

    for rank in ranks_in_hand:
        if ranks_in_hand.count(rank) == 4:
            print("Book found! one book of" + str(rank))
            books.append(rank)
            #Removing those cards
            #making a new hand
            new_hand = []
            for card in hand:
                if card[0:2] == "10":
                    card_rank = 10
                else:
                    card_rank = card[0]
                if card_rank != rank:
                    new_hand.append(card)
            return new_hand

    return hand

#creating an ampty list for the books each player collects
books_player = []
books_computer = []


#This function handles all the steps for the Player's turn
def player_turn():
    global player_hand
    matching_cards = []
    rank = input("What rank would you like to ask for?(2-10,A,K,Q,J): ").upper()
    valid_ranks = ["2", "3", "4", "5", "6", "7", "8", "9", "10", "J", "Q", "K", "A"]
    while rank not in valid_ranks:
        rank = input("Invalid input! Please enter a valid rank(2-10,A,K,Q,J): ").upper()
    if rank == "10":
        rank_number = 10
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    else:
        rank_number = def_rank(rank + "T") #"T" is just a fake suit to help with the comparisson
    for card in computer_hand:
        card_rank = def_rank(card)
        if card_rank == rank_number:
            matching_cards.append(card)

    #displayin any possible cards the player has got
    if len(matching_cards) > 0:
        print("Congrats! You have gotten " + str(matching_cards) + "from your opponent.")
        for card in matching_cards:
            computer_hand.remove(card)
            player_hand.append(card)

        player_hand = check_for_books(player_hand, books_player)

    else:
        print("Go fish! You will take a card from the deck." )
        if len(deck) > 0:
            drawn_card = draw_card()
            print("You drew " + str(drawn_card))
            player_hand.append(drawn_card)
            if def_rank(drawn_card) == rank_number:
                print("You drew the rank you asked for! You get another turn")
                check_for_books(player_hand, books_player)
                player_turn()
            else:
                check_for_books(player_hand, books_player)
        else:
            print("Deck is empty!")
    #displaying the player's hand
    print("Player's hand: " + str(player_hand))



#This function will handle all the steps in the computer's turn
def computer_turn():
    global computer_hand, player_hand
    matching_cards = []
    #counting ranks in computer's hand to find the most common one
    ranks_in_hand = []
    for card in computer_hand:
        if card[0:2] == "10":
            ranks_in_hand.append("10")
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    else:
        ranks_in_hand.append(card[0])
#finding all the unique ranks
unique_ranks = []
for rank in ranks_in_hand:
    if rank not in unique_ranks:
        unique_ranks.append(rank)
#counting how many times each rank appears
highest = 0
most_common_rank = ""
for rank in unique_ranks:
    count = 0
    for item in ranks_in_hand:
        if item == rank:
            count += 1
    if count > highest:
        highest = count
        most_common_rank = rank
print("Computer asks for " + str(most_common_rank))

if most_common_rank == "10":
    rank_number = 10
else:
    rank_number = def_rank(most_common_rank + "T")

for card in player_hand:
    card_rank = def_rank(card)
    if card_rank == rank_number:
        matching_cards.append(card)

if len(matching_cards) > 0:
    print("Computer got " + str(matching_cards) + " from you!")
    for card in matching_cards:
        player_hand.remove(card)
        computer_hand.append(card)
    computer_hand = check_for_books(computer_hand, books_computer)
else:
    print("Go fish computer!")
    if len(deck) > 0:
        drawn_card = draw_card()
        print("Computer drew " + drawn_card)
        computer_hand.append(drawn_card)
        if def_rank(drawn_card) == rank_number:
            print("Computer drew the rank it asked for! Another turn.")
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            computer_hand = check_for_books(computer_hand, books_computer)
            computer_turn()
        else:
            print("Deck is empty!")

#This function will handle the game structure
def game():
    while len(player_hand) and len(computer_hand) and len(deck) > 0:
        print("")
        print("<<<<<<Player's Turn >>>>>>")
        player_turn()
        #displaying player's current books
        print("Player's books: " + str(len(books_player)) )
        #checking if player ran out of cards
        if len(player_hand) == 0:
            print("Player ran out of cards")
            break
        print("")
        print("<<<<<<Computer's turn>>>>>>")
        computer_turn()
        #displaying computer's current books
        print("Computer's books: " + str(len(books_computer)) )
        #checking if computer ran out of cards
        if len(computer_hand) == 0:
            print("Computer ran out of cards")
            break
        print("")
        display_hand()

    print("")
    print("Game over!")


#This function checks who the winner is
def check_winner():
    player_score = len(books_player)
    computer_score = len(books_computer)
    print("Final scores are:")
    print("Player score: " + str (player_score))
    print("Computer score: " + str(computer_score))
    if player_score > computer_score:
        print("Congrats! You have won!")
    elif player_score < computer_score:
        print("OOPS! Computer wins!")
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    else:
        print("It's a tie!")


game()
check_winner()
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