Blackjack

September 13, 2017

```python
In [ ]: import random, re, math

        deck = {
            "2 of Spades": 2,
            "3 of Spades": 3,
            "4 of Spades": 4,
            "5 of Spades": 5,
            "6 of Spades": 6,
            "7 of Spades": 7,
            "8 of Spades": 8,
            "9 of Spades": 9,
            "10 of Spades": 10,
            "Jack of Spades": 10,
            "Queen of Spades": 10,
            "King of Spades": 10,
            "Ace of Spades": 11,
            "2 of Clubs": 2,
            "3 of Clubs": 3,
            "4 of Clubs": 4,
            "5 of Clubs": 5,
            "6 of Clubs": 6,
            "7 of Clubs": 7,
            "8 of Clubs": 8,
            "9 of Clubs": 9,
            "10 of Clubs": 10,
            "Jack of Clubs": 10,
            "Queen of Clubs": 10,
            "King of Clubs": 10,
            "Ace of Clubs": 11,
            "2 of Diamonds": 2,
            "3 of Diamonds": 3,
            "4 of Diamonds": 4,
            "5 of Diamonds": 5,
            "6 of Diamonds": 6,
            "7 of Diamonds": 7,
            "8 of Diamonds": 8,
            "9 of Diamonds": 9,
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        "10 of Diamonds": 10,
        "Jack of Diamonds": 10,
        "Queen of Diamonds": 10,
        "King of Diamonds": 10,
        "Ace of Diamonds": 11,
        "2 of Hearts": 2,
        "3 of Hearts": 3,
        "4 of Hearts": 4,
        "5 of Hearts": 5,
        "6 of Hearts": 6,
        "7 of Hearts": 7,
        "8 of Hearts": 8,
        "9 of Hearts": 9,
        "10 of Hearts": 10,
        "Jack of Hearts": 10,
        "Queen of Hearts": 10,
        "King of Hearts": 10,
        "Ace of Hearts": 11
}

card_types = list(deck.keys())

print("Welcome to  Blackjack!")
print("Follow the prompts to bet against the House and win big.")
print("First, what is your name?")

name = raw_input("> ")

print("\nNice to meet you, %s!") % (name)
print("How many decks would you like to play with?")
print("Choose between 2 and 10:")

def deck_size():
    number = raw_input("")
    try:
        number = int(number)
        if number >= 2 and number <= 10:
            return number
        else:
            print("Choose a number between 2 and 10:")
            deck_size()
    except:
        print("Please input a number between 2 and 10:")
        deck_size()

number_of_decks = deck_size()
multiple_decks = []
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def deck_builder(number):
    i = 0
    while i < number:
        multiple_decks.append(card_types)
        i += 1
    return multiple_decks

playing_decks = deck_builder(number_of_decks)
# flatten list of lists into single list
playing_decks = [item for sublist in playing_decks for item in sublist]

print("\nWe'll start you with $1000.")
print("You can play with a bet of $25, $50, $100, or $200.")
print("Type in just the number without the '$.'")
print("What would you like your bet to be?")

money = 1000
def place_bet():
    bet = raw_input("")
    try:
        bet = int(bet)
        if bet == 25 or bet == 50 or bet == 100 or bet == 200:
            return bet
        else:
            print("Choose a bet of 25, 50, 100, or 200.")
            place_bet()
    except:
        print("Choose a bet of 25, 50, 100, or 200.")
        place_bet()
bet = place_bet()

def additional_bet(add_bet, money):
    if add_bet <= money:
        return add_bet
    else:
        print("You don't have that much money...")
        additional_bet(add_bet, money)

def deal_my_hand():
    my_hand = []
    my_hand.append(random.choice(playing_decks))
    playing_decks.remove(my_hand[0])
    my_hand.append(random.choice(playing_decks))
    playing_decks.remove(my_hand[1])
    return my_hand

def deal_dealer_hand():
    dealer_hand = []
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        dealer_hand.append(random.choice(playing_decks))
        playing_decks.remove(dealer_hand[0])
        dealer_hand.append(random.choice(playing_decks))
        playing_decks.remove(dealer_hand[1])
        return dealer_hand

def user_card_count(my_hand):
    user_count = 0
    for card in my_hand:
        if re.match("[2-6]", card):
            user_count += 1
        if re.match("10", card):
            user_count -= 1
        if re.match("[A-Z]", card):
            user_count -= 1
    return user_count

def computer_card_count(dealer_hand):
    computer_count = 0
    for card in dealer_hand:
        if re.match("[2-6]", card):
            computer_count += 1
        if re.match("10", card):
            computer_count -= 1
        if re.match("[A-Z]", card):
            computer_count -= 1
    return computer_count

def user_points(my_hand):
    user_points = 0
    for card in my_hand:
        user_points += deck[card]
    return user_points

def computer_points(dealer_hand):
    dealer_points = 0
    for card in dealer_hand:
        dealer_points += deck[card]
    return dealer_points

while money > 0 and len(playing_decks) >= 4:
    deck["Ace of Spades"] = 11
    deck["Ace of Clubs"] = 11
    deck["Ace of Diamonds"] = 11
    deck["Ace of Hearts"] = 11
    money -= bet
    my_hand = deal_my_hand()
    dealer_hand = deal_dealer_hand()
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my_points = user_points(my_hand)
dealer_points = computer_points(dealer_hand)
user_count = user_card_count(my_hand)
computer_count = computer_card_count(dealer_hand)
running_count = user_count + computer_count
print("\nMy hand: %s" % my_hand)
print("My points: %d" % my_points)
print("Dealer hand: %s" % dealer_hand)
print("Dealer points: %d" % dealer_points)
print("Running count: %d" % running_count)
print("Winnings: $%d" % money)
blackjack = False
if dealer_points == 21:
    print("Dealer has Blackjack! You lose!")
    blackjack = True
if my_points == 21:
    print("You have Blackjack! You win 2.5x your bet!")
    money += bet * 2.5
    blackjack = True
if blackjack == False:
    skip_cpu = False
    if len(my_hand) == 2:
        if re.match("[Ace]", my_hand[0]) and re.match("[Ace]", my_hand[1]):
            my_points = 12
    if len(dealer_hand) == 2:
        if re.match("[Ace]", dealer_hand[0]) and re.match("[Ace]",dealer_hand[1]):
            dealer_points = 12
    print("\nDo you want to bet additional money?")
    print("Type 'y' for Yes or 'n' for No.")
    bet_additional = raw_input("")
    if bet_additional == "y" or bet_additional == "Y":
        print("How much of your remaining money would you like to bet?")
        add_money = int(raw_input(""))
        current_bet  = additional_bet(add_money, money)
        money -= current_bet
    if bet_additional == "n" or bet_additional == "N":
        current_bet = 0
    while my_points < 21:
        print("\nType 'h' to Hit or 's' to Stay.")
        h_or_s_choice = raw_input("")
        if h_or_s_choice == "h" or h_or_s_choice == "H":
            my_hand.append(random.choice(playing_decks))
            playing_decks.remove(my_hand[-1])
            my_points += deck[my_hand[-1]]
            if re.match("[2-6]", my_hand[-1]):
                running_count += 1
            if re.match("10", my_hand[-1]):
                running_count -= 1
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            if re.match("[A-Z]", my_hand[-1]):
                running_count -= 1
            print("\nMy hand: %s" % my_hand)
            print("My points: %d" % my_points)
            print("Dealer hand: %s" % dealer_hand)
            print("Dealer points: %d" % dealer_points)
            print("Running count: %d" % running_count)
            print("Winnings: $%d" % money)
            if my_points == 21:
                print("You have Blackjack! You win 2.5x your bet!")
                money += bet * 2.5
                money += current_bet * 2.5
                skip_cpu = True
                break
            if my_points > 21:
                if any("Ace" in card for card in my_hand):
                    my_points = 0
                    for card in my_hand:
                        if re.match("[Ace]", card):
                            deck[card] = 1
                        my_points += deck[card]
                    print("\nThe Ace is now worth 1.")
                    print("\nMy hand: %s" % my_hand)
                    print("My points: %d" % my_points)
                    print("Dealer hand: %s" % dealer_hand)
                    print("Dealer points: %d" % dealer_points)
                    print("Running count: %d" % running_count)
                    print("Winnings: $%d" % money)
                    if my_points > 21:
                        print("You have over 21 points. You bust!")
                        skip_cpu = True
                        break
                else:
                    print("You have over 21 points. You bust!")
                    skip_cpu = True
                    break
        if h_or_s_choice == "s" or h_or_s_choice == "S":
            break
if skip_cpu == False:
    end_cpu_turn = False
    while dealer_points < 17:
        dealer_hand.append(random.choice(playing_decks))
        playing_decks.remove(dealer_hand[-1])
        dealer_points += deck[dealer_hand[-1]]
        if re.match("[2-6]", dealer_hand[-1]):
            running_count += 1
        if re.match("10", dealer_hand[-1]):
            running_count -= 1
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        if re.match("[A-Z]", dealer_hand[-1]):
            running_count -= 1
        print("\nMy hand: %s" % my_hand)
        print("My points: %d" % my_points)
        print("Dealer hand: %s" % dealer_hand)
        print("Dealer points: %d" % dealer_points)
        print("Running count: %d" % running_count)
        print("Winnings: $%d" % money)
        if dealer_points == 21:
            print("Dealer has Blackjack! You lose!")
            end_cpu_turn = True
            break
        if dealer_points > 21:
            if any("Ace" in card for card in dealer_hand):
                dealer_points = 0
                for card in dealer_hand:
                    if re.match("[Ace]", card):
                        deck[card] = 1
                    dealer_points += deck[card]
                print("\nThe Ace is now worth 1.")
                print("\nMy hand: %s" % my_hand)
                print("My points: %d" % my_points)
                print("Dealer hand: %s" % dealer_hand)
                print("Dealer points: %d" % dealer_points)
                print("Running count: %d" % running_count)
                print("Winnings: $%d" % money)
                if dealer_points > 21:
                    print("Dealer has over 21 points. You win!")
                    money += bet * 2
                    money += current_bet * 2
                    end_cpu_turn = True
                    break
            else:
                print("Dealer has over 21 points. You win!")
                money += bet * 2
                money += current_bet * 2
                end_cpu_turn = True
                break
if end_cpu_turn == False:
    if dealer_points >= 17 and dealer_points < 21:
        if my_points > dealer_points:
            print("You win!")
            money += bet * 2
            money += current_bet * 2
        if my_points < dealer_points:
            print("You lose!")
        if my_points == dealer_points:
            print("It's a tie. You push your bet.")
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                    money += bet
                    money += current_bet

def user_winnings(money):
    if money <= 1000:
        winnings = 0
        return winnings
    if money > 1000:
        winnings = money - 1000
        return winnings
winnings = user_winnings(money)

print("\nGame over.")
print("%s's winnings: %d" % (name, winnings))
print("\nThank you for playing Blackjack!")
```