

HW1 Blackjack

This assignment will provide you experience with Classes and Objects in Python.

In this homework assignment you are going to write a simple version of the card game, Blackjack (aka 21). The purpose of the game is to get cards that add up to, but not over, 21. Your program will generate a deck of cards, shuffle the deck, deal 2 cards to the user, and continue dealing cards to the user while they ask for a 'hit' (another card), or until the total value of their cards exceeds 21. When the user stops asking for a hit, then compare their score to the dealer. Code for the Card Class and the DeckOfCards Class has been provided.

Rules of the game:

The user will always win if...

- User score does not exceed 21, and is higher than the dealer's score.
- User score does not exceed 21, and the dealer "busts" (gets a score higher than 21).

The user will always lose if...

- User "busts" (gets a score higher than 21)
- User score does not exceed 21, but the dealer's score is equal or higher and also does not exceed 21.

Your program will create a DeckOfCards object using your DeckOfCards class. This object will contain a list of 52 Card objects. You are provided a `shuffle_deck()` function, but you must also write a `deal_card()` function which returns the top card (card at index 0 in the list).

Your program must print the deck of cards before, and after, they are shuffled (I want to see they are being shuffled properly).

Your program must also be able to correctly score the card based on the suit. i.e...

"2 of Spades" = 2 points

"3 of Spades" = 3 points

...

"9 of Spades" = 9 points

"10 of Spades" = 10 points

"Jack of Spades" = 10 points

"Queen of Spades" = 10 points

"King of Spades" = 10 points

"Ace of Spades" = 11 points (11 points is fine, you are not required to add logic for 1 or 11)

Playing the game

To begin the game, your program should have a welcome message, create the deck of cards, shuffle the deck, deal two cards to the user, print the current score to the screen, and ask the user if they would like a 'hit'. Continue asking the user if they would like a hit until they stop, or their score exceeds 21. If the user's score exceeds 21 print a losing message to the screen. Otherwise calculate the dealer's score, determine if the user won or lost, print the results, and ask the user if they would like to play again.

If the user chooses to play again, keep using the same deck. Do not create a new deck. You can simply shuffle the deck again. You do not need to exclude the cards that have been dealt to the user. You can simply shuffle the whole deck of 52 cards again. You can see how this works in the sample output below. Print the deck before and after it is shuffled, so I can verify your `shuffle_deck()` and `deal_card()` functions are working properly.

The Dealer

You do not need to write code, to play for the dealer. You can simply calculate the dealer's score as a random number between 17 and 23: `rand()%7+17`

Use this value to determine if the dealer has "busted", or has a score greater, equal, or less than the user.

Other Requirements

- Have a separate file for DeckOfCards.py and play_game.py
 - Card class definition can be in DeckOfCards.py (like the example from class)
 - play_game.py should import DeckOfCards
 - All the logic for the game should be in play_game.py
- Note: In the DeckOfCards.py from class, there is logic in that file. For your homework have all your logic for the game in play_game.py
- For each of the possible ways to win or lose, mentioned above, print a message to the user stating why they won or lost. i.e. if the dealer busted print "Dealer busted, you win!" (or similar).
 - As mentioned, when you shuffle the deck, print the deck before and after the shuffle.

If you are unfamiliar with the game of BlackJack (or 21) you can familiarize yourself here: <https://en.wikipedia.org/wiki/Blackjack> (You are not required to read this)

Things NOT Required:

The following items are not required for this assignment:

- You do not have to write code to play for the dealer. Randomly generating a dealer score between 17 and 23 is fine.
- You do not have to add logic to handle the value of an Ace as 1 or 11. Value 11 is fine.
- You do not have to account for "five card charlie" (a scenario where the user wins if they have 5 cards, and a score under 21).

Sample Output

Welcome to Black Jack!

deck before shuffled:

2 of Hearts, 3 of Hearts, 4 of Hearts, 5 of Hearts, 6 of Hearts, 7 of Hearts, 8 of Hearts, 9 of Hearts, 10 of Hearts, Jack of Hearts, Queen of Hearts, King of Hearts, Ace of Hearts, 2 of Diamonds, 3 of Diamonds, 4 of Diamonds, 5 of Diamonds, 6 of Diamonds, 7 of Diamonds, 8 of Diamonds, 9 of Diamonds, 10 of Diamonds, Jack of Diamonds, Queen of Diamonds, King of Diamonds, Ace of Diamonds, 2 of Spades, 3 of Spades, 4 of Spades, 5 of Spades, 6 of Spades, 7 of Spades, 8 of Spades, 9 of Spades, 10 of

Spades, Jack of Spades, Queen of Spades, King of Spades, Ace of Spades, 2 of Clubs, 3 of Clubs, 4 of Clubs, 5 of Clubs, 6 of Clubs, 7 of Clubs, 8 of Clubs, 9 of Clubs, 10 of Clubs, Jack of Clubs, Queen of Clubs, King of Clubs, Ace of Clubs

deck after shuffled:

8 of Hearts, 10 of Clubs, King of Clubs, 2 of Hearts, 9 of Hearts, Queen of Hearts, Jack of Clubs, 6 of Spades, 2 of Clubs, Ace of Diamonds, Jack of Hearts, Ace of Spades, 10 of Spades, Jack of Diamonds, 9 of Diamonds, 4 of Diamonds, 5 of Hearts, Jack of Spades, 2 of Spades, 8 of Spades, 3 of Diamonds, 7 of Hearts, 5 of Diamonds, 3 of Clubs, 6 of Clubs, King of Hearts, 9 of Clubs, 7 of Spades, 4 of Hearts, 2 of Diamonds, 8 of Diamonds, King of Spades, Queen of Clubs, 5 of Spades, 3 of Spades, Ace of Hearts, 7 of Diamonds, 6 of Hearts, Ace of Clubs, 5 of Clubs, 7 of Clubs, 8 of Clubs, 10 of Hearts, 3 of Hearts, 4 of Clubs, 9 of Spades, 10 of Diamonds, 4 of Spades, Queen of Diamonds, King of Diamonds, 6 of Diamonds, Queen of Spades

Card number 1 is: 8 of Hearts

Card number 2 is: 10 of Clubs

Your total score is: 18

Would you like a hit?(y/n) n

Dealer score is: 19

Dealer score is higher, you lose!

another game?(y/n): y

deck before shuffled:

8 of Hearts, 10 of Clubs, King of Clubs, 2 of Hearts, 9 of Hearts, Queen of Hearts, Jack of Clubs, 6 of Spades, 2 of Clubs, Ace of Diamonds, Jack of Hearts, Ace of Spades, 10 of Spades, Jack of Diamonds, 9 of Diamonds, 4 of Diamonds, 5 of Hearts, Jack of Spades, 2 of Spades, 8 of Spades, 3 of Diamonds, 7 of Hearts, 5 of Diamonds, 3 of Clubs, 6 of Clubs, King of Hearts, 9 of Clubs, 7 of Spades, 4 of Hearts, 2 of Diamonds, 8 of Diamonds, King of Spades, Queen of Clubs, 5 of Spades, 3 of Spades, Ace of Hearts, 7 of Diamonds, 6 of Hearts, Ace of Clubs, 5 of Clubs, 7 of Clubs, 8 of Clubs, 10 of Hearts, 3 of Hearts, 4 of Clubs, 9 of Spades, 10 of Diamonds, 4 of Spades, Queen of Diamonds, King of Diamonds, 6 of Diamonds, Queen of Spades

deck after shuffled:

6 of Spades, 7 of Diamonds, 2 of Diamonds, 3 of Spades, 10 of Clubs, King of Clubs, Queen of Clubs, King of Spades, 6 of Hearts, 5 of Spades, 3 of Clubs, 4 of Hearts, 5 of Hearts, 8 of Spades, 7 of Clubs, King of Diamonds, 2 of Hearts, 3 of Hearts, Jack of Hearts, 10 of Hearts, 5 of Diamonds, 4 of Spades, King of Hearts, 6 of Clubs, Queen of

Spades, 2 of Spades, 9 of Spades, 3 of Diamonds, Jack of Spades, Ace of Diamonds, 9 of Hearts, 9 of Clubs, 8 of Hearts, 9 of Diamonds, Jack of Diamonds, Queen of Diamonds, 6 of Diamonds, Ace of Spades, 7 of Hearts, 10 of Diamonds, 8 of Diamonds, 4 of Clubs, 10 of Spades, 7 of Spades, 4 of Diamonds, 2 of Clubs, Queen of Hearts, Ace of Clubs, 8 of Clubs, Jack of Clubs, 5 of Clubs, Ace of Hearts

Card number 1 is: 6 of Spades

Card number 2 is: 7 of Diamonds

Your total score is: 13

Would you like a hit?(y/n) y

Card number 3 is: 2 of Diamonds

Your total score is: 15

Would you like a hit?(y/n) y

Card number 4 is: 3 of Spades

Your total score is: 18

Would you like a hit?(y/n) n

Dealer score is: 21

Dealer score is higher, you lose!

another game?(y/n): y

deck before shuffled:

6 of Spades, 7 of Diamonds, 2 of Diamonds, 3 of Spades, 10 of Clubs, King of Clubs, Queen of Clubs, King of Spades, 6 of Hearts, 5 of Spades, 3 of Clubs, 4 of Hearts, 5 of Hearts, 8 of Spades, 7 of Clubs, King of Diamonds, 2 of Hearts, 3 of Hearts, Jack of Hearts, 10 of Hearts, 5 of Diamonds, 4 of Spades, King of Hearts, 6 of Clubs, Queen of Spades, 2 of Spades, 9 of Spades, 3 of Diamonds, Jack of Spades, Ace of Diamonds, 9 of Hearts, 9 of Clubs, 8 of Hearts, 9 of Diamonds, Jack of Diamonds, Queen of Diamonds, 6 of Diamonds, Ace of Spades, 7 of Hearts, 10 of Diamonds, 8 of Diamonds, 4 of Clubs, 10 of Spades, 7 of Spades, 4 of Diamonds, 2 of Clubs, Queen of Hearts, Ace of Clubs, 8 of Clubs, Jack of Clubs, 5 of Clubs, Ace of Hearts

deck after shuffled:

5 of Hearts, 3 of Spades, 7 of Clubs, Ace of Diamonds, 7 of Diamonds, Jack of Spades, 6 of Hearts, 4 of Diamonds, 9 of Diamonds, Ace of Spades, Queen of Hearts, 8 of Hearts, 10 of Spades, 2 of Clubs, 4 of Clubs, King of Hearts, King of Diamonds, 6 of Diamonds, 2 of Diamonds, 3 of Diamonds, Ace of Clubs, King of Clubs, 6 of Spades, 10 of Hearts, Jack of Clubs, 3 of Clubs, 6 of Clubs, 8 of Diamonds, 10 of Clubs, Jack of Diamonds, Queen of Clubs, King of Spades, 10 of Diamonds, 7 of Hearts, Queen of Spades, Queen of Diamonds, 9 of Clubs, 4 of Hearts, 5 of Spades, Ace of Hearts, 8 of

Clubs, 7 of Spades, Jack of Hearts, 9 of Hearts, 4 of Spades, 5 of Diamonds, 5 of Clubs, 3 of Hearts, 2 of Hearts, 9 of Spades, 2 of Spades, 8 of Spades

Card number 1 is: 5 of Hearts

Card number 2 is: 3 of Spades

Your total score is: 8

Would you like a hit?(y/n) **y**

Card number 3 is: Ace of Diamonds

You got an Ace. Your total score is 19

Would you like a hit?(y/n) **n**

Dealer score is: 23

Dealer Busted, you win!!!

another game?(y/n): **n**

Process exited with code: 0

Code Style and Naming Conventions:

You need to follow the style and naming conventions used in class. Name variables with good descriptive names, and give proper spacing and indentation to your code to make it easy to follow. Add good comments to your code, that explain what your program does.

Deliverables in Cloud9: Create a folder, hw1, in your private workspace, and put DeckOfCards.py and play_game.py in that folder.

Deliverables in Canvas: Submit the AWS Console Login url, and your Cloud9 IDE url. This is for the grader, to know when you submitted your homework and to have quick access to your login url.

Grading Criteria: 50 points possible

40 points: Program compiles, runs, and successfully fulfills program requirements outlined above.

10 points: Coding Style, Naming Conventions, and Comments are all descriptive and well organized