In this assignment, you will be asked to write a program to play a modified version of the card game “Blackjack”, or “21”.

## Blackjack Rules

* The game is played with a standard deck of 52 cards, shuffled.
* Each player is dealt a hand of 2 cards to start. The first card is “face-up”. The rest are “face-down”.
* One of the players acts first.
* This player is shown all the cards in her hand, and one of the cards (the one that is “face-up”) in her dealer’s hand.
* This player has the option to “hit” or “stand”.
  + “Hit” will give the player an additional card.
  + “Stand” means the player wants no more cards.
* The player can continue to hit until she decides to stand or “busts”.
  + If the sum of the player’s cards exceeds 21, that player busts and cannot win.
* Once the first player stands or busts, the second player then gets to draw his cards, one at a time.
* The winner is the player for whose cards have the highest sum without busting.
  + An Ace is always worth 1 (this is different and simpler than real Blackjack rules)
  + Jack, Queen, and King are worth 10
  + All other cards are worth whatever their rank states.
* The next round is played, with the other player acting first.

### Program Flow

Your program will prompt for name of the 2 players, and then begin the play. The program should track how many wins each player has (a tie is considered a half-win; both players busting means nobody wins), and ask whether the game should continue at the end of each match. Note that there are four possible outcomes of each “match”:

* Player 1 wins
* Player 2 wins
* Tie
* No one wins (both players bust).

See the end of this file for an example of running the program.

## Part 1: Program Design

Generate a design for the program by using pseudo code. Remember to use good object-oriented design and commenting practices. Demostrate use of Arrays, ArrayLists, Method usage. Printing can only be done in the main.

Hints:

* Create only one Scanner for the input. Store it in a variable or pass it in a parameter to use it in different methods.
* Write down how many instances of each the deck you will need and what is the best construct for the base deck and/or the shuffled deck.
* Shuffle the deck when the deck has less than 10 cards remaining. Part 2: Program Implementation

Start by generating method headers for which will be used.

Part 2: Rubric

Program is worth 100 total point. There will be three check-ins on your code development

Check-in #1 Wed Nov. 27, - Build deck and shuffle (print shuffled deck)

Check-in#2 Thurs Dec 5 – Run of play, Rules (play one hand)

Check-in#3 Fri Dec 13 – Betting, Continued play, Error tolerance

Final due date is Thur Dec 19

Scoring

Psuedo code – 10 pts

Check-ins – 10 pts each

Adherence to design standards – 20 pts

Design/method/decomposition – 20 pts

Formatting\Commenting – 10 pts

Game play – 10 pts

## Sample game play

Some sample output from a working program is shown below.

Welcome to Blackjack!

Please enter the name of player 1: Leia

Please enter the name of player 2: Luke

==============

Leia shows: 4 of Spades

Luke shows: 5 of Diamonds

Luke, it is your turn.

Luke, you have [5 of Diamonds, 8 of Diamonds] (13)

Do you want to [h]it or [s]tand?

h

You drew 2 of Clubs

Luke, you have [5 of Diamonds, 8 of Diamonds, 2 of Clubs] (15)

Do you want to [h]it or [s]tand?

h

You drew 3 of Clubs

Luke, you have [5 of Diamonds, 8 of Diamonds, 2 of Clubs, 3 of Clubs] (18)

Do you want to [h]it or [s]tand?

s

==============

Leia shows: 4 of Spades

Luke shows: 5 of Diamonds

Leia, it is your turn.

Leia, you have [4 of Spades, Queen of Clubs] (14)

Do you want to [h]it or [s]tand?

h

You drew 6 of Spades

Leia, you have [4 of Spades, Queen of Clubs, 6 of Spades] (20)

Do you want to [h]it or [s]tand?

s

Leia wins!

Leia has 1.0 wins.

Luke has 0.0 wins.

Play again (y/n)? y

==============

Leia shows: 2 of Diamonds

Luke shows: 7 of Clubs

Leia, it is your turn.

Leia, you have [2 of Diamonds, 2 of Hearts] (4)

Do you want to [h]it or [s]tand?

h

You drew 3 of Clubs

Leia, you have [2 of Diamonds, 2 of Hearts, 3 of Clubs] (7)

Do you want to [h]it or [s]tand?

h

You drew 2 of Spades

Leia, you have [2 of Diamonds, 2 of Hearts, 3 of Clubs, 2 of Spades] (9)

Do you want to [h]it or [s]tand?

h

You drew 5 of Hearts

Leia, you have [2 of Diamonds, 2 of Hearts, 3 of Clubs, 2 of Spades, 5 of Hearts] (14)

Do you want to [h]it or [s]tand?

h

You drew 3 of Hearts

Leia, you have [2 of Diamonds, 2 of Hearts, 3 of Clubs, 2 of Spades, 5 of Hearts, 3 of Hearts] (17)

Do you want to [h]it or [s]tand?

s

==============

Leia shows: 2 of Diamonds

Luke shows: 7 of Clubs

Luke, it is your turn.

Luke, you have [7 of Clubs, 5 of Clubs] (12)

Do you want to [h]it or [s]tand?

h

You drew 7 of Spades

Luke, you have [7 of Clubs, 5 of Clubs, 7 of Spades] (19)

Do you want to [h]it or [s]tand?

s

Luke wins!

Leia has 1.0 wins.

Luke has 1.0 wins.

Play again (y/n)? y

==============

Leia shows: 6 of Clubs

Luke shows: 6 of Hearts

Luke, it is your turn.

Luke, you have [6 of Hearts, Queen of Diamonds] (16)

Do you want to [h]it or [s]tand?

s

==============

Leia shows: 6 of Clubs

Luke shows: 6 of Hearts

Leia, it is your turn.

Leia, you have [6 of Clubs, 6 of Diamonds] (12)

Do you want to [h]it or [s]tand?

h

You drew 4 of Hearts

Leia, you have [6 of Clubs, 6 of Diamonds, 4 of Hearts] (16)

Do you want to [h]it or [s]tand?

s

The game was a tie.

Leia has 1.5 wins.

Luke has 1.5 wins.

Play again (y/n)? y

==============

Leia shows: Ace of Clubs

Luke shows: Queen of Hearts

Leia, it is your turn.

Leia, you have [Ace of Clubs, 7 of Spades] (8)

Do you want to [h]it or [s]tand?

h

You drew Jack of Diamonds

Leia, you have [Ace of Clubs, 7 of Spades, Jack of Diamonds] (18)

Do you want to [h]it or [s]tand?

s

==============

Leia shows: Ace of Clubs

Luke shows: Queen of Hearts

Luke, it is your turn.

Luke, you have [Queen of Hearts, 2 of Spades] (12)

Do you want to [h]it or [s]tand?

h

You drew Ace of Diamonds

Luke, you have [Queen of Hearts, 2 of Spades, Ace of Diamonds] (13)

Do you want to [h]it or [s]tand?

h

You drew 5 of Hearts

Luke, you have [Queen of Hearts, 2 of Spades, Ace of Diamonds, 5 of Hearts] (18)

Do you want to [h]it or [s]tand?

h

You drew 9 of Spades

Bust!

Leia wins!

Leia has 2.5 wins.

Luke has 1.5 wins.

Play again (y/n)? n