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Visual Basic

Black Jack

August 2016

Black Jack

Difficulty Level:

Beginner
Intermediate
Advanced

Help References:

Random Numbers
Arrays

Note: This program is not intended to encourage gambling. Gambling by minors is illegal.

Write a Visual Basic program that simulates a video Black Jack machine.

Blackjack, or Twenty-One, is a descendant of Baccarat and Chemin-de-Fer and is considered one of the world's most popular casino games.

The object of the game is to a achieve a higher card count than the dealer (in our case, the computer) without exceeding 21. A player busts and loses their bet with a card count exceeding 21.

In blackjack, the cards are valued as follows:

i. An Ace can count as either 1 or 11.
ii. The cards 2 through 10 are valued as indicated.
iii. The Jack, Queen, and King are all valued at 10.

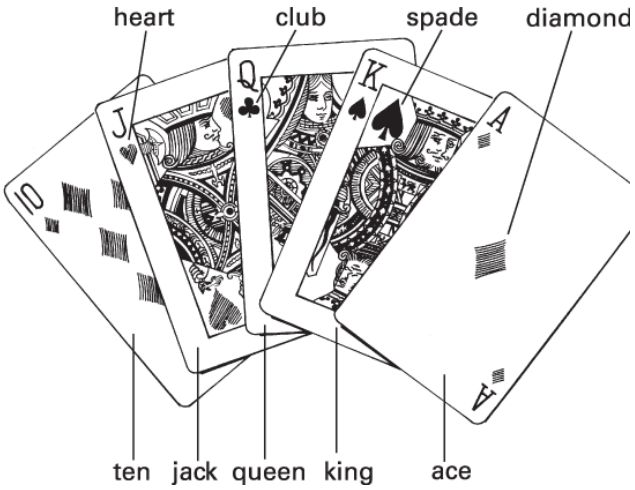
The suits of the cards do not have any meaning in the game.

The value of a hand is simply the sum of the point counts of each card in the hand.

Rules for the Dealer in Black Jack

The dealer must play his hand in a specific way, with no choices allowed. There are two popular rule variations that determine what totals the dealer must draw to. For the purposes of this game, we will use the one below:

Dealer stands on all 17s
In this case, the dealer must continue to take cards ("hit") until his total is 17 or greater. An Ace in the dealer's hand is always counted as 11 if possible without the dealer going over 21. For example, (Ace,8) would be 19 and the dealer would stop drawing cards ("stand"). Also, (Ace,6) is 17 and again the dealer will stand. (Ace,5) is only 16, so the dealer would hit. He will continue to draw cards until the hand's value is 17 or more. For example, (Ace,5,7) is only 13 so he hits again. (Ace,5,7,5) makes 18 so he would stop ("stand") at that point.



For the purposes of this game, there will be no "pair-splitting" allowed.

Your game should shuffle the deck of 52 cards.

A card should then be dealt to the player.

The player should have the option to "Hit" (get another card) or "Hold".

When the player presses "Hit" the player is presented with another card. The program should then determine if the player has busted.

When the player presses "Hold", the player's card total should be calculated as well as the computer's. The player should be informed of the winner and asked if they want to play another hand.

Help for Black Jack

Code to Shuffle a Deck of 52 Cards

For purposes of the program, we will store the card deck in an array called Deck which will have the indexes 1 to 52.

In **General | Declarations** ...

```
Dim Deck(52) As Integer
```

Code ...

```
Dim suit As String
Dim facevalue As String
Dim r As Random = New Random
Dim c As Integer

For Card = 1 To 52

    Deck(Card) = 0

Next Card

For Card = 1 To 52

    Do
        c = r.Next(1, 53)
    Loop Until Deck(c) = 0

    Deck(c) = Card - 1

Next Card
```

The following code can be used to print the shuffled deck to the Debug window:

```
For Card = 1 To 52

    'Determine the suit of the card
    If Deck(Card) \ 13 = 0 Then Suit = "Clubs"
    If Deck(Card) \ 13 = 1 Then Suit = "Hearts"
    If Deck(Card) \ 13 = 2 Then Suit = "Spades"
    If Deck(Card) \ 13 = 3 Then Suit = "Diamonds"

    'Determine the face of the card
    If Deck(Card) Mod 13 = 0 Then FaceValue = "King"
    If Deck(Card) Mod 13 = 1 Then FaceValue = "Ace"
    If Deck(Card) Mod 13 = 2 Then FaceValue = "Two"
    If Deck(Card) Mod 13 = 3 Then FaceValue = "Three"
    If Deck(Card) Mod 13 = 4 Then FaceValue = "Four"
    If Deck(Card) Mod 13 = 5 Then FaceValue = "Five"
    If Deck(Card) Mod 13 = 6 Then FaceValue = "Six"
    If Deck(Card) Mod 13 = 7 Then FaceValue = "Seven"
    If Deck(Card) Mod 13 = 8 Then FaceValue = "Eight"
    If Deck(Card) Mod 13 = 9 Then FaceValue = "Nine"
    If Deck(Card) Mod 13 = 10 Then FaceValue = "Ten"
    If Deck(Card) Mod 13 = 11 Then FaceValue = "Jack"
    If Deck(Card) Mod 13 = 12 Then FaceValue = "Queen"

    Debug.Print FaceValue + " of " + Suit

Next Card
```

Black Jack

Please fill out all the information in this column using a pen before getting this assignment marked.

_____
Name

_____
Date

_____
Class

Academic Honesty

The work I am submitting is completely my own creation and has not been copied from anyone else's work. If I have received help on this project, the names of those who have assisted are listed below.

_____
Signature

_____

_____

_____

Pre-Marking

The following people have pre-marked this assignment: (minimum of two)

_____

_____

_____

Deductions

Each ❑ which is checked indicates the item was not satisfactory and results in the loss of one mark.

Deduction for late assignment is 1 mark per day.

Deduction for program crashing is 2 marks.

User Interface

- ❑ Appropriate Text in Title Bar (Form.Text)
- ❑ Separators and Access Keys in Menu, Capitalization
- ❑ "Exit" DialogBox meets requirements
- ❑ "About" DialogBox meets requirements
- ❑ Efficient and Esthetically-Pleasing User Interface
- ❑ Appropriate controls are used
- ❑ Spelling and Grammar are correct

Code / Programming Style

- ❑ Variables are declared and logically named
- ❑ Code is commented where appropriate
- ❑ Code is indented and spaced to show
- ❑ Code is efficient

Work Ethic / Problem Solving Skills

- ❑ Problem Solving Skills are demonstrated
- ❑ Makes Productive Use of Time
- ❑ Only Seeks Help when Necessary

Program-Specific Criteria

- ❑ The deck of cards is shuffled
- ❑ Player can "Hit" or "Hold"
- ❑ Player can decide value of Ace (1 or 11)
- ❑ Player's score is accurately calculated
- ❑ Dealer follows dealer's rules
- ❑ Dealer's score is accurately calculated
- ❑ A winner is properly detected

Comments

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_____

Mark _____ / 10