Black Jack

Version 3

Project

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Table of Contents

Introduction 3

Rules 4

Card Values 4

Code Statistics 5

Code 5

**Introduction**

Blackjack, also known as twenty-one, is the most widely played casino banking game in the world. Blackjack is a comparing card game between a player and dealer, meaning players compete against the dealer but not against other players. It is played with one or more decks of 52 cards.

Blackjack's precursor was twenty-one, a game of unknown origin. The first written reference is found in a book by the Spanish author Miguel de Cervantes, most famous for writing Don Quixote. Cervantes was a gambler, and the main characters of his tale "Rinconete y Cortadillo", from Novelas Ejemplares, are a couple of cheats working in Seville. They are proficient at cheating at ventiuna (Spanish for twenty-one), and state that the object of the game is to reach 21 points without going over and that the ace values 1 or 11. The game is played with the Spanish baraja deck, which lacks eights, nines and tens. This short story was written between 1601 and 1602, implying that ventiuna was played in Castilla since the beginning of the 17th century or earlier. Later references to this game are found in France and Spain.

When twenty-one was introduced in the United States, gambling houses offered bonus payouts to stimulate players' interest. One such bonus was a ten-to-one payout if the player's hand consisted of the ace of spades and a black jack (either the jack of clubs or the jack of spades). This hand was called a "blackjack", and the name stuck to the game even though the ten-to-one bonus was soon withdrawn. In the modern game, a blackjack refers to any hand of an ace plus a ten or face card regardless of suits or colours.

**Rules**

Upon running the program the player will be issued two playing cards and the dealer will have one visible card out of his two cards. Depending on the players total, the player must decide to accept more cards and get as close to 21 without going over (busting) or staying. Once the player feels comfortable with his/her choice and stay, the dealer then take cards. The dealer has to get as close to 21 as well without busting, but must keep taking cards until they have a 17 or more. Whoever is closest to 21 without going over, wins. If both the player and dealer have the same number, a tie, called a push, is issued and the game is reset.

**Card Values**

Card values are as follows:

|  |  |
| --- | --- |
| Face | Value |
| A | 1[[1]](#footnote-1) |
| 2 | 2 |
| 3 | 3 |
| 4 | 4 |
| 5 | 5 |
| 6 | 6 |
| 7 | 7 |
| 8 | 8 |
| 9 | 9 |
| 10 | 10 |
| J | 10 |
| Q | 10 |
| K | 10 |

**Code Statistics**

|  |  |  |
| --- | --- | --- |
| **Element** | **#** | **Names** |
| Lines of code | 281 |  |
| Unique variables | 6 | uTotal, dTotal, choice, rNum, suit, lose |
| Libraries | 5 | iostream, cstdlib, string, ctime, iomanip |
| Functions | 2 | time( ), rand( ) |
| Loops | 2 | do-while loop – line 156-223  while loop – line 228-272 |
| Switch Statements | 10 | lines – throughout |

**Code**

#include <iostream> //Input / Output library

#include <cstdlib> //C standard library

#include <string> //string stream library

#include <ctime> //C Time

#include <iomanip> //input / output manipulation

using namespace std;

int main()

{

//random number seed

srand(static\_cast<unsigned int>(time(0)));

//declare and initialize variables

int uTotal = 0, dTotal = 0; //uTotal -> user total, dTotal -> dealer total

char choice; //choice -> user input

int rNum, suit; //rNum -> random number, suit -> random suit

bool lose = false;

//output

cout << "Single-Hand BlackJack" << endl;

cout << "Your first card: ";

/\* calculating/getting cards \*/

/\* User card \*/

//setting rNum to a random number between 1 and 13 (inclusive)

rNum = (rand() % 13) + 1;

//switch for number card

switch(rNum)

{

case 1:

{

cout << "A";

uTotal += 1;

break;

}

case 2: cout << "2"; uTotal += 2; break;

case 3: cout << "3"; uTotal += 3; break;

case 4: cout << "4"; uTotal += 4;break;

case 5: cout << "5"; uTotal += 5;break;

case 6: cout << "6"; uTotal += 6;break;

case 7: cout << "7"; uTotal += 7;break;

case 8: cout << "8"; uTotal += 8;break;

case 9: cout << "9"; uTotal += 9;break;

case 10: cout << "10"; uTotal += 10;break;

case 11: cout << "J"; uTotal += 10;break;

case 12: cout << "Q"; uTotal += 10;break;

case 13: cout << "K"; uTotal += 10;break;

}

//setting suit to a random number between 1 and 4 (inclusive)

suit = (rand() % 4) + 1;

//switch for suit

switch(suit)

{

case 1: cout << "C" << endl; break;

case 2: cout << "D" << endl; break;

case 3: cout << "S" << endl; break;

case 4: cout << "H" << endl; break;

}

cout << "Your total: " << uTotal << endl;

cout << "\nDealer's first card: ";

/\* Dealer Card \*/

//setting rNum to a random number between 1 and 13 (inclusive)

rNum = (rand() % 13) + 1;

//switch for number card

switch(rNum)

{

case 1:

{

cout << "A";

dTotal += 1;

break;

}

case 2: cout << "2"; dTotal += 2; break;

case 3: cout << "3"; dTotal += 3; break;

case 4: cout << "4"; dTotal += 4;break;

case 5: cout << "5"; dTotal += 5;break;

case 6: cout << "6"; dTotal += 6;break;

case 7: cout << "7"; dTotal += 7;break;

case 8: cout << "8"; dTotal += 8;break;

case 9: cout << "9"; dTotal += 9;break;

case 10: cout << "10"; dTotal += 10;break;

case 11: cout << "J"; dTotal += 10;break;

case 12: cout << "Q"; dTotal += 10;break;

case 13: cout << "K"; dTotal += 10;break;

}

//setting suit to a random number between 1 and 4 (inclusive)

suit = (rand() % 4) + 1;

//switch for suit

switch(suit)

{

case 1: cout << "C" << endl; break;

case 2: cout << "D" << endl; break;

case 3: cout << "S" << endl; break;

case 4: cout << "H" << endl; break;

}

cout << "Dealer total: " << dTotal << endl;

/\* User card \*/

cout << "\nYour second card: ";

//setting rNum to a random number between 1 and 13 (inclusive)

rNum = (rand() % 13) + 1;

//switch for number card

switch(rNum)

{

case 1:

{

cout << "A";

uTotal += 1;

break;

}

case 2: cout << "2"; uTotal += 2; break;

case 3: cout << "3"; uTotal += 3; break;

case 4: cout << "4"; uTotal += 4;break;

case 5: cout << "5"; uTotal += 5;break;

case 6: cout << "6"; uTotal += 6;break;

case 7: cout << "7"; uTotal += 7;break;

case 8: cout << "8"; uTotal += 8;break;

case 9: cout << "9"; uTotal += 9;break;

case 10: cout << "10"; uTotal += 10;break;

case 11: cout << "J"; uTotal += 10;break;

case 12: cout << "Q"; uTotal += 10;break;

case 13: cout << "K"; uTotal += 10;break;

}

//setting suit to a random number between 1 and 4 (inclusive)

suit = (rand() % 4) + 1;

//switch for suit

switch(suit)

{

case 1: cout << "C" << endl; break;

case 2: cout << "D" << endl; break;

case 3: cout << "S" << endl; break;

case 4: cout << "H" << endl; break;

}

cout << "Your total: " << setw(2) << uTotal << endl;

cout << "Dealer's total: " << setw(2) << dTotal << endl;

do

{

cout << "[H]it or [S]tay: ";

cin >> choice;

switch(choice)

{

case 'h':

case 'H':

{

cout << "\nYour next card: ";

//setting rNum to a random number between 1 and 13 (inclusive)

rNum = (rand() % 13) + 1;

//switch for number card

switch(rNum)

{

case 1:

{

cout << "A";

uTotal += 1;

break;

}

case 2: cout << "2"; uTotal += 2; break;

case 3: cout << "3"; uTotal += 3; break;

case 4: cout << "4"; uTotal += 4;break;

case 5: cout << "5"; uTotal += 5;break;

case 6: cout << "6"; uTotal += 6;break;

case 7: cout << "7"; uTotal += 7;break;

case 8: cout << "8"; uTotal += 8;break;

case 9: cout << "9"; uTotal += 9;break;

case 10: cout << "10"; uTotal += 10;break;

case 11: cout << "J"; uTotal += 10;break;

case 12: cout << "Q"; uTotal += 10;break;

case 13: cout << "K"; uTotal += 10;break;

}

//setting suit to a random number between 1 and 4 (inclusive)

suit = (rand() % 4) + 1;

//switch for suit

switch(suit)

{

case 1: cout << "C" << endl; break;

case 2: cout << "D" << endl; break;

case 3: cout << "S" << endl; break;

case 4: cout << "H" << endl; break;

}

cout << "Your total: " << setw(2) << uTotal << endl;

cout << "Dealer's total: " << setw(2) << dTotal << endl;

if(uTotal > 21)

{

cout << "You busted over 21. You lose" << endl;

lose = true;

break;

}

break;

}

case 's':

case 'S': break;

default: cout << "You did not enter a valid response" << endl; break;

}

cout << endl;

}while((choice != 's' && choice != 'S') && lose == false);

if(!lose)

{

while(dTotal < 17)

{

cout << "Dealer's next card: ";

//setting rNum to a random number between 1 and 13 (inclusive)

rNum = (rand() % 13) + 1;

//switch for number card

switch(rNum)

{

case 1:

{

cout << "A";

dTotal += 1;

break;

}

case 2: cout << "2"; dTotal += 2; break;

case 3: cout << "3"; dTotal += 3; break;

case 4: cout << "4"; dTotal += 4;break;

case 5: cout << "5"; dTotal += 5;break;

case 6: cout << "6"; dTotal += 6;break;

case 7: cout << "7"; dTotal += 7;break;

case 8: cout << "8"; dTotal += 8;break;

case 9: cout << "9"; dTotal += 9;break;

case 10: cout << "10"; dTotal += 10;break;

case 11: cout << "J"; dTotal += 10;break;

case 12: cout << "Q"; dTotal += 10;break;

case 13: cout << "K"; dTotal += 10;break;

}

//setting suit to a random number between 1 and 4 (inclusive)

suit = (rand() % 4) + 1;

//switch for suit

switch(suit)

{

case 1: cout << "C" << endl; break;

case 2: cout << "D" << endl; break;

case 3: cout << "S" << endl; break;

case 4: cout << "H" << endl; break;

}

cout << "Your total: " << setw(2) << uTotal << endl;

cout << "Dealer's total: " << setw(2) << dTotal << endl;

cout << endl;

}

if(dTotal > 21) cout << "Dealer busted. You win!" << endl;

else if(uTotal == dTotal) cout << "push at " << uTotal << ". It's a draw!" << endl;

else if(uTotal > dTotal) cout << "You beat the dealer. You win!" << endl;

else if(uTotal < dTotal) cout << "The dealer beat you. You lose!" << endl;

}

//exit stage right!

return 0;

}

1. Normally, an Ace carries the value of 1 or 11. But in this version, the Ace will remain a value of 1 [↑](#footnote-ref-1)