

# Final Project

## *Blackjack*

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CSC 17A - 49213  
18 December 2020

## **Introduction:**

I have created a program that runs a simple version of the card game Blackjack from scratch. This version of Blackjack is the card aspect only. I have not yet implemented a chip system for betting, nor have I included the ability to split when a pair is drawn. Blackjack is my favorite card game, and it seemed fitting to make, given the requirements for the project, and my prerequisite knowledge of the game's rules. The entire program was created from the ground up, and no reference code was used throughout the entirety of the project.

The player is dealt two cards and one of the dealer cards is shown. The player is then given the choice to "hit" or "stay". If the player chooses to hit, then the player is given another card. If the player's card total (each card is given a number value, and is added up to find the total) hits or exceeds 21, they automatically stay. The dealer then reveals their second card. After the dealer reveals their second card, if their total is less than or equal to sixteen, they draw until their total exceeds sixteen. The card total of the dealer and the player are compared, and whichever total is closer to 21 wins, given that the total does not exceed 21 (if the player or dealer exceeds a total of 21, they lose the game). If the difference from 21 is the same or if both the dealer and player exceed 21 or "bust" then the game results in a draw. If the player chooses to stay, then their total remains, and the dealer continues the same as previously described.

## **Summary:**

Total Lines: 1025

Lines of Comments: 169

Number of Classes: 5

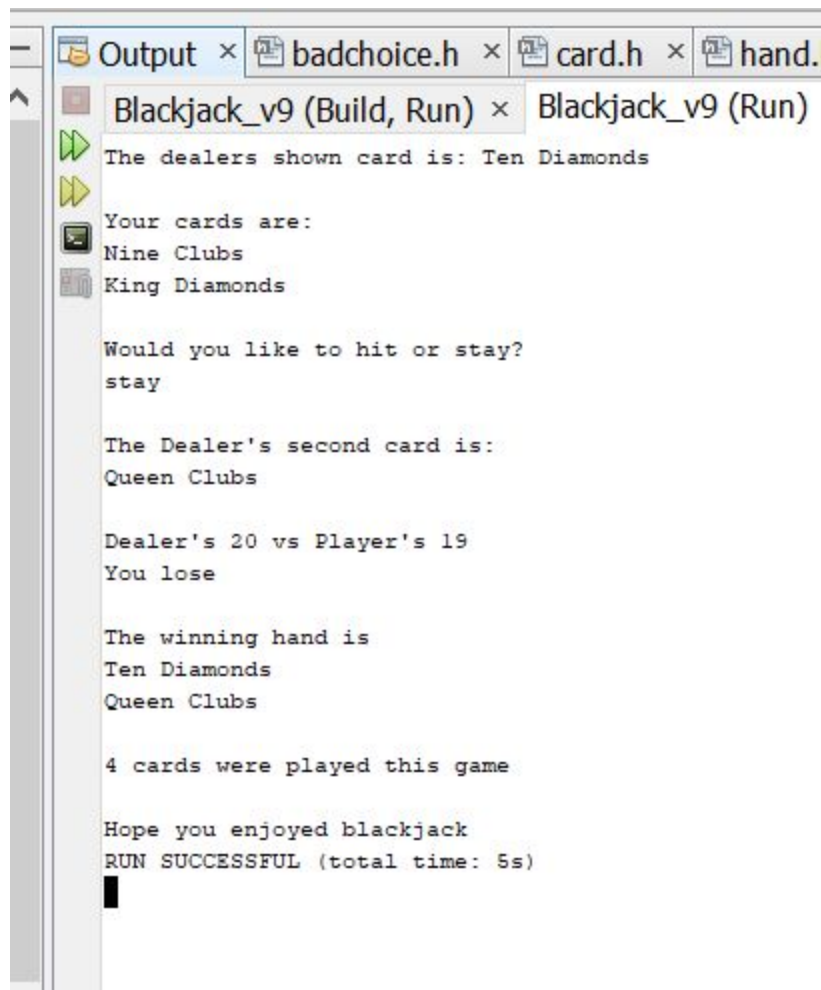
Number of Variables: 24

The final project took me about a week to complete. Roughly 20 hours were put into the project including the documentation. The most challenging aspect of the project was implementing all of the required concepts into the program. I could not figure out how to include friends, abstract classes, or templates. Although I functionally understand how each work, implementing them into my project was difficult, and time was limited.

## **Description:**

The game initially started as just a program that drew cards and output them. The card values and the ability to total them were then added, as well as the conditions for winning the game. Next came checks to ensure that repeat cards did not show up. After this came the rest of the concepts from the class up until this point such as pointers and binary files. After this came the splitting of the project into multiplier source files, followed by conversion into classes. After converting into classes, I added exceptions, static variables and utilized a part of the STL. The final version added the copy constructor, and other minor tweaks to the final result.

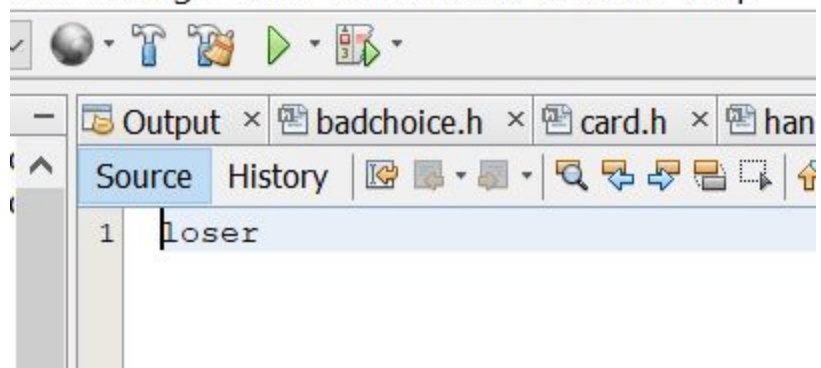
Sample output:



The screenshot shows the 'Output' window of a C++ IDE. The window title bar includes tabs for 'Output', 'badchoice.h', 'card.h', and 'hand.'. Below the title bar, there are two tabs for 'Blackjack\_v9 (Build, Run)' and 'Blackjack\_v9 (Run)'. The output text is as follows:

```
The dealers shown card is: Ten Diamonds  
  
Your cards are:  
Nine Clubs  
King Diamonds  
  
Would you like to hit or stay?  
stay  
  
The Dealer's second card is:  
Queen Clubs  
  
Dealer's 20 vs Player's 19  
You lose  
  
The winning hand is  
Ten Diamonds  
Queen Clubs  
  
4 cards were played this game  
  
Hope you enjoyed blackjack  
RUN SUCCESSFUL (total time: 5s)
```

Run Debug Profile Team Tools Window Help



The screenshot shows the 'Source' window of a C++ IDE. The window title bar includes tabs for 'Output', 'badchoice.h', 'card.h', and 'han'. Below the title bar, there are tabs for 'Source', 'History', and a toolbar with various icons. The source code editor shows a single line of code:

```
1 loser
```

```
Output x badchoice.h x card.h x hand.  
Blackjack_v9 (Build, Run) x Blackjack_v9 (Run)  
The dealers shown card is: Six Diamonds  
Your cards are:  
Seven Clubs  
Two Clubs  
Would you like to hit or stay?  
hit  
You drew Seven Diamonds  
Would you like to hit or stay?  
hit  
You drew Nine Diamonds  
The Dealer's second card is:  
Four Hearts  
The dealer draws a card  
The next card is  
Five Spades  
The dealer draws a card  
The next card is  
Queen Diamonds  
Dealer's 25 vs Player's 25  
No winner  
No winner  
The winning hand is  
No winning hand  
It was a draw  
8 cards were played this game  
Hope you enjoyed blackjack  
RUN SUCCESSFUL (total time: 6s)
```

```
Output x badchoice.h x card.h x  
Source History  
1 draw
```