

Project 1

Blackjack

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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: 1082

Lines of Comments: 111

Number of Classes: 5

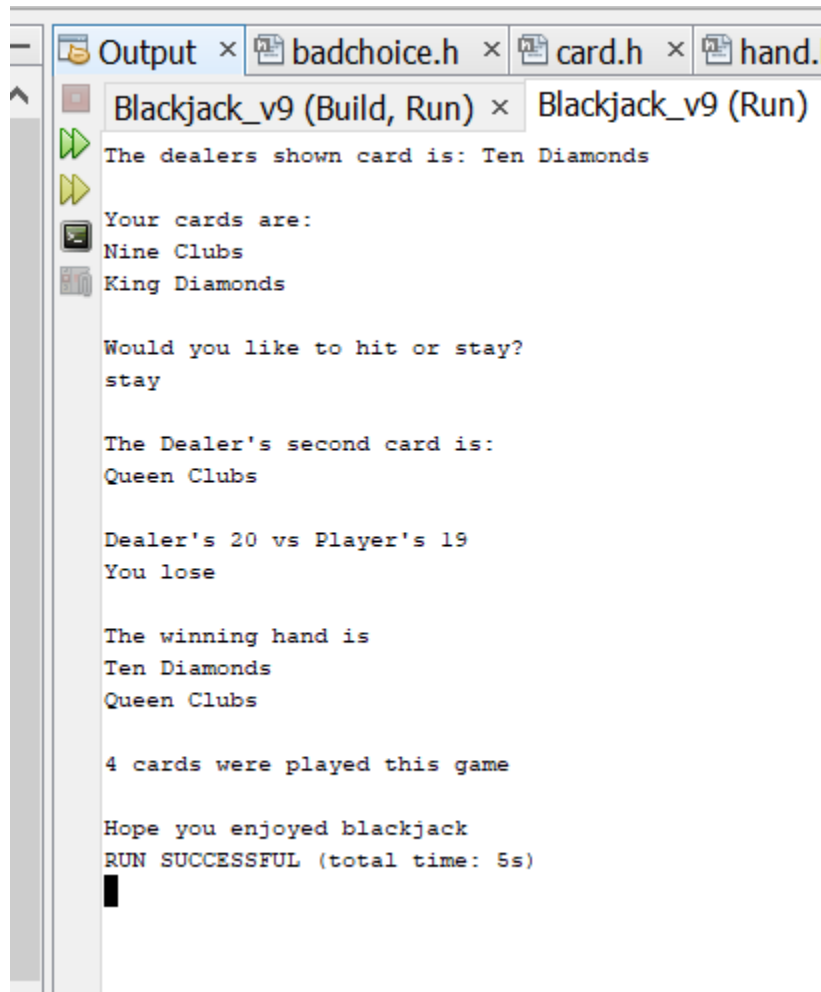
Number of Variables: 30

This project iteration took me about a week to complete, building off of my own Blackjack game from the past. Roughly 15 hours were put into the project including the documentation. The most challenging aspect of the project was implementing all of the required containers and algorithms into the program. I could not figure out how to include sets. Although I functionally understand how they work, implementing them into my project was difficult, and I ultimately could not think of a place for them.

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 multiple source files, followed by conversion into classes. After converting into classes, I added exceptions, static variables and utilized a part of the STL. The next version added the copy constructor, and other minor tweaks. Following this was the addition of lists to the project. The final version added stacks, maps, and queues, which ultimately made the game more efficient, removing the need to check for repeat cards every time someone drew a card.

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.'. The main content area displays the following text:

```
Blackjack_v9 (Build, Run) x Blackjack_v9 (Run)
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

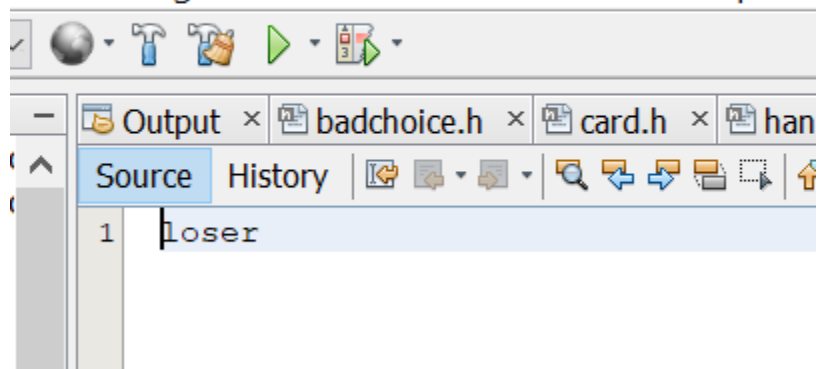
Dealer's 20 vs Player's 19
You lose

The winning hand is
Ten Diamonds
Queen Clubs

4 cards were played this game

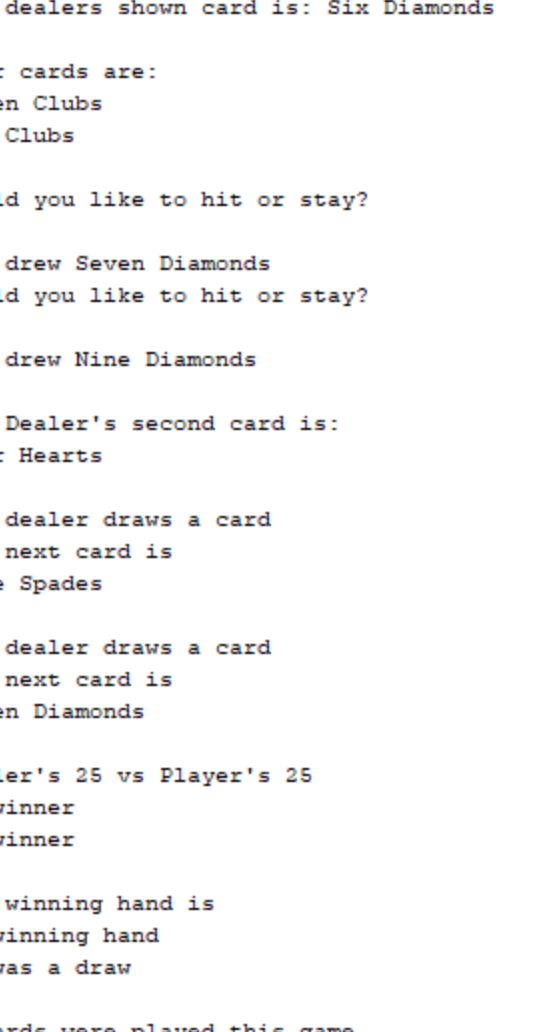
Hope you enjoyed blackjack
RUN SUCCESSFUL (total time: 5s)
```

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'. The main content area displays the following code:

```
1 | loser
```



```
Output × badchoice.h × card.h × hand.h
Blackjack_v9 (Build, Run) × 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)
```

The screenshot shows the Visual Studio Code editor. At the top, there are three tabs: 'Output', 'badchoice.h', and 'card.h'. Below the tabs, the 'Source' tab is selected, and the 'History' view is active. The code editor displays a single line of code: 'draw'.