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Data Structure 2270 – Team Project

Final Report

Our main data structure used was a stack, our stack consisted of all the cards(suit, value, and face value) that had been shuffled previously using the Fisher-Yates algorithm. This was an easy choice for us since we are dealing cards, we can easily and efficiently pop a card or multiple cards off the stack. In our program we also use vectors, arrays, and a struct. The vector is used to hold the cards that the player and dealer hold throughout the game. A vector is perfect for blackjack because the size of the hand is needed throughout the game and is efficient to add things to the end. The array is an array of structs that is used to load in all of the cards and then shuffle them(Fisher-Yates) before adding them to the stack.

<https://www.geeksforgeeks.org/shuffle-a-given-array-using-fisher-yates-shuffle-algorithm>

Fisher-Yates shuffle methodology used to shuffle the array and then place them all into stack dealing

As far as planning and method goes, we decided to start with the driver and move throughout the game like we were playing and make functions and prompt the user as the game would. We have normal blackjack abilities like betting, hitting, which occurs when a player wants another card, doubling down, and holding if the player is pleased with their hand. The betting is formatted like a normal casino would be, blackjack receives 1.5 times the bet and a normal win receives their original bet times 2.

Although we may have not used the most complex data structures, the ability to implement an advanced game like blackjack using c++ and add user interface functionality was extremely

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rewarding throughout the process of this project. At the beginning of our game we did not plan on using Javascript, HTML and CSS to make the interface, but while playing ourselves we did not enjoy the interaction with the compiler and decided to create a functional web interface. Due to the limiting capabilities of connecting Javascript with C++, it was difficult to create a working interface while writing to a file. After much trial and error, we came up with the idea of writing to an HTML file instead of a txt. In doing so, we were able to refresh the page and create a self scrolling prompt using Javascript. This way, we could follow the file that was being written to.