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Engineering Computation
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Final Project Code Documentation

The 21 Simulator is a blackjack simulator meant to focus on practicing counting cards and performing proper strategies based on accepted correct plays. Upon startup, the program loads various textures and presents a menu with three modes. The third of these modes, simulation in order to determine the expected value of a inputted set matrix of plays, ended up being outside the scope of this project, and so was not able to be completely implemented.

The first of these modes is a simple blackjack simulator. In the `main()` function of the program, one can edit the number of 52-card decks of cards used in the deck for the game, with the default value set to 6 as the standard at most casinos, as well as the number of non-dealer players with a default of 1. Gameplay will run continuously for as many rounds as the player would want to play. For each player's turn, keyboard inputs are used to dictate the player's decisions. Essentially this game functions just as a game of blackjack against an AI dealer.

The second mode is a practice simulator for counting cards. Using the method of "counting cards", which is a running estimated sum of the weights of the cards in a deck, the game will play a game of blackjack one card at a time between several AI players and an AI dealer. At the end of the hand, the player is asked to input the proper count, and told if their selection is correct or incorrect on the command console. The speed that the cards are played can be altered in the game's file `game.cpp`, which enables an adaptable difficulty level for the player.