

Video Poker (Jacks or Better)

A Group Project

MATH 3808: Mathematical Analyses of Games of Chance

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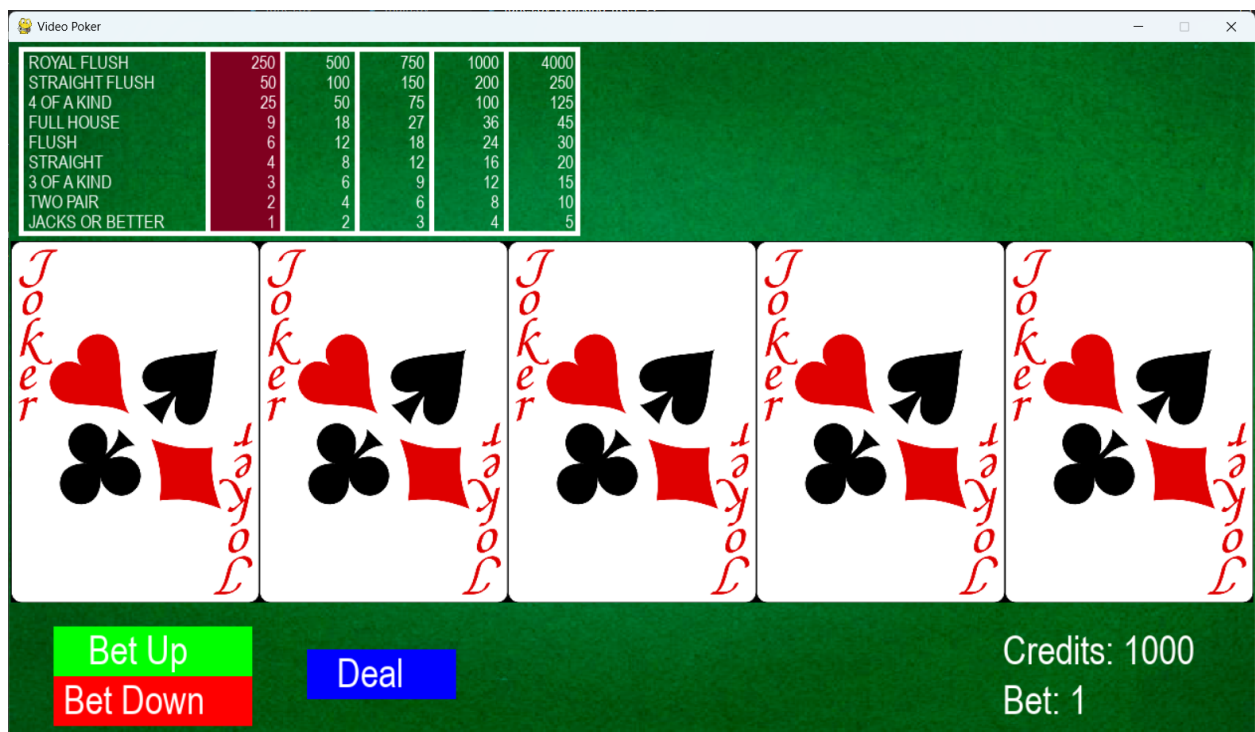
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Rules of the game

The topic for this project is video poker, jacks or better. To play the game, download the dependencies and launch the program, follow the instructions on the readme.

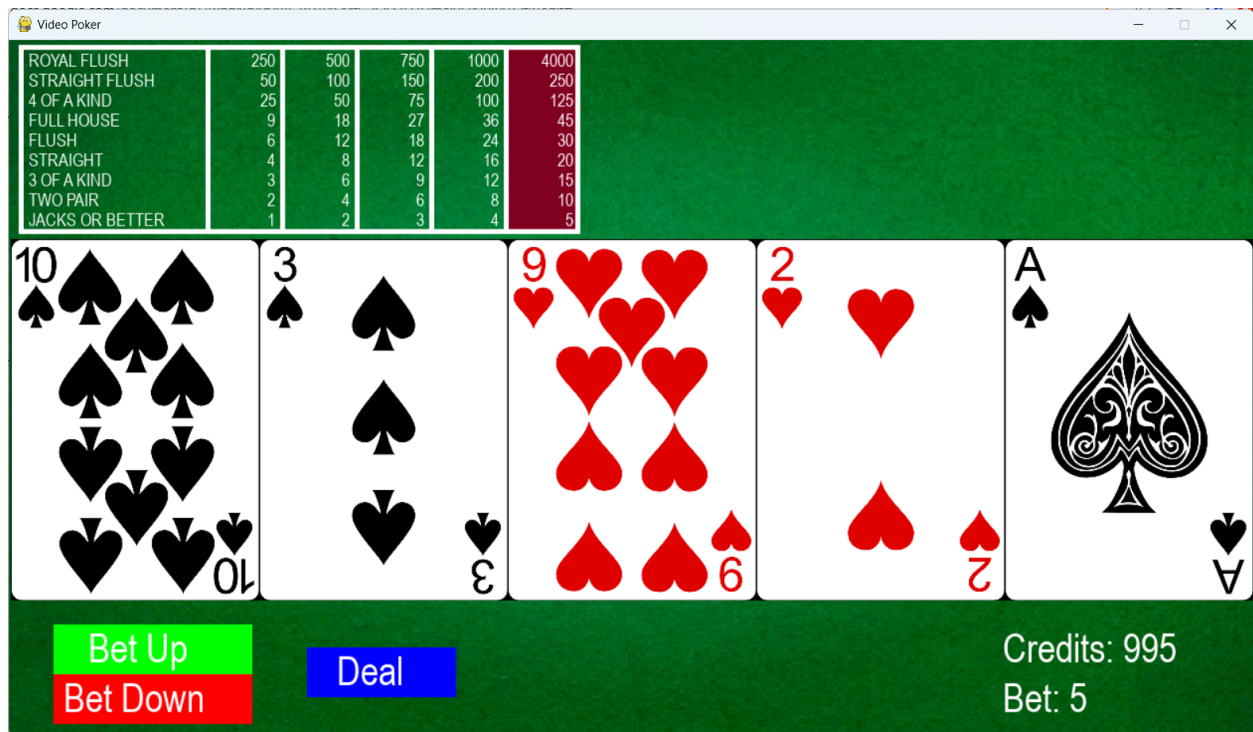
In this game, you can change your bet amount before being dealt 5 cards. Once the hand is dealt, you can click on any and all of the 5 cards to “hold” them. Any cards not “held” will be redrawn from the remaining cards in the deck. Then according to the pay table on the top of the window, credits will be won.

This is the program when it is just launched.

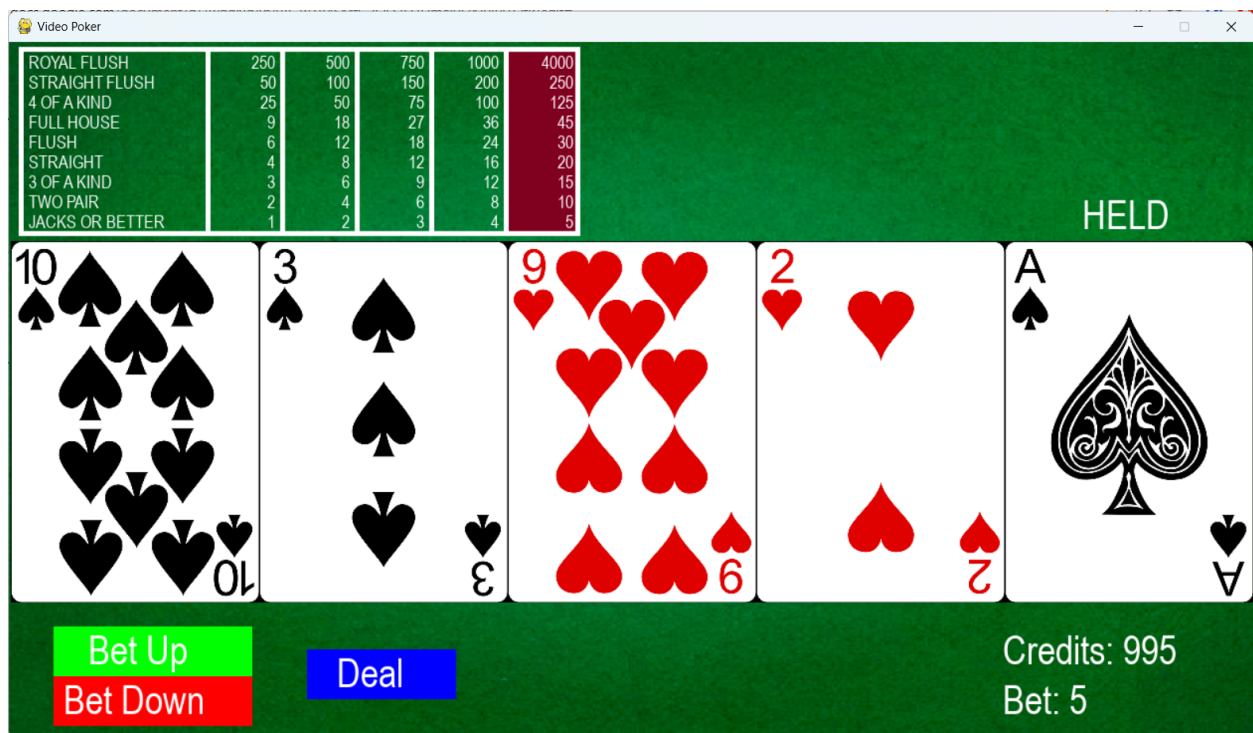


This window will show you a lot of information. On the bottom right, your current credits and bet amount are shown. On the bottom left, there are 3 buttons. There are bet up and down buttons that increase and decrease the bet amount by 1, and then the deal button. The deal button is used for both dealing the initial hand, and for dealing the redrawn cards after deciding which cards to hold.

Pressing the bet up button until max bet is reached then pressing deal will lead to this:



We will hold onto the ace by clicking it:



Then we will click deal again to redraw the 4 other cards:

Video Poker Paytable:

Hand	250	500	750	1000	4000
ROYAL FLUSH	250	500	750	1000	4000
STRAIGHT FLUSH	50	100	150	200	250
4 OF A KIND	25	50	75	100	125
FULL HOUSE	9	18	27	36	45
FLUSH	6	12	18	24	30
STRAIGHT	4	8	12	16	20
3 OF A KIND	3	6	9	12	15
TWO PAIR	2	4	6	8	10
JACKS OR BETTER	1	2	3	4	5

Current Hand: Ace of Diamonds, 7 of Diamonds, 9 of Spades, 8 of Diamonds, Ace of Spades.

Game Status: Credits: 1000, Bet: 5, Win: Pair.

Controls: Bet Up, Bet Down, Deal.

In this case we got a pair of aces, which will give us our money back. Clicking 'deal' again will give us a new hand and we can keep playing.

Function Descriptions

There are 3 main python files, along with a folder full of all the card images. The card.py and main.py files mainly deal with the interface elements, and handle the logic for keeping cards and drawing new cards, as well as all the button logic. The file with all the logic determining hands and payout is in funcs.py.

The main function used to determine a hand's strength is checkhand(hand). This takes 5 card objects and returns a number from 1-10, 10 representing a royal flush, and a 1 representing less than jack or better.

Some of the functions are fairly straight forward, for example checking straight flush code just calls the check_straight and check_flush logic, and a royal flush checks for flush, straight, and also that the sorted hand starts with an Ace and King. Similarly, the 4 of a kind check will just see if ignoring the values, if there are 4 of the same of any value, it will return true.

A more complicated function would be checking for straights, since an ace can be both at the top and bottom of a straight. So in the code we account for both when there is no ace, in which case we just see if they are only apart from each other by 1, or if there is an ace, if it is with a {2,3,4,5} or a {10, J, Q, K}.

For more descriptions, the code itself is commented very well, so you can check the funcs.py file for more information about the logic.