

BLACKJACK MINIMUM RISK ALGORITHM

-BY

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INTRODUCTION:

BLACKJACK is a card game the object of which is to be dealt with cards having a higher count than those of the dealer up to but not exceeding 21. It is probably the only casino game, in which you have a chance to beat the house with logic and strategy. To understand the algorithms and strategies on blackjack first we need to know the rules of it.

RULES OF BLACKJACK:

The dealer and each player receives two cards. The dealer turns the first of his cards face up and the other remains face down. Players' cards are typically dealt face up, but this is not necessary.

The object of the game is to come as close to 21 as possible without going over, which is termed "busting" Each card is counted as its face value, with face cards counting 10, and aces being counted as 1 or 11, at the player's discretion. The dealer must follow fixed rules, which prescribe generally that the dealer must continue to take cards until reaching a total of 17 or higher. Dealer aces are counted generally as 11 unless it would cause the dealer to bust. The player, unlike the dealer, has the discretion to hit or stand, and in certain cases has additional options of "splitting" or "doubling down."

Blackjack

CARD VALUES



STRATEGIES:

After knowing the rules, let's move to the strategy and gameplay part. High-speed computers were used to simulate each distinct situation in the game. The computer calculated the correct move for each element, and each of these correct moves was pieced back together to form an overall strategy. The strategies were defined based on either starting from a fresh deck or decks of cards - a so-called "basic strategy" - or reflecting the distribution of types of cards, such as low or high, or 10s or 5s, that had already been played in prior hands - so-called "counting strategies."

And hence we come to the so-called basic strategy introduced by Thorp, who also wrote books for this to crack blackjack along with his colleagues. Even though this actually doesn't help you win but it gives a slight percentage of winning money. After all, the basic strategy is designed so as to maximize profits over consecutive hands and shorten the losses incurred during this. There is also one more method that

helps significantly to place bets on the hands called counting cards. The cards are categorized into high, low, and neutral. Each card is given value as shown:



So player counts all the cards that have been served so that it gives him the idea of the cards that are about to be dealt. But this method is useful when there are fixed number of decks for the game, not applicable in games that use continuous shuffling method as there is no saying in what may come next. Here we use continuous shuffling method while dealing cards in our program so this doesn't give us any advantage.

The basic strategy has been evolved and named as evolved basic strategy, keeping in mind the changes incorporated in the game.

DEALER'S UP CARD											
YOUR HAND	2	3	4	5	6	7	8	9	10	A	
12	H	H	S	S	S	H	H	H	H	H	
13	S	S	S	S	S	H	H	H	H	H	
14	S	S	S	S	S	H	H	H	H	H	
15	S	S	S	S	S	H	H	H	H	H	
16	S	S	S	S	S	H	H	H	H	H	
17+	S	S	S	S	S	S	S	S	S	S	
A2	H	H	D	D	D	H	H	H	H	H	
A3	H	H	D	D	D	H	H	H	H	H	
A4	H	H	D	D	D	H	H	H	H	H	
A5	H	H	D	D	D	H	H	H	H	H	
A6	D	D	D	D	D	H	H	H	H	H	
A7	S	D	D	D	D	S	S	H	H	S	
A8	S	S	S	D	D	S	S	S	S	S	
A9	S	S	S	S	S	S	S	S	S	S	
22	P	P	P	P	P	P	H	H	H	H	
33	H	H	P	P	P	P	H	H	H	H	
44	H	H	H	D	D	H	H	H	H	H	
55	D	D	D	D	D	D	D	D	H	H	
66	P	P	P	P	P	H	H	H	H	H	
77	P	P	P	P	P	P	H	H	S	H	
88	P	P	P	P	P	P	P	P	P	P	
99	P	P	P	P	P	S	P	P	S	S	
10 10	S	S	S	S	S	S	S	S	S	S	
A A	P	P	P	P	P	P	P	P	P	P	
5-7	H	H	H	H	H	H	H	H	H	H	
8	H	H	H	D	D	H	H	H	H	H	
9	D	D	D	D	D	H	H	H	H	H	
10	D	D	D	D	D	D	D	D	H	H	
11	D	D	D	D	D	D	D	D	D	D	

H = HIT, S = STAND, D = DOUBLE DOWN, P = SPLIT
 IF DOUBLING DOWN IS INDICATED AND PLAYER HAS MORE THAN
 TWO CARDS, THEN HIT
 NEVER TAKE INSURANCE
 STOP PLAYING WHEN RECEIVING A PAIR OF 9S OR WHEN TWO OR
 MORE ACES ARE DEALT IN A SINGLE ROUND