

Requirements Specification v6 – Killer Cutthroat Spades

Req#	Requirement Description	Priority	Effort
A1	The game will comply with the rules for Killer Cutthroat Spades.		
A1.1	Spades is played with the spade suit as trumps.		
A1.1a	In the first release, the game will run on the Internet with four human players.	01	
A.1.1a.1	Potentially multiple Spades games will be played on the Internet simultaneously, so the game environment shall support a community of users.	01a	
A.1.1a.2	A player shall be able to sign in for a game with four pre-arranged players to occur at a specified time within a 10-minute window.	01b	
A.1.1a.3	A player shall be able to sign up for a first-come-first-served game with whomever is available.	01c	
A1.2	In the third release, the game shall support one human player and three simulated players.	99	
A1.3	In second release, the game will run on the Internet and 1+ human players will play with 0+ simulated players.	99	
A1.4	In the fourth release, the game will support Monte Carlo simulation with no human players (to test various strategies).	99	
A2	A players shall be designated as the dealer, but the game shall deal 13 cards to each player for each hand.	02	
A2.1	The dealer shall rotate clockwise beginning with the human player.		
A3	The game shall have a GUI interface that simulates a poker table and four hands, with the human player's hand clearly visible.	03	
A3.1	The game shall display the number of tricks taken by each player along with the number of tricks bid by the player throughout the hand.	05	

Reqt	Requirement Description	Priority	Effort
A3.2	The game shall display the current game score of the four players at all times.	04	
A3.3	The game shall make the cards from each player clearly visible on each trick until the human player indicates to play the next trick.	06	
A3.4	The human player's hand shall be sorted by suit and then left-to-right from highest to lowest (i.e., AK... 2).	06a	
A3.5	The suits in the human player's hand shall be sorted by alternating color (e.g., red/black/red/black).	06b	
A3.6	At the end of the hand, the game shall display the number of tricks bid and taken for the hand along with the score for this hand.	05a	
A4	The game shall prevent any player from violating the Spades rules.		
A4.1	The game shall prevent any player from reneging.		
A4.2	The strategies for each simulated player shall rely on the information readily available due to bidding and play of the game rather than a gods-eye view of the other players' hands.		
A5	The game may be played on an iPhone, an Android phone, the web, or a laptop.		
A5.1	For the first release, the game shall be played on an iPhone.	07	
A5.2	For the second release, the game may be played on a laptop.	99	
A5.3	For the third release, the game may be played on an Android phone.	99	
A5.4	For the fourth release, the game may be played on the web with other (remote) human players.	99	
B1	The player to the left of the dealer bids first, with bids proceeding clockwise.	10	

Reqt	Requirement Description	Priority	Effort
B2	Players shall bid to take any number of tricks from 0 (nil) to 13 at the beginning of a hand.	11	
B2.1	A bidding strategy that may be used by a simulated player is to bid the number of spades held.	13	
B2.2	A bidding strategy that may be used by a simulated player is based on a count system. Aces are worth 1, kings worth $\frac{1}{2}$, queens worth $\frac{1}{4}$, each spade over four for the hand is worth 1. Total the count, round down, and that is the bid. TBD for a later release.	99	
B2.3	A bidding strategy that may be used by a simulated player is based on a modified count system. TBD for a later release.	99	
B2.4	A bidding strategy that may be used by a simulated player is TBD. TBD for a later release.	99	
B3	A player may bid nil (to take 0 tricks).	12	
B3.1	All bids of 0 are nil bids.		
P1	Each simulated player in the game shall follow a strategy and tactics for playing well that is consistent with the Spades rules.		
P1	The player to the left of the dealer shall make the opening lead.	20	
P1.1	Each simulated player's strategy shall focus on making its bid exactly.		
P1.2	A simulated player may prioritize not making undertricks or not making overtricks.		
P2	The player winning a trick shall make the lead for the next trick.	21	
P2.1	Spades may not be led until there is a ruff (aka trump, cut).	23	
P2.2	A lead strategy that may be used by a simulated player is to lead 1) a suit where you do not have the A, K, or Q; 2) an ace; 3) underlead a queen; 4) underlead a king.	22	

Req#	Requirement Description	Priority	Effort
P3	Each player shall follow suit if they can do so.	24	
P3.1	If all players follow suit or sluff (play a non-spade without following suit), the highest card in the suit led wins the trick (in order, AKQJ...2).	25	
P3.2	If a player cannot follow suit, they may ruff the trick.	26	
P3.3	If a player ruffs a trick, the highest spade played takes the trick (i.e., another player can over-ruff).	27	
P4	All other players should attempt to set any player bidding nil .	29	
P4.1	A playing strategy that may be used by a simulated player when another player bids nil is to ignore the nil bidder.	28	
P4.2	A playing strategy when another player bids nil is to attempt to set the nil bidder without going set yourself.	99	
P4.3	A playing strategy that may be used by a simulated player when another player bids nil is to attempt to set the nil bidder even if it sets yourself.	99	
P4.4	A playing strategy that may be used by a simulated player when another player bids nil is to ignore the nil bidder if making your bid will win the game.	99	
S1	Players who take the number of tricks bid for the hand score bid X 10 points.	30	
S2	A player who takes fewer than the number of tricks bid on a hand (for non- nil bid), scores the bid X -10 points.	31	
S3	A player who takes overtricks on a hand loses 10 points per overtrick; subtract overtricks X 10 from bid X 10 points.	32	
S4	A player who takes no tricks for a hand where they bid nil scores 100 points.	33	
S4.1	A player who takes one or more tricks after bidding nil scores -100 points.	34	

Req	Requirement Description	Priority	Effort
S5	The game is over 250 points.	35	
S5.1	If two or more players are tied for high score over 250 points, the game shall continue until there is a single winner.	36	