

Blackjack Systems Analyst Version 4

1.0 Introduction

Blackjack Systems Analyst can be used to develop, test and practice various Play Strategies and corresponding Bet Strategies (Systems) for playing the game of Blackjack or Spanish 21; and to determine the probability of winning at the Blackjack table. Set Bet Strategy using formulas to calculate bets to be wagered, or by establishing preset wagers for progression betting. Automatically set Basic Blackjack Play Strategy for any combination of typical Game Rules, or set your own variations.

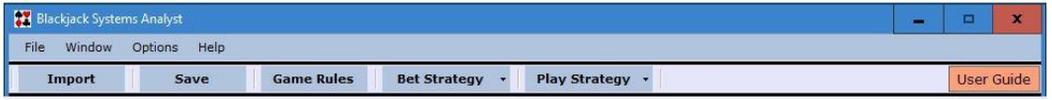
1.1 Application Basics

In Test mode, the simulator will run a series of hands based on Game Rules, Play Strategy and Bet Strategy. Dealt Hands are grouped into playing Sessions based on reaching a Profit Goal, a Loss Limit, a number of consecutive Losses, or number of consecutive Gains. Graphs of Balance versus Dealt Hand Number and Balance versus Session Number are plotted and displayed. Results and statistics for both Dealt Hands and Sessions are listed to evaluate the effectiveness of the system in producing winning results. Results related to Dealt Hands and Sessions can be exported to a spreadsheet program for further analysis. To optimize a system, adjust Bet and Play strategies to result in a gradual increase in balance with minimal variations. In Practice mode, monitor the simulation as bets are wagered, cards are displayed, decisions are made, and results are shown.

1.2 Using the Application

Navigate through the application and open strategy windows by using the menu and tool-bar buttons at the top when a simulation is not running.

Menu and Tool-Bar



In the **Game Rules** window, set any combination of Blackjack rules by which to run the simulation.

In **Play Strategy** windows, set play decisions for all possible hands against any dealer up card.

In **Bet Strategy** windows, set bet strategy to use in the simulation. Bets can be **Preset** or **Calculated**.

Using the **Save** dialog box, the current setup of selected rules, play strategy and bet strategy can be saved within the application. Up to (20) setups can be saved.

Using the **Import** dialog box, a previously saved setup of game rules, play strategy and bet strategy can be imported for strategy adjustments and simulation runs.

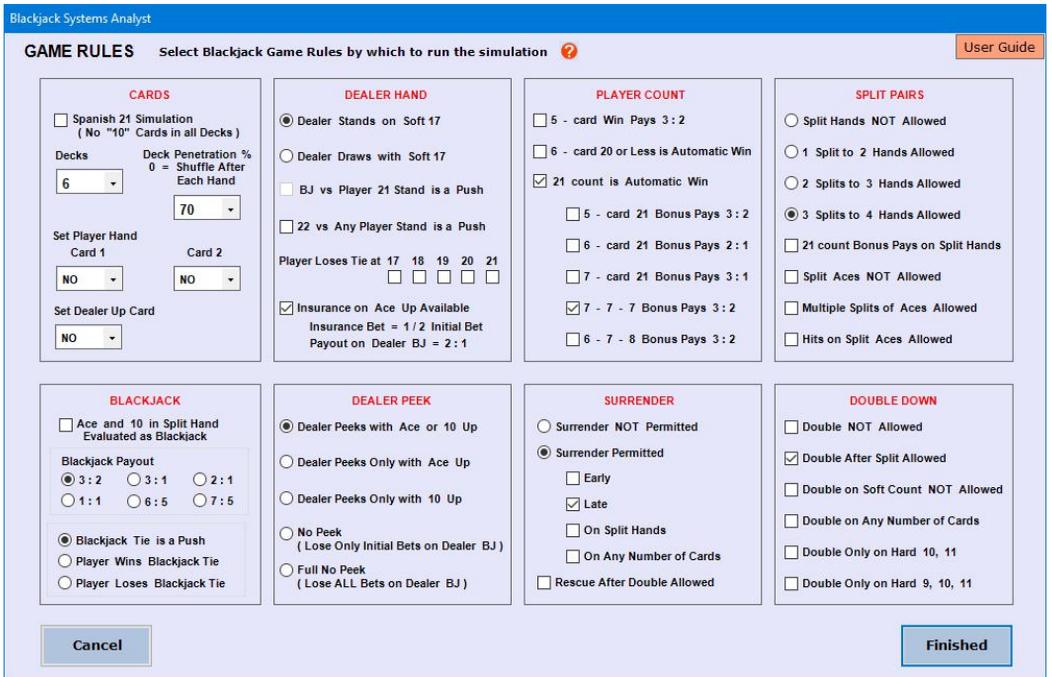
Options are available to randomize all card shuffles or to repeat card shuffles in all simulation runs.

The **User Guide** can be accessed at any time, and help regarding a specific topic in any window can be displayed by clicking  next to the topic in question.

2.0 Game Rules

In the **Game Rules** window, set any combination of Blackjack rules by which to run the simulation. When a previously saved setup is imported, the game rules are automatically set according to the imported setup.

Game Rules



After all rules have been set, click the **Finished** button to keep the selections and return to the main window. If a simulation is in progress, it will be reset.

To discard any changes made to the rules and return to the main window, click the **Cancel** button. If a simulation is in progress, it can then be continued from the point where it was stopped.

2.1 Rule Options

Spanish 21 Simulation (No "10" Cards in all Decks)

Run Spanish 21 Simulations. All four "10" cards in each deck are not used, so each deck consists of 48 cards.

Decks

The number of card decks shuffled together to simulate the game. Set from 1 to 8 decks.

Deck Penetration %

The percentage of cards used before a shuffle occurs. Set at 0, 30, 40, 50, 60, 70, or 80 percent. Shuffle occurs after set penetration is reached and the hand in progress is completed. Zero "0" Deck Penetration signifies a shuffle after each hand is completed.

Set Player Hand

The first and second card dealt to Player can be set for every hand simulated to analyze and practice play strategy for specific dealt hands. If a card is set, a shuffle of all cards occurs after each hand is completed.

Set Dealer Up Card

The first card dealt to Dealer can be set for every hand simulated to analyze and practice play strategy for a specific Dealer Up Card. If the card is set, a shuffle of all cards occurs after each hand is completed.



Ace and 10 in Split Hand Evaluated as Blackjack

When the first two cards in a split hand consist of an Ace and a 10-count card, the hand is evaluated as a Blackjack.

Blackjack Payout

The amount paid to the Player for a Blackjack, set as a ratio to the amount of the Bet. Select ratio as 3:2, 3:1, 2:1, 1:1, 6:5 or 7:5

Blackjack Tie is a Push

When both Player and Dealer have Blackjack, the result is neither a Player win nor a loss.

Player Wins Blackjack Tie

When both Player and Dealer have Blackjack, the Player wins.

Player Loses Blackjack Tie

When both Player and Dealer have Blackjack, the Player loses.

BLACKJACK

Ace and 10 in Split Hand Evaluated as Blackjack

Blackjack Payout

3 : 2 3 : 1 2 : 1

1 : 1 6 : 5 7 : 5

Blackjack Tie is a Push

Player Wins Blackjack Tie

Player Loses Blackjack Tie

Dealer Stands on Soft 17

With one Ace counted as 11 points, Dealer must Stand with Hand count equal to or greater than 17.

Dealer Draws With Soft 17

With one Ace counted as 11 points, Dealer must draw a card with hand count of 17 and Stand with count greater than 17.

BJ vs Player 21 Stand is a Push

When the Dealer has a Blackjack and Player Stand count is 21, the result is a push.

22 vs Any Player Stand is a Push

When the Dealer hand count is 22, all Player hands left standing result in a push, except any split hands evaluated as Blackjack.

Player Loses Tie at 17, 18, 19, 20, 21

When Player and Dealer stand on the same count (17, 18, 19, 20 and/or 21), Player loses the standing Bet.

Insurance on Ace Up Available

When Dealer Up Card is an Ace, Player may bet half the Initial Bet that the hole card will be a 10 (resulting in a Blackjack). If Dealer has Blackjack, payout is 2 : 1 on the Insurance Bet.

DEALER HAND

Dealer Stands on Soft 17

Dealer Draws with Soft 17

BJ vs Player 21 Stand is a Push

22 vs Any Player Stand is a Push

Player Loses Tie at 17 18 19 20 21

Insurance on Ace Up Available
Insurance Bet = 1 / 2 Initial Bet
Payout on Dealer BJ = 2 : 1

Dealer Peeks With Ace or 10 Up

Dealer checks for Blackjack before any play, if the up card is Ace or 10. If Dealer has Blackjack, the Player loses immediately.

Dealer Peeks Only With Ace Up

Dealer checks for Blackjack before any play, only if the up card is an Ace . If Dealer has Blackjack, the Player loses immediately. If the Dealer up card is 10 and the face-down card turns out to be an Ace, the hand is counted as Blackjack and Player can lose all bets placed on the original hand and any split hands.

Dealer Peeks Only With 10 Up

Dealer checks for Blackjack before any play, only if the up card is a 10 - count . If Dealer has Blackjack, the Player loses immediately. If the Dealer up card is an Ace and the face-down card turns out to be a 10 , the hand is counted as Blackjack and Player can lose all bets placed on the original hand and any split hands.

No Peek (Lose Only Initial Bets on Dealer Blackjack)

Dealer checks for Blackjack only after Player finishes play. If the Dealer has Blackjack, Player can lose only the Initial Bet placed on the original hand and any split hands.

Full No Peek (Lose All Bets on Dealer Blackjack)

Dealer checks for Blackjack only after Player finishes play. If the Dealer has Blackjack, Player can lose ALL bets placed on the original hand and any split hands.

DEALER PEEK

Dealer Peeks with Ace or 10 Up

Dealer Peeks Only with Ace Up

Dealer Peeks Only with 10 Up

No Peek
(Lose Only Initial Bets on Dealer BJ)

Full No Peek
(Lose ALL Bets on Dealer BJ)

5 - Card Win Pays 3 : 2

When Player stands with (5) cards or more, has not Doubled, and wins the hand, payout is 3 : 2 on Initial Bet.

6 - Card 20 or Less is Automatic Win

When Player stands on 20 or less with (6) cards or more, player wins automatically and payout is 1 : 1 on the standing Bet amount.

21 Count is Automatic Win

When Player stands on 21, Player wins automatically and payout is 1 : 1 on the standing Bet amount.

5 - Card 21 Bonus Pays 3 : 2

When Player stands on 21 with (5) cards and has not Doubled, Player automatically wins the hand and payout is 3 : 2 on Initial Bet.

6 - Card 21 Bonus Pays 2 : 1

When Player stands on 21 with (6) cards and has not Doubled, Player automatically wins the hand and payout is 2 : 1 on Initial Bet.

7 - Card 21 Bonus Pays 3 : 1

When Player stands on 21 with (7) cards or more and has not Doubled, Player automatically wins the hand and payout is 3 : 1 on Initial Bet.

7 - 7 - 7 Bonus Pays 3 : 2

When Player stands on 21 with (3) "7" cards, Player automatically wins and payout is 3 : 2 on Initial Bet.

6 - 7 - 8 Bonus Pays 3 : 2

When Player stands on 21 with a "6" , "7" and "8", Player automatically wins and payout is 3 : 2 on Initial Bet.

PLAYER COUNT

5 - card Win Pays 3 : 2

6 - card 20 or Less is Automatic Win

21 count is Automatic Win

5 - card 21 Bonus Pays 3 : 2

6 - card 21 Bonus Pays 2 : 1

7 - card 21 Bonus Pays 3 : 1

7 - 7 - 7 Bonus Pays 3 : 2

6 - 7 - 8 Bonus Pays 3 : 2

Surrender NOT Permitted

Player cannot surrender the hand and forfeit half the Initial Bet at any time.

Surrender Permitted (Early)

Player can surrender a hand and forfeit half the Initial Bet before the Dealer checks for Blackjack.

Surrender Permitted (Late)

Player can surrender the dealt hand and forfeit half the Initial Bet only after the Dealer checks for, and does not have Blackjack.

Surrender Permitted (On Split Hands)

Player can surrender a split hand and forfeit half the Initial Bet.

Surrender Permitted (On Any Number of Cards)

Player can surrender and forfeit half the Initial Bet after a hand is hit.

Rescue After Double Allowed

Player can surrender (Rescue) a hand and forfeit half the standing Bet after the Initial Bet is Doubled and one additional card is drawn.

SURRENDER

Surrender NOT Permitted

Surrender Permitted

Early

Late

On Split Hands

On Any Number of Cards

Rescue After Double Allowed

Split Hands NOT Allowed

Player cannot split cards of the same value to make another hand.

1 Split to 2 Hands Allowed

The maximum number of pairs Player is allowed to split is (1), resulting in (2) split hands.

2 Splits to 3 Hands Allowed

The maximum number of pairs Player is allowed to split is (2), resulting in (3) split hands.

3 Splits to 4 Hands Allowed

The maximum number of pairs Player is allowed to split is (3), resulting in (4) split hands.

Bonus Pays on Split Hands

Bonus payments according to Player Count Rules are honored on both dealt hands and split hands.

Split Aces NOT Allowed

Aces in the Player Dealt Hand cannot be split to make another hand.

Multiple Splits of Aces Allowed

When a pair of Aces are split and another Ace is drawn, Player can re-split them to make another hand.

Hit on Split Aces Allowed

Player can take multiple hits on split hands created by splitting Aces.

SPLIT PAIRS

Split Hands NOT Allowed

1 Split to 2 Hands Allowed

2 Splits to 3 Hands Allowed

3 Splits to 4 Hands Allowed

Bonus Pays on Split Hands

Split Aces NOT Allowed

Multiple Splits of Aces Allowed

Hits on Split Aces Allowed

Double NOT Allowed

Player cannot double the Initial Bet on any hand.

Double After Split Allowed

Player can double the Initial Bet and draw only one additional card on a split hand.

Double On Soft Count NOT Allowed

Player cannot double the Initial Bet and draw only one additional card on a soft count.

Double On Any Number of Cards

Player can double the Initial Bet and draw only one additional card after a hand is hit.

Double Only On Hard 10 or 11

Player can double the Initial Bet and draw only one additional card on a hard count of 10 or 11 only.

Double Only On Hard 9, 10 or 11

Player can double the Initial Bet and draw only one additional card on a hard count of 9, 10 or 11 only.

DOUBLE DOWN

Double NOT Allowed

Double After Split Allowed

Double on Soft Count NOT Allowed

Double on Any Number of Cards

Double Only on Hard 10, 11

Double Only on Hard 9, 10, 11

3.2 Strategy for Dealt Hand - After Hit

The strategy table **Play Strategy For Non-Split Dealt Hand After Hit** includes options For Hit, Stand, Double, Surrender and Rescue After Double. The strategy applies to the initial non-split dealt hand after the first and successive hits. Strategies are grouped according to the Player's hand count:

Hard Count (no Aces in hand or all Aces counted as 1 point)
Soft Count (one Ace in hand counted as 1 or 11 points)

Play Strategy for Non-Split Dealt Hand after Hit

After the Play Strategy has been adjusted, click the **Finished** button to keep the settings and return to the main window. If a simulation is in progress, it will be reset.

To discard any adjustments made to the Play Strategy and return to the main window, click the **Cancel** button. A simulation in progress can then be continued from the point where it was stopped.

3.3 Strategy for Split Hand - First 2 Cards (After All Splits Formed)

The strategy table **Play Strategy for First 2 Cards of Split Hand (After All Splits Formed)** includes options for Hit, Stand, Double and Surrender. Strategies are grouped according to the Player's hand count:

Hard Count (no Ace in hand)
Soft Count (at least one Ace in hand)

All split hands (first 2 cards) are generated according to the strategy set for the initial Dealt Hand until the permitted number of split hands are formed. Therefore, the strategy for first 2 cards of a split hand does not address pairs. If the game rules are set for no splitting, the strategy windows for a split hand are not accessible.

Play Strategy for First 2 Cards of Split Hand (After All Splits Formed)

After the Play Strategy has been adjusted, click the **Finished** button to keep the settings and return to the main window. If a simulation is in progress, it will be reset.

To discard any adjustments made to the Play Strategy and return to the main window, click the **Cancel** button. A simulation in progress can then be continued from the point where it was stopped.

3.4 Strategy for Split Hand - After Hit

The strategy table **Play Strategy For Split Hand After Hit** includes options for Hit, Stand, Double, Surrender and Rescue After Double. The strategy applies to all split hands after the first hit and successive hits. Strategies are grouped according to the Player's hand count:

Hard Count (no Aces in hand or all Aces counted as 1 point)
Soft Count (one Ace in hand counted as 1 or 11 points)

Play Strategy for Split Hand after Hit

After the Play Strategy has been adjusted, click the **Finished** button to keep the settings and return to the main window. If a simulation is in progress, it will be reset.

To discard any adjustments made to the Play Strategy and return to the main window, click the **Cancel** button. A simulation in progress can then be continued from the point where it was stopped.

3.5 Basic Play Strategy

Basic Play Strategy, based on statistical analysis and probabilities, can be loaded into the strategy tables to account for all combinations of selected rules. To set Basic Play Strategy, click the button **Set Basic Strategy** in the **Play Strategy** drop-down at the top of the main application window or within the **File** menu. After **Basic Play Strategy** is set, all play strategy tables are changed accordingly. The strategies can then be adjusted by opening each Play Strategy window.



4.0 Bet Strategy

Bet strategies are set up in separate windows. Set the type of bet strategy to use during the simulation under **BET STRATEGY** in the control panel on the main window :

Calculated on Result

Wagers are calculated based on Result of the previous hand or the Initial Bet wagered on the previous hand.

Calculated on Balance

Wagers are calculated based on deviation from Session Start Balance.

Preset for Short Runs

Wagers are preset for relatively short runs of Losses and Gains.

Preset on Balance

Wagers are preset based on deviation from Session Start Balance.

Flat Bets During Runs

Wagers are preset for "Flat Betting" until a specified Gain Run Count or Loss Run Count occurs.

Preset for Long Runs

Wagers are preset for relatively long runs of Losses and Gains.



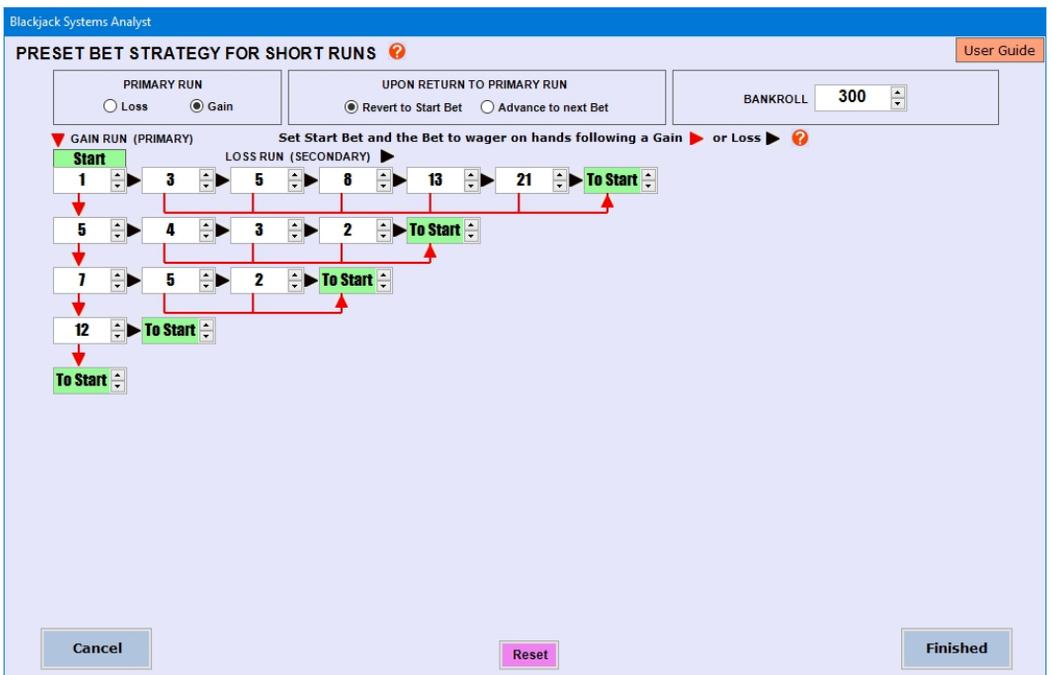
4.1 Preset for Short Runs

Set **Initial Bets** to be wagered after each loss or gain in a strategy chart. Set the **PRIMARY RUN** in the column on the left side of the chart for **Loss** or **Gain**. The Secondary Run rows in the chart will be automatically set to the opposite of what is set for the Primary Run. Set **ON RETURN TO PRIMARY RUN** to either **Revert to Start Bet** or **Advance to Next Bet** in the Primary Run when the Secondary Run is interrupted. The **RED** direction lines and arrows extending from the Secondary Run change accordingly.

Set **BANKROLL** (100 - 100,000) for the amount to be shown as **Balance** at the start of the simulation.

Set **Start Bet** for the Bet wagered on the first hand of the simulation. Following the downward pointing arrows in the **PRIMARY RUN** column, set bets for as many as (9) successive hands having the same result (Loss or Gain). Bets can be set from 1 to 10,000. With the last text box set as **"To Start"**, the Bet for that hand and the position in the chart reverts back to the **Start Bet**. Following the right pointing arrows in the **SECONDARY RUN** rows, set Bets for as many as (10) successive hands having the same result (Loss or Gain). With the last text box set as **"To Start"**, the Bet for that hand and the position in the chart will revert back to the **Start Bet**. If neither Gain nor Loss occurs on a hand (**Balance** does not change), position in the chart and the Bet wagered on the next hand remains the same.

Preset Bet Strategy for Short Runs



After the Bet Strategy has been adjusted, click the **Finished** button to keep the settings and return to the main window. **BET STRATEGY** will be set as **Preset for Short Runs**. If a simulation is in progress, it will be reset. To discard any adjustments made to the Bet Strategy and return to the main window, click the **Cancel** button. A simulation in progress can then be continued from the point where it was stopped.

4.2 Calculated on Result

Separate formulas can be set up for calculating Initial Bets based on the Initial Bet wagered on the previous Dealt Hand, or based on Net Result of the previous Dealt Hand. Select a **Basic Betting System** to set up :

User Setup : Configure your own Betting System

D'Alembert: Wager the **START BET** (one unit) on the first hand. Increase the Bet by one unit after a Loss. Decrease the Bet by one unit after a Gain.

Oscar's Grind: Wager the **START BET** (one unit) on the first hand. Increase the Bet by one unit after a Gain, but to no more than what is needed to reach a profit of one unit. Wager the **START BET** after profit of one unit is reached. Wager the same Bet after any Loss.

Martingale: Wager the **START BET** on the first hand. Double the Bet after a Loss. Wager the **START BET** after any Gain.

Paroli: Wager the **START BET** on the first hand. Double the Bet after a Gain. Wager the **START BET** after any Loss.

Set **BANKROLL** (100 – 100,000) for the amount to be shown as **Balance** at the start of the simulation.

Set **MINIMUM BET** (1 – 10,000) and **MAXIMUM BET** (1 – 100,000) to establish a range of bets to wager.

Set **START BET** (1 – 10,000) for the Bet wagered on the first hand of the simulation and at the start of all sessions. The **MINIMUM BET** input box is disabled for D'Alembert, Martingale, and Paroli Betting Systems.

Select a formula based on whether the Bet wagered on each hand after a Net Loss and after a Net Gain is to be determined by a calculation based on the Initial Bet wagered on the previous hand or by the Net Result on the previous hand. To determine the Bet to be wagered on the next hand, set a factor by which the previous Initial Bet or Net Result will be multiplied, and an amount to either **Add** to or **Subtract** from that result. (The formula input boxes are enabled only when a "User Setup" Betting System is selected.) Check the appropriate box to continue to wager the **MAXIMUM BET** or **MINIMUM BET** after Net Losses, when the calculated Bet is outside the min/max range, until a Net Gain occurs. Check the appropriate box to continue to wager the **MAXIMUM BET** or **MINIMUM BET** after Net Gains, when the calculated Bet is outside the min/max range, until a Net Loss occurs. Otherwise, the Bet to be wagered for the next hand reverts back to the **START BET**. If a Loss or a Gain does not occur (**Balance** does not change), the Bet on the next hand remains the same.

To round the Calculated Bet to a whole number, check the box labeled "**Round Up to a Whole Number**" or "**Round Down to a Whole Number**". To limit the Calculated Bet so that **LOSS LIMIT** is not exceeded as result of a Loss of the Initial Bet wagered on the next hand, check the box labeled "**Limit Bet so Loss Limit is not exceeded on a Loss**". To limit the Calculated Bet so that **PROFIT GOAL** is not exceeded as result of a Gain of the Initial Bet wagered on the next hand, check the box labeled "**Limit Bet so Profit Goal is not exceeded on a Gain**".

Calculated Bet Strategy Based on Net Result

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User Guide

CALCULATED BET STRATEGY BASED ON NET RESULT

Select a Basic Betting System to Set Up

User Setup
 D'Alembert
 Oscar's Grind
 Martingale
 Paroli

User Setup:
Configure your own Betting System

Set Bankroll, Start Bet, Minimum Bet, and Maximum Bet

BANKROLL	START BET	MINIMUM BET	MAXIMUM BET
300	5	2	15

Set formulas by which Initial Bets are calculated

To calculate the Initial Bet on the next hand after a Net LOSS :

Multiply INITIAL BET on previous hand by 2.00 and Add 2

Multiply Net LOSS on previous hand by [] and []

To calculate the Initial Bet on the next hand after a Net GAIN :

Multiply INITIAL BET on previous hand by 1.00 and Subtract 1

Multiply Net GAIN on previous hand by [] and []

When Calculated Bet after LOSS is greater than MAXIMUM BET, continue to wager MAXIMUM BET until Net GAIN occurs

When Calculated Bet after LOSS is less than MINIMUM BET, continue to wager MINIMUM BET until Net GAIN occurs

When Calculated Bet after GAIN is greater than MAXIMUM BET, continue to wager MAXIMUM BET until Net LOSS occurs

When Calculated Bet after GAIN is less than MINIMUM BET, continue to wager MINIMUM BET until Net LOSS occurs

Round Up to a Whole Number

Limit Bet so Session Loss Limit is not exceeded on a Net LOSS

Round Down to a Whole Number

Limit Bet so Session Profit Goal is not exceeded on a Net GAIN

Cancel
Reset
Finished

Example (See above) :

In the formula to calculate the bet on the next hand after a Loss, the factor by which to multiply the previous Bet is set at 2 and the "Add" amount is set at 2. In the formula for bet strategy after a Gain, the factor by which to multiply the Net Gain is set at 1 and the "Subtract" amount is set at 1. If the Bet wagered on the previous hand is 5 and the result of the hand is a Loss in Balance, the Bet wagered on the next hand will be $(5 \times 2) + 2 = 12$. If the next hand results in a Gain, the Bet wagered on the following hand will be $(12 \times 1) - 1 = 11$. But, if the hand results in a Loss, the formula set up for the next bet following a Loss is utilized, and the Bet will be $(12 \times 2) + 2 = 26$.

After the Bet Strategy has been adjusted, click the **Finished** button to keep the settings and return to the main window. BET STRATEGY will be set as Calculated on Result. If a simulation is in progress, it will be reset. To discard any adjustments made to the Bet Strategy and return to the main window, click the **Cancel** button. A simulation in progress can then be continued from the point where it was stopped.

4.3 Calculated on Balance

Separate formulas can be set up for calculating the Bet when current Bankroll Balance is **MORE THAN** the Session Start Balance, and when current Bankroll Balance is **LESS THAN** the Session Start Balance. To determine the Bet to be wagered on the next hand, set a factor by which the difference between current Balance and Session Start Balance is to be multiplied; and an amount to either **Add** to or **Subtract** from that result.

Set **BANKROLL** (100 – 100,000) for the amount of **Balance** at the start of the simulation. Set **START BET** (1 – 10,000) for the Bet wagered on the first hand of all sessions, and when Session Balance equals zero. Set **MINIMUM BET** (1 – 10,000) and **MAXIMUM BET** (1 – 100,000) to establish a range of initial bets to wager.

When the calculated Bet is less than the Minimum Bet, the **MINIMUM BET** or the **START BET** is wagered on the next hand (as selected). If the calculated Bet for the next hand is greater than the **MAXIMUM BET**, the **START BET** is wagered and a new Session begins. If a Loss or a Gain does not occur (**Balance** does not change), the Initial Bet on the next hand remains the same.

To round the Calculated Bet to a whole number, check the box labeled "**Round Up to a Whole Number**" or "**Round Down to a Whole Number**". To limit the Calculated Bet so that **LOSS LIMIT** is not exceeded as result of a Loss of the Initial Bet on the next hand, check the box labeled "**Limit Bet so Loss Limit is not exceeded on a Loss**". To limit the Calculated Bet so that **PROFIT GOAL** is not exceeded as result of a Gain by the Initial Bet amount on the next hand, check the box labeled "**Limit Bet so Profit Goal is not exceeded on a Gain**".

Calculated Bet Strategy Based on Session Balance

Blackjack Systems Analyst
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CALCULATED BET STRATEGY BASED ON SESSION BALANCE

Set Bankroll, Start Bet, Minimum Bet and Maximum Bet

BANKROLL	START BET	MINIMUM BET	MAXIMUM BET	
200	4	2	20	When Calculated Bet is less than MINIMUM BET : <input type="radio"/> Wager Start Bet <input checked="" type="radio"/> Wager Minimum Bet

Set formulas by which Initial Bets are calculated

Current Bankroll Balance MORE THAN Session Start Balance

To calculate the Initial Bet on the next hand :

Multiply Difference between current Balance and Session Start Balance by 0.50 and Add 1

Current Bankroll Balance LESS THAN Session Start Balance

To calculate the Initial Bet on the next hand :

Multiply Difference between current Balance and Session Start Balance by 0.50 and Subtract 1

Round Up to a Whole Number

Limit Bet so Session Loss Limit is not exceeded on a Net LOSS

Round Down to a Whole Number

Limit Bet so Session Profit Goal is not exceeded on a Net GAIN

Cancel
Reset
Finished

After the Bet Strategy has been adjusted, click the **Finished** button to keep the settings and return to the main window. BET STRATEGY will be set as Calculated on Balance. If a simulation is in progress, it will be reset. To discard any adjustments made to the Bet Strategy and return to the main window, click the **Cancel** button. A simulation in progress can then be continued from the point where it was stopped.

4.4 Preset on Balance

Set **BANKROLL** (100 – 100,000) for the amount to be shown as **Balance** at the start of the simulation. Set **START BET** (1 – 10,000) for the Bet wagered on the first hand of all sessions, and when Session Balance equals zero. Set **Initial Bets** based on deviation from Session Start Balance. As many as eight (8) Balance Ranges can be set up for both **NEGATIVE SESSION BALANCE** and **POSITIVE SESSION BALANCE**. Set a corresponding **INITIAL BET** (1 – 10,000) for as many Balance Ranges as desired. Within each Balance Range, the corresponding Initial Bet is wagered until Session Balance is in a different Range. During a simulation, when Session Balance is in a range where "NEW SESSION" is indicated for INITIAL BET, or when Session Balance is outside all ranges, a new session begins, and the Start Bet is wagered.

For Negative Session Balance, the option is available to wager the corresponding **INITIAL BET** in each Balance Range; or wager the corresponding **INITIAL BET** until Positive Session Balance is reached or Session Balance decreases to a lower Range. For Positive Session Balance, the option is available to wager the corresponding **INITIAL BET** in each Balance Range; or wager the corresponding **INITIAL BET** until Negative Session Balance is reached or Session Balance increases to a higher Range.

Preset Bet Strategy Based on Session Balance

Blackjack Systems Analyst User Guide

PRESET BET STRATEGY BASED ON SESSION BALANCE ?

Set Bankroll and Start Bet at Start of Simulation

BANKROLL: START BET:

NEGATIVE SESSION BALANCE RANGE
Less Than

NEGATIVE SESSION BALANCE RANGE	To	INITIAL BET
0	-5	2
-5	-10	3
-10	-20	4
-20	-40	5
-40	-41	NEW SESSION
-41	-42	NEW SESSION
-42	-43	NEW SESSION
-43	-44	NEW SESSION

POSITIVE SESSION BALANCE RANGE
More Than

POSITIVE SESSION BALANCE RANGE	To	INITIAL BET
34	35	NEW SESSION
33	34	NEW SESSION
32	33	NEW SESSION
31	32	NEW SESSION
30	31	NEW SESSION
15	30	4
5	15	3
0	5	2

Wager the set Initial Bet when Session Balance is within the corresponding Negative Balance Range
 Wager Initial Bet set for a Range until Positive Session Balance is reached, unless Session Balance decreases to a lower Range

 Wager the set Initial Bet when Session Balance is within the corresponding Balance Range
 Wager Initial Bet set for a Range until Negative Session Balance is reached, unless Session Balance increases to a higher Range

Cancel Reset Finished

After the Bet Strategy has been adjusted, click the **Finished** button to keep the settings and return to the main window. BET STRATEGY will be set as **Preset on Balance**. If a simulation is in progress, it will be reset. To discard any adjustments made to the Bet Strategy and return to the main window, click the **Cancel** button. A simulation in progress can then be continued from the point where it was stopped.

4.5 Flat Bets During Runs

For both Loss Runs and Gain Runs, set the Flat Bet to wager for all Dealt Hands during the run at up to (13) Bet Levels, designated A through M. At each Bet Level, set the RUN COUNT to be reached before going to a different Bet Level; and set the BET LEVEL to go to after the set BET LEVEL RUN COUNT is reached.

Set **BANKROLL** (100 – 100,000) for the amount to be shown as **Balance** at the start of the simulation. Set **START BET** (1 – 10,000) for the Bet wagered on the first hand of all sessions, and when Session Balance equals zero. Set the **INITIAL BET** (1 – 10,000) for each Dealt Hand (Flat Betting) until a specified number of consecutive Gains or consecutive Losses is encountered, after which the Initial Bet to wager is changed according to that as set at a different **BET LEVEL**.

The next Bet after a GAIN that occurs during a LOSS RUN can be set as the START BET, the Initial Bet at BET LEVEL A in GAIN RUNS, or the Initial Bet at the Same BET LEVEL in GAIN RUNS. The next Bet after a LOSS that occurs during a GAIN RUN can be set as the START BET, Initial Bet at BET LEVEL A in LOSS RUNS, or Initial Bet at the Same BET LEVEL in LOSS RUNS. When Net Result of the Dealt Hand is zero, Run Count and Bet Level remain the same, and the Initial Bet wagered on the next hand will be the same as on the previous hand.

Preset Flat Bet Strategy During Loss and Gain Runs

Blackjack Systems Analyst User Guide

PRESET FLAT BET STRATEGY DURING LOSS AND GAIN RUNS ?

FLAT BET WAGERS DURING LOSS RUNS

ON GAIN GO TO: START BET
 BET LEVEL A in GAIN RUNS
 Same BET LEVEL in GAIN RUNS

GO TO LOSS RUN BET LEVEL	BET LEVEL LOSS RUN COUNT	INITIAL BET	BET LEVEL
B	2	2	A
C	2	3	B
A	2	4	C
			D

BANKROLL:

START BET:

FLAT BET WAGERS DURING GAIN RUNS

ON LOSS GO TO: START BET
 BET LEVEL A in LOSS RUNS
 Same BET LEVEL in LOSS RUNS

BET LEVEL	INITIAL BET	BET LEVEL GAIN RUN COUNT	GO TO GAIN RUN BET LEVEL
A	2	2	B
B	3	2	C
C	4	2	A
D			

Cancel Reset Finished

After the Bet Strategy has been adjusted, click the **Finished** button to keep the settings and return to the main window. BET STRATEGY will be set as **Flat Bets During Runs**. If a simulation is in progress, it will be reset. To discard any adjustments made to the Bet Strategy and return to the main window, click the **Cancel** button. A simulation in progress can then be continued from the point where it was stopped.

4.6 Preset for Long Runs

Wagers are preset for relatively long runs of Losses and Gains. Set the **INITIAL BET** (1 – 10,000) to be wagered after each Loss and Gain in a strategy chart. Set **BANKROLL** (100 – 100,000) as the Balance at the start of the simulation. Set **START BET** (1 – 10,000) as the amount to wager on the first hand of all sessions. Set **INITIAL BETS** to wager during a **RUN OF GAINS**. Set **INITIAL BETS** to wager during a **RUN OF LOSSES**.

The wager for the next hand after a Loss that ends a run of Gains can be set as the START BET, the first bet (BET A) in RUN OF LOSSES, or the Bet a set number of levels back toward the Start Bet in the RUN OF GAINS. The wager for the next hand after a Gain that ends a run of Losses can be set as the START BET, the first bet (BET A) in RUN OF GAINS, or the Bet a set number of levels back toward the Start Bet in the RUN OF LOSSES.

Options are available, for both RUN OF GAINS and RUN OF LOSSES, to disable a DOUBLE DOWN (Hit instead) and/or SPLIT PAIRS (Use Hard Count No Pairs Bet Strategy) in the set Play Strategy on hands where the Initial Bet is more than a set value. When Net Result of the Dealt Hand is zero (**Balance** does not change), position in the chart and the Initial Bet wagered on the next hand will be the same as on the previous hand.

Preset Bet Strategy For Long Runs

After the Bet Strategy has been adjusted, click the **Finished** button to keep the settings and return to the main window. BET STRATEGY will be set as Preset for Long Runs. If a simulation is in progress, it will be reset. To discard any adjustments made to the Bet Strategy and return to the main window, click the **Cancel** button. A simulation in progress can then be continued from the point where it was stopped.

5.0 Simulation

Control the simulation in the control box at the lower right corner of the main window. Set **MODE** to **Test** or **Practice**. Set **BET STRATEGY** to **Calculated on Result**, **Calculated on Balance**, **Preset for Short Runs**, **Preset on Balance**, **Flat Bets During Runs**, or **Preset for Long Runs**.

In Test mode, and when the graphs are set to **Plot After All Hands Run**, number of **TOTAL HANDS** can be set from 1 to 1,000,000. Otherwise, the number of **TOTAL HANDS** to run continuously can be set from 1 to 100,000. When in **Practice** mode, the time delay between display of each card, decision and result can be adjusted by moving the **PRACTICE SPEED** slider. The delay can be set from less than 1 second to approximately 5 seconds, and can be adjusted before the simulation is started, or during the run.

Hands can be grouped into Sessions (a series of hands that might be played during a period of time). Set **MAXIMUM HANDS (per session)**, **SESSION PROFIT GOAL**, **SESSION LOSS LIMIT**, and **MAXIMUM RUN OF LOSSES and GAINS** allowable. When outcome of a hand results in either Session Loss Limit reached, Session Profit Goal reached, or Maximum Loss/Gain Run reached, a new session starts. Cards are then shuffled and the Bet wagered on the next hand reverts back to the **Start Bet** (as set in the Bet Strategy being used).

Click the **Start** button to run a simulation. During a simulation run, the Start button will change to a **Continue** button. Click the **Stop** button to stop (pause) the simulation. Click the **Continue** button to restart the simulation from the point where it was stopped. Click the **Reset** button to clear the graph or cards, and to zero all results and statistics. Various **STOP POINTS** can be set to pause the simulation automatically.

Under the Options menu tab, **Shuffle Options** are available to either randomize all card shuffles, or repeat card shuffles in all simulation runs. Shuffles can be **"Randomized and Not Repeated"**, arranging cards in random order. "Shuffles Randomized" is indicated in the control box. When cards are shuffled, they are arranged in random order, and that all shuffles that occur in a simulation have cards arranged in a different random order. This mimics what you would expect to see in a casino.

Alternatively, setting **"Different Randomized Shuffles Repeated in Sequence"** will result in dissimilar randomized shuffles being repeated, and occurring in the same order through all simulations run with the same set **SEQUENCE NUMBER**. This setting is useful in Test mode. The **Sequence Number** can be set from 1 to 10000. Any change in strategy, game rules, or session settings could change shuffle points, results and statistics. Utilize this setting to compare results and statistics of multiple simulations with identical card shuffles in each run, using various strategies and session settings.

Shuffle Options

5.1 Test Mode

In **Test** mode, the simulation will run at fast speed, and graphs of **Balance versus Dealt Hand Number** and **Balance versus Session Number** are generated. Either graph can be viewed by clicking the tab labeled **"Graph - Balance / Dealt Hand"** or **"Graph - Balance / Session"**. Speed of the simulation depends on computer processing speed, and is not adjustable. Check the box labeled **"Plot After All Hands Run"** to have the data plotted after all hands have been run, to reduce the run-time for a large number of hands. To develop a winning Blackjack system, adjust Bet Strategies, Play Strategies and Session settings to result in a gradual increase in Balance with minimal variations.

When a graph is generated during the simulation, **STOP POINTS** can be set to pause the simulation if **Session Profit Goal**, **Session Loss Limit**, **Minimum Bet** or **Maximum Bet** is reached; when **Bankroll is Depleted** or **End of Session** occurs, or when maximum **Loss** or **Gain Run Count** is reached in a session.

Main Application Window – Test Mode

The screenshot shows the main application window with the following components:

- Graph - Balance / Dealt Hand:** A line graph titled "BALANCE VS. DEALT HAND NUMBER" showing Bankroll Balance on the y-axis (0 to 200) and Dealt Hand Number on the x-axis (1 to 601). The balance starts at 100 and fluctuates, ending near 150.
- Game Statistics:**

DEALT HANDS	627	SPLIT HANDS	12
INITIAL BET	1.00	DOUBLED BETS	55
TOTAL BET	1.00	HANDS WON / LOST	292 / 303
NET RESULT	-1.00	HANDS PUSHED	44
OVERALL WIN %	45.696	PLAYER BJ / DEALER BJ	34 / 34
DOUBLED WIN %	70.909	MAX RUN PLAYER BJ	2
PLAYER BUST %	12.676	MAX RUN DEALER BJ	2
DEALER BUST %	25.040	MAX RUN PLAYER BUST	4
SURRENDER %	5.477	MAX RUN DEALER BUST	5
BALANCE	151.00	SESSION PROGRESS +/-	+21.00
SESSION WIN %	100.000	SESSIONS WON / LOST	1 / 0
- Strategy Results:**

START BET	1	SIMULATION STOP POINT	
BANKROLL	100.00	MINIMUM OR MAXIMUM BET WAGERED	
MINIMUM BET	1	MINIMUM BET WAGERED	
MAXIMUM BET	10	MAXIMUM BET WAGERED	
- Control Panels:**
 - SESSIONS:** MAXIMUM HANDS (1000), SESSION PROFIT GOAL (30), SESSION LOSS LIMIT (40), MAXIMUM RUN LOSSES (10), GAINS (8).
 - MODE:** Test, Practice.
 - BET STRATEGY:** Calculated on Result, Calculated on Balance, Preset for Short Runs, Preset on Balance, Flat Bets During Runs, Preset for Long Runs.
 - TOTAL HANDS:** 2000
 - STOP POINTS:** After Each Dealt Hand, Session Maximum Gain / Loss Run Count Reached, Bankroll Depleted, Profit Goal Reached, End of Session, Loss Limit Reached, Minimum Bet Wagered, Maximum Bet Wagered.

Key **Game Statistics**, **Strategy Results** and frequency of **Gain Runs and Loss Runs** are listed as the simulation progresses. View these numbers by clicking the appropriate tab. Betting parameters, as set in the Bet Strategy, are also displayed.

Game Statistics

DEALT HANDS	228	SPLIT HANDS	6
INITIAL BET	3.00	DOUBLED BETS	24
TOTAL BET	3.00	HANDS WON / LOST	117 / 99
NET RESULT	+3.00	HANDS PUSHED	18
OVERALL WIN %	50.000	PLAYER BJ / DEALER BJ	12 / 11
DOUBLED WIN %	54.167	MAX RUN PLAYER BJ	2
PLAYER BUST %	14.103	MAX RUN DEALER BJ	1
DEALER BUST %	22.807	MAX RUN PLAYER BUST	2
SURRENDER %	1.282	MAX RUN DEALER BUST	3
BALANCE	214.50	BANKROLL +/-	+114.50
SESSION WIN %	62.500	SESSIONS WON / LOST	5 / 3

Strategy Results

PROFIT GOAL MET / LOSS LIMIT REACHED	8 / 7
# OF NET GAINS / # OF NET LOSSES	197 / 213
TOTAL OF GAINS / TOTAL OF LOSSES	+1085.50 / -941.00
MAX RUN OF GAINS / MAX RUN OF LOSSES	7 / 9
TOTAL OF ALL BETS WAGERED	2261.00
AVERAGE INITIAL BET PER DEALT HAND	4.35
AVERAGE TOTAL BET PER DEALT HAND	4.98
AVERAGE NET RESULT PER DEALT HAND	+0.32
PLAYER EDGE (+) OR DEALER EDGE (-)	+7.31 %
AVERAGE GAIN (+) OR LOSS (-) PER AVERAGE TOTAL BET	+6.39 %

Gain / Loss Runs

RUN	COUNT	GAINS	% TOTAL	COUNT	LOSSES	% TOTAL
1	62	279.00	47.81	52	53.50	10.93
2	30	156.50	26.82	33	116.50	23.80
3	9	61.00	10.45	12	84.00	17.16
4	4	35.00	6.00	6	70.50	14.40
5	4	34.00	5.83	5	94.50	19.31
6	1	9.50	1.63	2	46.50	9.50
7	1	8.50	1.46	1	24.00	4.90
8	0	0.00	0.00	0	0.00	0.00
9	0	0.00	0.00	0	0.00	0.00
10	0	0.00	0.00	0	0.00	0.00
11	0	0.00	0.00	0	0.00	0.00

In Test mode, Dealt Hand and Session results data is stored in separate files. These files can be exported to a spreadsheet program, where data can be viewed, and various charts and graphs can be generated for further analysis. The files can be opened with the bundled "Gnumeric" spreadsheet program, or with some other application (through Windows Explorer), by clicking the **Export Results** button.

Export Results

The dialog box contains the following information:

- OPEN DATA FILE:**
 - Dealt_Hand_Results_Gnumeric.csv
 - Session_Results_Gnumeric.csv
- OPEN FILE WITH:**
 - Gnumeric Spreadsheet
 - Other Program
- Buttons:** Cancel, OK
- Message:** Gnumeric will display a Maximum of 100,000 results

Dealt Hand Results data exported includes: Dealt Hand Number, Initial Bet, Total Bet, Gains, Gain Runs, Losses, Loss Runs, Pushes, Net Result, Balance, and Session Number.

Session Results data exported includes: Session Number, Number of Session Hands, Session Start Balance, Maximum Session Gain, Maximum Session Loss, Session Result, Session End Balance, and Hand Number.

A Results data-file for a maximum of 100,000 Dealt Hands can be viewed with the bundled spreadsheet program **"Gnumeric"**. Data can be viewed and analyzed within Gnumeric, and may be saved as a different name and file format, for analysis in a different spreadsheet program, if preferred. To open the data-files with results for a maximum of 1 million Dealt Hands, other spreadsheet programs, like **"Excel"** and **"Kingsoft"**, can be used. These applications are more efficient in opening files having large amounts of data.

With a spreadsheet program, results data can be analyzed by using the **"Chart"** function, which provides many useful choices for chart Type, including Bar, Column, and Line. To generate a chart, highlight a column or specific data to be charted. Then click the Chart Function button to access the chart creation dialog box.

Gnumeric Spreadsheet

The spreadsheet shows the following data for the first 12 rows:

	B	C	D	E	F	G	H	I	J
	INITIAL BET	TOTAL BET	GAINS	GAIN RUNS	LOSSES	LOSS RUNS	PUSHES	NET RESULT	BALANCE (BANKROLL = 100)
1	10	10					PUSH	0	100
2	10	10	GAIN					10	110
3	9	9	GAIN					9	119
4	8	16	GAIN					16	135
5	7	7		3	LOSS			-7	128
6	8	8			LOSS			-8	120
7	9	9	GAIN				2	9	129
8	8	8					PUSH	0	129
9	8	8						-8	121
10	9	9	GAIN				1	9	130
11	8	8	GAIN					8	138

5.2 Practice Mode

In **Practice** mode, the simulation will run at an adjustable speed. All player and dealer cards are displayed for each hand. A message appears when Dealer checks for Blackjack and when a card shuffle occurs. Amount of bet wagered, the insurance bet wagered, hand counts, player decisions, and results of the hand are displayed as the simulation progresses. Key statistics and betting parameters are displayed as the simulation progresses, as is done in Test mode. (See 5.1 Test Mode)

When the **Minimum Bet** or the **Maximum Bet** is wagered, a message is displayed in the text box labeled **"MINIMUM OR MAXIMUM BET WAGERED"**. **STOP POINTS** can be set to pause the simulation if **Session Profit Goal**, **Session Loss Limit**, **Minimum Bet** or **Maximum Bet** is reached; when **Bankroll is Depleted** or **End of Session** occurs; or when maximum **Loss or Gain Run Count** is reached in a session. The simulation can also be stopped **After Each Dealt Hand** is displayed.

Main Application Window – Practice Mode

The screenshot shows the main application window for Blackjack Systems Analyst 4.0. The interface is divided into several sections:

- DEALER:** Shows the dealer's hand with cards 8 of hearts, Ace of spades, King of diamonds, and 8 of diamonds. The count is 24 and the result is BUST.
- PLAYER:** Shows the player's hand with cards 5 of clubs, 4 of clubs, 2 of hearts, and Ace of hearts. The bet is 1.00, count is 10, and the result is WIN 1.00.
- SPLIT HAND 1:** Shows a split hand with cards 5 of diamonds, 5 of clubs, Ace of hearts, and 5 of clubs. The bet is 1.00, count is 10, and the result is WIN 1.00.
- SPLIT HAND 2:** Shows a split hand with cards 5 of diamonds, 10 of diamonds, Ace of hearts, and 5 of clubs. The bet is 1.00, count is 13, and the result is WIN 1.00.
- SPLIT HAND 3:** Shows a split hand with cards 5 of diamonds, 10 of diamonds, Ace of hearts, and 5 of clubs. The bet is 1.00, count is 13, and the result is WIN 1.00.
- Game Statistics:** A table showing overall performance metrics.

Game Statistics		Strategy Results		Gain / Loss Runs	
DEALT HANDS	100	SPLIT HANDS	114		
INITIAL BET	1.00	DOUBLED BETS	65		
TOTAL BET	4.00	HANDS WON / LOST	99 / 109		
NET RESULT	+4.00	HANDS PUSHED	6		
OVERALL WIN %	46.262	PLAYER BJ / DEALER BJ	0 / 0		
DOUBLED WIN %	56.364	MAX RUN PLAYER BJ	0		
PLAYER BUST %	0.000	MAX RUN DEALER BJ	0		
DEALER BUST %	39.000	MAX RUN PLAYER BUST	0		
SURRENDER %	0.000	MAX RUN DEALER BUST	4		
BALANCE	102.00	SESSION PROGRESS +/-	+2.00		
SESSION WIN %	100.000	SESSIONS WON / LOST	1 / 0		
- Simulation Parameters:** Includes settings for Sessions (Maximum Hands: 100, Profit Goal: 30, Loss Limit: 30), Mode (Calculated on Result), Bet Strategy (Calculated on Result), Total Hands (2000), Practice Speed, and Stop Points (After Each Dealt Hand).
- Buttons:** Stop, Reset, Continue, Shuffles Randomized.

6.0 Save a Setup

To **Save** the current setup of game rules, play strategy and bet strategy open the **Save System Setup** dialog box by clicking the **Save** button in the tool bar or in the File menu at the top of the main application window. In the dialog box, the description of the **Current Setup** is displayed. In the list box, choose a **Setup** to replace with the **Current Setup**. Edit the description in the text box, if desired, then click the **Save** button. A message will indicate that the current rules and strategies were saved. Click the OK button. Up to (20) setups can be saved.

To exit the dialog box before saving a setup, click the **Cancel** button.

Save System Setup

The Save System Setup dialog box contains the following elements:

- Current Setup:** Default Rules and Basic Play Strategy
- Choose a Setup to Replace with the Current Setup:** A list box containing:
 - Default Rules and Basic Play Strategy
 - Spanish 21 and Basic Strategy
 - Sample 1 - Calculated Bets, Default Rules, Basic Strategy
 - Sample 2 - Preset Bets, Default Rules, Basic Strategy
 - Empty
 - Empty
 - Empty
 - Empty
 - Empty
 - Empty
 - Empty
- Edit Description and Save Current Setup as:** Preset Bets, Default Rules, Basic Strategy
- Buttons:** Cancel, Save

7.0 Import a Setup

To **Import** a previously saved setup of game rules, play strategy and bet strategy, open the **Import Bet and Play Setup** dialog box by clicking the **Import** button in the tool bar or in the File menu at the top of the main application window. In the dialog box, the description of the **Current Setup** is displayed. In the list box, choose a **Setup** to import, then click the **Import** Button. A message will indicate that the setup was imported. Click the **OK** button. Game Rules, play strategy and bet strategy will then be set according to the imported setup.

To exit the dialog box before importing a setup, click the **Cancel** button.

Sample setups of game rules, play strategy and bet strategy have been loaded into the application for importing, further development and testing.

Import System Setup

The Import System Setup dialog box contains the following elements:

- Current Setup:** Default Rules and Basic Play Strategy
- Choose a Setup to Import:** A list box containing:
 - Default Rules and Basic Play Strategy
 - Spanish 21 and Basic Strategy
 - Sample 1 - Calculated Bets, Default Rules, Basic Strategy
 - Sample 2 - Preset Bets, Default Rules, Basic Strategy
 - Empty
 - Empty
 - Empty
 - Empty
 - Empty
 - Empty
 - Empty
- Setup to be imported:** Spanish 21 and Basic Strategy
- Buttons:** Cancel, Import