

The Behrend Casino

Team #1

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# **Software Requirements Specification Document**

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## 1 Purpose

The software under consideration will provide entertainment to users by simulating a real life casino. The Casino will feature card games such as Blackjack, Texas Hold 'Em, 5 Card Draw Poker, as well as Roulette - a table game. While there are many card game applications already in use, this software will be specifically tailored to users who prefer to play without requiring friends or being randomly assigned to strangers.

The solo player functionality will allow the user to enjoy card games without needing an Internet connection, which maximizes safety, particularly for vulnerable users such as children. Also, this solo-play software model liberates users of the need to make arrangements with friends or rely on random online user availability; instead, users may play alongside AI players at their convenience for applicable games -- BlackJack includes an AI dealer, and the poker games feature multiple AI players, against which the user will play.

## 2 Scope

The casino game will allow 4 variants of local play, including Roulette, BlackJack, 5 Card Draw Poker, and Texas Hold 'Em Poker. Additionally, an interactive point-and-click play style will be coupled with a minimalistic GUI to provide visual appeal and ease. In-game settings and directions will be included to optimize ease of use.

A currency system will be incorporated and provide game-tracking capability to users. This feature permits the user to store information rather than needing to pick up "from scratch" with each new game.

Features:

- Casino Play
  - Variations of local play format
  - Interactive point-and-click play style
  - Minimalistic GUI
- Currency system used to track in-game progress
- In-game settings and directions

### 3 User characteristics

#### 3.1 Key users

##### Card Game Enthusiasts

- User role responsibilities: Launch application and proceed to game play
- Subject matter experience: Users will need a novice-level understanding of how the card games work and the basic rules.
- Technological experience: Novice-level experience regarding technology will be required to operate the system, such as ability to launch the desktop application
- Other user characteristics:
  - Basic operation of a computer (turning on, launching application, utilizing mouse)
  - Basic math skills such as addition and probabilities
  - Understanding of card values
  - Basic English comprehension

#### 3.2 Secondary users

##### Users playing solely out of boredom

- User role responsibilities: Launch application and proceed to game play
- Subject matter experience: Users will need a novice-level understanding of how the card games work and the basic rules
- Technological experience: Novice-level experience regarding technology will be required to operate the system, such as ability to launch the desktop application
- Other user characteristics:
  - Basic operation of a computer (turning on, launching application, utilizing mouse)
  - Basic math skills such as addition
  - Understanding of card values
  - Basic English comprehension

### 4 Product perspective

The software will depend on the Windows operating system, version 7 or higher, as well as the Java Virtual Machine for interpretation at runtime.

#### 4.1 User interfaces

##### User Interface Required Characteristics:

###### Title screen (First screen)

- Centralized application name/logo
- Three centralized main buttons: "New Game", "Quit", and "Settings"
- Top right corner button: Settings

###### Initial Currency Assignment Screen

- Wheel graphic with sectors shown
- "Spin!" button in middle of screen, clickable
- Pop-up to display user's initial currency result

### **Game Selection Screen**

- Four large buttons which are labeled as the different games (“Play Roulette”, “Play BlackJack”, “Play 5 Card Draw Poker”, and “Play Texas Hold ‘Em Poker”)
- Label displaying user’s received currency at bottom-left
- Simplistic card graphic towards right on screen

### **Roulette Game Screen: @Max please edit yellow**

- User currency displayed in corner
- Roulette table graphic with labeled pockets
- Chip buttons with which user can select bet amount
- Spin button which will select the winning pocket
- Payout text field that will display user’s winnings

### **BlackJack Game Screen**

- User currency displayed in corner
- Cards update on the screen in real time
- Dealer’s cards are shown at the top of the screen, Player’s are at the bottom
- Buttons to “Hit” or “Stay”, as appropriate
- Button to Ante to start each game of BlackJack
- Slider to adjust Ante with box to show slider’s amount
- Menu bar at top of screen to change game, exit or view rules
- Two text boxes to keep track of current scores

### **5 Card Draw Poker Game Screen**

- Table graphic with deck of cards graphic featured in center
- User currency displayed in right corner of the screen
- Card replacement choice menu with “Submit” button on left panel of the screen
- User hand displayed/updated at the middle right portion of the screen
- Buttons to “Bet”, “Call”, “Raise”, or “Fold” as appropriate
- AI bet amounts and Amount Owed by Player to Table displayed in the middle panel
- Bet amount integer slider to determine bet amount to be placed by player

### **Texas Hold’em Game Screen**

- Menu bar at the top of the screen(Exit tab where you can back to main menu, exit the program completely, or switch games)
- Table graphic that shows a Penn State Themed poker table
- Table cards displayed
- Player’s Cards displayed
- All 4 players currencies displayed
- A message text box that lets the user know each AI players’ moves
- The pot amount displayed
- A call/check button with the amount owed written next to it
- A bet/raise button with a JQuery slider next to it to determine how much the user wants to bet
- A fold button which will end the round for the user

## **4.2 Software interfaces**

**Not applicable; the system does not carry out database functionality or utilize other software interfaces.**

#### 4.3 Communications interfaces

**Not applicable; this software system requires no communications.**

#### 4.4 Hardware interfaces

**Required hardware components include a mouse and computer monitor.**

#### 4.5 Memory constraints

**The system imposes no significant memory constraints.**

#### 4.6 Site adaptation requirements

**Java and the Java Virtual Machine are required for the software system to function.**

### 5 Assumptions and Dependencies

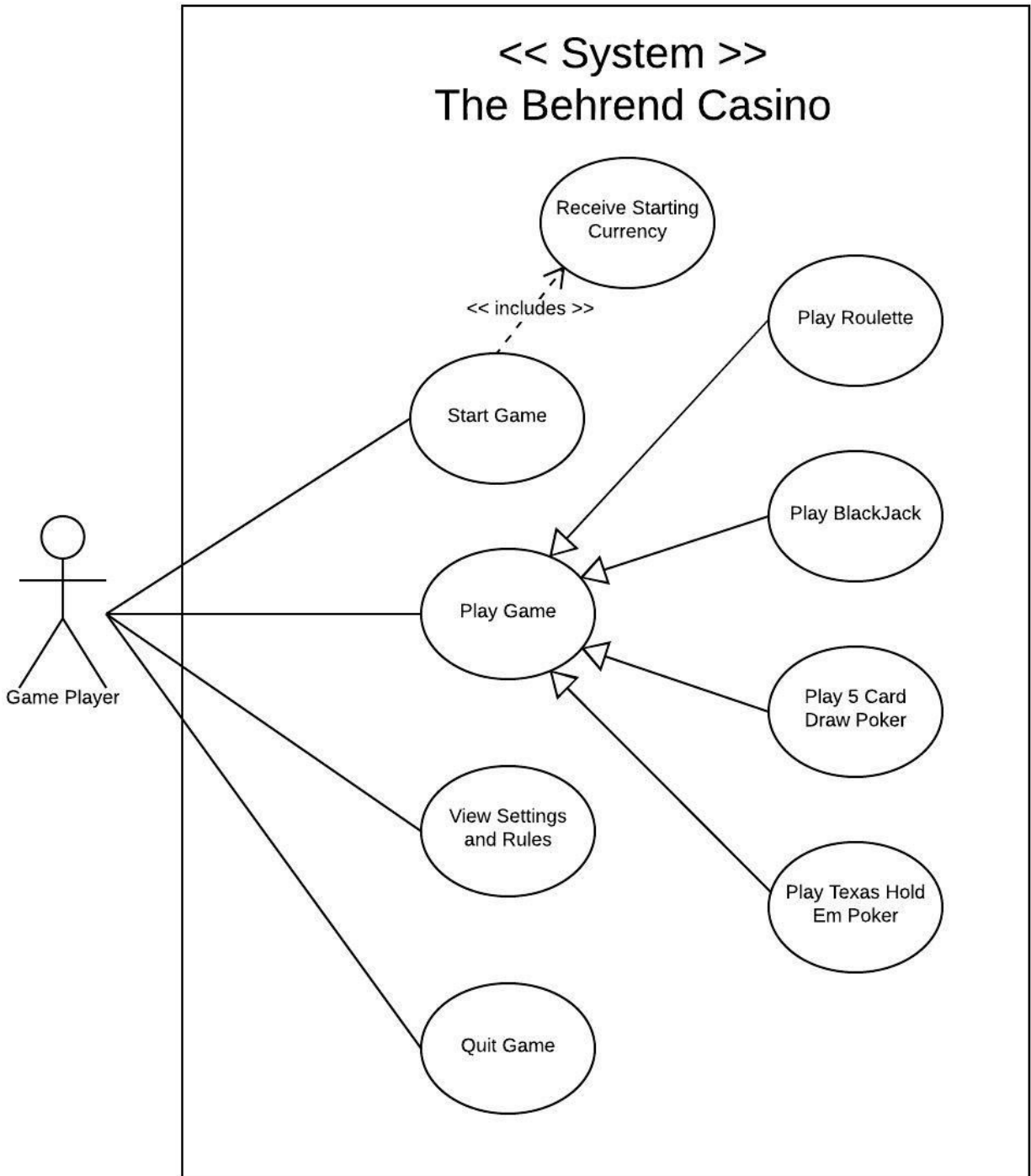
- The program will only consist of the games listed
- The program will not include online play
- The program has been downloaded and is available on the user's computer

### 6 Specific requirements

#### 6.1 System Functional Requirements

Major Functions:

- Start Game
- Play Game
  - Play Roulette
  - Play BlackJack
  - Play 5 Card Draw Poker
  - Play Texas Hold 'Em
- View Settings and Rules
- Quit Game
- Receive Starting Currency



<b>Use Case</b>	<b>#1: Start Game</b>
<b>Goal in Context</b>	Start the application and begin playing
<b>Scope</b>	The Behrend Casino Game
<b>Level</b>	Primary Task
<b>Primary Actor</b>	Human Game Player
<b>Preconditions</b>	The application has not been launched
<b>Minimal Guarantee</b>	The application will fail to launch
<b>Success Guarantee</b>	The game player will reach a point at which (s)he can choose a specific game
<b>Trigger</b>	The game player executes the game system
<b>Success Scenario</b>	Action Step
<b>1</b>	The player launches the game application
<b>2</b>	The system responds and begins execution
<b>3</b>	The player indicates that they would like to begin a new game
<b>4</b>	The system allows the player to select the desired game
<b>5</b>	The player selects the desired game
<b>6</b>	The system acknowledges the player's request
<b>Extension Step</b>	Branching Action
<b>2a</b>	The system fails to launch
	2a1: The system displays a message regarding the failure



<b>Use Case</b>	<b>#2: View Settings and Rules</b>
<b>Goal in Context</b>	View the settings and rules of the various games
<b>Scope</b>	The Behrend Casino Game
<b>Level</b>	Primary Task
<b>Primary Actor</b>	Human Game Player
<b>Preconditions</b>	The application has been launched
<b>Minimal Guarantee</b>	The settings and rules fail to display
<b>Success Guarantee</b>	The player may view all rules and change settings as desired
<b>Trigger</b>	The game player selects to view the settings and rules
<b>Success Scenario</b>	Action Step
<b>1</b>	The player selects to view the settings and rules
<b>2</b>	The system displays the general settings and choices of games
<b>3</b>	The player may alter various settings
<b>4</b>	The player selects the particular game for which (s)he would like to view the rules
<b>5</b>	The system displays the rules of the specified game
<b>6</b>	The player reads the rules, and exits the settings and rules component
<b>Extension Step</b>	Branching Action
<b>2a</b>	The system fails to display the settings and game choices
	2a1: The system displays a message regarding the failure
<b>3a</b>	The player attempts to perform an invalid change
	3a1: The system displays a message informing the player that this request is invalid

<b>Use Case</b>	<b>#3: Receive Starting Currency</b>
<b>Goal in Context</b>	Receive virtual chips used for gameplay
<b>Scope</b>	The Behrend Casino Game
<b>Level</b>	Primary Task
<b>Primary Actor</b>	Human Game Player
<b>Preconditions</b>	The player has chosen to start game
<b>Minimal Guarantee</b>	The system will fail to allot an initial currency to the player
<b>Success Guarantee</b>	The player will receive his/her starting currency
<b>Trigger</b>	The game player has selected to start a new game
<b>Success Scenario</b>	Action Step
<b>1</b>	The system prompts the player to receive a starting currency assignment
<b>2</b>	The player affirms the prompt request
<b>3</b>	The system generates and displays the player's starting currency
<b>4</b>	The player affirms their newly-assigned currency amount
<b>Extension Step</b>	Branching Action
<b>1a</b>	The system fails to prompt the player to receive currency
	1a1: The system displays a message regarding the failure
<b>3a</b>	The system fails to generate and/or display the starting currency
	3a1: The system displays a message regarding the failure, and returns the user to that initial screen

<b>Use Case</b>	<b>#4: Quit Game</b>
<b>Goal in Context</b>	Quit the game and exit the application
<b>Scope</b>	The Behrend Casino Game
<b>Level</b>	Primary Task
<b>Primary Actor</b>	Human Game Player
<b>Preconditions</b>	The player has launched the application
<b>Minimal Guarantee</b>	The system will fail to close
<b>Success Guarantee</b>	The system will be terminated successfully
<b>Trigger</b>	The game player has selected to quit the game
<b>Success Scenario</b>	Action Step
<b>1</b>	The player selects to quit the game
<b>2</b>	The system displays a message, which verifies the player's choice
<b>3</b>	The player verifies their choice to quit the game
<b>4</b>	The system ends the session, and terminates
<b>Extension Step</b>	Branching Action
<b>4a</b>	The system is unable to terminate
	4a1: The system notifies the player that it is currently unable to terminate

Use Case	Play 5 Draw Poker
Goal in context	Play any number of rounds of 5 Cards Draw Poker
Scope	Behrend Casino Game System
Level	Primary Task
Primary Actor	Human Game Player
Preconditions	User is select game menu
Minimal Guarantee	Player is unable to play the game
Success Guarantee	One round has been played, user can continue playing for more rounds of the same game.
Main Success Scenario	Action Steps
1.	The user pays buy-in amount
2.	The system AI (Dealer) draws 5 cards (facing down/hidden) to the user
3.	The system enables the user to see values of the cards in hand
4.	The user is asked to place bet
<i>Extension Step</i>	Branching Action
4a	The system does not detect a bet, game session terminates
4a1	4a1: The user is asked by the system if a new session is wished to be started
5.	The system detects a placed bet, enable user to draw up-to 3 cards from deck to replace any from current user hand

<b><i>Extension Step</i></b>	Branching Action
<b>5a</b>	The system does not detect a bet, game session terminates
<b>5a1</b>	5a1: The user is asked by the system if a new session is wished to be started
<b>6.</b>	The system starts second round of betting
<b>7.</b>	The system detects a placed bet, final round begins and user sets hand in the table
<b><i>Extension Step</i></b>	Branching Action
<b>7a</b>	The system does not detect a bet, game session terminates
<b>7a1</b>	7a1: The user is asked by the system if a new session is wished to be started
<b>8.</b>	The user with best hand wins the round
<b>9.</b>	The user buys in again or exits the game

Use Case	Play Texas Hold'em
Goal in context	Play any number of rounds of Texas Hold'em
Scope	Behrend Casino Game System
Level	Primary Task
Primary Actor	Human Game Player
Preconditions	User selects game from menu
Minimal Guarantee	Game fails and player is unable to play the game
Success Guarantee	One round has been played, user can continue playing for more rounds within the same game.
Main Success Scenario	Action Steps
1.	The user pays buy-in amount
2.	The dealer, small blind, and big blind chips are distributed starting with user and
3.	Round starts with the system AI (Dealer) dealing two cards to all players
4.	The system enables the user to see values of the cards in hand
5.	Starting from the small blind and continuing left players ante up/call
6.	The system detects end of betting and flips three cards.
7.	Repeat step 5
8.	The system detects end of betting and flips one card
9.	Repeat steps 5 and 8
10.	All players flip cards

11.	System detects winning hand and that player receives the pot
12.	System detects if each player has money. When a player runs out of money they are forced to leave the table.
13.	Rotate the dealer, big blind, and small blind chips to the left
14.	Start round over from step 3
<b>Extension Step</b>	Branching Action
5a	Player can raise
5a1	When someone raises the calling, folding, or raising (if not given the chance yet) starts over and must go around the table back to the player that raised
5b	Player can fold
5b1	When a player folds they are skipped until the end of the round
5b2	All players fold and remaining player wins pot
11a.	Two players have the same hand so they split the pot evenly
12a.	The user is the last player left. They are forced to leave table and keep their winnings.

Use Case	Play Blackjack
<b>Goal in context</b>	Play any number of rounds of Blackjack
<b>Scope</b>	Behrend Casino Game System
<b>Level</b>	Primary Task
<b>Primary Actor</b>	Human Game Player
<b>Preconditions</b>	User is select game menu
<b>Minimal Guarantee</b>	Player is unable to play the game
<b>Success Guarantee</b>	One round has been played, user can continue playing for more rounds of the same game.
<b>Main Success Scenario</b>	Action Steps
1.	The user pays buy-in amount
2.	The system AI (Dealer) draws 2 cards (one facing down, one facing up) to the user
3.	The system enables the user to see values of the cards on table
4.	The user hits
5.	The system detects a winner and distributes winning amount
<b>Extension Step</b>	Branching Action



<b>4a</b>	The user cannot hit anymore
<b>4a1</b>	The user selects to stay
<b>5a</b>	The system does not detect a response, game session terminates
<b>5a1</b>	5a1: The user is asked by the system if a new session is wished to be started

Use Case	Roulette Wheel
<b>Goal In Context</b>	Simulate the experience of Roulette
<b>Scope</b>	Play Roulette
<b>Primary Actor</b>	User
<b>Preconditions</b>	The User has enough in game currency
<b>Minimal Guarantee</b>	The User plays Roulette
<b>Success Guarantee</b>	The User increases his/her in-game currency
<b>Trigger</b>	The User “spins” the wheel
<b>Success Scenario</b>	Action Step
1	The Roulette Game prompts the User to select number(s), or color.
2	The Roulette Game prompts the User to place a bet, then spin the wheel
3	The Roulette Game spins the wheel, randomly selecting a number
4	The Roulette Game checks to see if User has a matching number/color and has won
5	The Roulette Game pays out the User’s winnings, and adjust User’s in-game currency
6	Repeat at step one

Extension Step	Branching Action
4a,5a	No Matches, Positive Balance
	A1: The Roulette Game does not pay out winnings
	A2: The Roulette Game waits for the User's next spin ( Restarts at Step 1)
4b,5b	No Matches, Zero Balance
	B1: The Roulette Game does not pay out winnings
	B2: User is prompted he has run out of in-game currency and is returned to Main Menu.

## 6.2 Logical Database Requirements

**Not applicable; the system does not require a logical database**

## 6.3 Software System Attributes

### 6.3.1 Usability

- The first screen will have no more than 3 buttons ("New Game", "Quit", "Settings")
- The initial money wheel will only have one button (Spin)
- Once the money wheel is done spinning the game choice screen should automatically come up once the user confirms the currency value
- The user may view thoroughly-explained game rules at the click of a button from within each game
- The user will only need a mouse to navigate the interface

### 6.3.2 Performance

- The application will take no longer than 10 seconds to start up
- It will take no longer than 10 seconds to navigate between pages
- The initial currency wheel will spin for no more than 10 seconds
- The application will support 1 terminal for a single user
- The file size will be under 1GB

#### 6.3.3 Reliability

- Once the game is successfully downloaded, the game will require no down time for updates

#### 6.3.4 Availability

- Once the game is successfully downloaded, there will be no maintenance required for the game

#### 6.3.5 Security

- There will be no malware in the downloadable file
- Security is not a primary factor there is no sensitive or personal data within the system

#### 6.3.6 Maintainability

- Not Applicable to this software. Once the system is downloaded, no maintenance is required.

#### 6.3.7 Portability

- The game will be supported on all operating systems
- The game will be a downloadable file portable to any system.
- All code will be transferable
- The game will be programmed using Java