

Milestone 1: Project Specifications for Blackjack

Participants:

1. 2-7 players
2. One dealer, the dealer is “AI”

Roles:

1. Human players can choose to take different actions with their hand, goal is to get as close to a hand value of 21 without going over
2. Dealer is AI, in charge of running all aspects of the game (shuffling, dealing cards, handling bets etc.)

Starting Balance:

1. Each participant starts with a balance of \$1000.

Betting:

1. Before the start of each round, players must place a bet. The bet amount must be greater than \$0 and cannot exceed their current balance.
2. Players place their bets at the beginning of each round.
3. The dealer ensures that each player’s bet is within the allowed range (greater than \$0 and not exceeding their current balance).

Deck of Cards:

1. 6-deck card game with point values: 2-10 (face value), Jack/Queen/King (10 points), Ace (1 or 11 points).

Gameplay:

1. At the start of each round each player and the dealer are initially dealt two cards. The first card the dealer is dealt is face down, the rest are all dealt face up
2. Players can decide to “hit” (receive a card) or “stand” (end their turn).

2. The order the players take their turn does not matter, for simplicity the players will take their turn in the order they received their cards, however the players must all take their turns before the AI dealer takes their turn.
3. The AI Dealer hits if its hand value is below 17 and stands at 17 and above.
4. If a player achieves a hand value of 21 during their turn, they automatically win; otherwise, all players must complete their turns.
5. If a player's hand value exceeds 21, they lose their bet and are eliminated for the round.
6. After all players have completed their turns, hands are compared with the dealer's hand, a player wins their bet if their hands value is greater than the dealer, they tie if it is equivalent, otherwise they lose their bet, and the round ends.
 - a. For example, if we have 4 players: player0 with a hand valued at 18, player1 with a hand valued at 17, player2 who busted with 22, player3 who has a hand valued at 21, the dealer's hand is valued at 19, player0 and player1 will lose their bet, player2 has already lost (over 21), player3 will win their bet.

Winning and Losing:

1. Blackjack Payout: The winner will keep their bet and receive a payout of 1.5 times their bet from the dealer.
2. Dealer's Blackjack: All players who did not get a blackjack lose their bets for the round, players who got a blackjack tie with the dealer and get to keep their bet.
 - a. Although a dealer deals his first card face down, if the dealers second card is either an ace or a ten, the dealer will look at his face down card(the players do not see the card) if both his cards add up to a blackjack he reveals his face down card and the round ends, whoever got a blackjack ties, otherwise they lose. the dealer does not wait until the end of the game if he has a blackjack.
3. Player and Dealer Both Have Blackjack (Tie) or have hands equal, they keep their bets, and the game continues.
 - a. For example, if the dealer gets a blackjack, and a player gets a blackjack, they tie.
 - b. If the dealer gets 21(not a blackjack) and a player gets 21(not a blackjack), they tie.
 - c. If the dealer gets 21(not a blackjack, could be 3, 8, 10) and the player gets a blackjack, they do not tie.
 - d. If the dealer gets 18, and a player gets 18, they tie.
4. Player wins: Balance increases by the amount won, like stated above if a player wins with a blackjack they get a payout of 1.5x their bet. Otherwise when a player wins they get a payout of 1x their bet.
5. Player loses: Balance decreases by the bet amount.

Handling Insufficient Funds:

1. If a player tries to bet more than their current balance, the dealer should prompt them to enter a valid bet within their remaining balance.
2. If a player has no money left, they are no longer eligible to play.

Updated Gameplay Sequence:

1. Winning and losing bets are settled, and balances are updated accordingly.
2. If a player runs out of money, they are removed from subsequent rounds.
3. The game ends when all players run out of money.