Playing Cards

Group Assignment 1

Blackjack Part I

Blackjack is a cardgame played with 2 or more players. See the complete rules on
`https://en.wikipedia.org/wiki/Blackjack`

Summary of simple rules

Assume you have one deck of cards (52 cards). Assume there is only one player and one dealer in the game. The player begins to draw cards, he can stop at any time. The objective would be to get as close as possible to 21 points without going above (busting). If busting the dealer wins by default. After the payer's turn, the dealer will try to score higher or match the player's cards. If the dealer busts, the player wins by default. If matching or scoring more points than the player, the dealer wins the round. Scoring 21 points is called a blackjack.

Points

- Ace - 1 or 11 points
- 2-10 - the value on the card
- knave, queen, king - 10 points.

Questions

Assume you are the player. For the first game of the deck find:

1. What is the chance of getting an ace as the first card?
2. If you scored an ace as the first card, what is the chance of getting a blackjack with the second card?
3. Write a matlab program that simulates drawing cards. Verify the probabilities from 1. and 2.
4. What is the chance of getting a blackjack with the first two cards? Verify your results by simulation.
5. Simulate the risk of busting if the player always draws 3 cards.
6. Devise a strategy based on obtained points for the player to stop.
7. Simulate the devised strategy with the matlab program, what is the chance or busting now?
8. The strategy of the dealer is always to keep playing as long as his points are below the player. Simulate his strategy in the matlab program. How often does the player win?