BSDS 100: Intro to Data Science with R
Case Study 3

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Blackjack Case Study: In this case study you will be simulating a standard game of Blackjack. See https://en.wikipedia.org/wiki/Blackjack for more information on the game. Throughout, you can assume that the players only have to choose between two options: "hit" or "stand." Further, the dealer must hit until he or she has a score of 17.

Overall Question: Suppose that you are at a Blackjack table with a group of other players. Your aim is to determine whether your odds of winning a game of Blackjack depends upon the following aspects of the game:

(a) the number of decks used by the dealer

(b) the number of other players at your table

(c) how often the decks are re-shuffled between consecutive games

What you must turn in: To answer these questions, build a function that

1. simulates a game of black-jack for k players and t decks which has a random "shuffle" on each hand.

2. Once you have this function built, simulate many games to get an estimate of the winning probability under different scenarios to answer (a) - (c) above.

Turn in a .Rmd file, which contains your black-jack function, properly commented, as well as the simulation study and plots used to answer questions (a) - (c). You can work with others in the class on this assignment, but you each need to turn in a .Rmd file and a .pdf file.