HW2_Galatonova

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Player's and dealer's hands

```
players_hand <- data.frame(face=character(),
                 suit=character(),
                 value=integer())

dealers_hand <- data.frame(face=character(),
                 suit=character(),
                 value=integer())
```

Shuffle function

```
shuffle <- function(cards) {
  random <- sample(1:208, size = 208)
  cards[random, ]
}
```

Probability function

```
probability <- function(dealer_sum, player_sum, cards) {
  min_score <- dealer_sum - player_sum
  max_score <- 21 - player_sum
  suitable_cards_num <- length(cards[cards[ ,3]<=max_score & cards[ ,3]>=min_score, ][ ,1])
  probability <- round(suitable_cards_num / length(cards[ , 1]) * 100)
}
```

Start game function

```
start_game <- function(cards, dealer, player) {
  cards <- shuffle(cards)

  dealer[nrow(dealer) + 1:2,] <- cards[1:2, ]
  cards <- cards[-(1:2), ]
```

```
  player[nrow(player) + 1:2,] <- cards[1:2, ]
  cards <- cards[-(1:2), ]

  cat("Dealer's hand:\n")
  print(dealer[ , 1:3], row.names = FALSE)
  cat("sum:", sum(dealer[, 3]))

  cat("\nPlayer's hand:\n")
  print(player[ , 1:3], row.names = FALSE)
  cat("sum:", sum(player[, 3]))

  win_probability <- probability(dealer_sum = sum(dealer[ ,3]), player_sum =  sum(player[ ,3]), cards =

  if (sum(player[ , 3]) >= sum(dealer[ , 3])) {
  cat("\nchances 100%")
  } else {
  cat("\nchances", win_probability, "%")
  }
  return(list(cards, dealer, player))
}
```

Deal function

```
deal <- function(cards, dealer, player) {
  player[nrow(player) + 1,] <- cards[1, ]
  cards <- cards[-1, ]

  cat("Dealer's hand:\n")
  print(dealer[ , 1:3], row.names = FALSE)
  cat("sum", sum(dealer[, 3]))

  cat("\nPlayer's hand:\n")
  print(player[ , 1:3], row.names = FALSE, colnames = FALSE)
  cat("sum:", sum(player[, 3]))

  win_probability <- probability(dealer_sum = sum(dealer[ ,3]), player_sum =  sum(player[ ,3]), cards =

  if (sum(player[ , 3]) > 21){
  cat("\nchances 0%")
  } else if (sum(player[ , 3]) > sum(dealer[ , 3])){
  cat("\nchances 100%")
  } else {
  cat("\nchances", win_probability, "%")
  }
  return(list(cards, player))
}
```

Stop game function

```
stop_game <- function(dealer, player) {
  if (sum(player[ , 3]) > 21) {
    cat("loose")
  } else if (sum(player[ , 3]) >= sum(dealer[ , 3])) {
    cat("win")
  } else {
    cat("loose")
    }
}
```

Example 1

Start of game

```
deck_for_game <- rbind(deck, deck, deck, deck)

current_status <- start_game(cards = deck_for_game, dealer = dealers_hand, player = players_hand)
```

```
## Dealer's hand:
##   face   suit value
##  queen hearts    10
##   five spades     5
## sum: 15
## Player's hand:
##  face   suit value
##  jack hearts    10
##  jack hearts    10
## sum: 20
## chances 100%
```

```
deck_for_game <- current_status[[1]]
dealers_hand <- current_status[[2]]
players_hand <- current_status[[3]]
```

Stop game

```
stop_game(dealer = dealers_hand, player = players_hand)
```

```
## win
```

Example 2

Start of game

```
deck_for_game <- rbind(deck, deck, deck, deck)

players_hand <- data.frame(face=character(),
                 suit=character(),
                 value=integer())

dealers_hand <- data.frame(face=character(),
                 suit=character(),
                 value=integer())

current_status <- start_game(cards = deck_for_game, dealer = dealers_hand, player = players_hand)
```

```
## Dealer's hand:
##   face   suit value
##  three spades     3
##  eight hearts     8
## sum: 11
## Player's hand:
##  face     suit value
##   ten   hearts    10
##  four diamonds     4
## sum: 14
## chances 100%
```

```
deck_for_game <- current_status[[1]]
dealers_hand <- current_status[[2]]
players_hand <- current_status[[3]]
```

Deal

```
current_status <- deal(cards = deck_for_game, dealer = dealers_hand, player = players_hand)
```

```
## Dealer's hand:
##   face   suit value
##  three spades     3
##  eight hearts     8
## sum 11
## Player's hand:
##  face     suit value
##   ten   hearts    10
##  four diamonds     4
##   ten   spades    10
## sum: 24
## chances 0%
```

```
deck_for_game <- current_status[[1]]
players_hand <- current_status[[2]]
```

Stop game

```
stop_game(dealer = dealers_hand, player = players_hand)
```

```
## loose
```