```
> players <- c("dark","dark","dark","dark","dark","light","light","light","light","light")
> pieces <- c("King","queen","pawn","pawn","knight","bishop","king","rook","pawn","pawn")
> chess_data <- c(players, pieces)
> m1 <- matrix(chess_data, nrow = 10, ncol = 2)
> dim(m1) <- c(10, 2)
> m1
      [,1]    [,2]
 [1,] "dark"  "King"
 [2,] "dark"  "queen"
 [3,] "dark"  "pawn"
 [4,] "dark"  "pawn"
 [5,] "dark"  "knight"
 [6,] "light" "bishop"
 [7,] "light" "king"
 [8,] "light" "rook"
 [9,] "light" "pawn"
[10,] "light" "pawn"
> m2 <- cbind(Player = players, Piece = pieces)
> m2
      Player  Piece
 [1,] "dark"  "King"
 [2,] "dark"  "queen"
 [3,] "dark"  "pawn"
 [4,] "dark"  "pawn"
 [5,] "dark"  "knight"
 [6,] "light" "bishop"
 [7,] "light" "king"
 [8,] "light" "rook"
 [9,] "light" "pawn"
[10,] "light" "pawn"
> m3 <- data.frame(Player = players, Piece = pieces)
> m3

   Player  Piece
1    dark   King
2    dark  queen
3    dark   pawn
4    dark   pawn
5    dark knight
6   light bishop
7   light   king
8   light   rook
9   light   pawn
10  light   pawn
> m_fast <- cbind(Player = players, Piece = pieces)
> colnames(m1) <- c("Player", "Piece")
> m1
      Player  Piece
 [1,] "dark"  "King"
 [2,] "dark"  "queen"
 [3,] "dark"  "pawn"
 [4,] "dark"  "pawn"
 [5,] "dark"  "knight"
 [6,] "light" "bishop"
 [7,] "light" "king"
 [8,] "light" "rook"
 [9,] "light" "pawn"
[10,] "light" "pawn"
```

```
> rownames(m1) <- paste0("Row", 1:10)
> dimnames(m1) <- list(rownames(m1), c("Player", "Piece"))
> m1
       Player  Piece
Row1   "dark"  "King"
Row2   "dark"  "queen"
Row3   "dark"  "pawn"
Row4   "dark"  "pawn"
Row5   "dark"  "knight"
Row6   "light" "bishop"
Row7   "light" "king"
Row8   "light" "rook"
Row9   "light" "pawn"
Row10  "light" "pawn"
> chess_matrix <- cbind(Player = players, Piece = pieces)
> print("Initial Chess Matrix:")
[1] "Initial Chess Matrix:"
> print(chess_matrix)
       Player  Piece
 [1,]  "dark"  "King"
 [2,]  "dark"  "queen"
 [3,]  "dark"  "pawn"
 [4,]  "dark"  "pawn"
 [5,]  "dark"  "knight"
 [6,]  "light" "bishop"
 [7,]  "light" "king"
 [8,]  "light" "rook"
 [9,]  "light" "pawn"
[10,]  "light" "pawn"
> new_row <- c("dark", "bishop")
> chess_matrix <- rbind(chess_matrix, new_row)
> print("Matrix after adding a new row with rbind():")
[1] "Matrix after adding a new row with rbind():"
> print(chess_matrix)
         Player  Piece
         "dark"  "King"
         "dark"  "queen"
         "dark"  "pawn"
         "dark"  "pawn"
         "dark"  "knight"
         "light" "bishop"
         "light" "king"
         "light" "rook"
         "light" "pawn"
         "light" "pawn"
new_row  "dark"  "bishop"
```

```
> chess_matrix <- m2
> new_row <- c("dark", "bishop")
> chess_matrix <- rbind(chess_matrix, new_row)
> chess_matrix
        Player  Piece
        "dark"  "King"
        "dark"  "queen"
        "dark"  "pawn"
        "dark"  "pawn"
        "dark"  "knight"
        "light" "bishop"
        "light" "king"
        "light" "rook"
        "light" "pawn"
        "light" "pawn"
new row "dark"  "bishop"
```