

R Notations

Your ID and Name

Submission Date

read.csv

```
read.csv("../data/cards.csv")
```

```
##      face      suit value
## 1   king  spades    13
## 2  queen  spades    12
## 3   jack  spades    11
## 4    ten  spades    10
## 5    nine  spades     9
## 6   eight  spades     8
## 7   seven  spades     7
## 8    six   spades     6
## 9    five  spades     5
## 10   four  spades     4
## 11  three  spades     3
## 12    two  spades     2
## 13   ace   spades     1
## 14   king   clubs    13
## 15  queen   clubs    12
## 16   jack   clubs    11
## 17    ten   clubs    10
## 18    nine   clubs     9
## 19  eight   clubs     8
## 20  seven   clubs     7
## 21    six   clubs     6
## 22   five   clubs     5
## 23   four   clubs     4
## 24  three   clubs     3
## 25    two   clubs     2
## 26   ace    clubs     1
## 27   king diamonds    13
## 28  queen diamonds    12
## 29   jack diamonds    11
## 30    ten diamonds    10
## 31    nine diamonds     9
## 32  eight diamonds     8
## 33  seven diamonds     7
## 34    six diamonds     6
## 35   five diamonds     5
## 36   four diamonds     4
## 37  three diamonds     3
```

```
## 38 two diamonds 2
## 39 ace diamonds 1
## 40 king hearts 13
## 41 queen hearts 12
## 42 jack hearts 11
## 43 ten hearts 10
## 44 nine hearts 9
## 45 eight hearts 8
## 46 seven hearts 7
## 47 six hearts 6
## 48 five hearts 5
## 49 four hearts 4
## 50 three hearts 3
## 51 two hearts 2
## 52 ace hearts 1
```

```
deck <- read.csv("../data/cards.csv")
str(deck)
```

```
## 'data.frame': 52 obs. of 3 variables:
## $ face : chr "king" "queen" "jack" "ten" ...
## $ suit : chr "spades" "spades" "spades" "spades" ...
## $ value: int 13 12 11 10 9 8 7 6 5 4 ...
```

```
deck <- read.csv("../data/cards.csv", stringsAsFactors = TRUE)
str(deck)
```

```
## 'data.frame': 52 obs. of 3 variables:
## $ face : Factor w/ 13 levels "ace","eight",...: 6 8 5 11 7 2 9 10 3 4 ...
## $ suit : Factor w/ 4 levels "clubs","diamonds",...: 4 4 4 4 4 4 4 4 4 4 ...
## $ value: int 13 12 11 10 9 8 7 6 5 4 ...
```

```
deck <- read.csv("../data/cards.csv")
str(deck)
```

```
## 'data.frame': 52 obs. of 3 variables:
## $ face : chr "king" "queen" "jack" "ten" ...
## $ suit : chr "spades" "spades" "spades" "spades" ...
## $ value: int 13 12 11 10 9 8 7 6 5 4 ...
```

```
head(deck)
```

```
## face suit value
## 1 king spades 13
## 2 queen spades 12
## 3 jack spades 11
## 4 ten spades 10
## 5 nine spades 9
## 6 eight spades 8
```

Positive Integers

```
deck[1, 1]
```

```
## [1] "king"
```

```
deck[1, 1:3]
```

```

##   face   suit value
## 1 king spades   13

new <- deck[1, 1:3]
new

##   face   suit value
## 1 king spades   13

vec <- c(6, 1, 3, 6, 10, 5)
vec[1:3]

## [1] 6 1 3
vec[c(2, 4, 6)]

## [1] 1 6 5
str(deck[1, 1])

## chr "king"
str(deck[1, 1, drop = FALSE])

## 'data.frame':   1 obs. of  1 variable:
## $ face: chr "king"
str(deck[1, 1:3])

## 'data.frame':   1 obs. of  3 variables:
## $ face : chr "king"
## $ suit : chr "spades"
## $ value: int 13
str(deck[1:3, 1])

## chr [1:3] "king" "queen" "jack"
str(deck[1:3, 1, drop = FALSE])

## 'data.frame':   3 obs. of  1 variable:
## $ face: chr "king" "queen" "jack"
## Negative Integers
deck[-1, 1:3]

##   face   suit value
## 2 queen spades   12
## 3 jack  spades   11
## 4 ten   spades   10
## 5 nine  spades    9
## 6 eight spades    8
## 7 seven spades    7
## 8 six   spades    6
## 9 five  spades    5
## 10 four spades    4
## 11 three spades    3
## 12 two  spades    2
## 13 ace  spades    1
## 14 king clubs   13
## 15 queen clubs   12

```

```
## 16 jack clubs 11
## 17 ten clubs 10
## 18 nine clubs 9
## 19 eight clubs 8
## 20 seven clubs 7
## 21 six clubs 6
## 22 five clubs 5
## 23 four clubs 4
## 24 three clubs 3
## 25 two clubs 2
## 26 ace clubs 1
## 27 king diamonds 13
## 28 queen diamonds 12
## 29 jack diamonds 11
## 30 ten diamonds 10
## 31 nine diamonds 9
## 32 eight diamonds 8
## 33 seven diamonds 7
## 34 six diamonds 6
## 35 five diamonds 5
## 36 four diamonds 4
## 37 three diamonds 3
## 38 two diamonds 2
## 39 ace diamonds 1
## 40 king hearts 13
## 41 queen hearts 12
## 42 jack hearts 11
## 43 ten hearts 10
## 44 nine hearts 9
## 45 eight hearts 8
## 46 seven hearts 7
## 47 six hearts 6
## 48 five hearts 5
## 49 four hearts 4
## 50 three hearts 3
## 51 two hearts 2
## 52 ace hearts 1
```

```
deck[-(2:52), 1:3]
```

```
## face suit value
## 1 king spades 13
```

Blank Spaces

```
deck[1, ]
```

```
## face suit value
## 1 king spades 13
```

```
deck[ , 1]
```

```
## [1] "king" "queen" "jack" "ten" "nine" "eight" "seven" "six" "five"
## [10] "four" "three" "two" "ace" "king" "queen" "jack" "ten" "nine"
## [19] "eight" "seven" "six" "five" "four" "three" "two" "ace" "king"
```

```
## [28] "queen" "jack" "ten" "nine" "eight" "seven" "six" "five" "four"
## [37] "three" "two" "ace" "king" "queen" "jack" "ten" "nine" "eight"
## [46] "seven" "six" "five" "four" "three" "two" "ace"
```

```
deck[ , 1, drop = FALSE]
```

```
##      face
## 1    king
## 2  queen
## 3   jack
## 4    ten
## 5   nine
## 6  eight
## 7  seven
## 8    six
## 9   five
## 10 four
## 11 three
## 12  two
## 13  ace
## 14 king
## 15 queen
## 16 jack
## 17  ten
## 18 nine
## 19 eight
## 20 seven
## 21  six
## 22  five
## 23 four
## 24 three
## 25  two
## 26  ace
## 27 king
## 28 queen
## 29 jack
## 30  ten
## 31 nine
## 32 eight
## 33 seven
## 34  six
## 35  five
## 36 four
## 37 three
## 38  two
## 39  ace
## 40 king
## 41 queen
## 42 jack
## 43  ten
## 44 nine
## 45 eight
## 46 seven
## 47  six
## 48  five
```

```
## 49 four
## 50 three
## 51 two
## 52 ace
```

Logical Values

```
deck[1, c(TRUE, TRUE, FALSE)]
```

```
## face suit
## 1 king spades
```

```
rows <- c(TRUE, rep(FALSE, 51))
deck[rows, ]
```

```
## face suit value
## 1 king spades 13
```

Names

```
deck[1, c("face", "suit", "value")]
```

```
## face suit value
## 1 king spades 13
```

```
deck[, "value"]
```

```
## [1] 13 12 11 10 9 8 7 6 5 4 3 2 1 13 12 11 10 9 8 7 6 5 4 3 2
## [26] 1 13 12 11 10 9 8 7 6 5 4 3 2 1 13 12 11 10 9 8 7 6 5 4 3
## [51] 2 1
```

```
deck[, "value", drop = FALSE]
```

```
## value
## 1 13
## 2 12
## 3 11
## 4 10
## 5 9
## 6 8
## 7 7
## 8 6
## 9 5
## 10 4
## 11 3
## 12 2
## 13 1
## 14 13
## 15 12
## 16 11
## 17 10
## 18 9
## 19 8
## 20 7
## 21 6
## 22 5
```

```
## 23      4
## 24      3
## 25      2
## 26      1
## 27     13
## 28     12
## 29     11
## 30     10
## 31      9
## 32      8
## 33      7
## 34      6
## 35      5
## 36      4
## 37      3
## 38      2
## 39      1
## 40     13
## 41     12
## 42     11
## 43     10
## 44      9
## 45      8
## 46      7
## 47      6
## 48      5
## 49      4
## 50      3
## 51      2
## 52      1
```

```
deal <- function(cards) {
  cards[1, ]
}
deal(deck)
```

```
##   face  suit value
## 1 king spades   13
```

```
deck2 <- deck[1:52, ]
head(deck2)
```

```
##   face  suit value
## 1 king spades   13
## 2 queen spades  12
## 3 jack spades   11
## 4 ten spades    10
## 5 nine spades   9
## 6 eight spades  8
```

```
deck2 <- deck[52:1, ]
head(deck2)
```

```
##   face  suit value
## 52 ace hearts    1
## 51 two hearts   2
```

```
## 50 three hearts      3
## 49 four hearts      4
## 48 five hearts      5
## 47 six hearts       6

deck3 <- deck[c(2, 1, 3:52), ]
head(deck3)

##   face   suit value
## 2 queen spades   12
## 1 king  spades   13
## 3 jack  spades   11
## 4 ten   spades   10
## 5 nine  spades    9
## 6 eight spades    8

random <- sample(1:52, size = 52)
random

## [1] 40 18 27 23 11 47 26 42 15  5 30 12 43 20 25 33 31 45  3  4 52 19 28 41 10
## [26] 48 51  6  1 38 39 29 36  8 34 14 49 37 22 13 44  9 24 32 16 35 46 50  2 21
## [51] 17  7

deck4 <- deck[random, ]
head(deck4)

##   face   suit value
## 40 king   hearts   13
## 18 nine   clubs    9
## 27 king   diamonds 13
## 23 four   clubs    4
## 11 three  spades    3
## 47 six    hearts    6

shuffle <- function(cards) {
  random <- sample(1:52, size = 52)
  cards[random, ]
}
deal(deck)

##   face   suit value
## 1 king spades   13

deck2 <- shuffle(deck)
deal(deck2)

##   face   suit value
## 33 seven diamonds  7
```

Dollar Signs and Double Brackets

```
str(deck)

## 'data.frame':   52 obs. of  3 variables:
## $ face : chr  "king" "queen" "jack" "ten" ...
## $ suit : chr  "spades" "spades" "spades" "spades" ...
## $ value: int   13 12 11 10 9 8 7 6 5 4 ...
```



```

deck$value

## [1] 13 12 11 10 9 8 7 6 5 4 3 2 1 13 12 11 10 9 8 7 6 5 4 3 2
## [26] 1 13 12 11 10 9 8 7 6 5 4 3 2 1 13 12 11 10 9 8 7 6 5 4 3
## [51] 2 1

mean(deck$value)

## [1] 7

median(deck$value)

## [1] 7

lst <- list(numbers = c(1, 2), logical = TRUE, strings = c("a", "b", "c"))
lst

## $numbers
## [1] 1 2
##
## $logical
## [1] TRUE
##
## $strings
## [1] "a" "b" "c"

lst[1]

## $numbers
## [1] 1 2

lst$numbers

## [1] 1 2

lst[[1]]

## [1] 1 2

lst["numbers"]

## $numbers
## [1] 1 2

lst[["numbers"]]

## [1] 1 2

dump(list = c("deal", "shuffle"), file = "shuffle.R")
save.image(file = "./r_notation.RData")

```

Comments

What you have learned ...