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

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

```
##     face     suit value
## 16  jack    clubs    11
## 37 three diamonds     3
## 24 three    clubs     3
## 38   two diamonds     2
## 10  four   spades     4
## 11 three   spades     3
```

```
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
## 41 queen hearts    12
```

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 . . .