Chapter-4

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Positiv Integers

```
deck <- read.csv("C:/Users/gwmcc/OneDrive/Documents/GitHub/Data-332/Chapter-3/cards.csv")

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
```

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

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

```
# extracting more than one value
deck[1, c(1, 2, 3)]
```

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

```
# Saving to an R object
new <- deck[1, c(1, 2, 3)]
new
```

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

```
# Repetition
deck[c(1, 1), c(1, 2, 3)]
```

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

```r
# Can subset a vector with a single index
vec <- c(6, 1, 3, 6, 10, 5)
vec[1:3]
```

```
## [1] 6 1 3
```

Negativee Numbers

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

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

Zero

```r
deck[0, 0]
```

```
## data frame with 0 columns and 0 rows
```

```r
# Not verey helpful
```

Blank Spaces

```r
# use to tell R to extract every value in a dimension
deck[1, ]
```

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

Logical Values

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

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

```r
rows <- c(TRUE, F, F, F, F, F, F, F, F, F, F, F, F, F, F, F, F, F ,F, F, F, F, F, F, F, F, F, F, F, F, 

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
```

Deal A Card

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

deal(deck)
```

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

Shuffling the Deck

```
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
```

```
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(c(1:52), size =52)
random
```

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

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

```
##     face     suit value
## 11 three   spades     3
## 38   two diamonds     2
## 22  five    clubs     5
## 4    ten   spades    10
## 20 seven    clubs     7
## 30   ten diamonds    10
```

Shuffle Function

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

deal(deck)
```

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

```
deck2 <- shuffle(deck)
deal(deck2)
```

```
##    face   suit value
## 44 nine hearts     9
```

Dollar Signs and Double Brackets

```
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
```

```r
mean(deck$value)
```

```
## [1] 7
```

```r
median(deck$value)
```

```
## [1] 7
```

```r
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"
```

```r
lst[1]
```

```
## $numbers
## [1] 1 2
```

```r
sum(lst$numbers)
```

```
## [1] 3
```

```r
sum(lst[[1]])
```

```
## [1] 3
```

```r
lst["numbers"]
```

```
## $numbers
## [1] 1 2
```

```r
lst[["numbres"]]
```

```
## NULL
```