Untitled

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```
iris
```

Dataframes

```
##      Sepal.Length Sepal.Width Petal.Length Petal.Width   Species
## 1             5.1         3.5          1.4         0.2    setosa
## 2             4.9         3.0          1.4         0.2    setosa
## 3             4.7         3.2          1.3         0.2    setosa
## 4             4.6         3.1          1.5         0.2    setosa
## 5             5.0         3.6          1.4         0.2    setosa
## 6             5.4         3.9          1.7         0.4    setosa
## 7             4.6         3.4          1.4         0.3    setosa
## 8             5.0         3.4          1.5         0.2    setosa
## 9             4.4         2.9          1.4         0.2    setosa
## 10            4.9         3.1          1.5         0.1    setosa
## 11            5.4         3.7          1.5         0.2    setosa
## 12            4.8         3.4          1.6         0.2    setosa
## 13            4.8         3.0          1.4         0.1    setosa
## 14            4.3         3.0          1.1         0.1    setosa
## 15            5.8         4.0          1.2         0.2    setosa
## 16            5.7         4.4          1.5         0.4    setosa
## 17            5.4         3.9          1.3         0.4    setosa
## 18            5.1         3.5          1.4         0.3    setosa
## 19            5.7         3.8          1.7         0.3    setosa
## 20            5.1         3.8          1.5         0.3    setosa
## 21            5.4         3.4          1.7         0.2    setosa
## 22            5.1         3.7          1.5         0.4    setosa
## 23            4.6         3.6          1.0         0.2    setosa
## 24            5.1         3.3          1.7         0.5    setosa
## 25            4.8         3.4          1.9         0.2    setosa
## 26            5.0         3.0          1.6         0.2    setosa
## 27            5.0         3.4          1.6         0.4    setosa
## 28            5.2         3.5          1.5         0.2    setosa
## 29            5.2         3.4          1.4         0.2    setosa
## 30            4.7         3.2          1.6         0.2    setosa
## 31            4.8         3.1          1.6         0.2    setosa
## 32            5.4         3.4          1.5         0.4    setosa
## 33            5.2         4.1          1.5         0.1    setosa
## 34            5.5         4.2          1.4         0.2    setosa
```

```
## 35           4.9          3.1          1.5          0.2      setosa
## 36           5.0          3.2          1.2          0.2      setosa
## 37           5.5          3.5          1.3          0.2      setosa
## 38           4.9          3.6          1.4          0.1      setosa
## 39           4.4          3.0          1.3          0.2      setosa
## 40           5.1          3.4          1.5          0.2      setosa
## 41           5.0          3.5          1.3          0.3      setosa
## 42           4.5          2.3          1.3          0.3      setosa
## 43           4.4          3.2          1.3          0.2      setosa
## 44           5.0          3.5          1.6          0.6      setosa
## 45           5.1          3.8          1.9          0.4      setosa
## 46           4.8          3.0          1.4          0.3      setosa
## 47           5.1          3.8          1.6          0.2      setosa
## 48           4.6          3.2          1.4          0.2      setosa
## 49           5.3          3.7          1.5          0.2      setosa
## 50           5.0          3.3          1.4          0.2      setosa
## 51           7.0          3.2          4.7          1.4 versicolor
## 52           6.4          3.2          4.5          1.5 versicolor
## 53           6.9          3.1          4.9          1.5 versicolor
## 54           5.5          2.3          4.0          1.3 versicolor
## 55           6.5          2.8          4.6          1.5 versicolor
## 56           5.7          2.8          4.5          1.3 versicolor
## 57           6.3          3.3          4.7          1.6 versicolor
## 58           4.9          2.4          3.3          1.0 versicolor
## 59           6.6          2.9          4.6          1.3 versicolor
## 60           5.2          2.7          3.9          1.4 versicolor
## 61           5.0          2.0          3.5          1.0 versicolor
## 62           5.9          3.0          4.2          1.5 versicolor
## 63           6.0          2.2          4.0          1.0 versicolor
## 64           6.1          2.9          4.7          1.4 versicolor
## 65           5.6          2.9          3.6          1.3 versicolor
## 66           6.7          3.1          4.4          1.4 versicolor
## 67           5.6          3.0          4.5          1.5 versicolor
## 68           5.8          2.7          4.1          1.0 versicolor
## 69           6.2          2.2          4.5          1.5 versicolor
## 70           5.6          2.5          3.9          1.1 versicolor
## 71           5.9          3.2          4.8          1.8 versicolor
## 72           6.1          2.8          4.0          1.3 versicolor
## 73           6.3          2.5          4.9          1.5 versicolor
## 74           6.1          2.8          4.7          1.2 versicolor
## 75           6.4          2.9          4.3          1.3 versicolor
## 76           6.6          3.0          4.4          1.4 versicolor
## 77           6.8          2.8          4.8          1.4 versicolor
## 78           6.7          3.0          5.0          1.7 versicolor
## 79           6.0          2.9          4.5          1.5 versicolor
## 80           5.7          2.6          3.5          1.0 versicolor
## 81           5.5          2.4          3.8          1.1 versicolor
## 82           5.5          2.4          3.7          1.0 versicolor
## 83           5.8          2.7          3.9          1.2 versicolor
## 84           6.0          2.7          5.1          1.6 versicolor
## 85           5.4          3.0          4.5          1.5 versicolor
## 86           6.0          3.4          4.5          1.6 versicolor
## 87           6.7          3.1          4.7          1.5 versicolor
## 88           6.3          2.3          4.4          1.3 versicolor
```

```
## 89            5.6         3.0         4.1         1.3 versicolor
## 90            5.5         2.5         4.0         1.3 versicolor
## 91            5.5         2.6         4.4         1.2 versicolor
## 92            6.1         3.0         4.6         1.4 versicolor
## 93            5.8         2.6         4.0         1.2 versicolor
## 94            5.0         2.3         3.3         1.0 versicolor
## 95            5.6         2.7         4.2         1.3 versicolor
## 96            5.7         3.0         4.2         1.2 versicolor
## 97            5.7         2.9         4.2         1.3 versicolor
## 98            6.2         2.9         4.3         1.3 versicolor
## 99            5.1         2.5         3.0         1.1 versicolor
## 100           5.7         2.8         4.1         1.3 versicolor
## 101           6.3         3.3         6.0         2.5  virginica
## 102           5.8         2.7         5.1         1.9  virginica
## 103           7.1         3.0         5.9         2.1  virginica
## 104           6.3         2.9         5.6         1.8  virginica
## 105           6.5         3.0         5.8         2.2  virginica
## 106           7.6         3.0         6.6         2.1  virginica
## 107           4.9         2.5         4.5         1.7  virginica
## 108           7.3         2.9         6.3         1.8  virginica
## 109           6.7         2.5         5.8         1.8  virginica
## 110           7.2         3.6         6.1         2.5  virginica
## 111           6.5         3.2         5.1         2.0  virginica
## 112           6.4         2.7         5.3         1.9  virginica
## 113           6.8         3.0         5.5         2.1  virginica
## 114           5.7         2.5         5.0         2.0  virginica
## 115           5.8         2.8         5.1         2.4  virginica
## 116           6.4         3.2         5.3         2.3  virginica
## 117           6.5         3.0         5.5         1.8  virginica
## 118           7.7         3.8         6.7         2.2  virginica
## 119           7.7         2.6         6.9         2.3  virginica
## 120           6.0         2.2         5.0         1.5  virginica
## 121           6.9         3.2         5.7         2.3  virginica
## 122           5.6         2.8         4.9         2.0  virginica
## 123           7.7         2.8         6.7         2.0  virginica
## 124           6.3         2.7         4.9         1.8  virginica
## 125           6.7         3.3         5.7         2.1  virginica
## 126           7.2         3.2         6.0         1.8  virginica
## 127           6.2         2.8         4.8         1.8  virginica
## 128           6.1         3.0         4.9         1.8  virginica
## 129           6.4         2.8         5.6         2.1  virginica
## 130           7.2         3.0         5.8         1.6  virginica
## 131           7.4         2.8         6.1         1.9  virginica
## 132           7.9         3.8         6.4         2.0  virginica
## 133           6.4         2.8         5.6         2.2  virginica
## 134           6.3         2.8         5.1         1.5  virginica
## 135           6.1         2.6         5.6         1.4  virginica
## 136           7.7         3.0         6.1         2.3  virginica
## 137           6.3         3.4         5.6         2.4  virginica
## 138           6.4         3.1         5.5         1.8  virginica
## 139           6.0         3.0         4.8         1.8  virginica
## 140           6.9         3.1         5.4         2.1  virginica
## 141           6.7         3.1         5.6         2.4  virginica
## 142           6.9         3.1         5.1         2.3  virginica
```

```
## 143          5.8           2.7          5.1          1.9  virginica
## 144          6.8           3.2          5.9          2.3  virginica
## 145          6.7           3.3          5.7          2.5  virginica
## 146          6.7           3.0          5.2          2.3  virginica
## 147          6.3           2.5          5.0          1.9  virginica
## 148          6.5           3.0          5.2          2.0  virginica
## 149          6.2           3.4          5.4          2.3  virginica
## 150          5.9           3.0          5.1          1.8  virginica
```

```
head(iris)
```

```
##   Sepal.Length Sepal.Width Petal.Length Petal.Width Species
## 1          5.1         3.5          1.4         0.2  setosa
## 2          4.9         3.0          1.4         0.2  setosa
## 3          4.7         3.2          1.3         0.2  setosa
## 4          4.6         3.1          1.5         0.2  setosa
## 5          5.0         3.6          1.4         0.2  setosa
## 6          5.4         3.9          1.7         0.4  setosa
```

```
tail(iris)
```

```
##     Sepal.Length Sepal.Width Petal.Length Petal.Width   Species
## 145          6.7         3.3          5.7         2.5 virginica
## 146          6.7         3.0          5.2         2.3 virginica
## 147          6.3         2.5          5.0         1.9 virginica
## 148          6.5         3.0          5.2         2.0 virginica
## 149          6.2         3.4          5.4         2.3 virginica
## 150          5.9         3.0          5.1         1.8 virginica
```

```
dim(iris)
```

```
## [1] 150   5
```

```
summary(iris)
```

```
##   Sepal.Length    Sepal.Width     Petal.Length    Petal.Width
##  Min.   :4.300   Min.   :2.000   Min.   :1.000   Min.   :0.100
##  1st Qu.:5.100   1st Qu.:2.800   1st Qu.:1.600   1st Qu.:0.300
##  Median :5.800   Median :3.000   Median :4.350   Median :1.300
##  Mean   :5.843   Mean   :3.057   Mean   :3.758   Mean   :1.199
##  3rd Qu.:6.400   3rd Qu.:3.300   3rd Qu.:5.100   3rd Qu.:1.800
##  Max.   :7.900   Max.   :4.400   Max.   :6.900   Max.   :2.500
##        Species
##  setosa    :50
##  versicolor:50
##  virginica :50
##
##
##
```

```
str(iris)
```

```
## 'data.frame':    150 obs. of  5 variables:
##  $ Sepal.Length: num  5.1 4.9 4.7 4.6 5 5.4 4.6 5 4.4 4.9 ...
##  $ Sepal.Width : num  3.5 3 3.2 3.1 3.6 3.9 3.4 3.4 2.9 3.1 ...
##  $ Petal.Length: num  1.4 1.4 1.3 1.5 1.4 1.7 1.4 1.5 1.4 1.5 ...
##  $ Petal.Width : num  0.2 0.2 0.2 0.2 0.2 0.4 0.3 0.2 0.2 0.1 ...
##  $ Species     : Factor w/ 3 levels "setosa","versicolor",..: 1 1 1 1 1 1 1 1 1 1 ...
```

```
head(iris)
```

Manipulacion de un dataframe

```
##   Sepal.Length Sepal.Width Petal.Length Petal.Width Species
## 1          5.1         3.5          1.4         0.2  setosa
## 2          4.9         3.0          1.4         0.2  setosa
## 3          4.7         3.2          1.3         0.2  setosa
## 4          4.6         3.1          1.5         0.2  setosa
## 5          5.0         3.6          1.4         0.2  setosa
## 6          5.4         3.9          1.7         0.4  setosa
```

```
q <- iris + 2
```

```
## Warning in Ops.factor(left, right): '+' not meaningful for factors
```

```
head(q)
```

```
##   Sepal.Length Sepal.Width Petal.Length Petal.Width Species
## 1          7.1         5.5          3.4         2.2      NA
## 2          6.9         5.0          3.4         2.2      NA
## 3          6.7         5.2          3.3         2.2      NA
## 4          6.6         5.1          3.5         2.2      NA
## 5          7.0         5.6          3.4         2.2      NA
## 6          7.4         5.9          3.7         2.4      NA
```

Subconjuntos de una estructura de datos

Indice

```
color <- c("rojo", "azul", "verde", "amarillo", "morado")
color
```

```
## [1] "rojo"     "azul"     "verde"    "amarillo" "morado"
```

```r
color[4]
```

```
## [1] "amarillo"
```

```r
color[5]
```

```
## [1] "morado"
```

```r
color[1:3]
```

```
## [1] "rojo"  "azul"  "verde"
```

Nota:

```r
color[-3]
```

```
## [1] "rojo"     "azul"     "amarillo" "morado"
```

```r
color[c(-1,-5)]
```

```
## [1] "azul"     "verde"     "amarillo"
```

```r
head(iris)
```

Dataframe

```
##   Sepal.Length Sepal.Width Petal.Length Petal.Width Species
## 1          5.1         3.5          1.4         0.2  setosa
## 2          4.9         3.0          1.4         0.2  setosa
## 3          4.7         3.2          1.3         0.2  setosa
## 4          4.6         3.1          1.5         0.2  setosa
## 5          5.0         3.6          1.4         0.2  setosa
## 6          5.4         3.9          1.7         0.4  setosa
```

```r
iris[1,2]
```

```
## [1] 3.5
```

```r
iris[1,]
```

```
##   Sepal.Length Sepal.Width Petal.Length Petal.Width Species
## 1          5.1         3.5          1.4         0.2  setosa
```

```r
iris[,1]
```

```
##   [1] 5.1 4.9 4.7 4.6 5.0 5.4 4.6 5.0 4.4 4.9 5.4 4.8 4.8 4.3 5.8 5.7 5.4 5.1
##  [19] 5.7 5.1 5.4 5.1 4.6 5.1 4.8 5.0 5.0 5.2 5.2 4.7 4.8 5.4 5.2 5.5 4.9 5.0
##  [37] 5.5 4.9 4.4 5.1 5.0 4.5 4.4 5.0 5.1 4.8 5.1 4.6 5.3 5.0 7.0 6.4 6.9 5.5
##  [55] 6.5 5.7 6.3 4.9 6.6 5.2 5.0 5.9 6.0 6.1 5.6 6.7 5.6 5.8 6.2 5.6 5.9 6.1
##  [73] 6.3 6.1 6.4 6.6 6.8 6.7 6.0 5.7 5.5 5.5 5.8 6.0 5.4 6.0 6.7 6.3 5.6 5.5
##  [91] 5.5 6.1 5.8 5.0 5.6 5.7 5.7 6.2 5.1 5.7 6.3 5.8 7.1 6.3 6.5 7.6 4.9 7.3
## [109] 6.7 7.2 6.5 6.4 6.8 5.7 5.8 6.4 6.5 7.7 7.7 6.0 6.9 5.6 7.7 6.3 6.7 7.2
## [127] 6.2 6.1 6.4 7.2 7.4 7.9 6.4 6.3 6.1 7.7 6.3 6.4 6.0 6.9 6.7 6.9 5.8 6.8
## [145] 6.7 6.7 6.3 6.5 6.2 5.9
```

```r
iris[,c(1,3,5)]
```

```
##    Sepal.Length Petal.Length  Species
## 1           5.1          1.4   setosa
## 2           4.9          1.4   setosa
## 3           4.7          1.3   setosa
## 4           4.6          1.5   setosa
## 5           5.0          1.4   setosa
## 6           5.4          1.7   setosa
## 7           4.6          1.4   setosa
## 8           5.0          1.5   setosa
## 9           4.4          1.4   setosa
## 10          4.9          1.5   setosa
## 11          5.4          1.5   setosa
## 12          4.8          1.6   setosa
## 13          4.8          1.4   setosa
## 14          4.3          1.1   setosa
## 15          5.8          1.2   setosa
## 16          5.7          1.5   setosa
## 17          5.4          1.3   setosa
## 18          5.1          1.4   setosa
## 19          5.7          1.7   setosa
## 20          5.1          1.5   setosa
## 21          5.4          1.7   setosa
## 22          5.1          1.5   setosa
## 23          4.6          1.0   setosa
## 24          5.1          1.7   setosa
## 25          4.8          1.9   setosa
## 26          5.0          1.6   setosa
## 27          5.0          1.6   setosa
## 28          5.2          1.5   setosa
## 29          5.2          1.4   setosa
## 30          4.7          1.6   setosa
## 31          4.8          1.6   setosa
## 32          5.4          1.5   setosa
## 33          5.2          1.5   setosa
## 34          5.5          1.4   setosa
## 35          4.9          1.5   setosa
## 36          5.0          1.2   setosa
## 37          5.5          1.3   setosa
## 38          4.9          1.4   setosa
```

```
## 39            4.4       1.3      setosa
## 40            5.1       1.5      setosa
## 41            5.0       1.3      setosa
## 42            4.5       1.3      setosa
## 43            4.4       1.3      setosa
## 44            5.0       1.6      setosa
## 45            5.1       1.9      setosa
## 46            4.8       1.4      setosa
## 47            5.1       1.6      setosa
## 48            4.6       1.4      setosa
## 49            5.3       1.5      setosa
## 50            5.0       1.4      setosa
## 51            7.0       4.7 versicolor
## 52            6.4       4.5 versicolor
## 53            6.9       4.9 versicolor
## 54            5.5       4.0 versicolor
## 55            6.5       4.6 versicolor
## 56            5.7       4.5 versicolor
## 57            6.3       4.7 versicolor
## 58            4.9       3.3 versicolor
## 59            6.6       4.6 versicolor
## 60            5.2       3.9 versicolor
## 61            5.0       3.5 versicolor
## 62            5.9       4.2 versicolor
## 63            6.0       4.0 versicolor
## 64            6.1       4.7 versicolor
## 65            5.6       3.6 versicolor
## 66            6.7       4.4 versicolor
## 67            5.6       4.5 versicolor
## 68            5.8       4.1 versicolor
## 69            6.2       4.5 versicolor
## 70            5.6       3.9 versicolor
## 71            5.9       4.8 versicolor
## 72            6.1       4.0 versicolor
## 73            6.3       4.9 versicolor
## 74            6.1       4.7 versicolor
## 75            6.4       4.3 versicolor
## 76            6.6       4.4 versicolor
## 77            6.8       4.8 versicolor
## 78            6.7       5.0 versicolor
## 79            6.0       4.5 versicolor
## 80            5.7       3.5 versicolor
## 81            5.5       3.8 versicolor
## 82            5.5       3.7 versicolor
## 83            5.8       3.9 versicolor
## 84            6.0       5.1 versicolor
## 85            5.4       4.5 versicolor
## 86            6.0       4.5 versicolor
## 87            6.7       4.7 versicolor
## 88            6.3       4.4 versicolor
## 89            5.6       4.1 versicolor
## 90            5.5       4.0 versicolor
## 91            5.5       4.4 versicolor
## 92            6.1       4.6 versicolor
```

```
## 93             5.8             4.0 versicolor
## 94             5.0             3.3 versicolor
## 95             5.6             4.2 versicolor
## 96             5.7             4.2 versicolor
## 97             5.7             4.2 versicolor
## 98             6.2             4.3 versicolor
## 99             5.1             3.0 versicolor
## 100            5.7             4.1 versicolor
## 101            6.3             6.0  virginica
## 102            5.8             5.1  virginica
## 103            7.1             5.9  virginica
## 104            6.3             5.6  virginica
## 105            6.5             5.8  virginica
## 106            7.6             6.6  virginica
## 107            4.9             4.5  virginica
## 108            7.3             6.3  virginica
## 109            6.7             5.8  virginica
## 110            7.2             6.1  virginica
## 111            6.5             5.1  virginica
## 112            6.4             5.3  virginica
## 113            6.8             5.5  virginica
## 114            5.7             5.0  virginica
## 115            5.8             5.1  virginica
## 116            6.4             5.3  virginica
## 117            6.5             5.5  virginica
## 118            7.7             6.7  virginica
## 119            7.7             6.9  virginica
## 120            6.0             5.0  virginica
## 121            6.9             5.7  virginica
## 122            5.6             4.9  virginica
## 123            7.7             6.7  virginica
## 124            6.3             4.9  virginica
## 125            6.7             5.7  virginica
## 126            7.2             6.0  virginica
## 127            6.2             4.8  virginica
## 128            6.1             4.9  virginica
## 129            6.4             5.6  virginica
## 130            7.2             5.8  virginica
## 131            7.4             6.1  virginica
## 132            7.9             6.4  virginica
## 133            6.4             5.6  virginica
## 134            6.3             5.1  virginica
## 135            6.1             5.6  virginica
## 136            7.7             6.1  virginica
## 137            6.3             5.6  virginica
## 138            6.4             5.5  virginica
## 139            6.0             4.8  virginica
## 140            6.9             5.4  virginica
## 141            6.7             5.6  virginica
## 142            6.9             5.1  virginica
## 143            5.8             5.1  virginica
## 144            6.8             5.9  virginica
## 145            6.7             5.7  virginica
## 146            6.7             5.2  virginica
```

```
## 147          6.3          5.0  virginica
## 148          6.5          5.2  virginica
## 149          6.2          5.4  virginica
## 150          5.9          5.1  virginica
```

```r
iris[c(1,3,5),]
```

```
##   Sepal.Length Sepal.Width Petal.Length Petal.Width Species
## 1          5.1         3.5          1.4         0.2  setosa
## 3          4.7         3.2          1.3         0.2  setosa
## 5          5.0         3.6          1.4         0.2  setosa
```

```r
iris[c(1,3),c(1,3)]
```

```
##   Sepal.Length Petal.Length
## 1          5.1          1.4
## 3          4.7          1.3
```

```r
iris[1:50, c(1,3)]
```

```
##    Sepal.Length Petal.Length
## 1           5.1          1.4
## 2           4.9          1.4
## 3           4.7          1.3
## 4           4.6          1.5
## 5           5.0          1.4
## 6           5.4          1.7
## 7           4.6          1.4
## 8           5.0          1.5
## 9           4.4          1.4
## 10          4.9          1.5
## 11          5.4          1.5
## 12          4.8          1.6
## 13          4.8          1.4
## 14          4.3          1.1
## 15          5.8          1.2
## 16          5.7          1.5
## 17          5.4          1.3
## 18          5.1          1.4
## 19          5.7          1.7
## 20          5.1          1.5
## 21          5.4          1.7
## 22          5.1          1.5
## 23          4.6          1.0
## 24          5.1          1.7
## 25          4.8          1.9
## 26          5.0          1.6
## 27          5.0          1.6
## 28          5.2          1.5
## 29          5.2          1.4
## 30          4.7          1.6
## 31          4.8          1.6
```

```
## 32           5.4           1.5
## 33           5.2           1.5
## 34           5.5           1.4
## 35           4.9           1.5
## 36           5.0           1.2
## 37           5.5           1.3
## 38           4.9           1.4
## 39           4.4           1.3
## 40           5.1           1.5
## 41           5.0           1.3
## 42           4.5           1.3
## 43           4.4           1.3
## 44           5.0           1.6
## 45           5.1           1.9
## 46           4.8           1.4
## 47           5.1           1.6
## 48           4.6           1.4
## 49           5.3           1.5
## 50           5.0           1.4
```

```
names(iris)
```

```
## [1] "Sepal.Length" "Sepal.Width"  "Petal.Length" "Petal.Width"  "Species"
```

```
iris["Sepal.Length"]
```

```
##      Sepal.Length
## 1              5.1
## 2              4.9
## 3              4.7
## 4              4.6
## 5              5.0
## 6              5.4
## 7              4.6
## 8              5.0
## 9              4.4
## 10             4.9
## 11             5.4
## 12             4.8
## 13             4.8
## 14             4.3
## 15             5.8
## 16             5.7
## 17             5.4
## 18             5.1
## 19             5.7
## 20             5.1
## 21             5.4
## 22             5.1
## 23             4.6
## 24             5.1
## 25             4.8
## 26             5.0
```

```
## 27             5.0
## 28             5.2
## 29             5.2
## 30             4.7
## 31             4.8
## 32             5.4
## 33             5.2
## 34             5.5
## 35             4.9
## 36             5.0
## 37             5.5
## 38             4.9
## 39             4.4
## 40             5.1
## 41             5.0
## 42             4.5
## 43             4.4
## 44             5.0
## 45             5.1
## 46             4.8
## 47             5.1
## 48             4.6
## 49             5.3
## 50             5.0
## 51             7.0
## 52             6.4
## 53             6.9
## 54             5.5
## 55             6.5
## 56             5.7
## 57             6.3
## 58             4.9
## 59             6.6
## 60             5.2
## 61             5.0
## 62             5.9
## 63             6.0
## 64             6.1
## 65             5.6
## 66             6.7
## 67             5.6
## 68             5.8
## 69             6.2
## 70             5.6
## 71             5.9
## 72             6.1
## 73             6.3
## 74             6.1
## 75             6.4
## 76             6.6
## 77             6.8
## 78             6.7
## 79             6.0
## 80             5.7
```

```
## 81          5.5
## 82          5.5
## 83          5.8
## 84          6.0
## 85          5.4
## 86          6.0
## 87          6.7
## 88          6.3
## 89          5.6
## 90          5.5
## 91          5.5
## 92          6.1
## 93          5.8
## 94          5.0
## 95          5.6
## 96          5.7
## 97          5.7
## 98          6.2
## 99          5.1
## 100         5.7
## 101         6.3
## 102         5.8
## 103         7.1
## 104         6.3
## 105         6.5
## 106         7.6
## 107         4.9
## 108         7.3
## 109         6.7
## 110         7.2
## 111         6.5
## 112         6.4
## 113         6.8
## 114         5.7
## 115         5.8
## 116         6.4
## 117         6.5
## 118         7.7
## 119         7.7
## 120         6.0
## 121         6.9
## 122         5.6
## 123         7.7
## 124         6.3
## 125         6.7
## 126         7.2
## 127         6.2
## 128         6.1
## 129         6.4
## 130         7.2
## 131         7.4
## 132         7.9
## 133         6.4
## 134         6.3
```

```
## 135          6.1
## 136          7.7
## 137          6.3
## 138          6.4
## 139          6.0
## 140          6.9
## 141          6.7
## 142          6.9
## 143          5.8
## 144          6.8
## 145          6.7
## 146          6.7
## 147          6.3
## 148          6.5
## 149          6.2
## 150          5.9
```

Condicionales

Data_frame[condicion, columnas_devueltas]

```
q2 <- iris[iris$Petal.Length >= 5.5,]
summary(q2)
```

```
##   Sepal.Length    Sepal.Width     Petal.Length    Petal.Width
## Min.   :6.100   Min.   :2.500   Min.   :5.500   Min.   :1.400
## 1st Qu.:6.475   1st Qu.:2.875   1st Qu.:5.600   1st Qu.:1.800
## Median :6.800   Median :3.000   Median :5.800   Median :2.100
## Mean   :6.936   Mean   :3.071   Mean   :5.939   Mean   :2.082
## 3rd Qu.:7.325   3rd Qu.:3.225   3rd Qu.:6.100   3rd Qu.:2.300
## Max.   :7.900   Max.   :3.800   Max.   :6.900   Max.   :2.500
##        Species
## setosa    : 0
## versicolor: 0
## virginica :28
##
##
##
```

```
q3 <- iris[iris$Petal.Length >= 1.5 & iris$Species== "setosa",]
summary(q3)
```

```
##   Sepal.Length    Sepal.Width     Petal.Length    Petal.Width
## Min.   :4.600   Min.   :3.000   Min.   :1.500   Min.   :0.1000
## 1st Qu.:4.925   1st Qu.:3.325   1st Qu.:1.500   1st Qu.:0.2000
## Median :5.100   Median :3.400   Median :1.550   Median :0.2000
## Mean   :5.108   Mean   :3.515   Mean   :1.588   Mean   :0.2731
## 3rd Qu.:5.275   3rd Qu.:3.775   3rd Qu.:1.600   3rd Qu.:0.4000
## Max.   :5.700   Max.   :4.400   Max.   :1.900   Max.   :0.6000
##        Species
## setosa    :26
## versicolor: 0
```

```
## virginica : 0
##
##
##
```

Dplyr

Funciones

```
nombre <- function(argumentos){
operaciones
}
```
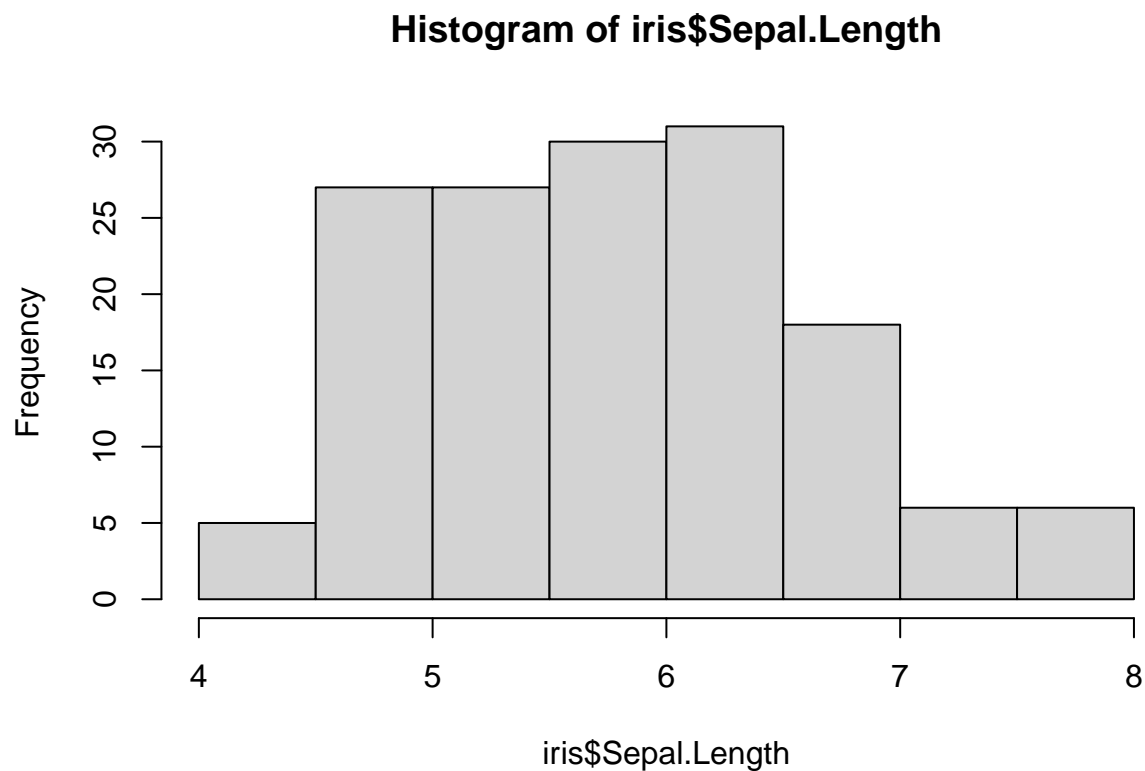
Area de un cuadrado

```r
area_cuadrado <- function(lado){
  lado*lado
}
```

```r
area_cuadrado(lado = 4)
```
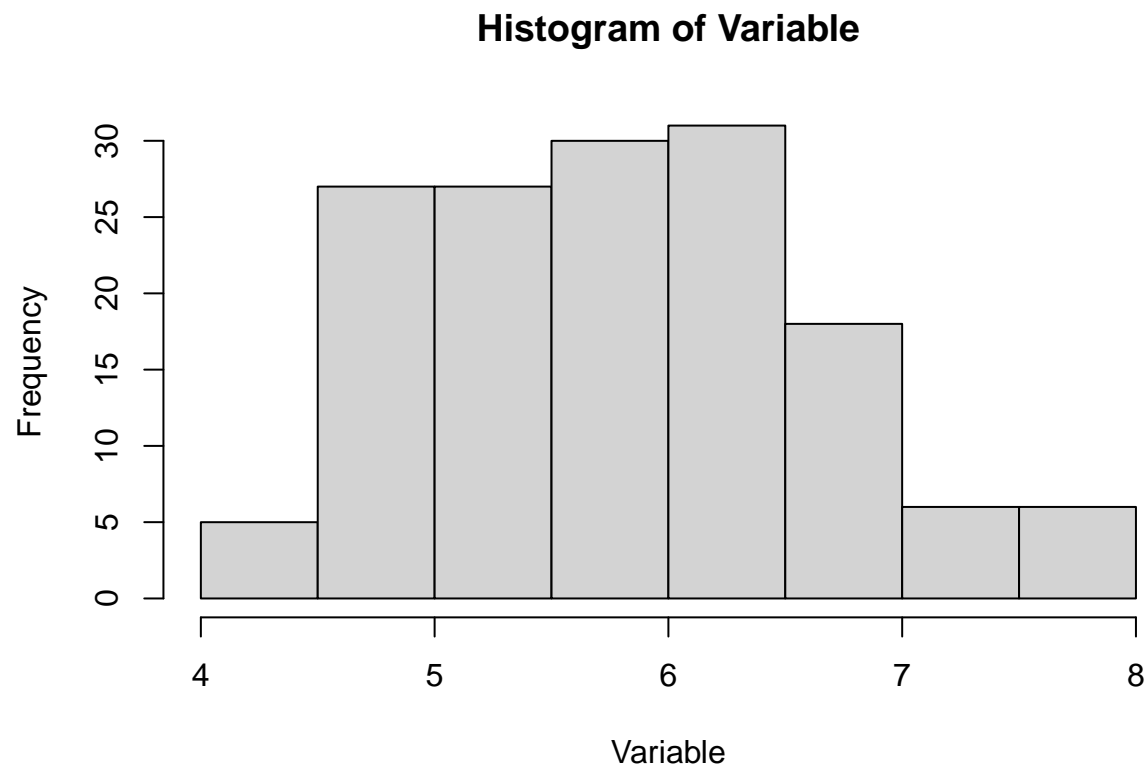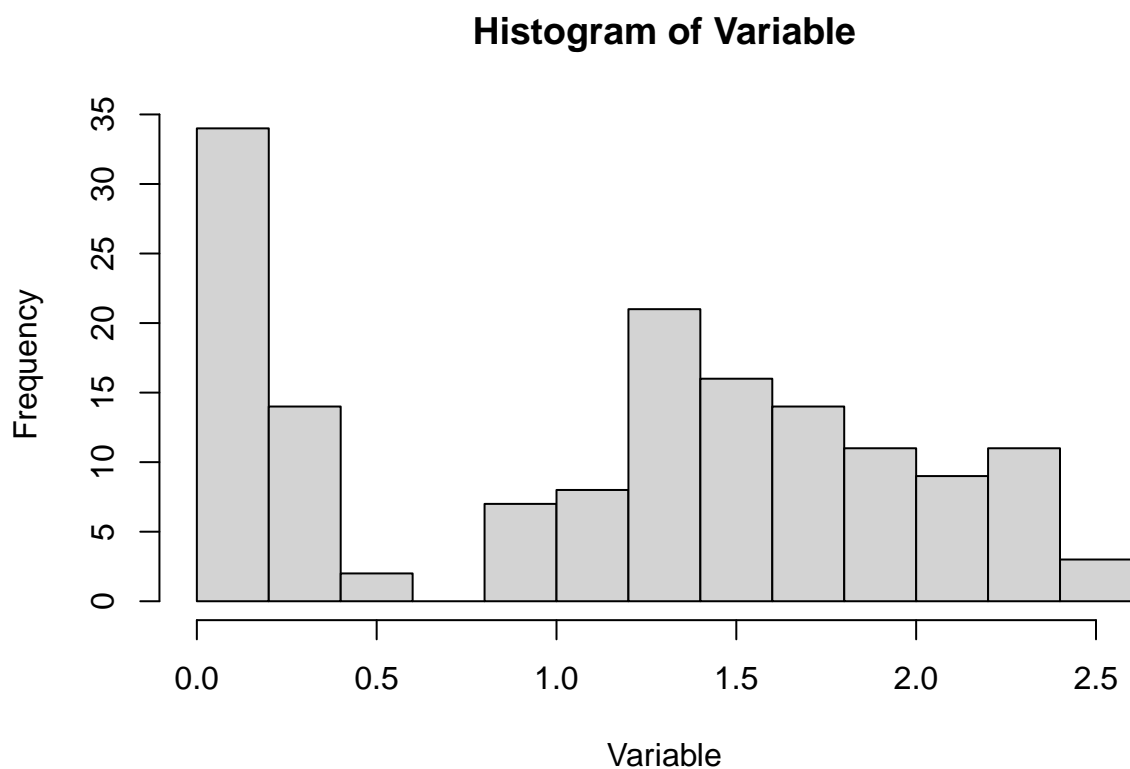
```
## [1] 16
```

```r
hist(iris$Sepal.Length)
```

Histogram of iris$Sepal.Length

```
estadisticos_grafica <- function(Variable){
  hist(Variable)
  summary(Variable)
}
```

```
estadisticos_grafica(Variable = iris$Sepal.Length)
```

Histogram of Variable


```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   4.300   5.100   5.800   5.843   6.400   7.900
```

```
estadisticos_grafica(iris$Petal.Width)
```

Histogram of Variable


```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   0.100   0.300   1.300   1.199   1.800   2.500
```

Como crear un dataframe en R

```r
escolaridad <- c("primaria","secundaria")
ingresos <- c(100,200)
obj <- cbind(escolaridad,ingresos)
obj
```

```
##      escolaridad  ingresos
## [1,] "primaria"   "100"
## [2,] "secundaria" "200"
```

```r
obj2 <- rbind(obj, c("preparatoria", 300))
obj2
```

```
##      escolaridad    ingresos
## [1,] "primaria"     "100"
## [2,] "secundaria"   "200"
## [3,] "preparatoria" "300"
```