Kharinaev Homework 13.09.2021

Dataset description

русский текст Dataset contains info about stocks of S&P 500 companies (date, open, high, low, close prices, volume, company name (ticker))

1.1 Matrix

```
matrix1 <- matrix(rnorm(25), nrow=5)
rownames(matrix1) <- c("x0","x1","x2","x3","x4")
colnames(matrix1) <- c("y0","y1","y2","y3","y4")
matrix1
```

```
##            y0          y1         y2         y3         y4
## x0  0.7432478 -0.06928239 -0.6526181  0.7968116 0.30994088
## x1 -0.7092270 -0.68449498  0.1097426 -0.5062432 0.92890858
## x2 -0.7459261  1.43430612  0.9166490  0.1139667 0.89911417
## x3 -1.0944145  1.06612594  0.5011175 -1.0745211 2.02897604
## x4 -0.9300085 -0.47568389  1.0933482  2.5184786 0.02180929
```

1.2 Row and column names

```
rownames(matrix1)
```

```
## [1] "x0" "x1" "x2" "x3" "x4"
```

```
colnames(matrix1)
```

```
## [1] "y0" "y1" "y2" "y3" "y4"
```

1.3 Transpose

```
t(matrix1)
```

```
##             x0         x1         x2         x3          x4
## y0  0.74324779 -0.7092270 -0.7459261 -1.0944145 -0.93000847
## y1 -0.06928239 -0.6844950  1.4343061  1.0661259 -0.47568389
## y2 -0.65261815  0.1097426  0.9166490  0.5011175  1.09334816
## y3  0.79681157 -0.5062432  0.1139667 -1.0745211  2.51847864
## y4  0.30994088  0.9289086  0.8991142  2.0289760  0.02180929
```

2.1 Matrix of vectors

```
c1 <- c(1,2,3,4)
c2 <- c(1,2,3,4)
c3 <- c(1,2,3,4)
c4 <- c(1,2,3,4)
matrix2 <- cbind(c1,c2,c3,c4)
rownames(matrix2) <- c("r1","r2","r3","r4")
matrix2
```

```
##    c1 c2 c3 c4
## r1  1  1  1  1
## r2  2  2  2  2
```

```
## r3  3  3  3  3
## r4  4  4  4  4
```

2.2 It's dimension

```
dim(matrix2)

## [1] 4 4
```

3. Check element [2,2]

```
is.numeric(matrix2[2,2])

## [1] TRUE

is.logical(matrix2[2,2])

## [1] FALSE

is.null(matrix2[2,2])

## [1] FALSE

is.nan(matrix2[2,2])

## [1] FALSE
```

4. Read CSV and make table

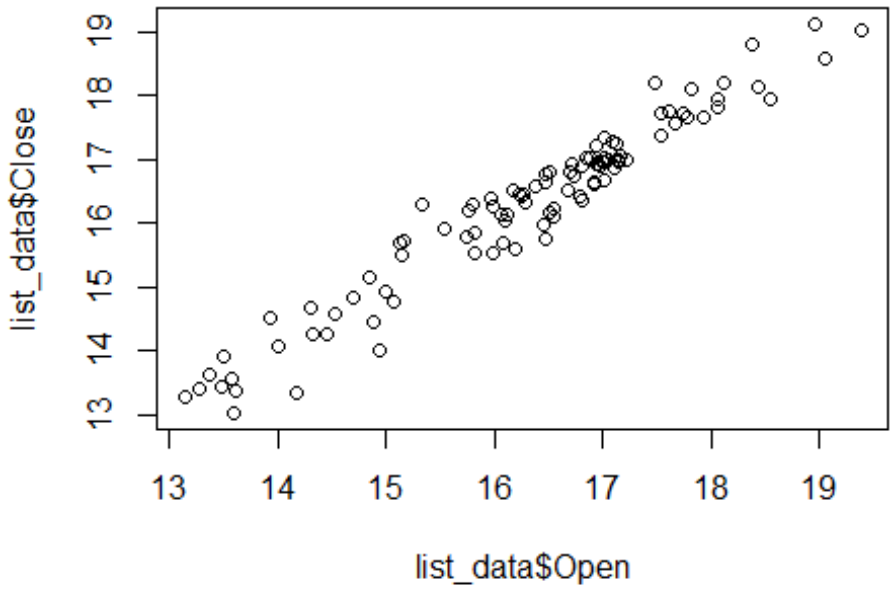
```
data <- read.csv(file = '..\\dataset.csv')
head(data)

##         date  open  high   low close   volume Name
## 1 2013-02-08 15.07 15.12 14.63 14.75  8407500  AAL
## 2 2013-02-11 14.89 15.01 14.26 14.46  8882000  AAL
## 3 2013-02-12 14.45 14.51 14.10 14.27  8126000  AAL
## 4 2013-02-13 14.30 14.94 14.25 14.66 10259500  AAL
## 5 2013-02-14 14.94 14.96 13.16 13.99 31879900  AAL
## 6 2013-02-15 13.93 14.61 13.93 14.50 15628000  AAL

list_data <- list(Date=data[1:100,"date"], Open=data[1:100,"open"],
                  Close=data[1:100,"close"], Name=data[1:100,"Name"])
list_data$Date[1:5]

## [1] "2013-02-08" "2013-02-11" "2013-02-12" "2013-02-13" "2013-02-14"

list_data$Open[1:5]

## [1] 15.07 14.89 14.45 14.30 14.94

list_data$Close[1:5]

## [1] 14.75 14.46 14.27 14.66 13.99

list_data$Name[1:5]

## [1] "AAL" "AAL" "AAL" "AAL" "AAL"
```

```
table <- data[1:100,c('date','open','close','Name')]
head(table)
```

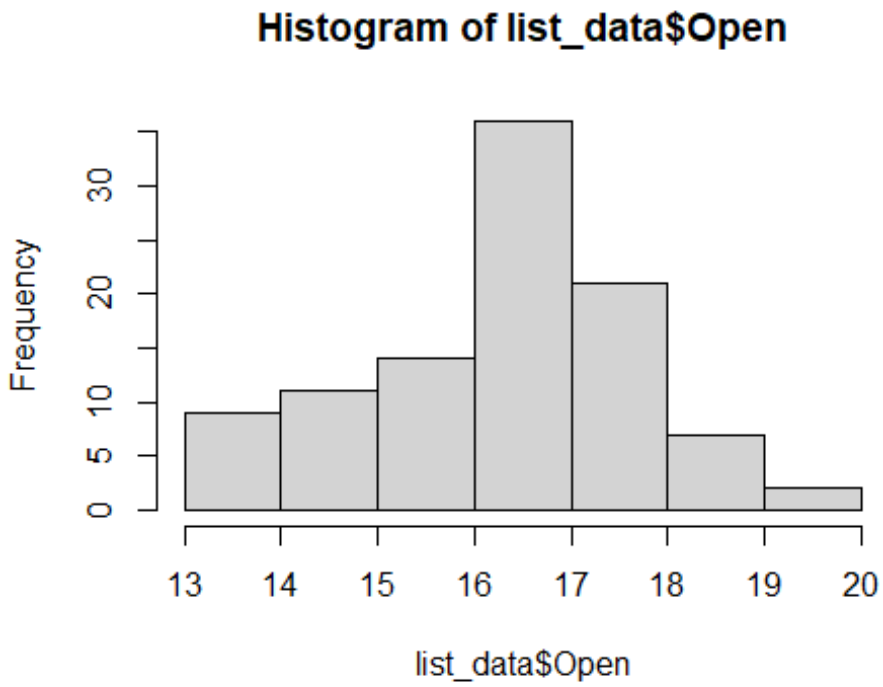
```
##         date  open close Name
## 1 2013-02-08 15.07 14.75  AAL
## 2 2013-02-11 14.89 14.46  AAL
## 3 2013-02-12 14.45 14.27  AAL
## 4 2013-02-13 14.30 14.66  AAL
## 5 2013-02-14 14.94 13.99  AAL
## 6 2013-02-15 13.93 14.50  AAL
```

5.1 Plot and histogram for list

```
plot(list_data$Open, list_data$Close)
```

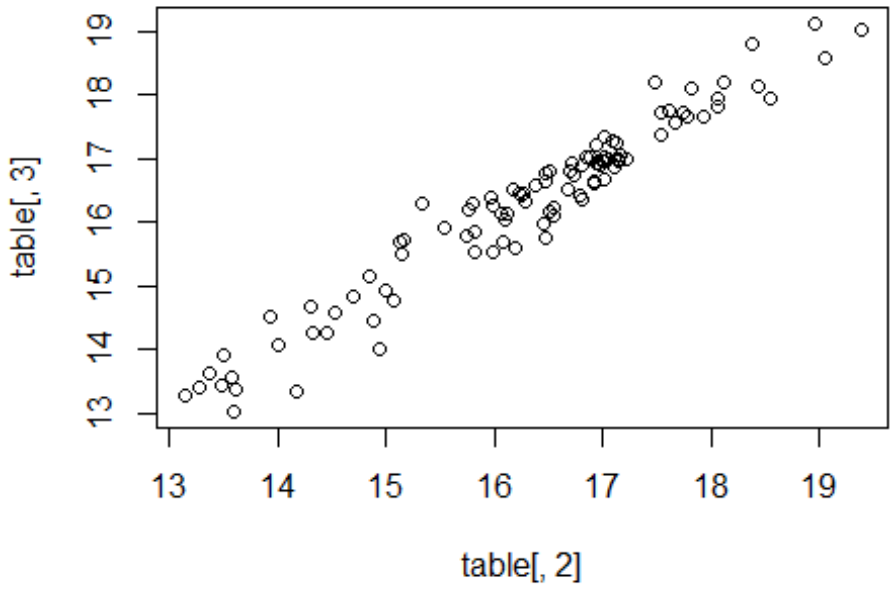



```
hist(list_data$Open)
```



5.2 Plot and histogram for table

```
plot(table[,2],table[,3])
```




```
hist(table[,2])
```

6. if-else + for, while, repeat

```
ans <- TRUE
for (i in 1:100){
  if (table[i,"open"] == 0){
    ans <- FALSE
  }
}
if (ans == FALSE){
  print("there are some 0")
} else {
  print("all values is not 0")
}

## [1] "all values is not 0"

ans <- TRUE
i <- 1
while (i<=100){
  if (list_data$Close[i] < 19){
    ans <- FALSE
  }
  i <- i+1
}
if (ans == FALSE){
  print("there are some values below 19")
} else {
  print("all values is above 19")
}
```

```
## [1] "there are some values below 19"
```

```
ans <- TRUE
i <- 1
repeat {
  if (list_data$Close[i] < 10 | list_data$Close[i] > 20){
    ans <- FALSE
    break
  }
  i <- i + 1
  if (i == 100){
    break
  }
}
if (ans == FALSE){
  print("there are some values out of [10,20]")
} else {
  print("all values is in [10,20]")
}
```

```
## [1] "all values is in [10,20]"
```