All About Lists

Introduction to R

Question 1

Create an empty list x. Then define its *second* entry as the vector 2:4. Then print the list. Note what value does the first entry default to.

```
x <- list()
x[[2]] <- 2:4
x
```

```
## [[1]]
## NULL
##
## [[2]]
## [1] 2 3 4
```

```
The first list element is NULL.
```

Question 2

Use the `names()` function to rename the list entries to `x` and `y`. Print x to ensure your changes took hold.

```
names(x) <- c("x","y")
x
```

```
## $x
## NULL
##
## $y
## [1] 2 3 4
```

Question 3

Change the name of the first entry of the list x to `a`.

```
names(x)[1] <- "a"
```

Question 4

Create a data frame `df` that has columns `x` and `y` and has three rows. Use the `nrow()`, `ncol()`, and `dim()` functions to display the number of rows, the number of columns, and the dimensions of `df`. Let the first column contain numbers, and the second column contain logical values.

```
df <- data.frame("x"=1:3,"y"=c(TRUE,FALSE,TRUE))
nrow(df)
```

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

```
ncol(df)
```

```
## [1] 2
```

```
dim(df)
```

```
## [1] 3 2
```

Question 5

Add columns to `df` using the dollar sign operator, using the double bracket notation with number, and using the double bracket notation with character name.

```
df$a <- 4:6
df[[4]] <- 7:9
df[["b"]] <- 10:12
print(df)
```

```
##   x     y a V4  b
## 1 1  TRUE 4  7 10
## 2 2 FALSE 5  8 11
## 3 3  TRUE 6  9 12
```

Question 6

Use `row.names()` to change the names of the rows of `df` to “1st”, “2nd”, and “3rd”. (It works the same way `names()` does.)

```
row.names(df) <- c("1st","2nd","3rd")
df
```

```
##     x     y a V4  b
## 1st 1  TRUE 4  7 10
## 2nd 2 FALSE 5  8 11
## 3rd 3  TRUE 6  9 12
```

Question 7

Display the contents of the first row of `df` using the row number and then using the row name. Note that you access the elements of a two-dimensional object using `[row number/name,column number/name]`.

```
df[1,]
```

```
##     x    y a V4  b
## 1st 1 TRUE 4  7 10
```

```
df["1st",]
```

```
##     x    y a V4  b
## 1st 1 TRUE 4  7 10
```

Question 8

Initialize a 2 x 2 matrix where all the matrix elements are 1. Display the matrix.

```
x <- matrix(c(1,1,1,1),nrow=2)
x
```

```
##      [,1] [,2]
## [1,]    1    1
## [2,]    1    1
```