

List.R

```

#=====
# List.R
#=====
# R list is a container for values, but its contents can be items of different
# data types.

#-----
# Creating a List
#-----

workers <- list(firstname = "Bill", lastname = "Smith", age = 28, salary = 120000)

#-----
# creating vectors.
#-----
firstnames <- c('Sophia', 'Jackson', 'Bill', 'Susan', 'Adam')
lastnames <- c('Smith', 'Jones', 'Smith', 'Fry', 'Hernandez')
ages <- c( 27, 39, 26, 73, 19)
salaries <- c(60000, 52000, 65000, 65000, 73000)

#-----
# creating a list using vector
#-----
workers <- list(firstname = firstnames,
               lastname = lastnames,
               age = ages,
               salary = salaries)

workers

#-----
# accessing elements of a list
#-----
workers[[1]]      # getting the firstnames of workers
workers[1]        # getting the firstnames of workers

workers[[1]][1]   # getting the first firstname
workers[[1]][4]   # getting the fourth firstname

workers[[4]][2]   # getting the second salary

# workers[[5]] -- Error in workers[[5]] : subscript out of bounds
# workers[[4]][6] -- Not an error returns NA

names(workers)    # getting the names of the elements of the list
                  # returns:  firstname  lastname  age salary

workers$firstname # get all the firstnames contained in workers
workers$firstname[2] # get the second firstname of workers

```

```
workers$age           # get all the age data contained in worker
```

```
#-----  
# getting info on the type of data in a list  
#-----
```

```
typeof(workers$firstname)  # getting type of  firstname  
typeof(workers$age)        # getting type of  age  
typeof(workers$salary)     # getting type of  salary
```

```
#-----  
# add elements to a list  
#-----
```

```
workers$address <- '200 South Drive, Miami, FL 33130'
```

```
names(workers)  
tail <- length(workers$firstname)  
workers$firstname[tail+1] <- "Bob"  
workers$lastname[tail+1] <- "Hannah"  
workers$age[tail+1] <- 37  
workers$salary[tail+1] <- 175000
```

```
#-----  
# delete elements to a list  
#-----
```

```
workers$age <- NULL # delete ages
```

```
#-----  
# delete elements to a list  
#-----
```

```
plot(workers$salary, type ='l')
```

Project Code

```

#=====
# List Coding Project
#=====

#=====
# Project Coding
#=====

### -----
# MAC USERS
### -----

filename <- '~/Desktop/FIU_R/Code/List/List_Project/fredgraph.csv'
fed.data <- read.csv(file= filename, head=TRUE, sep=",")

### -----
# WINDOWS USERS
### -----
### username <- "cemka_000"
### -----
### UNCOMMENT BELOW AND COMMENT MAX SECTION ABOVE
### -----
# username <- "PUT YOUR USERNAME HERE"
# users.folder <- "C:\\Users\\"
# the.rest <- "\\Desktop\\FIU_R\\Code\\List\\List_Project\\fredgraph.csv"
# filename<- paste (users.folder, username , sep = '\\')
# filename <- paste (filename, the.rest, sep = '\\')
# fed.data <- read.csv(file= filename, head=TRUE, sep=",")

#-----
# plotting the data
#-----
par(mfrow=c(2,2))
plot( fed.data$CPIAUCSL_PC1, type='l')
hist( fed.data$CPIAUCSL_PC1, type='l')
plot( fed.data$UNRATE, type='l')

#-----
# Student Code (Student question)
#-----
hist( fed.data$UNRATE, type='l')

# Student question:
# what insight can you state from the plots and histograms

#-----
# Student Code
#-----
# find the names of the vectors in the list and output the names on the console

```

enter your code below

```
names("PUT SOME CODE HERE")
```

#-----

Student Code

#-----

Change the name of the column CPIAUCSL_PC1 to CPI

Delete the CPIAUCSL_PC1 column

enter your code below

```
fed.data$"PUT SOME CODE HERE" <- fed.data$CPIAUCSL_PC1
```

```
fed.data$CPIAUCSL_PC1 <- "PUT SOME CODE HERE"
```

#-----

Student Code

#-----

Change the name of the vector UNRATE to UNEMPRATE

Delete the UNEMPRATE column

```
fed.data$UNEMPRATE <- fed.data$"PUT SOME CODE HERE"
```

```
fed.data$"PUT SOME CODE HERE" <- NULL
```

#-----

Student Code

#-----

Get the names of the columns of the data frame fed.data

```
names("PUT SOME CODE HERE")
```

#-----

Student Code

#-----

Find the length of fed.data

Find the number of rows of fed.data

```
length("PUT SOME CODE HERE")
```

```
nrow("PUT SOME CODE HERE")
```

Student question: (IMPORTANT)

why are the numbers different?

what does this mean when coding ?

#-----

Student Code

#-----

find the stats mean, median, mode , sd, min, max of CPI

```

sprintf("The Mean of CPI is:%f", mean("PUT SOME CODE HERE"))
sprintf("The Median of CPI is:%f", "PUT SOME CODE HERE"(fed.data$CPI))
sprintf("The Std. Dev. of CPI is:%f", sd("PUT SOME CODE HERE"))
sprintf("The Min of CPI is:%f", "PUT SOME CODE HERE"(fed.data$CPI))
sprintf("The Max of CPI is:%f", max("PUT SOME CODE HERE"))

```

```

#=====
# Project Coding
#=====

```

```

sprintf("The Median of UNEMP RATE is:%f", median(fed.data$UNEMP RATE))
sprintf("The Std. Dev. of UNEMP RATE is:%f", sd(fed.data$UNEMP RATE))
sprintf("The Min of UNEMP RATE is:%f", min(fed.data$UNEMP RATE))
sprintf("The Max of UNEMP RATE is:%f", max(fed.data$UNEMP RATE))
sprintf("The Max of UNEMP RATE is:%f", max(fed.data$UNEMP RATE))

```

```

#-----
# Student Code
#-----
# find and print out correlation between CPI and UNEMP RATE

```

```

sprintf("The correlation of CPI and UNEMP RATE is:%f", cor("PUT SOME CODE HERE", "PUT
SOME CODE HERE"))

```

```

#-----
# Student Code
#-----
# plot scatterplot between CPI and UNEMP RATE

```

```

par(mfrow=c(1,1))
plot("PUT SOME CODE HERE", "PUT SOME CODE HERE")

```

```

#=====
# Project Coding
#=====

```

```

# more advance use scatter.smooth with option degree = 0 , family = gaussian
# hint look up function 'scatter.smooth' using RStudio help
# enter your code here
scatter.smooth(fed.data$CPI, fed.data$UNEMP RATE,
               degree = 0,
               family = 'gaussian')

```

```

# Student question
# what insight can you state from the plots
#-----
# End

```

#

Project Code Solution

```

#=====
# List Coding Project Solution
#=====

#=====
# Project Coding
#=====

### -----
# MAC USERS
### -----

filename <- '~/Desktop/FIU_R/Code/List/List_Project/fredgraph.csv'
fed.data <- read.csv(file= filename, head=TRUE, sep=",")

### -----
# WINDOWS USERS
### -----
### username <- "cemka_000"
### -----
### UNCOMMENT BELOW AND COMMENT MAX SECTION ABOVE
### -----
# username <- "PUT YOUR USERNAME HERE"
# users.folder <- "C:\\Users\\"
# the.rest <- "\\Desktop\\FIU_R\\Code\\List\\List_Project\\fredgraph.csv"
# filename<- paste (users.folder, username , sep = '\\')
# filename <- paste (filename, the.rest, sep = '\\')
# fed.data <- read.csv(file= filename, head=TRUE, sep=",")

#-----
# plotting the data
#-----
par(mfrow=c(2,2))
plot( fed.data$CPIAUCSL_PC1, type='l')
hist( fed.data$CPIAUCSL_PC1, type='l')
plot( fed.data$UNRATE, type='l')

#-----
# Student Code (Student question)
#-----
hist( fed.data$UNRATE, type='l')

# Student question:
# what insight can you state from the plots and histograms

#-----
# Student Code
#-----

```

find the names of the vectors in the list and output the names on the console
enter your code below

```
names("PUT SOME CODE HERE")
```

```
names(fed.data)
```

```
#-----
```

Student Code

```
#-----
```

Change the name of the column CPIAUCSL_PC1 to CPI

Delete the CPIAUCSL_PC1 column

enter your code below

```
fed.data$"PUT SOME CODE HERE" <- fed.data$CPIAUCSL_PC1
```

```
fed.data$CPIAUCSL_PC1 <- "PUT SOME CODE HERE"
```

```
fed.data$CPI <- fed.data$CPIAUCSL_PC1
```

```
fed.data$CPIAUCSL_PC1 <- NULL
```

```
#-----
```

Student Code

```
#-----
```

Change the name of the vector UNRATE to UNEMPRATE

Delete the UNEMPRATE column

```
fed.data$UNEMPRATE <- fed.data$"PUT SOME CODE HERE"
```

```
fed.data$"PUT SOME CODE HERE" <- NULL
```

```
fed.data$UNEMPRATE <- fed.data$UNRATE
```

```
fed.data$UNRATE <- NULL
```

```
#-----
```

Student Code

```
#-----
```

Get the names of the columns of the data frame fed.data

```
names("PUT SOME CODE HERE")
```

```
names(fed.data)
```

```
#-----
```

Student Code

```
#-----
```

Find the length of fed.data

Find the number of rows of fed.data

```
length("PUT SOME CODE HERE")
```

```
nrow("PUT SOME CODE HERE")
```

```
length(fed.data)
```

```
nrow(fed.data)
```

```
# Student question: (IMPORTANT)
```

```
# why are the numbers different?
```

```
# what does this mean when coding ?
```

```
#-----
```

```
# Student Code
```

```
#-----
```

```
# find the stats mean, median, mode , sd, min, max of CPI
```

```
sprintf("The Mean of CPI is:%f", mean("PUT SOME CODE HERE"))
```

```
sprintf("The Median of CPI is:%f", "PUT SOME CODE HERE"(fed.data$CPI))
```

```
sprintf("The Std. Dev. of CPI is:%f", sd("PUT SOME CODE HERE"))
```

```
sprintf("The Min of CPI is:%f", "PUT SOME CODE HERE"(fed.data$CPI))
```

```
sprintf("The Max of CPI is:%f", max("PUT SOME CODE HERE"))
```

```
sprintf("The Mean of CPI is:%f", mean(fed.data$CPI))
```

```
sprintf("The Median of CPI is:%f", median(fed.data$CPI))
```

```
sprintf("The Std. Dev. of CPI is:%f", sd(fed.data$CPI))
```

```
sprintf("The Min of CPI is:%f", min(fed.data$CPI))
```

```
sprintf("The Max of CPI is:%f", max(fed.data$CPI))
```

```
#=====
```

```
# Project Coding
```

```
#=====
```

```
sprintf("The Median of UNEMP RATE is:%f", median(fed.data$UNEMP RATE))
```

```
sprintf("The Std. Dev. of UNEMP RATE is:%f", sd(fed.data$UNEMP RATE))
```

```
sprintf("The Min of UNEMP RATE is:%f", min(fed.data$UNEMP RATE))
```

```
sprintf("The Max of UNEMP RATE is:%f", max(fed.data$UNEMP RATE))
```

```
sprintf("The Max of UNEMP RATE is:%f", max(fed.data$UNEMP RATE))
```

```
#=====
```

```
#-----
```

```
# Student Code
```

```
#-----
```

```
# find and print out correlation between CPI and UNEMP RATE
```

```
sprintf("The correlation of CPI and UNEMP RATE is:%f", cor("PUT SOME CODE HERE", "PUT  
SOME CODE HERE"))
```

```
sprintf("The correlation of CPI and UNEMP RATE is:%f", cor(fed.data$CPI,  
fed.data$UNEMP RATE))
```

```
#-----  
# Student Code  
#-----  
# plot scatterplot between CPI and UNEMP RATE  
  
par(mfrow=c(1,1))  
plot("PUT SOME CODE HERE", "PUT SOME CODE HERE")  
  
plot(fed.data$CPI, fed.data$UNEMP RATE)  
  
#=====   
# Project Coding  
#=====   
  
# more advance use scatter.smooth with option degree = 0 , family = gaussian  
# hint look up function 'scatter.smooth' using RStudio help  
# enter your code here  
scatter.smooth(fed.data$CPI, fed.data$UNEMP RATE,  
               degree = 0,  
               family = 'gaussian')  
  
# Student question  
# what insight can you state from the plots  
#-----  
# End  
#-----
```