

Homework4

Li Zhang

09/13/2021

Exercise 3.2

Suppose a vector is defined as `x <- c(12, 56, 31, -5, 7)`.

- Calculate the mean of all elements in `x` and assign it to `y`.
- Square each element in `x` and assign the results to a new vector `z`.

```
x <- c(12, 56, 31, -5, 7)

# The mean of all elements in x
y <- mean(x)
y
```

```
## [1] 20.2
```

```
# Square each element in x
z <- x^2
z
```

```
## [1] 144 3136 961 25 49
```

Exercise 3.3

Use Google to find functions which set and get the current working directory in R, respectively.

```
#setwd(dir) is used to set the current working directory.
setwd("/Users/zhangli/Desktop")
```

```
#getwd returns the current working directory.
getwd()
```

```
## [1] "/Users/zhangli/Desktop"
```

Exercise 3.4

Use Google to find the function which lists all the files in the current working folder in R.

```
#Function that lists all the files in the current working folder in R
list.files()
```

```
#or we can use this function.
dir()
```

Exercise 3.5

Compute $1+2+3+\dots+1000$ with one line of R code. Hint: examine the example code for `sum()` function in the R help document.

```
sum(1:1000)
```

```
## [1] 500500
```

Exercise 3.6

Suppose a vector `var1 <- c(NA, 334, 566, 319, NA, -307)`.

Obtain a new vector `var2` which removes all NAs from `var1`. Using the argument `na.rm` to calculate the mean of `var1`. Make sure you ignore all NAs.

```
# Obtain a new vector var2 which removes all NAs from var1
var1 <- c(NA, 334, 566, 319, NA, -307)
var2 <- var1[!is.na(var1)]
```

```
# Using the argument na.rm to calculate the mean of var1
mean(var1, na.rm = TRUE)
```

```
## [1] 228
```

Exercise 3.7

Using sample selection function randomly select 10 integers from 1 to 100. Create a vector `y` which satisfies the following conditions: if an selected integer is an even number, then `y` returns ‘even,’ otherwise `y` returns ‘odd.’

```
x <- sample(1:100, 10)
y <- ifelse(x%%2 == 0, "even", "odd")
y
```

```
## [1] "odd" "odd" "odd" "odd" "odd" "odd" "odd" "even" "odd" "odd"
```

Exercise 3.8

Did Mickey catch more fishes than Tom and Jerry combined? Write R code to verify this statement using the `fishes` vector and return a TRUE or FALSE value.

```
fishes<- c(7, 3, 9)
fishes[3] > sum(fishes[1:2])
```

```
## [1] FALSE
```

Exercise 3.9

Using the name rather than the index in the vector `fisher`, assign a character ‘Ten’ to Tom.

```
fisher<- c(7, 4, 9)
names(fisher) <- c("Tom", "Jerry", "Mickey")
fisher["Tom"] <- 'Ten'
fisher
```

```
##      Tom  Jerry Mickey
## "Ten"    "4"    "9"
```

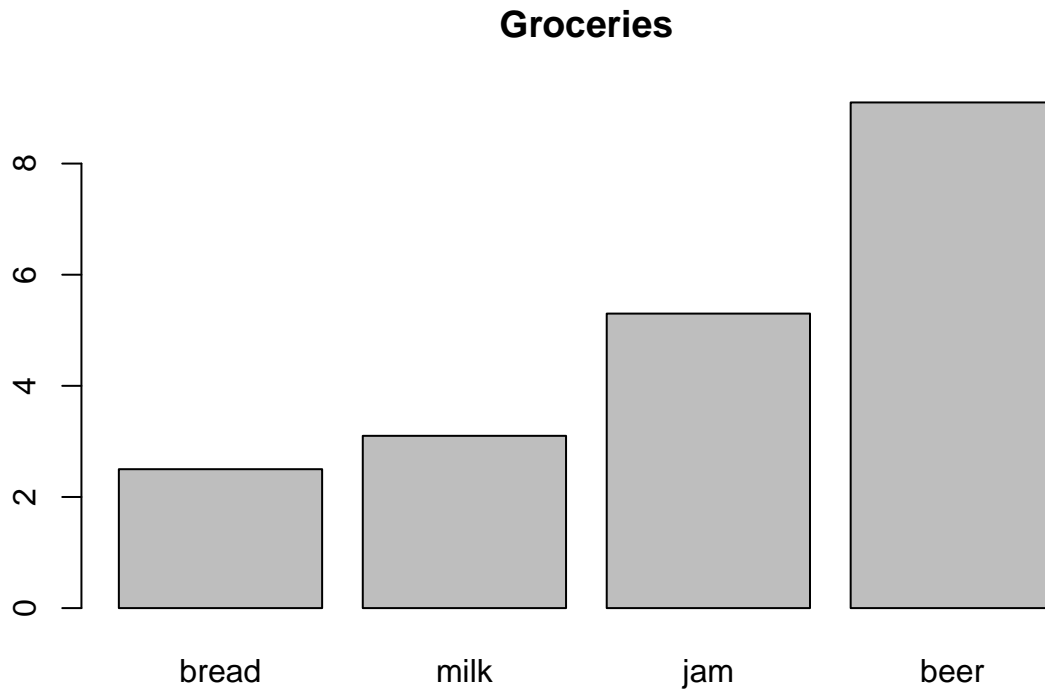
Exercise 3.10

Create a vector representing the prices of groceries, bread \$2.5, milk \$3.1, jam \$5.3, beer \$9.1. And create a bar plot to represent this information.

```
groceries <- c(2.5, 3.1, 5.3, 9.1)
names(groceries) <- c("bread", "milk", "jam", "beer")
groceries
```

```
## bread  milk   jam  beer
##   2.5   3.1   5.3   9.1
```

```
barplot(groceries, main = "Groceries")
```



Exercise 3.11

Create a vector with 21 integers from -10 to 10, and store it in the x variable. Then create a scatter plot of x^2 against x.

```
x <- seq(-10, 10, length = 21)
plot(x, x^2)
```

