RWorksheet_Aposaga#4a

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#1 #a

```
shoeSize <- c(6.5, 9.0, 8.5, 8.5, 10.5, 7.0, 9.5, 9.0, 13.0, 7.5, 10.5, 8.5, 12.0, 10.5, 13.0, 11.5, 8.5
Height <- c(66.0, 68.0, 64.5, 65.0, 70.0, 64.0, 70.0, 71.0, 72.0, 64.0, 74.5, 67.0, 71.0, 71.0, 77.0, 7
Gender <- c("F", "F", "F", "F", "M", "F", "F", "F", "M", "F", "M", "F", "M", "M", "M", "M", "F", "F", "M
SHG <- data.frame(shoeSize, Height, Gender)
names(SHG) <- c("Shoe Size", "Height", "Gender")
SHG
```

```
##    Shoe Size Height Gender
## 1        6.5   66.0      F
## 2        9.0   68.0      F
## 3        8.5   64.5      F
## 4        8.5   65.0      F
## 5       10.5   70.0      M
## 6        7.0   64.0      F
## 7        9.5   70.0      F
## 8        9.0   71.0      F
## 9       13.0   72.0      M
## 10       7.5   64.0      F
## 11      10.5   74.5      M
## 12       8.5   67.0      F
## 13      12.0   71.0      M
## 14      10.5   71.0      M
## 15      13.0   77.0      M
## 16      11.5   72.0      M
## 17       8.5   59.0      F
## 18       5.0   62.0      F
## 19      10.0   72.0      M
## 20       6.5   66.0      F
## 21       7.5   64.0      F
## 22       8.5   67.0      M
## 23      10.5   73.0      M
## 24       8.5   69.0      F
## 25      10.5   72.0      M
## 26      11.0   70.0      M
## 27       9.0   69.0      M
## 28      13.0   70.0      M
```

#b

```r
SHG_male <- subset(SHG, Gender == "M")
SHG_male
```

```
##    Shoe Size Height Gender
## 5       10.5   70.0      M
## 9       13.0   72.0      M
## 11      10.5   74.5      M
## 13      12.0   71.0      M
## 14      10.5   71.0      M
## 15      13.0   77.0      M
## 16      11.5   72.0      M
## 19      10.0   72.0      M
## 22       8.5   67.0      M
## 23      10.5   73.0      M
## 25      10.5   72.0      M
## 26      11.0   70.0      M
## 27       9.0   69.0      M
## 28      13.0   70.0      M
```

```r
SHG_female <- subset(SHG, Gender == "F")
SHG_female
```

```
##    Shoe Size Height Gender
## 1        6.5   66.0      F
## 2        9.0   68.0      F
## 3        8.5   64.5      F
## 4        8.5   65.0      F
## 6        7.0   64.0      F
## 7        9.5   70.0      F
## 8        9.0   71.0      F
## 10       7.5   64.0      F
## 12       8.5   67.0      F
## 17       8.5   59.0      F
## 18       5.0   62.0      F
## 20       6.5   66.0      F
## 21       7.5   64.0      F
## 24       8.5   69.0      F
```

#c

```r
mean(shoeSize)
```

```
## [1] 9.410714
```

```r
mean(Height)
```

```
## [1] 68.57143
```

#d #There is no relationship between the two variables, since a person's shoe size is different from their height, although they are both attributes of a respondent.

#2

```r
months <- c("March", "April", "January", "November", "January", "September", "October", "September", "N
factor_months_vector <- factor(months)
factor_months_vector
```

```
##  [1] March     April     January   November  January   September October
##  [8] September November  August    January   November  November  February
## [15] May       August    July      December  August    August    September
## [22] November  February  April
## 11 Levels: April August December February January July March May ... September
```

#3

```r
summary(months)
```

```
##    Length     Class      Mode
##        24 character character
```

```r
summary(factor_months_vector)
```

```
##     April    August  December  February   January      July     March       May
##         2         4         1         2         3         1         1         1
##  November   October September
##         5         1         3
```

#4

```r
factor_data <- c("East", "West", "North")
freq <- c(1,4,3)

new_order_data <- factor(factor_data, levels = c("East", "West", "North"))
new_order_data
```

```
## [1] East  West  North
## Levels: East West North
```

```r
fdata <- data.frame(Direction = factor_data, Frequency = freq)
fdata
```

```
##   Direction Frequency
## 1      East         1
## 2      West         4
## 3     North         3
```

#5

```r
importmarch <- read.table("import_march.csv", header = TRUE, sep = ",", stringsAsFactors = FALSE)
importmarch
```

```
##   Students Strategy.1 Strategy.2 Strategy.3
## 1     Male          8         10          8
## 2                   4          8          6
## 3                   0          6          4
## 4   Female         14          4         15
## 5                  10          2         12
## 6                   6          0          9
```

#6

```
selnum <- is.na(as.numeric(readline(prompt = "select number from 1 to 50: ")))
```

```
## select number from 1 to 50:
```

```
if(selnum < 1 || selnum > 50){
  print("The number selected is beyond the range of 1 to 50.")
} else if(selnum == 20){
  print("TRUE")
} else {
  paste("The selected number is", selnum)
}
```

```
## [1] "The selected number is TRUE"
```

#7

```
bills <- c(1000, 500, 200, 100, 50)
count <- 0
min_bills <- function(price){

  for(bill in bills){
    if(price >= bill){
      count <- count + price %% bill
      price <- price %% bill
    }
  }

  cat("Minimum number of bills needed to purchase a snack:", count, "\n")
}

min_bills(1550)
```

```
## Minimum number of bills needed to purchase a snack: 600
```

#8a

```
Name <- c("Annie", "Thea", "Steve", "Hanna")
Grade1 <- c(85, 65, 75, 95)
Grade2 <- c(65, 75, 55, 75)
Grade3 <- c(85, 90, 80, 100)
Grade4 <- c(100, 90, 85, 90)

grades <- data.frame(Name, Grade1, Grade2, Grade3, Grade4)
grades
```

```
##    Name Grade1 Grade2 Grade3 Grade4
## 1 Annie     85     65     85    100
## 2  Thea     65     75     90     90
## 3 Steve     75     55     80     85
## 4 Hanna     95     75    100     90
```

#8b

```
ave_grades <- apply(grades[,2:5], 1, function(x) sum(x) / length(x) )
ave_grades
```

```
## [1] 83.75 80.00 73.75 90.00
```

```
high_achievers <- grades$Name[ave_grades > 90]
high_achiever_averages <- ave_grades[ave_grades > 90]

for (i in 1:nrow(grades)) {
  if (ave_grades[i] > 90) {
    cat(grades$Name[i], "'s average grade this semester is ", ave_grades[i], ".\n", sep = "")
  }
}
```

#8c

```
for (j in 2:5) {
  test_average <- sum(grades[, j]) / nrow(grades)
  if (test_average < 80) {
    cat("The ", names(grades)[j], " test was difficult.\n", sep = "")
  }
}
```

```
## The Grade2 test was difficult.
```

#8d

```
for (i in 1:nrow(grades)) {

  highest_grade <- sort(as.numeric(grades[i, 2:5]), decreasing = TRUE)[1]
  if (highest_grade > 90) {
    cat(grades$Name[i], "'s highest grade this semester is ", highest_grade, ".\n", sep = "")
  }
}
```

```
## Annie's highest grade this semester is 100.
## Hanna's highest grade this semester is 100.
```