Rworksheet_Rabago#4a

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1.

```
data <- data.frame(
ShoeSize = c(6.5,9.0,8.5,8.5,10.5,7.0,9.5,9.0,13.0,7.5,10.5,8.5,12.0,10.5,13.0,11.5,8.5,5.0,10.0,6.5,7.5
Height = c(66.0,68.0,64.5,65.0,70.0,64.0,70.0,71.0,72.0,64.0,74.5,67.0,71.0,71.0,77.0,72.0,59.0,62.0,72
Gender = c("F","F","F","F","M","F","F","F","M","F","M","F","M","M","M","M",
           "F","F","M","F","F","M","M","F","M","M","M","M") )

data
```

```
##    ShoeSize 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
```

1.a.

The data contains three variables. The first variable is shoe size, which is numeric and shows the respondents' shoe sizes. The second variable is height, also numeric, representing the respondents' height in inches. The third variable is gender, which is categorical and represented as "M" for male and "F" for female.

1.b.

```
fshoesize <- subset(data,Gender == "F",select = c(ShoeSize,Height))
mshoesize <- subset(data,Gender == "M",select = c(ShoeSize,Height))

fshoesize
```

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

```
mshoesize
```

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

1.c.

```
meanshoesize <- mean(data$ShoeSize)
meanheight <- mean(data$Height)

meanshoesize
```

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

```
meanheight
```

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

1.d.

-There is no relationship between shoe size and height because they are separate physical traits. Even though both vary from person to person, one does not directly affect the other. People of the same height can have different shoe sizes, and vice versa.

2.

```
months_vector <- c("March", "April", "January", "November", "January",
                   "September", "October", "September", "November", "August",
                   "January", "November", "November", "February", "May", "August",
                   "July", "December", "August", "August", "September", "November",
                   "February", "April")


factor_months_vector <- factor(months_vector)


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.

```
summary(months_vector)
```

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

```
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.

```
direction <- c("East","West","North")
frequency <- c(1,4,3)

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

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

5.a.

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

5.b.

```
import_march
```

```
##   Students Strategy1 Strategy2 Strategy3
## 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.a

```
number <- readline(prompt= "Select number 1 to 50: ")
```

```
## Select number 1 to 50:
```

```
number
```

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

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

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

7.a.

```
price <- as.numeric(readline(prompt="Enter the price: "))
```

```
## Enter the price:
```

```
minimumbills <- function(price) {
billsused <- 0
if (!is.na(price) && price >= 1000) {
billsused <- billsused + price %/% 1000
price <- price %% 1000
}

if (!is.na(price) && price >= 500) {
billsused <- billsused + price %/% 500
price <- price %% 500
}
if (!is.na(price) && price >= 200) {
billsused <- billsused + price %/% 200
price <- price %% 200
}
if (!is.na(price) && price >= 100) {
billsused <- billsused + price %/% 100
price <- price %% 100
}
if (!is.na(price) && price >= 50) {
billsused <- billsused + price %/% 50
price <- price %% 50
}
return(billsused)
}
minimumbills(price)
```

```
## [1] 0
```

8.a.

```
students <- data.frame(
  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)
)


students
```

```
##    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
```

8.b.

```
avgscores <- rowSums(students[,-1]) / (ncol(students) - 1)


if (any(avgscores > 90)) {

  highavg_names <- students$Name[avgscores > 90]
  highavg_scores <- avgscores[avgscores > 90]


  for (i in 1:length(highavg_names)) {
    cat(paste(highavg_names[i], "'s average grade this semester is ", highavg_scores[i], ".\n", sep = "
  }
} else {
  cat("No student's average grade is over 90.\n")
}
```

```
## No student's average grade is over 90.
```

8.c.

```
testaverages <- colSums(students[,-1]) / nrow(students)


if (any(testaverages < 80)) {
  difficult_tests <- which(testaverages < 80)
  cat(paste ("The", difficult_tests, "th test was difficult.\n"))
} else {
  cat("All tests had an average score of 80 or above.\n")
}
```

```
## The 2 th test was difficult.
```

8.d.

```
for (i in 1:nrow(students)) {
  highest_score <- students$Grade1[i]
  if (students$Grade2[i] > highest_score) highest_score <- students$Grade2[i]
  if (students$Grade3[i] > highest_score) highest_score <- students$Grade3[i]
  if (students$Grade4[i] > highest_score) highest_score <- students$Grade4[i]

  if (highest_score > 90) {
    cat(students$Name[i], "highest grade this semester is", highest_score, "\n")
```

```
  }
}
```

```
## Annie highest grade this semester is 100
## Hanna highest grade this semester is 100
```