RWorksheet_Sabarillo#4a

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```
#1.
household_df <- read.csv("/cloud/project/worksheet#4/Household Data.csv")
household_df
```

```
##    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
```

1.a - The data has 28 objects with 3 variables:Shoe size, Height and Gender

```
#1.b
male_subset <- subset(household_df, Gender == "M" & Shoe.size&Height)
male_subset
```

```
##    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
```

```
#1.b
female_subset <- subset(household_df, Gender == "F" & Shoe.size&Height)
female_subset
```

```
##    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
```

```
#1.c
mean1 <- mean(household_df$Shoe.size)
mean1
```

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

```
mean2 <- mean(household_df$Height)
mean2
```

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

1.d - Looking at the data, it's clear that the relationship between height and shoe size differs between males and females. For males, there's a more predictable pattern where shoe size increases as height increases. This isn't as consistent for females, where shoe size seems to vary more independently of height.

```
#2.
month_vector <- c("March", "April" ,"January" ,"November" ,"January", "September","October","September"

factor_months <- factor(month_vector)
factor_months
```

```
##  [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
```

```r
#3.
month_summary <- summary(month_vector)
month_summary
```

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

```r
factor_month_summary <- summary(factor_months)
factor_month_summary
```

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

```r
#4.
direction_vector <- c(c("East", "West", "North"), c(1,4,3))
direction_vector
```

```
## [1] "East"  "West"  "North" "1"     "4"     "3"
```

```r
direction_matrix <- matrix(direction_vector,nrow=3,ncol=2)
direction_matrix
```

```
##      [,1]    [,2]
## [1,] "East"  "1"
## [2,] "West"  "4"
## [3,] "North" "3"
```

```r
#4.
colnames(direction_matrix) <- c("Direction", "Frequency")
direction_matrix
```

```
##      Direction Frequency
## [1,] "East"    "1"
## [2,] "West"    "4"
## [3,] "North"   "3"
```

```r
#4.
ordered_direction_factor <- factor(direction_matrix,levels = c("East","West","North"))
print(ordered_direction_factor)
```

```
## [1] East  West  North <NA>  <NA>  <NA>
## Levels: East West North
```

```r
#5.a
setwd("/cloud/project/worksheet#4")
strat_df <- read.table("import_march.csv", header= TRUE, sep = ",")
strat_df
```

```
##   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
```

```r
#5b - Because the numbers 1, 2, and 3 weren't part of the expected options in that category, R marked t
strat_df
```

```
##   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
```

```r
#6.
  user_input <- readline(prompt = "Enter a number between 1 and 50: ")
```

```
## Enter a number between 1 and 50:
```

```r
  if (user_input < 1 || user_input > 50) {
    print("The number selected is below/beyond the range of 1 to 50")
  } else if (user_input == 20) {
    print("TRUE")
  } else {
    print(user_input)
  }
```

```
## [1] "The number selected is below/beyond the range of 1 to 50"
```

```r
#7.
snackPrice<-readline(prompt = "Enter Amount: ")
```

```
## Enter Amount:
```

```r
if (snackPrice == 50){
  print("The minimum bill is : 100")
}else if(snackPrice == 100){
  print("The minimum bill is : 100")
}else if(snackPrice == 200){
  print("The minimum bill is : 200")
}else if(snackPrice == 500){
  print("The minimum bill is : 500")
}else if(snackPrice == 1000){
  print("The minimum bill is : 1000")
}else{
  print("The number is not divisible by 50")
}
```

```
## [1] "The number is not divisible by 50"
```

```r
# a. Create a dataframe
data <- 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)
)
print(data)
```

```
##    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
```

```r
# b. Average score without rowMeans()
for (i in 1:nrow(data)) {
  total <- data[i, "Grade1"] + data[i, "Grade2"] + data[i, "Grade3"] + data[i, "Grade4"]
  average <- total / 4
  if (average > 90) {
    cat(data[i, "Name"], "'s average grade this semester is", average, "\n")
  }
}

# c. Tests with average score less than 80
for (j in 2:ncol(data)) {
  total <- 0
  for (i in 1:nrow(data)) {
    total <- total + data[i, j]
  }
  average <- total / nrow(data)
  if (average < 80) {
    cat("The", j - 1, "th test was difficult.\n")
  }
}
```

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

```r
# d. Highest score without max()
for (i in 1:nrow(data)) {
  highest <- data[i, "Grade1"]
  if (data[i, "Grade2"] > highest) highest <- data[i, "Grade2"]
  if (data[i, "Grade3"] > highest) highest <- data[i, "Grade3"]
  if (data[i, "Grade4"] > highest) highest <- data[i, "Grade4"]
  if (highest > 90) {
    cat(data[i, "Name"], "'s highest grade this semester is", highest, "\n")
  }
}
```

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