Rworksheet_Caballero#4a

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```
#1.
shoe_size <- 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,
Height <- c(66.0,68.0,64.5,65.0,70.0,64.0,70.0,71.0,72.0,64.0,74.5,67.0,71.0,71.0,77.0,72.0,59.0,62.0,7
Household_data <- data.frame(shoe_size,Height)
Household_data
```

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

```
#A the data shows the data of shoe sizes and their corresponding height.



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"
final_household <- cbind(Household_data,Gender)
final_household
```

```
##    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
```

```
#we are making a subset of Male and Female
male_subset <- subset(final_household, Gender == "M")
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
```

```
female_subset <- subset(final_household,Gender == "F")
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
```

```
#B the result is
#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

#> 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


#C Means
mean_size <- mean(shoe_size)
mean_size
```

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

```r
#the mean of all shoe size of the repondents(all) is 9.410714

mean_height <- mean(Height)
mean_height
```

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

```r
#the mean of all height of the respondents(all) is  68.57143

mean_shoe_M <- mean(male_subset$shoe_size)
mean_shoe_M
```

```
## [1] 10.96429
```

```r
#the mean of shoe sizes of male repondents is 10.96429

mean_height_M <- mean(male_subset$Height)
mean_height_M
```

```
## [1] 71.46429
```

```r
#the mean of height of male respondents is 71.46429

mean_shoe_F <- mean(female_subset$shoe_size)
mean_shoe_F
```

```
## [1] 7.857143
```

```r
#the mean of shoe sizes of female respondents is 7.857143

mean_height_F <- mean(female_subset$Height)
mean_height_F
```

```
## [1] 65.67857
```

```r
#the mean of height of female respondents is 65.67857

#D
#Yes there is a relationship between shoe sizes and height, the taller the person is the bigger its sho
```

```r
#2
months <- 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)
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
```

```r
#3
summary_month <- summary(months)
summary_month
```

```
##    Length     Class      Mode
```

```
##        24 character character
```

```
#  Length     Class      Mode
#      24 character character

summary_factor <- summary(factor_months_vector)
summary_factor
```

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

```
#April    August  December  February   January      July     March
#2         4         1         2         3         1         1
#May  November   October September
#1         5         1         3
#both Vectors are useful but a factor can be more important when the order of levels matters, while a c
```

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

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

print(new_order_data)
```

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

```
#East  West  North
#Levels: East West North
```

```
#5
install.packages("readr")
```

```
## Installing package into '/cloud/lib/x86_64-pc-linux-gnu-library/4.3'
## (as 'lib' is unspecified)
```

```
library(readr)
#A
import_march <- read.csv(file="import_march.csv")
import_march
```

```
##   Students Strategy.1 Strategy2 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
## 7                  NA        NA         NA
```

```
#B
# A tibble: 6 × 4
#Students `Strategy 1` Strategy2 `Strategy 3`
#<chr>           <dbl>     <dbl>        <dbl>
#  1 Male                8        10            8
```

```
#2 NA                  4         8            6
#3 NA                  0         6            4
#4 Female             14         4           15
#5 NA                 10         2           12
#6 NA                  6         0            9
```

```
#6

num <- readline(prompt = "choose a number from 1 to 50 :")
```

```
## choose a number from 1 to 50 :
```

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

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

```
#first run the readline
#> num <- readline(prompt = "choose a number from 1 to 50 :")

#then input the number you selected in the console pane
#choose a number from 1 to 50 :100

#then run the if else function
#> if (num < 1 || num > 50) {
#  +   print("The number selected is beyond the range of 1 to 50")
#  + } else if (num == 20) {
#    +   print("TRUE")
#    + } else {
#      +   print(num)
#      + }
#[1] "100"
#then it will show the output

#the output if the number you selected is 20
#> num <- readline(prompt = "choose a number from 1 to 50 :")
#choose a number from 1 to 50 :20
#> if (num < 1 || num > 50) {
#  +   print("The number selected is beyond the range of 1 to 50")
#  + } else if (num == 20) {
#    +   print("TRUE")
#    + } else {
#      +   print(num)
#      + }
#[1] "TRUE"
#>
```

```
#7.
#a.
calc_min_bills<-function(){
  price<-as.integer(readline(prompt="Price of snack(a random number divisible by 50):"))
```

```
  if (is.na(price)|| price %% 50 !=0){
    cat("Invalid.\n")
    return()
  }
  num_bills<-0
  bill_denominations<-c(1000,500,200,100,50)

  for(bill in bill_denominations){
    num_bills<-num_bills + (price %/% bill)
    price<-price %% bill
  }

  cat("Minimum number of bills needed:", num_bills,"\n")
}
calc_min_bills()
```

```
## Price of snack(a random number divisible by 50):
## Invalid.
```

```
## NULL
```

```
#8.
#a.
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)
cardDf<-data.frame(Name, Grade1, Grade2, Grade3, Grade4)
cardDf
```

```
##    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
```

```
#b.
student_above_90<-FALSE
for(j in 1:length(Name)){
  average_score<-c((Grade1)[j]+(Grade2)[j]+(Grade3)[j]+(Grade4)[j])/4
  if (average_score>90){
    cat(paste(Name[j], "'s average grade this semester is", round(average_score,2),"\n"))
    student_above_90<-TRUE
  }
}
if(!student_above_90){
  print("No student have an average of over 90 in the math during the semester")
}
```

```
## [1] "No student have an average of over 90 in the math during the semester"
```

```
#c.
for (test_num in 1:4){
  total_score<-Grade1 + Grade2 + Grade3 + Grade4
  average_score<-total_score/4
```

```
  if (average_score[test_num]<80){
    cat("The", test_num, "test was difficult.\n")
  }
}
```

```
## The 3 test was difficult.
```

```
#d.
for (j in 1:length(Name)){
  highest_grade<-Grade1[j]

  if (Grade2[j]>highest_grade){
    highest_grade<-Grade2[j]
  }
  if (Grade3[j]>highest_grade){
    highest_grade<-Grade3[j]
  }
  if (Grade4[j]>highest_grade){
    highest_grade<-Grade4[j]
  }

  if (highest_grade>90){
    cat(paste(Name[j], "'s highest grade this semester is", highest_grade, ".\n"))
  }
}
```

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