

RWorksheet_Gallo#4a

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#1

```
Household_Data <- data.frame(  
  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(66.0,68.0,64.0,65.0,70.0,64.0,70.0,71.0,72.0,64.0,74.0,67.0,71.0,71.0,77.0,72.0,59.0,62.0,  
  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")  
)  
Household_Data
```

##	Shoe_size	Height	Gender
## 1	6.5	66	F
## 2	9.0	68	F
## 3	8.5	64	F
## 4	8.5	65	F
## 5	10.5	70	M
## 6	7.0	64	F
## 7	9.5	70	F
## 8	9.0	71	F
## 9	13.0	72	M
## 10	7.5	64	F
## 11	10.5	74	M
## 12	8.5	67	F
## 13	12.0	71	M
## 14	10.5	71	M
## 15	13.0	77	M
## 16	11.5	72	M
## 17	8.5	59	F
## 18	5.0	62	F
## 19	10.0	72	M
## 20	6.5	66	F
## 21	7.5	64	F
## 22	8.5	67	M
## 23	10.5	73	M
## 24	8.5	69	F
## 25	10.5	72	M
## 26	11.0	70	M
## 27	9.0	69	M
## 28	13.0	70	M

#1a Describe the data

#The males shoe size and height are bigger/higher than the females.

#1b Create a subset by males and females with their corresponding shoe size and height. What its result

```

male_shoeH <- subset(Household_Data, Gender == "M")

female_shoeH <- subset(Household_Data, Gender == "F")

#1c Find the mean of shoe size and height of the respondents. Write the R scripts and its result

meanshoeSH <- mean(Household_Data$Shoe_size&Household_Data$Height)
meanshoeSH

## [1] 1

#1d Is there a relationship between shoe size and height? Why?

#Yes. The higher the height, the bigger the shoe size

#FACTORS
#2
Monthsss <- c("March","April","January","November","January","September","October","September","November")
factor_months_vector <- factor(Monthsss)
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. Then check the summary() of the months_vector and factor_months_vector
summary(Monthsss)

##      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

#The result displayed how many of the same months are there in the vector and also displayed its data

#4 Create a vector and factor for the table below.

Direction <- c("East","West","North")
Frequency <- c(1,4,3)

factorDirect <- factor(Direction)
factorFreq <- factor(Frequency)

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

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

```

```
new_order_data2 <- factor(factorFreq, levels = c(1,4,3))
print(new_order_data2)
```

```
## [1] 1 4 3
## Levels: 1 4 3
```

#5. Enter the data below in Excel with file name = import_march.csv

#5a.

```
ExcelData <- read.csv("import_march.csv")
ExcelData
```

```
##   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
```

#5b.

```
ExcelData
```

```
##   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
```

#6a

```
inputNum <- readline(prompt="Enter number from 1 to 50:
")
```

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

```
if(inputNum>50){
  print("The number is beyond the range of 1 to 50")
}else{
  print("True")
}
```

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

#7 Change

```
calculateMinBills <- function() {
```

```
  bills <- c(1000, 500, 200, 100, 50)
```

```
  amount <- as.numeric(readline("Enter the price of the snack (a multiple of 50 pesos): "))
```

```
  if (is.na(amount) || amount %% 50 != 0) {
    cat("Invalid input. Price must be a multiple of 50 pesos.\n")
    return()
  }
```

```

}

snackprice <- amount

bill1000 <- 0
bill500 <- 0
bill200 <- 0
bill100 <- 0
bill50 <- 0

if (snackprice >= 1000) {
  bill1000 <- snackprice %/% 1000
  snackprice <- snackprice %% 1000
}
if (snackprice >= 500) {
  bill500 <- snackprice %/% 500
  snackprice <- snackprice %% 500
}
if (snackprice >= 200) {
  bill200 <- snackprice %/% 200
  snackprice <- snackprice %% 200
}
if (snackprice >= 100) {
  bill100 <- snackprice %/% 100
  snackprice <- snackprice %% 100
}
if (snackprice >= 50) {
  bill50 <- snackprice %/% 50
}

cat("Price:", amount, "pesos\n")
cat("Minimum number of bills needed:\n")
cat("1000 pesos:", bill1000, "bills\n")
cat("500 pesos:", bill500, "bills\n")
cat("200 pesos:", bill200, "bills\n")
cat("100 pesos:", bill100, "bills\n")
cat("50 pesos:", bill50, "bills\n")
}

calculateMinBills()

```

```

## Enter the price of the snack (a multiple of 50 pesos):
## Invalid input. Price must be a multiple of 50 pesos.

## NULL

```

```

#8a Create a data frame
GradesMath <- 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)
)
GradesMath

##      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. Without using the rowMean function, output the average score of students whose average math score o

GradesMath$Average <- (GradesMath$Grade1 + GradesMath$Grade2 + GradesMath$Grade3 + GradesMath$Grade4) /

HighGrades <- GradesMath[GradesMath$Average > 90, ]

if(nrow(HighGrades)>0){
  print(HighGrades$Name,"'s average grade this semester is:",HighGrades)
}else{
  print("there is no student that got 90 average grades")
}

## [1] "there is no student that got 90 average grades"

#8c Without using the mean function, output as follows for the tests in which the average score was les

AverageScores <- colMeans(GradesMath[, -1])

if (AverageScores[1] < 80) {
  print("The 1st test was difficult.\n")
}else if (AverageScores[2] < 80) {
  print("The 2nd test was difficult.\n")
}else if (AverageScores[3] < 80) {
  print("The 3rd test was difficult.\n")
}else if (AverageScores[4] < 80) {
  print("The 4th test was difficult.\n")
}else{
  print("No test that students find it difficult")
}

## [1] "The 2nd test was difficult.\n"

#8d Without using the max function, output as follows for students whose highest score for a semester

#Annie Scores

if (GradesMath[1,2] > GradesMath[1,3] && GradesMath[1,2] > GradesMath[1,4] && GradesMath[1,2] > GradesM
  AnnieScores <-GradesMath[1,2]
} else if (GradesMath[1,3] > GradesMath[1,4] && GradesMath[1,3] > GradesMath[1,5]) {
  AnnieScores <- GradesMath[1,3]
} else if (GradesMath[1,4] > GradesMath[1,5] && GradesMath[1,2] > GradesMath[1,5]) {
  AnnieScores <- GradesMath[1,4]
} else {
  AnnieScores <- GradesMath[1,5]
}

```

```

# Thea Scores
if (GradesMath[2,2] > GradesMath[2,3] && GradesMath[2,2] > GradesMath[2,4] && GradesMath[2,2] > GradesMath[2,5]) {
  TheaScores <- GradesMath[2,2]
} else if (GradesMath[2,3] > GradesMath[2,4] && GradesMath[2,3] > GradesMath[2,5]) {
  theaScores <- mathgrades[2,3]
} else if (GradesMath[2,4] > GradesMath[2,5] && GradesMath[2,2] > GradesMath[2,5]) {
  TheaScores <- GradesMath[2,4]
} else {
  TheaScores <- GradesMath[2,5]
}

# Steve Scores
if (GradesMath[3,2] > GradesMath[3,3] && GradesMath[3,2] > GradesMath[3,4] && GradesMath[3,2] > GradesMath[3,5]) {
  SteveScores <- GradesMath[3,2]
} else if (GradesMath[3,3] > GradesMath[3,4] && GradesMath[3,3] > GradesMath[3,5]) {
  SteveScores <- GradesMath[3,3]
} else if (GradesMath[3,4] > GradesMath[3,5] && GradesMath[3,2] > GradesMath[3,5]) {
  SteveScores <- GradesMath[3,4]
} else {
  SteveScores <- GradesMath[3,5]
}

# Hanna Scores
if (GradesMath[4,2] > GradesMath[4,3] && GradesMath[4,2] > GradesMath[4,4] && GradesMath[4,2] > GradesMath[4,5]) {
  HannaScores <- GradesMath[4,2]
} else if (GradesMath[4,3] > GradesMath[4,4] && GradesMath[4,3] > GradesMath[4,5]) {
  HannaScores <- mathgrades[4,3]
} else if (GradesMath[4,4] > GradesMath[4,5] && GradesMath[4,2] > GradesMath[4,5]) {
  HannaScores <- GradesMath[4,4]
} else {
  HannaScores <- GradesMath[4,5]
}

GradesMath$HighestGrades <- c(AnnieScores, TheaScores, SteveScores, HannaScores)

NinetyHighest <- GradesMath[GradesMath$HighestGrades > 90,]
NinetyHighest

##      Name Grade1 Grade2 Grade3 Grade4 Average HighestGrades
## 1 Annie      85      65      85      100  83.75          100
## 4 Hanna      95      75     100       90  90.00          100

if (nrow(NinetyHighest) > 0) {
  paste(NinetyHighest$Name, "'s highest grade this semester is", NinetyHighest$HighestGrade)
} else {
  paste("No students have an average math score over 90.")
}

## [1] "Annie 's highest grade this semester is 100"
## [2] "Hanna 's highest grade this semester is 100"

```