

RWorksheet_Lumahan#4A

2023-10-27

#1

```
size_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,
  Height = c(66.0,68.0,64.5,65.0,70,64.0,70.0,71.0,72.0,64.0,74.5,67.0,71.0,71.0,77.0,72.0,59.0,62.0,
  Gender = c("F", "F", "F", "F", "M", "F", "F", "F", "M", "F", "M", "F", "M", "M", "M", "F", "F", "M", "F", "F", "M")
)
size_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

```
names(size_data) <- c("Shoe size", "Height", "Gender")
size_data
```

##	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
```

#1a the male's height and shoe size is higher than the female's height and weight

#1b

```
Male_sh <- subset(size_data, Gender == 'M')
```

```
Female_sh <- subset(size_data, Gender == 'F')
```

#1c

```
mean_sh <- mean(size_data$Shoesize & size_data$Height)
```

```
mean_sh
```

```
## [1] NaN
```

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

Yes, because if your shoe is small then your height is small too.

#2

```
Month <- c("March", "April", "January", "November", "January",
"September", "October", "September", "November", "August",
```

```
"January", "November", "November", "February", "May", "August", "July", "December", "August", "August", "September",
```

```
factor_months_vector <- factor(Month)
```

```
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(Month)
```

```
##      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 results display how many the months that put in the vector and display how many of the same month

#4

```
Direction <- c("East","West","North")
```

```
Frequency <- c(1,4,3)
```

```
factor_direct <- factor(Direction)
```

```
factor_direct
```

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

```
factor_freq12 <- factor(Frequency)
```

```
factor_freq12
```

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

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

```
print(new_order_data)
```

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

```
new_order_data2 <- factor(factor_freq12,levels = c(1,4,3))
```

```
print(new_order_data2)
```

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

#5a

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

#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
```

#6 Full Search

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

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

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

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

```
#7Change
minimumprice <- function(price) {

  minprice <- price %/% 50
  paste("The minimum no. of bills:", minprice)
}

minimumprice(90)
```

```
## [1] "The minimum no. of bills: 1"
```

```
#8a Create a data frame
mathgrades <- 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)
)
mathgrades
```

```
##      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
```

```
mathgrades$Average <- (mathgrades$Grade1 + mathgrades$Grade2 + mathgrades$Grade3 + mathgrades$Grade4) / 4

highgrades <- mathgrades[mathgrades$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
average_scores <- colMeans(mathgrades[, -1])

if (average_scores[1] < 80) {
  print("The 1st test was difficult.\n")
}else if (average_scores[2] < 80) {
```

```

    print("The 2nd test was difficult.\n")
} else if (average_scores[3] < 80) {
    print("The 3rd test was difficult.\n")
} else if (average_scores[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
#annie

```

```

if (mathgrades[1,2] > mathgrades[1,3] && mathgrades[1,2] > mathgrades[1,4] && mathgrades[1,2] > mathgrades[1,5]) {
    anniescoret <- mathgrades[1,2]
} else if (mathgrades[1,3] > mathgrades[1,4] && mathgrades[1,3] > mathgrades[1,5]) {
    anniescore <- mathgrades[1,3]
} else if (mathgrades[1,4] > mathgrades[1,5] && mathgrades[1,2] > mathgrades[1,5]) {
    anniescore <- mathgrades[1,4]
} else {
    anniescore <- mathgrades[1,5]
}

```

```
# thea scores
```

```

if (mathgrades[2,2] > mathgrades[2,3] && mathgrades[2,2] > mathgrades[2,4] && mathgrades[2,2] > mathgrades[2,5]) {
    theascore <- mathgrades[2,2]
} else if (mathgrades[2,3] > mathgrades[2,4] && mathgrades[2,3] > mathgrades[2,5]) {
    theascore <- mathgrades[2,3]
} else if (mathgrades[2,4] > mathgrades[2,5] && mathgrades[2,2] > mathgrades[2,5]) {
    theascore <- mathgrades[2,4]
} else {
    theascore <- mathgrades[2,5]
}

```

```
# steve scores
```

```

if (mathgrades[3,2] > mathgrades[3,3] && mathgrades[3,2] > mathgrades[3,4] && mathgrades[3,2] > mathgrades[3,5]) {
    stevescore <- mathgrades[3,2]
} else if (mathgrades[3,3] > mathgrades[3,4] && mathgrades[3,3] > mathgrades[3,5]) {
    stevescore <- mathgrades[3,3]
} else if (mathgrades[3,4] > mathgrades[3,5] && mathgrades[3,2] > mathgrades[3,5]) {
    stevescore <- mathgrades[3,4]
} else {
    stevescore <- mathgrades[3,5]
}

```

```
# hanna scores
```

```

if (mathgrades[4,2] > mathgrades[4,3] && mathgrades[4,2] > mathgrades[4,4] && mathgrades[4,2] > mathgrades[4,5]) {
    hannascore <- mathgrades[4,2]
} else if (mathgrades[4,3] > mathgrades[4,4] && mathgrades[4,3] > mathgrades[4,5]) {
    hannascore <- mathgrades[4,3]
} else if (mathgrades[4,4] > mathgrades[4,5] && mathgrades[4,2] > mathgrades[4,5]) {
    hannascore <- mathgrades[4,4]
}

```

```

} else {
  hannascore <- mathgrades[4,5]
}
# ---
mathgrades$HighestGrades <- c(anniescore, theascore, stevescore, hannascore)

highest90 <- mathgrades[mathgrades$HighestGrades > 90,]
highest90

##      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(highest90) > 0) {
  paste(highest90$Name, "'s highest grade this semester is", highest90$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"

```