

RWorksheet_Lumauag#4a

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```
#1  
#a  
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,  
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, 70.0,  
gender <- c("F", "F", "F", "F", "M", "F", "F", "F", "M", "F", "M", "F", "M", "M", "M", "M", "F", "F", "F",  
householdData <- data.frame(shoesize, height, gender)  
names(householdData) <- c("Shoesize", "Height", "Gender")  
householdData
```

##	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

```
#b
householdDataMale <- subset(householdData, Gender == "M")
householdDataMale
```

```
##      Shoesize 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
```

```
householdDataFemale <- subset(householdData, Gender == "F")
householdDataFemale
```

```
##      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
## 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
mean(shoesize)
```

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

```
mean(height)
```

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

```
#d
#The relationship could exist as larger feet are often associated with taller individuals.
```

```
#2
#a
Months <- c("March", "April", "January", "November", "January",
"September", "October", "September", "November", "August",
```

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

```
Factor_Months <- factor(Months)
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
```

```
#3
summary(Months)
```

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

```
summary(Factor_Months)
```

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

#Factor_Months is more useful, especially for analysis that involve categorical data, as it allows to t

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

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

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

```
#5
options(repos = c(CRAN = "https://cloud.r-project.org"))
install.packages("readxl")
```

```
## package 'readxl' successfully unpacked and MD5 sums checked
##
## The downloaded binary packages are in
## C:\Users\Matteeuu\AppData\Local\Temp\RtmpKeSenT\downloaded_packages
```

```
data <- read.table("ExcelData.csv", header = TRUE, sep = ",", stringsAsFactors = FALSE)
data
```

```
## 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
```

```
user_input <- readline(prompt = "Please enter a number between 1 and 50: ")
```

```
## Please enter a number between 1 and 50:
```

```
paste("The number you selected is:", user_input)
```

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

```
if(is.na(user_input) < 1 && user_input > 50) {
  cat("The number selected is beyond the range of 1 to 50\n")
} else if (user_input == 20) {
  cat("TRUE\n")
} else {
  cat("You selected: ", user_input, "\n")
}
```

```
## You selected:
```

```
#7
```

```
min_bills <- function(price) {
  bills <- c(1000, 500, 200, 100, 50)
```

```
  count <- 0
```

```
  for (bill in bills) {
    if (price <= 0) {
      break
    }
    count <- count + floor(price / bill)

    price <- price %% bill
  }
```

```
  return(count)
}
```

```
snack_price <- as.integer(readline(prompt = "Enter the price of the snack (divisible by 50): "))
```

```
## Enter the price of the snack (divisible by 50):
```

```

if (is.na(snack_price) %% 50 == 0) {
  cat("Minimum number of bills needed:", min_bills(snack_price), "\n")
} else {
  cat("The price must be divisible by 50.\n")
}

```

The price must be divisible by 50.

```

#8
#a
Grades <- data.frame (Name = c("Annie", "Thea", "Steve", "Hanna"),
                      Grade_1 = c(85, 65, 75, 95),
                      Grade_2 = c(65, 75, 55, 75),
                      Grade_3 = c(85, 90, 80, 100),
                      Grade_4 = c(100, 90, 85, 90)
                      )

```

Grades

```

##      Name Grade_1 Grade_2 Grade_3 Grade_4
## 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
for (i in 1:nrow(Grades)) {
  avg_score <- sum(Grades[i, 2:5]) / 4
  if (avg_score > 90) {
    cat(Grades$Name[i], "'s average grade this semester is", avg_score, "\n")
  }
}

```

```

#c
for (j in 2:ncol(Grades)) {
  test_avg <- sum(Grades[, j]) / nrow(Grades)
  if (test_avg < 80) {
    cat("The", colnames(Grades)[j], "test was difficult.\n")
  }
}

```

The Grade_2 test was difficult.

```

#d
for (i in 1:nrow(Grades)) {
  highest_grade <- Grades[i, 2]
  for (j in 3:5) {
    if (Grades[i, j] > highest_grade) {
      highest_grade <- Grades[i, j]
    }
  }
  if (highest_grade > 90) {
    cat(Grades$Name[i], "'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
```