

RWorksheet_Celestra#4a

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1.

```
HouseHoldData <- 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),
  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, 66.0),
  Gender = c("F", "F", "F", "F","M", "F", "F", "F","M","F","M","F","M","M", "M", "M", "F", "F", "M", "F")
)
```

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

a. The data shows that it has three columns namely, shoesize, height and, gender with 28 rows.

b.

```
s <- subset(HouseHoldData, Gender == "M" & ShoeSize&Height)
s
```

```
##      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
```

```
s2 <- subset(HouseHoldData, Gender == "F" & ShoeSize&Height)
s2
```

```
##      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.

```
sm <- mean(HouseHoldData$ShoeSize)
sm
```

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

```
hm <- mean(HouseHoldData$Height)
hm
```

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

d. No, because there are some respondents that is taller but has smaller shoe size than others who are shorter.

2.

```
months_vector <- c("March", "April", "January", "November", "January", "September", "October", "September")
factor_months_vector <- factor(months_vector)
```

```
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. Yes, they are both useful because it shows the length, class, mode, and the number of repetitions of the character of two vectors.

```
summary(months_vector)
```

```
##      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
```

- 4.

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

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

```
factor_data <- direction
```

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

```
new_order_data
```

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

5. a.

```
import_march <- read.table("import_march.csv", header = TRUE, sep = ",")
```

- b.

```
import_march
```

```
##      Students Strategy1 Strategy2 Strategy3
## 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 a.

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

```
## Please select a number between 1 and 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"
```

7 a.

```

bills <- c(1000, 500, 200, 100, 50)
numbills <- 0

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

```

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

```

for (i in bills) {
  if (!is.na(snackprice) && !is.na(i) && snackprice >= i) {
    count <- snackprice %/% i
    numbills <- numbills + count
    snackprice <- snackprice %% i
  }
}
paste("Minimum number of bills needed:", numbills)

```

```
## [1] "Minimum number of bills needed: 0"
```

8 a.

```

df <- 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(df)

```

```

##      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.

```

for (i in 1:nrow(df)) {
  total <- df$Grade1[i] + df$Grade2[i] + df$Grade3[i] + df$Grade4[i]
  avg <- total / 4

  if (avg > 90) {
    print(paste(df$Name[i], "'s average grade this semester is", round(avg, 2)))
  }
}

```

c.

```
grades <- df[, 2:5]
testavg <- colSums(grades) / nrow(grades)

for (i in 1:length(testavg)) {
  if (testavg[i] < 80) {
    print(paste("The", i,"th test was difficult."))
  }
}
```

```
## [1] "The 2 th test was difficult."
```

d.

```
for (i in 1:nrow(df)) {
  highest <- df$Grade1[i]

  if (df$Grade2[i] > highest) {
    highest <- df$Grade2[i]
  }
  if (df$Grade3[i] > highest) {
    highest <- df$Grade3[i]
  }
  if (df$Grade4[i] > highest) {
    highest <- df$Grade4[i]
  }

  if (highest > 90) {
    print(paste(df$Name[i], "'s highest grade this semester is", highest))
  }
}
```

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

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