RWorksheet#4

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```r
 ShoeSize <- c(6.5,9.0,8.5,8.5,10.5,7.0,9.5,13.0,7.5,10.5,8,5,12.0,10.5,13.0,11.5,8.5,5.0,10.0,6.5,7.5,8
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"
  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
dab <- data.frame(ShoeSize,Height,Gender)
dab
```

```
##    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      13.0   71.0      F
## 9       7.5   72.0      M
## 10     10.5   64.0      F
## 11      8.0   74.5      M
## 12      5.0   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
```

```r
m_subset <-subset(dab, Gender == "M", select = c("ShoeSize", "Height"))
f_subset <-subset(dab,Gender == "F", select = c("ShoeSize", "Height"))


m_subset
```

```
##   ShoeSize Height
## 5     10.5   70.0
```

```
## 9      7.5   72.0
## 11     8.0   74.5
## 13    12.0   71.0
## 14    10.5   71.0
## 15    13.0   77.0
## 16    11.5   72.0
## 19    10.0   72.0
## 22     8.5   67.0
## 23    10.5   73.0
## 25    10.5   72.0
## 26    11.0   70.0
## 27     9.0   69.0
## 28    13.0   70.0
```

```r
f_subset
```

```
##    ShoeSize Height
## 1       6.5   66.0
## 2       9.0   68.0
## 3       8.5   64.5
## 4       8.5   65.0
## 6       7.0   64.0
## 7       9.5   70.0
## 8      13.0   71.0
## 10     10.5   64.0
## 12      5.0   67.0
## 17      8.5   59.0
## 18      5.0   62.0
## 20      6.5   66.0
## 21      7.5   64.0
## 24      8.5   69.0
```

```r
Shoesize <- mean(dab$ShoeSize)
height <- mean(dab$Height)
Shoesize
```

```
## [1] 9.25
```

```r
height
```

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

```r
#Although there is some association between shoe size and height, this
#correlation is not exact because these two factors are not totally
#dependent on one another.
```

```r
months_vector <- 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_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
```

```r
summary(months_vector)
```

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

```r
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
```

```r
factor_data <- c("East", "West", "North")
frequency <- c(1,4,3)

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

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

```r
table <- read.table(file = 'Import_March.csv', header = TRUE, sep = ',')
table
```

```
##          X 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
```

```r
random_number <- sample(1:50, 1)

cat("The chosen number is:", random_number, "\n")
```

```
## The chosen number is: 30
```

```r
if (random_number == 20) {
  cat("TRUE\n")
} else if (random_number < 1 || random_number > 50) {
  cat("The number selected is beyond the range of 1 to 50\n")
} else {
  cat(random_number, "\n")
}
```

```
## 30
```

```r
calculate_min_bills <- function(price_of_snack) {
  bill_denominations <- c(1000, 500, 200, 100, 50)
  total_bills <- 0

  for (bill in bill_denominations) {
    num_bills_needed <- price_of_snack %/% bill
    price_of_snack <- price_of_snack %% bill
```

```r
    total_bills <- total_bills + num_bills_needed
  }

  cat("Minimum number of bills needed to purchase the snack:", total_bills, "\n")
}

price_of_snack <- 1600
calculate_min_bills(price_of_snack)
```

```
## Minimum number of bills needed to purchase the snack: 3
```

```r
#A

students <- 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)
)
students
```

```
##     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
```

```r
#B
students$Average <- (students$Grade1 + students$Grade2 + students$Grade3 + students$Grade4) / 4

for (i in 1:nrow(students)) {
  if (students$Average[i] > 90) {
    cat(students$Name[i], "'s average grade this semester is", students$Average[i], "\n")
  }
}
```

```r
#C
test1_average <- sum(students$Grade1) / nrow(students)
test2_average <- sum(students$Grade2) / nrow(students)
test3_average <- sum(students$Grade3) / nrow(students)
test4_average <- sum(students$Grade4) / nrow(students)

if (test1_average < 80) {
  cat("The 1st test was difficult.\n")
}
if (test2_average < 80) {
  cat("The 2nd test was difficult.\n")
}
```

```
## The 2nd test was difficult.
```

```r
if (test3_average < 80) {
  cat("The 3rd test was difficult.\n")
}
if (test4_average < 80) {
```

```r
  cat("The 4th test was difficult.\n")
}
```

```r
#D
for (i in 1:nrow(students)) {
  highest_grade <- students$Grade1[i]
  if (students$Grade2[i] > highest_grade) {
    highest_grade <- students$Grade2[i]
  }
  if (students$Grade3[i] > highest_grade) {
    highest_grade <- students$Grade3[i]
  }
  if (students$Grade4[i] > highest_grade) {
    highest_grade <- students$Grade4[i]
  }
  if (highest_grade > 90) {
    cat(students$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
```