# RWorksheet_Laguda#4a

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#Number1

```r
df <- data.frame (
  ShoesSize = 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
  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, 7
  Gender = c("F", "F", "F", "F", "M", "F", "F", "F", "M", "F","M", "F", "M", "M", "M", "M", "F", "F", "1
df
```

```
##    ShoesSize 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

```r
male_subset <- df[df$Gender == "M", c("ShoesSize", "Height")]
female_subset <- df[df$Gender == "F", c("ShoesSize", "Height")]
male_subset
```

```
##    ShoesSize Height
```

```
## 5        10.5   70.0
## 9        13.0   72.0
## 11       10.5   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
female_subset
```

```
##     ShoesSize 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         9.0   71.0
## 10        7.5   64.0
## 12        8.5   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
```

#c

```r
 mean(df$ShoesSize)
```

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

```r
mean(df$Height)
```

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

#d # Yes, there is relationship between the height and shoe size, the more taller they are, the longer their size.

#Number 2

```r
months <- c("March","April","January","November","January",
"September","October","September","November","August",
"January","November","November","February","May","August", "July","December","August","August","Septembe
"April")
months
```

```
##  [1] "March"     "April"     "January"   "November"  "January"   "September"
##  [7] "October"   "September" "November"  "August"    "January"   "November"
## [13] "November"  "February"  "May"       "August"    "July"      "December"
## [19] "August"    "August"    "September" "November"  "February"  "April"
```

```r
factor_months_vector <- factor(months)
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

```r
summary(months)
```

```
##    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
```

#Number 4

```r
direction_vector <- c("East", "West", "North")
frequency_vector <- c(1, 4, 3)
factor_data <- factor(c(direction_vector, frequency_vector))
new_order_data <- factor(factor_data,levels = c("East","West","North"))
print(new_order_data)
```

```
## [1] East  West  North <NA>  <NA>  <NA>
## Levels: East West North
```

#Number 5

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

```
##   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
```

#Number6

```r
user_input <- as.numeric(readline ("Enter a number between 1 to 50: "))
```

```
## Enter a number between 1 to 50:
```

```r
if (!is.na(user_input))
if (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 {
```

```r
  cat("The chosen number is: ", user_input, "\n")
}
```

#7

```r
minimum_bills_needed <- function(price) {

  bill_denominations <- c(1000, 500, 200, 100, 50)


  bill_counts <- integer(length(bill_denominations))


  for (i in 1:length(bill_denominations)) {

    bill_counts[i] <- price %/% bill_denominations[i]


    price <- price %% bill_denominations[i]
  }
  cat("Minimum number of bills needed to purchase the snack:\n")
  for (i in 1:length(bill_denominations)) {
    cat(bill_denominations[i], "peso bills: ", bill_counts[i], "\n")
  }
}

# Example usage:
price_of_snack <- 750
minimum_bills_needed(price_of_snack)
```

```
## Minimum number of bills needed to purchase the snack:
## 1000 peso bills:  0
## 500 peso bills:  1
## 200 peso bills:  1
## 100 peso bills:  0
## 50 peso bills:  1
```

#8 #A

```r
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
```

#B

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

for (i in 1:nrow(students)) {
  average <- (students$Grade1[i] + students$Grade2[i] + students$Grade3[i] + students$Grade4[i]) / 4
  count <- 0
  total_average <- 0
  if (students$Grade4[i] > 90) {
    cat(students$Name[i], "'s average grade this semester is", average, ".\n")
    total_average <- total_average + average
    count <- count + 1
  }
}
```

```
## Annie 's average grade this semester is 83.75 .
```

```r
if (count > 0) {
  overall_average <- total_average / count
  cat("The overall average for high-achieving students is", overall_average, ".\n")
} else {
  cat("No high-achieving students found.\n")
}
```

```
## No high-achieving students found.
```

#C

```r
students$Average <- rowMeans(students[, 2:5])
difficult_tests <- which(students$Average < 80)

if (length(difficult_tests) > 0) {
  cat("The following tests were difficult for one or more students:\n")
  for (i in difficult_tests) {
    cat("The ", i, if (i == 2) "nd" else if (i == 3) "rd" else "th", " test was difficult.\n")
  }
} else {
  cat("No test was difficult for any student.\n")
}
```

```
## The following tests were difficult for one or more students:
## The  3 rd  test was difficult.
```

#D

```r
highest_grades <- numeric(length(students$Name))

for (i in 1:nrow(students)) {
  student_name <- students$Name[i]
  semester_grades <- students[i, 2:5]
  highest_grade <- -Inf

  for (grade in semester_grades) {
    if (grade > highest_grade) {
      highest_grade <- grade
    }
  }

  highest_grades[i] <- highest_grade
```

```r
  if (highest_grade > 90) {
    cat(student_name, "'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 .
```