RWorksheet_Tiad#4a

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```
#1.
  #a. The following table shows Shoe sizes, Height and gender data.
  #b.
  Shoe_size <- c(6.5,9.0,8.5,8.5,10.5,7.0,9.5,9.0,13.0,7.5,10.5,8.5,12.0,10.5,13.0,11.5,8.5,5.0,10.0,6.5
)
  Height <- c(66.0,68.0,64.5,65.0,70.0,64.0,70.0,71.0,72.0,64.0,74.5,67.0,71.0,71.0,77.0,72.0,59.0,62.0
  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
  Shoe_Table <- data.frame(Shoe_size, Height, Gender)
  Shoe_Table
```

```
##    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
```

```r
Male_Shoesizes <- subset(Shoe_Table, Gender == "M", select = c(Shoe_size, Height, Gender))
Male_Shoesizes
```

```
##    Shoe_size 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
```

```r
Female_Shoesizes <- subset(Shoe_Table, Gender == "F", select = c(Shoe_size, Height, Gender))
Female_Shoesizes
```

```
##    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
## 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
```

```r
#c.mean of Shoes sizes
mean_sizes <- mean(Shoe_size)
mean_sizes
```

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

```r
#mean of Height
mean_height <- mean(Height)
mean_height
```

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

```
  #d. Yes I think there is a relationship between Shoe sizes and height. Because
```

```
#2.
  months <- c("March", "April", "January", "November", "January", "September", "October", "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
```

```
  assign("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.
  summary(months)
```

```
##    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)
  difre_df <- data.frame(Direction,frequency)
  difre_df
```

```
##   Direction frequency
## 1      East         1
## 2      West         4
## 3     North         3
```

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

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

```
#5.
  #a.
  excel_table <- read.table("import_march.csv", header = TRUE, sep = ",", stringsAsFactors = FALSE)
  excel_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
```

```
#Using Conditional Statement
#6.Full search
  x <- readline(prompt = "Enter a number between 1 to 50: ")
```

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

```
  if(x <= 50 && x >= 1){
    print("TRUE")
    x
   }else{
    print("The number selected is beyond the range of 1 to 50")
   }
```

```
## [1] "The number selected is beyond the range of 1 to 50"
```

```
#7. Change
 price_input <- as.numeric(readline(prompt = "Enter the price of the snack (divisible by 50): "))
```

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

```
calculate_minimum_bills <- function(price) {
  if (is.na(price)) {
    cat("Please enter a valid number.\n")
    return()
  }

  if (price %% 50 != 0) {
    cat("Price must be a number divisible by 50.\n")
  } else {
    denominations <- c(1000, 500, 200, 100, 50)

    bill_count <- 0

    for (denom in denominations) {
      if (price >= denom) {
```

```
        count <- price %/% denom
        bill_count <- bill_count + count
        price <- price - (count * denom)
      }
    }

    if (bill_count > 0) {
      cat("Minimum number of bills needed:", bill_count, "\n")
    } else {
      cat("No bills needed.\n")
    }
  }
}

calculate_minimum_bills(price_input)
```

```
## Please enter a valid number.

## NULL
```

```
#8.
#a.
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)

Grade_df <- data.frame(Name, Grade1, Grade2, Grade3, Grade4)
Grade_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.
Grade_df$Average <- (Grade_df$Grade1 + Grade_df$Grade2 + Grade_df$Grade3 + Grade_df$Grade4) / 4

for (i in 1:nrow(Grade_df)) {
  if (Grade_df$Average[i] > 90) {
    cat(Grade_df$Name[i], "'s average grade this semester is", round(Grade_df$Average[i], 2), ".\n")
  }
}

#c
test_averages <- numeric(ncol(Grade_df) - 1)

for (j in 2:ncol(Grade_df)) {
  total_score <- 0
  for (i in 1:nrow(Grade_df)) {
```

```
    total_score <- total_score + Grade_df[i, j]
  }
  test_averages[j - 1] <- total_score / nrow(Grade_df)
}

for (n in 1:length(test_averages)) {
  if (test_averages[n] < 80) {
    cat("The", n, "test was difficult.\n")
  }
}
```

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

```
#d.
for (i in 1:nrow(Grade_df)) {
  highest_score <- Grade_df[i, 2]

  for (j in 3:ncol(Grade_df)) {
    if (Grade_df[i, j] > highest_score) {
      highest_score <- Grade_df[i, j]
    }
  }


  if (highest_score > 90) {
    cat(Grade_df$Name[i], "'s highest grade this semester is", highest_score, ".\n")
  }
}
```

```
## Annie 's highest grade this semester is 100 .
## Hanna 's highest grade this semester is 100 .
```