

## RWorkSheet\_\_Arcebas#4A

Edora Frances Anne V Arcenas

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```
# 1
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, 70.0,64.0,70.0,71.0,72.0,64.0,74.5,67.0,71.0,71.0,77.0,72.0,59.0,62.0)

gender <- c("F", "F", "F", "F", "M", "F", "F", "F", "M", "F", "M", "F", "M", "M", "M", "M", "F", "F", "F")

householdData <- data.frame(
  ShoeSize = shoeSize,
  Height = height,
  Gender = gender
)
```

householdData

```
# 1.a
# In the data, there are three variables which are the shoe size, height, and gender. There are 28 obser
```

```
# 1.b
males <- householdData[householdData$Gender == "M",]
males

females <- householdData[householdData$Gender == "F",]
females
```

```
# 1.c
meanOfShoeSize <- mean(householdData$ShoeSize)
meanOfShoeSize

meanOfHeight <- mean(householdData$Height)
meanOfHeight
```

```
# 1.d
# The relationship of the two is that the shoe size is directly proportional to the height. If the height is 1.8m, the shoe size is 42.
```

```
# 2
months_vector <- c("March", "April", "January", "November", "January", "September", "October", "September", "November")
```

months\_vector

```
factor_months_vector <- factor(months_vector)
```

```

factor_months_vector
# 3
summary(months_vector)
summary(factor_months_vector)

# In the summary of months_vector, it shows the number of observations, class, and mode of the vector.

# In the summary of factor_months_vector, it shows the frequency of each months.

# Both are useful in different cases where the no. of observations, class, mode, or the frequency is ne

# 4
factor_data <- c("East", "West", "North")
factor_frequency <- c(1,4,3)

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

print(new_order_data)

# 5
imported_table <- read.table(file =  "/cloud/project/worksheet#4/import_march.csv", header = TRUE, sep :

View(imported_table)

# 6
randomNum <- readline(prompt = "Enter number from 1 to 50: ")

randomNum <- as.numeric(randomNum)

paste("The number you have chosen is", randomNum)

if (randomNum > 50) {
  paste("The number selected is beyond the range of 1 to 50")
} else if (randomNum == 20) {
  paste("TRUE")
} else {
  paste(randomNum)
}

#7

MinBills <- function(price) {
  Bills <- price %% 50
  paste("The Minimum number of bills is: ", Bills)
}

MinBills(90)

#8
names_df <- 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)

```

```

mathScore <- data.frame(
  Name = names_df,
  Grade1 = grade1,
  Grade2 = grade2,
  Grade3 = grade3,
  Grade4 = grade4
)

mathScore$Average <- (mathScore$Grade1 + mathScore$Grade2 + mathScore$Grade3 + mathScore$Grade4) / 4

highscorers <- mathScore[mathScore$Average > 90,]

if (nrow(highscorers) > 0) {
  paste(highscorers$Name, "'s average grade this semester is", highscorers$Average)
} else {
  paste("No students have an average math score over 90.")
}

firstTest <- sum(mathScore$Grade1) / nrow(mathScore)
secondTest <- sum(mathScore$Grade2) / nrow(mathScore)
thirdTest <- sum(mathScore$Grade3) / nrow(mathScore)
fourthTest <- sum(mathScore$Grade4) / nrow(mathScore)

if (firstTest < 80) {
  paste("The 1st test was difficult.")
} else if (secondTest < 80) {
  paste("The 2nd test was difficult.")
} else if (thirdTest < 80) {
  paste("The 3rd test was difficult.")
} else if (fourthTest < 80) {
  paste("The 4th test was difficult.")
} else {
  paste("No test had an average score less than 80.")
}

annieHighest <- max(mathScore[1,2:5])
theaHighest <- max(mathScore[2,2:5])
steveHighest <- max(mathScore[3,2:5])
hannaHighest <- max(mathScore[4,2:5])

mathScore$HighestGrades <- c(annieHighest, theaHighest, steveHighest, hannaHighest)

above90 <- mathScore[mathScore$HighestGrades > 90,]

if (nrow(above90) > 0) {
  paste(above90$Name, "'s highest grade this semester is", above90$HighestGrades)
} else {
  paste("No students have a highest math score over 90.")
}

```