Week 2 Exercises

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Please complete all exercises below. You may use stringr, lubridate, or the forcats library.

Place this at the top of your script: library(stringr) library(lubridate) library(forcats)

```
library(stringr)
library(lubridate)

##
## Attaching package: 'lubridate'

## The following objects are masked from 'package:base':
##
##     date, intersect, setdiff, union

library(forcats)
library(readr)
```

Exercise 1

Read the sales_pipe.txt file into an R data frame as sales.

```
sales <- read_delim("~/MM/DSE5002/Week_2/Data/sales_pipe.txt",
                    delim = "|",
                    escape_double = FALSE,
                    trim_ws = TRUE,
                    locale = locale(encoding = "latin1"))

## Warning: One or more parsing issues, call `problems()` on your data frame
for details,
## e.g.:
##   dat <- vroom(...)
##   problems(dat)

## Rows: 4928 Columns: 20
## ── Column specification
────────────────────────────────────────────────────────

## Delimiter: "|"
## chr (16): Ship.Date, Ship.Mode, Customer.ID, Customer.Name, Segment,
Country...
## dbl  (4): Order.ID, Order.Date, Product.ID, Discount
##
## ℹ Use `spec()` to retrieve the full column specification for this data.
## ℹ Specify the column types or set `show_col_types = FALSE` to quiet this
message.
```

```
##, fileEncoding = 'WINDOWS-1252'

# Splitting the values in the profit column into three distinct columns
temp_char <- str_split_fixed(string=sales$Profit,pattern='\\|', n=3)

#Assign the correct column headers
colnames(temp_char) <- c("Quantity1", "Discount1", "Profit1")

#Combining the two data frames
updated_sales <- cbind(sales, temp_char)

# Super setting the correct columns
updated_sales <- updated_sales[,2:23]

#eliminating the incorrect profit column
updated_sales <- updated_sales[,-19]

#Renaming the columns
new_column_names <- c("row_id", "order_id", "order_date", "ship_date",
"ship_mode", "customer_id", "customer_name", "segment", "country", "city",
"state", "postal_code", "region", "product_id", "category", "sub_category",
"product_name", "sales", "quantity", "discount", "profit")

colnames(updated_sales) <- new_column_names

#updating from strings / characters to numbers
updated_sales$quantity = as.numeric(updated_sales$quantity)
updated_sales$discount = as.numeric(updated_sales$discount)
updated_sales$profit = as.numeric(updated_sales$profit)

#convert back to sales
sales = updated_sales
View(sales)
```

Exercise 2

You can extract a vector of columns names from a data frame using the colnames() function. Notice the first column has some odd characters. Change the column name for the FIRST column in the sales date frame to Row.ID.

Note: You will need to assign the first element of colnames to a single character.

```
# Included in the column name update above
```

Exercise 3

Convert both Ship.Date and Order.Date to date vectors within the sales data frame. What is the number of days between the most recent order and the oldest order? How many years is that? How many weeks?

Note: Use lubridate

```r
#Set as date
sales$ship_date <- as.Date(sales$ship_date, format = '%B %d %Y')
sales$order_date <- as.Date(sales$order_date, format = '%m/%d/%Y')

#Find max and min order dates
newest_order = max(sales$order_date) #The most recent order date is 2017-12-
30
oldest_order = min(sales$order_date) #The older order was placed on 2014-01-
03

#Create interval between oldest and most recent order
date_intervals = interval(newest_order, oldest_order)

time_in_seconds = int_length(date_intervals) * -1
time_in_seconds

## [1] 125884800

#Convert interval from seconds to days // 1457 days occurred between the
oldest and most recent order
number_of_days = time_in_seconds / 60 / 60 / 24
number_of_days

## [1] 1457

# ~ 4 years
number_of_days / 365

## [1] 3.991781

# ~208 weeks
number_of_days / 7

## [1] 208.1429
```

Exercise 4

What is the average number of days it takes to ship an order?

```r
#Calculate the time to ship for each order
sales$time_to_ship <- sales$ship_date - sales$order_date
```

```
# The average time to ship for each order is 3.9 days
mean(sales$time_to_ship)

## Time difference of 3.908482 days
```

Exercise 5

How many customers have the first name Bill? You will need to split the customer name into first and last name segments and then use a regular expression to match the first name bill. Use the length() function to determine the number of customers with the first name Bill in the sales data.

```
#Split names and create new columns with first and last name
sales$name <- str_split_fixed(sales$customer_name," ", n=2)
sales$first_name <- sales$name[,1]
sales$last_name<- sales$name[,2]

# There are 37 people names bill
length(str_subset(sales$first_name, "Bill"))

## [1] 37
```

Exercise 6

How many mentions of the word ‘table’ are there in the Product.Name column? **Note you can do this in one line of code**

```
#240 mentions of the word table in the product_name column
sum(str_count(sales$product_name,"table"))

## [1] 240
```

Exercise 7

Create a table of counts for each state in the sales data. The counts table should be ordered alphabetically from A to Z.

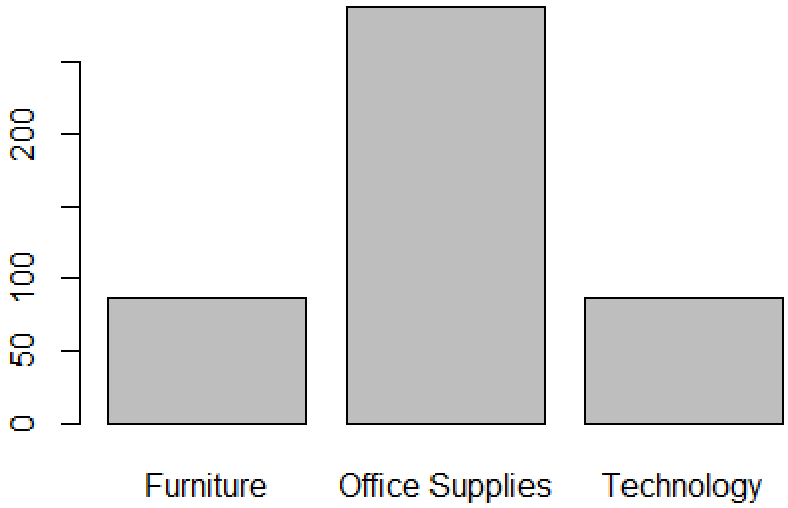
```
table(sales$state)

## 
##              Alabama              Arizona             Arkansas 
##                   28                  119                   22 
##           California             Colorado          Connecticut 
##                  993                   90                   50 
##             Delaware District of Columbia              Florida 
##                   47                    1                  186 
##              Georgia                Idaho             Illinois 
##                   79                    9                  286 
##              Indiana                 Iowa               Kansas
##                   74                   11                   16
##             Kentucky            Louisiana                Maine
##                   64                   18                    4
##             Maryland        Massachusetts             Michigan
##                   63                   71                  142
##            Minnesota          Mississippi             Missouri
##                   41                   27                   37
##              Montana             Nebraska               Nevada
##                    2                   26                   24
##        New Hampshire           New Jersey           New Mexico
##                    9                   58                   11
##             New York       North Carolina         North Dakota
##                  555                  117                    7
##                 Ohio             Oklahoma               Oregon
##                  211                   38                   56
##         Pennsylvania         Rhode Island       South Carolina
##                  312                   25                   28
##         South Dakota            Tennessee                Texas
##                    9                   88                  460
##                 Utah              Vermont             Virginia
##                   27                   10                   80
##           Washington        West Virginia            Wisconsin
##                  254                    4                   38
##              Wyoming
##                    1
```

Exercise 8

Create an alphabetically ordered barplot for each sales Category in the State of Texas.

```
texas_count <- sales[sales$state == "Texas",]
barplot(table(texas_count$category))
```



Exercise 9

Find the average profit by region. **Note: You will need to use the aggregate() function to do this. To understand how the function works type ?aggregate in the console.**

```
#The average profit by region is as follows: Central(20.5), East(29.9),
South(11.3), West(32.8)
aggregate(sales$profit, list(sales$region), mean)

##   Group.1        x
## 1 Central 20.46822
## 2    East 29.91937
## 3   South 11.27720
## 4    West 32.77000
```

Exercise 10

Find the average profit by order year. **Note: You will need to use the aggregate() function to do this. To understand how the function works type ?aggregate in the console.**

```
#Determine which year each order was placed
sales$order_year <- year(sales$order_date)
```

```
#Determine the average profit by year
round(aggregate(sales$profit, list(sales$order_year), mean),1)
```

```
##   Group.1    x
## 1    2014 32.2
## 2    2015 21.6
## 3    2016 30.1
## 4    2017 21.3
```

```
#The average profit for 2014 was 32.2, 2015 was 21.6, 2016 was 30.1, 2017 was
21.3
```