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)

Exercise 1

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

```
library(stringr)
library(lubridate)
```

```
##
## Attaching package: 'lubridate'
```

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

```
library(forcats)
# Your code here
sales <- read.delim("Data/sales_pipe.txt"
                    ,stringsAsFactors=FALSE
                    ,sep = "|"
                    ,fileEncoding="WINDOWS-1252"
 )
```

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.

```
colnames(sales)[1] <- c("Row.ID")
sales[1:10 ,]
```

```
##    Row.ID       Order.ID Order.Date        Ship.Date      Ship.Mode Customer.ID
## 1       1 CA-2016-152156  11/8/2016 November 11 2016   Second Class    CG-12520
## 2       2 CA-2016-152156  11/8/2016 November 11 2016   Second Class    CG-12520
## 3       3 CA-2016-138688  6/12/2016     June 16 2016   Second Class    DV-13045
## 4       4 US-2015-108966 10/11/2015  October 18 2015 Standard Class    SO-20335
## 5       5 US-2015-108966 10/11/2015  October 18 2015 Standard Class    SO-20335
## 6       6 CA-2014-115812   6/9/2014     June 14 2014 Standard Class    BH-11710
## 7       7 CA-2014-115812   6/9/2014     June 14 2014 Standard Class    BH-11710
```

```
## 8       8 CA-2014-115812   6/9/2014     June 14 2014 Standard Class    BH-11710
## 9       9 CA-2014-115812   6/9/2014     June 14 2014 Standard Class    BH-11710
## 10     10 CA-2014-115812   6/9/2014     June 14 2014 Standard Class    BH-11710
##      Customer.Name   Segment       Country            City      State
## 1      Claire Gute  Consumer United States       Henderson   Kentucky
## 2      Claire Gute  Consumer United States       Henderson   Kentucky
## 3  Darrin Van Huff Corporate United States     Los Angeles California
## 4   Sean O'Donnell  Consumer United States Fort Lauderdale    Florida
## 5   Sean O'Donnell  Consumer United States Fort Lauderdale    Florida
## 6  Brosina Hoffman  Consumer United States     Los Angeles California
## 7  Brosina Hoffman  Consumer United States     Los Angeles California
## 8  Brosina Hoffman  Consumer United States     Los Angeles California
## 9  Brosina Hoffman  Consumer United States     Los Angeles California
## 10 Brosina Hoffman  Consumer United States     Los Angeles California
##    Postal.Code Region      Product.ID        Category Sub.Category
## 1        42420  South FUR-BO-10001798       Furniture    Bookcases
## 2        42420  South FUR-CH-10000454       Furniture       Chairs
## 3        90036   West OFF-LA-10000240 Office Supplies       Labels
## 4        33311  South FUR-TA-10000577       Furniture       Tables
## 5        33311  South OFF-ST-10000760 Office Supplies      Storage
## 6        90032   West FUR-FU-10001487       Furniture  Furnishings
## 7        90032   West OFF-AR-10002833 Office Supplies          Art
## 8        90032   West TEC-PH-10002275      Technology       Phones
## 9        90032   West OFF-BI-10003910 Office Supplies      Binders
## 10       90032   West OFF-AP-10002892 Office Supplies   Appliances
##                                                        Product.Name    Sales
## 1                                  Bush Somerset Collection Bookcase 261.9600
## 2       Hon Deluxe Fabric Upholstered Stacking Chairs, Rounded Back 731.9400
## 3         Self-Adhesive Address Labels for Typewriters by Universal  14.6200
## 4                     Bretford CR4500 Series Slim Rectangular Table 957.5775
## 5                                   Eldon Fold 'N Roll Cart System  22.3680
## 6  Eldon Expressions Wood and Plastic Desk Accessories, Cherry Wood  48.8600
## 7                                                        Newell 322   7.2800
## 8                                    Mitel 5320 IP Phone VoIP phone 907.1520
## 9              DXL Angle-View Binders with Locking Rings by Samsill  18.5040
## 10                                 Belkin F5C206VTEL 6 Outlet Surge 114.9000
##    Quantity Discount    Profit
## 1         2     0.00   41.9136
## 2         3     0.00  219.5820
## 3         2     0.00    6.8714
## 4         5     0.45 -383.0310
## 5         2     0.20    2.5164
## 6         7     0.00   14.1694
## 7         4     0.00    1.9656
## 8         6     0.20   90.7152
## 9         3     0.20    5.7825
## 10        5     0.00   34.4700
```

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
sales$Order.Date <- as.Date(sales$Order.Date,format="%M/%d/%Y")
sales$Ship.Date <- as.Date(sales$Ship.Date,format="%B %d %Y")

max_orderdate <- max(sales$Order.Date)
min_orderdate <- min(sales$Order.Date)

years_betweenorders <- time_length(difftime(max_orderdate, min_orderdate), "years")

days_betweenorders <- time_length(difftime(max_orderdate, min_orderdate), "days")

weeks_betweenorders <- time_length(difftime(max_orderdate, min_orderdate), "weeks")

print(years_betweenorders)
```

```
## [1] 3.08282
```

```r
print(days_betweenorders)
```

```
## [1] 1126
```

```r
print(weeks_betweenorders)
```

```
## [1] 160.8571
```

Exercise 4

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

```r
ship_order_diff <- sales$Ship.Date - sales$Order.Date

mean_shipdays <- time_length(mean(ship_order_diff),"days")

print(mean_shipdays)
```

```
## [1] 152.7946
```

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.

```r
#It was hard for me to incorporate the length() function into this
#This isn't the way I would normally write the code, but to answer the question
#I wrote it this way

#Split customer name into two columns
split_custname <- str_split_fixed(sales$Customer.Name," ",n=2)

#pull out the length of customer first names
firstname_length <- str_length(split_custname[,1])

#If the first name is equal to 4, then count the total number matched to the
#Pattern Bill. Wrap this entire piece of code in a sum function.
sum(ifelse(firstname_length == 4, str_count(split_custname[,1],"Bill"),0))
```

```
## [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**

```
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.

```
sales$State <- factor(sales$State)
is.factor(sales$State)
```

```
## [1] TRUE
```

```
levels(sales$State)
```

```
##  [1] "Alabama"              "Arizona"              "Arkansas"
##  [4] "California"           "Colorado"             "Connecticut"
##  [7] "Delaware"             "District of Columbia" "Florida"
## [10] "Georgia"              "Idaho"                "Illinois"
## [13] "Indiana"              "Iowa"                 "Kansas"
## [16] "Kentucky"             "Louisiana"            "Maine"
## [19] "Maryland"             "Massachusetts"        "Michigan"
## [22] "Minnesota"            "Mississippi"          "Missouri"
## [25] "Montana"              "Nebraska"             "Nevada"
## [28] "New Hampshire"        "New Jersey"           "New Mexico"
## [31] "New York"             "North Carolina"       "North Dakota"
## [34] "Ohio"                 "Oklahoma"             "Oregon"
## [37] "Pennsylvania"         "Rhode Island"         "South Carolina"
## [40] "South Dakota"         "Tennessee"            "Texas"
## [43] "Utah"                 "Vermont"              "Virginia"
## [46] "Washington"           "West Virginia"        "Wisconsin"
## [49] "Wyoming"
```

```
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
```

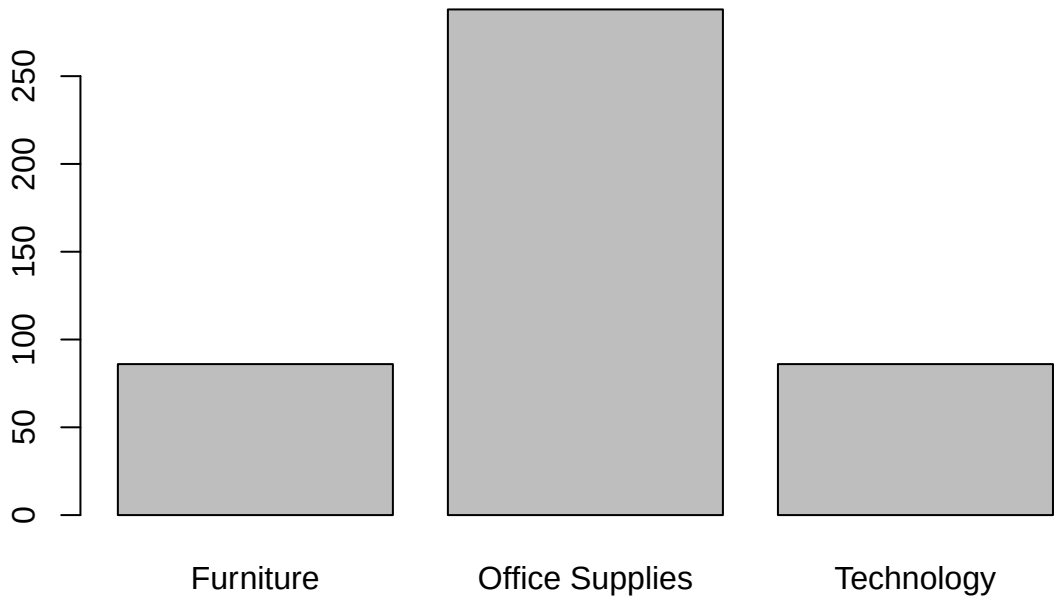
```
##             Maryland        Massachusetts             Michigan
##                   63                   71                  142
##            Minnesota          Mississippi             Missouri
##                   41                   27                   37
##              Montana              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.

```
sales_texas <- subset(sales, State=="Texas")

barplot(table(sales_texas$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.**

```
aggregate(sales$Profit, list(sales$Region), FUN = 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.**

```
orderyear <- format.Date(sales$Order.Date, "%Y")

aggregate(sales$Profit, list(orderyear), FUN = mean)
```

```
##   Group.1        x
## 1    2014 32.24582
## 2    2015 21.58676
## 3    2016 30.10960
```

```
## 4    2017 21.31825
```