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")
#Showing slice so my document doesn't span too many pages. See first
#column name change
sales[1:10 , 1:6]
```

```
##    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
```

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

```
sales$Order.Date <- as.Date(sales$Order.Date,format="%M/%d/%Y")
sales$Ship.Date <- as.Date(sales$Ship.Date,format="%B %d %Y")
#Show order date is now a date vector
is.Date(sales$Order.Date)
```

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

```
#Show ship date is now a date vector
is.Date(sales$Ship.Date)
```

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

```
#Store max and min dates
max_order_date <- max(sales$Order.Date)
min_order_date <- min(sales$Order.Date)

#Calculate time between orders using difftime function wrapped in time_length
years_between_orders <- time_length(difftime(max_order_date, min_order_date), "years")

days_between_orders <- time_length(difftime(max_order_date, min_order_date), "days")

weeks_between_orders <- time_length(difftime(max_order_date, min_order_date), "weeks")

print(years_between_orders)
```

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

```
print(days_between_orders)
```

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

```
print(weeks_between_orders)
```

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

Exercise 4

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

```
#Number of days to ship = ship date - order date
ship_order_diff <- sales$Ship.Date - sales$Order.Date

#Again, wrap mean function in time_length function to get number of days
mean_ship_days <- time_length(mean(ship_order_diff),"days")
```

```r
print(mean_ship_days)
```

```
## [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
#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 length 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**

```r
#Use str_count to count the number of times the whole word table is included
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.

```r
#Assign state to factor
sales$State <- factor(sales$State)
#Check for factor
is.factor(sales$State)
```

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

```r
#Show levels
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"
```

```
#Build table
table(sales$State)
```

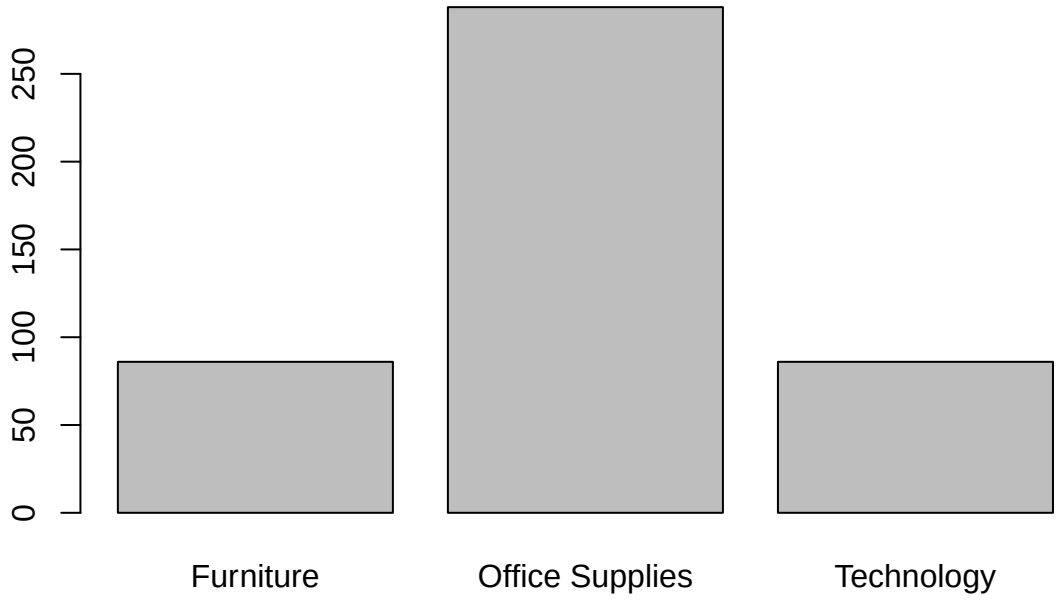
```
##
##              Alabama              Arizona             Arkansas
##                   28                  119                   22
##           California             Colorado          Connecticut
##                  993                   90                   50
##             Delaware District 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.

```
#Used subset to filter dataset
sales_texas <- subset(sales, State=="Texas")
```

```r
#Used table wrapped in barplot. Since State is already a factor
#from above, alphabetical ordering was applied
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.**

```r
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.**

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

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

```
##   Group.1        x
## 1    2014 32.24582
## 2    2015 21.58676
## 3    2016 30.10960
## 4    2017 21.31825
```