Weekly Summary Template

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Tuesday, Jan 24

> **!** TIL
>
> Include a *very brief* summary of what you learnt in this class here.
> Today, I learnt the following concepts in class:
>
> 1. How to read in csv's through functions such as read.csv, read.table or read.delim & also how to hard code a data frame
> 2. Learned about what dplyr is and some of its verbs and their functions
> 3. Learned about ggplot, some of its geoms and how to create plots using its aesthetics.

```
library(tidyverse)
```

```
-- Attaching packages --------------------------------------- tidyverse 1.3.2 --
v ggplot2 3.4.0      v purrr   1.0.1
v tibble  3.1.8      v dplyr   1.0.10
v tidyr   1.3.0      v stringr 1.5.0
v readr   2.1.3      v forcats 0.5.2
-- Conflicts ------------------------------------------ tidyverse_conflicts() --
x dplyr::filter() masks stats::filter()
x dplyr::lag()    masks stats::lag()
```

```
library(knitr)
```

In class we learned how to hard code in a data frame and that the kable function can help 'clean up' tables (make them look better)

```
data_hard_code <- data.frame(
  Name = c("Jake", "Ryan", "Emma"),
  Age = c(25,44,31),
  Height = c(5.10,6.1,5.5)
)

data_hard_code %>%
  knitr::kable()
```

Name	Age	Height
Jake	25	5.1
Ryan	44	6.1
Emma	31	5.5

```
# data <- read.csv("file path.csv") is used to read in a csv file
```

Some of the dplyr verbs that we learned about and some examples of using them are below

```
# Select
head(mpg,10) %>%
  select(c(model,drv, cty)) %>%
  knitr::kable()
```

model	drv	cty
a4	f	18
a4	f	21
a4	f	20
a4	f	21
a4	f	16
a4	f	18
a4	f	18

model	drv	cty
a4 quattro	4	18
a4 quattro	4	16
a4 quattro	4	20

```
# Mutate
iris %>%
  mutate(sepal_area = Sepal.Length * Sepal.Width) %>%
  head(10) %>%
  knitr::kable()
```

Sepal.Length	Sepal.Width	Petal.Length	Petal.Width	Species	sepal_area
5.1	3.5	1.4	0.2	setosa	17.85
4.9	3.0	1.4	0.2	setosa	14.70
4.7	3.2	1.3	0.2	setosa	15.04
4.6	3.1	1.5	0.2	setosa	14.26
5.0	3.6	1.4	0.2	setosa	18.00
5.4	3.9	1.7	0.4	setosa	21.06
4.6	3.4	1.4	0.3	setosa	15.64
5.0	3.4	1.5	0.2	setosa	17.00
4.4	2.9	1.4	0.2	setosa	12.76
4.9	3.1	1.5	0.1	setosa	15.19

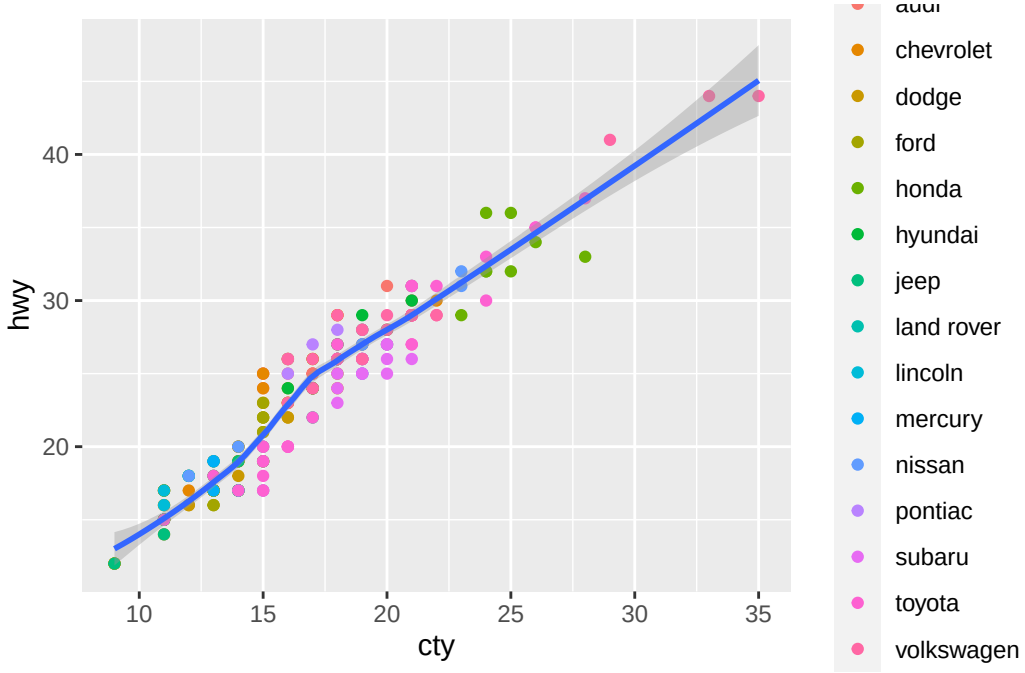
```
# Filter
head(mpg,10) %>%
  filter(hwy > 26) %>%
  head(., 10) %>%
  knitr::kable()
```

manufacturer	model	displ	year	cyl	trans	drv	cty	hwy	fl	class
audi	a4	1.8	1999	4	auto(l5)	f	18	29	p	compact
audi	a4	1.8	1999	4	manual(m5)	f	21	29	p	compact
audi	a4	2.0	2008	4	manual(m6)	f	20	31	p	compact
audi	a4	2.0	2008	4	auto(av)	f	21	30	p	compact
audi	a4	3.1	2008	6	auto(av)	f	18	27	p	compact
audi	a4 quattro	2.0	2008	4	manual(m6)	4	20	28	p	compact

Learned how to use ggplot with some basic geoms and aesthetics

```
# creates scatterplot of city miles/gallon vs hwy miles/gallon
# color encodes each point by its manufacturer
# adds a trend line between the city and highway mpg
plot <- ggplot(mpg)
plot <- plot +
  geom_point(aes(x = cty, y = hwy, color = manufacturer)) +
  geom_smooth(aes(x = cty, y = hwy))
plot
```

```
`geom_smooth()` using method = 'loess' and formula = 'y ~ x'
```



Thursday, Jan 26

! TIL

Include a *very brief* summary of what you learnt in this class here.
Today, I learnt the following concepts in class:

1. How to use ggThemeAssist

2. Some of the packages from the tidyverse library and what they can do
3. Discussed categorical variables/factors and how we can factor variables

Using ggThemeAssist, you can highlight the code below and add in all the extra theme features seen in the next code chunk

```
library(ggThemeAssist)
graph <- mpg %>%
  ggplot() +
  geom_point(aes(x = cty, y = hwy, color = class))
```

```
graph <- mpg %>%
  ggplot() +
  geom_point(aes(x = cty, y = hwy, color = class)) + theme(plot.title = element_text(face
    panel.background = element_rect(linetype = "dashed"),
    plot.background = element_rect(fill = "white",
        linetype = "dashed")) +labs(title = "City mpg vs Highway mpg",
    x = "City mpg", y = "Highway mpg")
```

Some packages in tidyverse that we discussed were purrr, forcats and readr

Purrr provides lots of functional programming tools

```
# creating an ixi matrix and computes the average of the elements

results = c()
for (i in 1:5) {
    M <- matrix(
        runif(i*i), nrow = i
        )
    results[i] <- mean(M)
}
results
```

```
[1] 0.6098401 0.7780875 0.3995246 0.4708869 0.5929083
```

```
# map() -> applies function to each element of matrix and returns output as a list
map(
    1:5,
```

```
    function(i){
        mean(
            matrix(
                runif(i*i), nrow = i
                )
            )
    }
)
```

```
[[1]]
[1] 0.3475075

[[2]]
[1] 0.5473553

[[3]]
[1] 0.563664

[[4]]
[1] 0.4880908

[[5]]
[1] 0.4881025
```

Categorical Variables/Factors

We learned that by using as.factor(), we can break down a column containing categorical variables into its levels

```
var <- mpg$manufacturer
as.factor(var)
```

```
 [1] audi       audi       audi       audi       audi       audi
 [7] audi       audi       audi       audi       audi       audi
[13] audi       audi       audi       audi       audi       audi
[19] chevrolet  chevrolet  chevrolet  chevrolet  chevrolet  chevrolet
[25] chevrolet  chevrolet  chevrolet  chevrolet  chevrolet  chevrolet
[31] chevrolet  chevrolet  chevrolet  chevrolet  chevrolet  chevrolet
[37] chevrolet  dodge      dodge      dodge      dodge      dodge
[43] dodge      dodge      dodge      dodge      dodge      dodge
[49] dodge      dodge      dodge      dodge      dodge      dodge
```

```
 [55] dodge      dodge      dodge      dodge      dodge      dodge
 [61] dodge      dodge      dodge      dodge      dodge      dodge
 [67] dodge      dodge      dodge      dodge      dodge      dodge
 [73] dodge      dodge      ford       ford       ford       ford
 [79] ford       ford       ford       ford       ford       ford
 [85] ford       ford       ford       ford       ford       ford
 [91] ford       ford       ford       ford       ford       ford
 [97] ford       ford       ford       honda      honda      honda
[103] honda      honda      honda      honda      honda      honda
[109] hyundai    hyundai    hyundai    hyundai    hyundai    hyundai
[115] hyundai    hyundai    hyundai    hyundai    hyundai    hyundai
[121] hyundai    hyundai    jeep       jeep       jeep       jeep
[127] jeep       jeep       jeep       jeep       land rover land rover
[133] land rover land rover lincoln    lincoln    lincoln    mercury
[139] mercury    mercury    mercury    nissan     nissan     nissan
[145] nissan     nissan     nissan     nissan     nissan     nissan
[151] nissan     nissan     nissan     nissan     pontiac    pontiac
[157] pontiac    pontiac    pontiac    subaru     subaru     subaru
[163] subaru     subaru     subaru     subaru     subaru     subaru
[169] subaru     subaru     subaru     subaru     subaru     toyota
[175] toyota     toyota     toyota     toyota     toyota     toyota
[181] toyota     toyota     toyota     toyota     toyota     toyota
[187] toyota     toyota     toyota     toyota     toyota     toyota
[193] toyota     toyota     toyota     toyota     toyota     toyota
[199] toyota     toyota     toyota     toyota     toyota     toyota
[205] toyota     toyota     toyota     volkswagen volkswagen volkswagen
[211] volkswagen volkswagen volkswagen volkswagen volkswagen volkswagen
[217] volkswagen volkswagen volkswagen volkswagen volkswagen volkswagen
[223] volkswagen volkswagen volkswagen volkswagen volkswagen volkswagen
[229] volkswagen volkswagen volkswagen volkswagen volkswagen volkswagen
15 Levels: audi chevrolet dodge ford honda hyundai jeep land rover ... volkswagen
```

Can use fct_reorder(), to reorder the values of a given categorical variable based on another variable.

```
# reorganizes the manufacturer levels based on hwy mpg in ascending order
fct_reorder(var, mpg$hwy, .desc = FALSE)
```

```
 [1] audi       audi       audi       audi       audi       audi
 [7] audi       audi       audi       audi       audi       audi
[13] audi       audi       audi       audi       audi       audi
[19] chevrolet  chevrolet  chevrolet  chevrolet  chevrolet  chevrolet
```

```
 [25] chevrolet  chevrolet  chevrolet  chevrolet  chevrolet  chevrolet
 [31] chevrolet  chevrolet  chevrolet  chevrolet  chevrolet  chevrolet
 [37] chevrolet  dodge      dodge      dodge      dodge      dodge
 [43] dodge      dodge      dodge      dodge      dodge      dodge
 [49] dodge      dodge      dodge      dodge      dodge      dodge
 [55] dodge      dodge      dodge      dodge      dodge      dodge
 [61] dodge      dodge      dodge      dodge      dodge      dodge
 [67] dodge      dodge      dodge      dodge      dodge      dodge
 [73] dodge      dodge      ford       ford       ford       ford
 [79] ford       ford       ford       ford       ford       ford
 [85] ford       ford       ford       ford       ford       ford
 [91] ford       ford       ford       ford       ford       ford
 [97] ford       ford       ford       honda      honda      honda
[103] honda      honda      honda      honda      honda      honda
[109] hyundai    hyundai    hyundai    hyundai    hyundai    hyundai
[115] hyundai    hyundai    hyundai    hyundai    hyundai    hyundai
[121] hyundai    hyundai    jeep       jeep       jeep       jeep
[127] jeep       jeep       jeep       jeep       land rover land rover
[133] land rover land rover lincoln    lincoln    lincoln    mercury
[139] mercury    mercury    mercury    nissan     nissan     nissan
[145] nissan     nissan     nissan     nissan     nissan     nissan
[151] nissan     nissan     nissan     nissan     pontiac    pontiac
[157] pontiac    pontiac    pontiac    subaru     subaru     subaru
[163] subaru     subaru     subaru     subaru     subaru     subaru
[169] subaru     subaru     subaru     subaru     subaru     toyota
[175] toyota     toyota     toyota     toyota     toyota     toyota
[181] toyota     toyota     toyota     toyota     toyota     toyota
[187] toyota     toyota     toyota     toyota     toyota     toyota
[193] toyota     toyota     toyota     toyota     toyota     toyota
[199] toyota     toyota     toyota     toyota     toyota     toyota
[205] toyota     toyota     toyota     volkswagen volkswagen volkswagen
[211] volkswagen volkswagen volkswagen volkswagen volkswagen volkswagen
[217] volkswagen volkswagen volkswagen volkswagen volkswagen volkswagen
[223] volkswagen volkswagen volkswagen volkswagen volkswagen volkswagen
[229] volkswagen volkswagen volkswagen volkswagen volkswagen volkswagen
15 Levels: land rover dodge lincoln ford mercury jeep chevrolet audi ... honda
```