Name:

**Working with Data in R Homework (Key)**

For homework this week, you will continue working with the climate data file that was part of your swirl lesson. I want you to work in the script window of R studio and to save your work as an R script file. You will send me your R script, and I will evaluate your homework by running your script.

Remember to first set your working directory to the folder where the climate data file is.

1. **Work off the last graph you made in the swirl lesson. In that graph, you could see there is a slight upward trend in temperature for each Location. This trend might be clearer, however, if we graphed the temperature increase over the past 20 years only. Use piping (%>%) to make the same graph but only using data from the past 20 years.**

climate %>% filter(Date2>"1988-01-01") %>% qplot(data=.,Date2, Tmean.C, facets=Location~., geom=c("point", "smooth"))

1. **Next make a graph that shows how the monthly precipitation is changing over time in each Location. Make the points have different colors based on the month. Make sure your graph has a smoothing function.**

Hint: To create a new variable called month, use the lubridate function month. For some reason, my computer will not recognize month as a function unless I specifically call it within the lubridate package (which is part of tidyverse), so use lubridate::month to call the function.

climate$month=lubridate::month(climate$Date2)

qplot(data=climate,Date2, ppt.mm, color=month, facets=Location~., geom=c("point", "smooth"))

1. **Next create a graph that shows how the annual total precipitation is changing since 1920 in each Location.**

Hint: You might want to make a new dataframe. You will need to use the lubridate package and summarize functions. Before summarizing, filter out 2018 data because there is only one month of data in 2018, so the total precip for the year based on one month would be wrong.

climate$year=lubridate::year(climate$Date2)

precip<- climate %>% filter(Date2>"1920-01-01",Date2<"2018-01-01") %>%group\_by(Location, year) %>% summarise(totalppt=sum(ppt.mm))

qplot(data=precip,year, totalppt, facets=Location~., geom=c("point", "smooth"))

To do this homework, you will need to begin looking up how to do things on your own in R. I have provided a page of resources for you on Canvas. But honestly, the best luck I have in finding help is to google it and generally I find answers in Stack Overflow.

There are many ways to solve these problems in R. As long as your graphs get made and your code works, that is fine by me.