```
install.packages("tidyverse")
library(tidyverse)

#  There are a number of sample tables and datasets from SOURCE??  that we will use for this part of the workshop  #
#  To view the datasets - select one and Ctrl-Enter to view the tibble  #

table1
table2
table3
table4a
table4b

#  Notice that all 5 of these tables contain the same data but in different arrangements   #
#  for the exercise of gathering our data we will use Table 4a                    #
#  Review Table 4a and provide a quick description of what you see                #
#  Can you relate this to your own research data?                       #

newtable4a <- gather(table4a,"1999", "2000", key="year", value="cases")
newtable4a

#  Now try another one on your own.  There is a table called table4b which contains the population for each country  #
#  Try creating a table with the variables country, year, and population using the gather() as we have above        #

table4b
newtable4b <- gather(table4b,"1999", "2000", key="year", value="cases")
newtable4b


########################################################################################################################
####
#  Spread() function                                                    #
#  We will be working with Table2 in this example.  It contains the country, year, type, and count variables         #
#  We want to spread the data so we have a new dataset with the following variables:  country, years, cases, population  #
```

```
table2
newtable2 <- spread(table2, key=type, value=count)
newtable2




################################################################################################################################
####
#  Changing Data Types                                                                    #
#  What types of data do we have in our current file?  To see this use the str() or structure function          #

#  Character to Factor conversion                                                    #

woodchips <- read_excel("woodchips.xlsx", sheet="Sheet1", col_names=TRUE)
woodchips

str(woodchips)

woodchips$sampleID

str(woodchips$sampleID)

as.factor(woodchips$sampleID)

woodchips$sampleID <- as.factor(woodchips$sampleID)


#  Numeric   to Factor conversion                                                    #

str(woodchips$quality)
woodchips$quality <- as.factor(woodchips$quality)
woodchips$quality
str(woodchips$quality)
```

```
# Factor  to Numeric conversion                                    #

str(woodchips$quality)
woodchips$quality <- as.numeric(woodchips$quality)
woodchips$quality
str(woodchips$quality)
```