Instructions: This exercise provides an opportunity to work with data and develop a confidence interval. The provided data set represents battery life in mobile phones for two different types of batteries: NiCad and Li-Ion. The reported times are in minutes starting with power-on, leaving the phone with the screen dark, and waiting until the phone powers itself off because of low battery. The research question is whether the Li-Ion batteries (labeled as type 2 in the data set) offer a better battery life than the NiCads under these conditions.

1. Download the provided CSV file (bBatterydata.csv) and read in the data using read\_csv() (from the readr package) or the Import Data dialog in R-Studio. Examine the data with str() and summary() and provide an overview of what you find in a comment.
2. Use graphical diagnostics to explore the data and report what you see in a comment. Among other options, make sure to use a grouped boxplot to examine the distributions of battery life for each type of battery. Note that boxplot() will take formula language as its first argument, like this: Time ~ Battery
3. Calculate the mean and standard deviation of both NiCad and Li-Ion. Add a comment indicating which mean is higher. Comment on the standard deviations for each subsample. Power user trick: You can use tapply() to apply a procedure like mean or sd to groups:

# tapply is a function that applies a second function to each

# cell of a ragged array

tapply(X=battData$Time,INDEX=battData$Battery,FUN=mean)

1. Use the t.test() command to create a confidence interval for the mean difference between these two vectors of data. Report the numeric values of the upper and lower bounds of the confidence interval.
2. In a brief comment, interpret the 95% confidence interval with respect to the research question. Explain what a confidence interval is and what, if anything, you know about the position of the population mean difference between the two types of battery.
3. Imagine you are now reporting these results back to the engineers who are working on these batteries. Engineers generally have no difficulty with quantitative concepts, but they are not statisticians, so they need thoughtful guidance on making sense of the results. Explain in a comment what caveats, cautions, or warnings accompany the confidence interval you just documented.
4. Share your code and comments