R bootcamp basic stats and plotting worksheet:

1. Take a look at the 'penguin' data set

   Hint: you can use functions such as head(), summary(), unique()

2. Try the following on your own, I will walk you through it soon so don't get too frustrated…
   a. Assign data for the Adelie species to one variable named 'adelie' and assign the subset of the data for the Gentoo species to another variable named 'gentoo'.
   b. Plot the flipper lengths of the two species as two histograms.
   c. Now plot the flipper lengths of the two species so that you can compare them more easily (**Hint**: what is a good plot for summarizing means or medians?)
   d. Is there a statistically significant difference between the flipper lengths of the two species?

3. Plot and compare two other measures on your own....

4. Compare the means of more than two groups.
   a. Plot the flipper length of all three species (**Hint**: you can do this in one figure)
   b. Add a legend with species names to your plot.
   c. Is there a statistically significant difference in flipper length among the three species? (**Hint**: use an ANOVA)
   d. Which species are significantly different (**Hint:** run a post-hoc test)
   e. Add the information from the post-hoc test to your figure (**Hint:** text() is a useful 'low-level' plotting tool)

5. Are body mass and flipper length correlated?
   a. Plot flipper length against body mass
   b. Are these two measures correlated? (**Hint:** use a Pearson's correlation)

c. Color code your plot by species, include a legend on the plot.

d. Do species differ in the relationship between body mass and flipper length?

6. Examine (plot and stats) the relationship between ***bill*** length and ***flipper*** length. Is the relationship between these two variables the same across the three species?