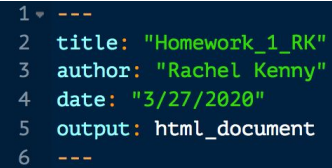# HOMEWORK #3

1. **Prepare your document**
   - Decisions about the organization of your files are up to you. You can either make a new project file and folder every time you work on a homework, or you can keep all of your homework assignments associated with the same project and folder.
   - Create your new rmarkdown file, and save it in the associated folder with your project file (.Rproj) and data. Alternatively, you can just duplicate last week's homework file and delete all of the code after you load your packages and data, then edit the date and title in the first five lines of code (see screenshot for reference).

     ```
     1 ---
     2 title: "Homework_1_RK"
     3 author: "Rachel Kenny"
     4 date: "3/27/2020"
     5 output: html_document
     6 ---
     ```
   - Load the agua chinon data and arthropod data

2. **Data wrangling**
   - Within the agua chinon dataset:
     - Refer to
       - The first 10 rows of data
       - The last 5 rows of data
     - Data type
       - Change the pin number column to character data
       - Change the pin number column to numeric data
       - Change the pin number column to factor data
   - Within the arthropod dataset:
     - Return columns 4-6
     - Return rows 10-15
     - Extract column 7 as a list
     - Extract column 7 as items in a list

3. **Logical statements**
   - Using the arthropod data
     - write an ifelse statement to create a new column which assigns the word "high" for functional evenness values above .25 and "low" for functional evenness values below .25
     - Write an ifelse statement to create a new column which assigns a "0" if the proportional biomass of predators is below .4, and the actual biomass value if it is above .6
     - Write an ifelse statement to create a new column based on ant richness which assigns the word "none" to ant richness of 0, "low" to ant richness values between 1-2, and "high" to ant richness of 3 or greater

4. **Basic statistics**
   - Calculate the mean and standard deviation of:
     - Pin number in the agua chinon dataset
     - Taxa richness in the arthropod dataset
     - Functional evenness in the arthropod dataset

5. **Data visualization**
   - Using the arthropod dataset
     - Create a basic histogram of functional evenness (using base r, not ggplot)
   - ggplot
     - Create a scatterplot showing changes in parasitoid proportional biomass over time (calendar year)
       - Include labels and customize as appropriate
       - Extra credit if you can add a best fit line