Bioinformatics Workshop Exercise Handout #2

Day 1, PM: R
Required Dataset: R_dataset.csv

Console Exercise:

1. Type 3+4 in console, followed by Enter
2. Type 3 + 4 in console, followed by Enter
3. Type 3+4;2+3, followed by Enter

Vectors Exercise:

1. Create two vectors and determine their lengths:
   num_vec <- c(0,1,2,3)
   char_vec <- c("Yes", "No", "Maybe")
   length(num_vec)

Lists Exercise:

1. Combine previous two vectors into one object:
   list1 <- list(num_vec, char_vec)

Object Types Exercise:

1. Try to find the type of the number *2* and the word *dog* on your own.

Reading in a file Exercise:

1. First, set the working directory.
2. Either through Session > Set Working Directory or the command line.
3. Read in the .csv file and save as R object called *test*.
4. View the object.
5. Install and load the dplyr package.

Select Exercise:

1. Produce an R object called *test_s* that has only information from the 1st and 3rd column of the data frame.
2. Produce an R object called *test_s2* that has only information from the 1st and 3rd column, but the data frame is now in the order Column 3, Column 1.

Filter Exercise:

1. Produce a dataset "filter1" that does not include female observations.
2. Produce a dataset "filter2" that only includes observations with femur length equal to or greater than 8.
3. Produce a dataset "filter3" that only includes observations of males with tibiotarsus lengths above 8.

Mutate Exercise:

1. Produce a column called *Leg* to the data table where you are determining the leg length (femur + tibiotarsus). Call the object *mutate1*.

Rename Exercise:

1. Change the name of Sample to ID using an R object *rename1*

R Object Exercise:

1. Create an R object called *Tarsometatarsus_data* with the following data:

Sample	Tarsometatarsus
AIK001	6.3
AIK002	4.9
AIK003	3.4
AIK004	5.8
AIK005	3.1
AIK006	3.2
AIK007	5.0
AIK008	6.8
AIK009	7.4
AIK010	10.6

Combining Datasets Exercise:

1. Combine the tarsometarsus data with the *test* data in one object called *all_data.*
2. Produce a new variable *TotalLength* in the *all_data* object (call the new object *all_data2*) that is the summation of femur + tibiotarsus + tarsometatarsus length
3. Produce a new R object called *simple_data* that contains the following variables: Sample, Sex, Age, TotalLength in that order
4. View *simple_data*

Pipe Operator Exercise:

1. Produce an R object *female_data* from *test* that contains only female data and excludes the sex column.