**R data structure and basic functions.**

Assignment:

1. Write the R statement to make a vector “myscores” that has the scores of (45,48,44,50)
2. Myscores is the point scores on a series of tests, each of which has 52 total points. How do you create myscores\_percent, where you convert the scores to percent?
3. What is the function to find the number of scores in myscores?
4. What is the (single) function to get a simple set of descriptive statistics about myscores, including max, min and other values?
5. For the student Pavel, we create a list that includes the following information: name, bhsc\_program, gpa, where gpa is like 3.7 and bhsc\_program is a string indicating the bhsc stream. For Pavel, name is Pavel, bhsc\_program is BINF, and gpa is 3.85. Write the R statement to make this list and call the resulting list “pavelrec”.
6. Pavel has completed more courses. You want to change the gpa to 3.89. Write 2 different ways to change Pavel’s gpa to 3.89 in pavelrec.
7. You have a new updated way of doing the lists. Instead of just one gpa score, you now want to have the final gpa for each year listed in the gpa variable. Pavel has finished two years, so his gpa variable would hold 3.85 and 3.89. Write a simple R statement to create the pavelrec with this new system (note: you can create it as an entirely new list).
8. Obviously, you can tell how many years a student has completed by the number of entries in the gpa variable (1 entry = 1 year, 2 = 2 years). Write a simple statement (or function) to calculate the number of years a student has completed.
9. Write a statement to add a variable years\_complete to the list to hold this information.
10. “years\_complete” and the gpa entry now have redundant information. When might this be a good design choice and when might it be a bad design choice?

**The following assignments will be graded. Please upload your answers to D2L before the next class:**

1. kval <- c(4, 22, 8, 17, 0.4, 3, 0.1) Write statements for the following:
2. Get the third element of kval
3. Add the number 12 to kval
4. Add the numbers 12, 14, 17 to kval in one statement
5. Get all elements of kval that are >10
6. Get the indices of all elements of kval that are >10 (which)
7. Get all elements of kval EXCEPT the third element
8. Form a 3 x 4 matrix A.
   1. Extract the 2nd row of the matrix
   2. Extract the 3rd column of the matrix
   3. Switch A[1,2] and A[2,1]
   4. How many entries in the first column are larger than 10?
   5. Calculate the mean of each row
   6. Calculate the max of each column
9. Create a vector and find its largest and second largest numbers.

Reading for the next class: The Art of R Programming Chapter 3-6.