Statistics 4861/6861

Assignment 1 Due: Wednesday, January 22

80 points

Turn in hardcopy of your code. Your name should appear on your code listing at the top. Also email me your R code file. Do NOT use a "reply" in your email system to send me your R code file. I will NOT read these. In fact, NEVER send me an email using "reply" to an email I send to the entire class. Any number of students can be on a single email thread when students use "reply". This makes it too difficult for me to follow. If I send you an individual email, addressed only to you, you may use "reply".

Your file name must have your name on it and the assignment number. For example, AlbertEinsteinAssign1.R is the way a student named Albert Einstein would name the file for his first assignment.

1. Given a numeric vector x, produce a vector named where.pos, which contains the indices of the positions where the value of x is positive.
   Example: given x = c(34, -5,0,12,-7,4) you should output a vector named where.pos which has the following entries: 1,4,6.

2. Given a numeric vector x, calculate the sample variance using a loop. Do not use var(x). You can use var(x) to check your answer, however.
3. Use seq or rep to create the sequence: 1,1,1,4,4,4,7,7,7.
4. Given a positive integer n, create the sequence 1,2,3,…,n,n-1,n-2,….2,1.
   Example: n = 5 Your output sequence should be 1,2,3,4,5,4,3,2,1
5. Write code to sum the sequence you created in problem 4. Use a for loop. What do you notice about the sum.
6. Input: a numerc data vector called x, and another vector named bounds. The bounds vector is numeric, and strictly monotonic. We want to bin the data in vector x based on bounds. This is what you would do if you are creating a histogram.
   Output: a vector named bin.count, which contains the count of how many elements of x are in each bin.

   Example: bounds = c(0,2.5,10). The bins are (-Inf,0),[0,2.5),[2.5,10), and [10,Inf). We return a vector of length 4. The first element of the return vector gives a count of how many x entries are in the interval (-Inf,0), the second element of the return vector gives a count of how many x entries are in the interval [0,2.5), etc. Here "[" indicates a closed bound and ")" indicates an open bound. Check the input argument for validity. If x = c(-4,10,5,24,12,34), then bin.count should equal c(1,0,1,4)

   Check that bounds is actually strictly monotonic. If it is not, print an error message.