ENGINEERING H192
DAILY ASSIGNMENT B19

MATLAB: Vectors and loops

One of MATLAB's most powerful features is its natural ability to operate on arrays, thus eliminating much of the need to write loops as you must often do in other programming languages, like C/C++ . The purpose of this assignment is: (1) to further your experience with MATLAB, and (2) to write your program two different ways so that you can compare a "vectorized" version of your program with a program written in a more conventional manner.

You are to write two versions, a vectorized version (**b19V.m**) and a loop version (**b19L.m**), of a MATLAB script file that uses the equation below to determine the standard deviation of the 2006 OSU football team's players' weights. Each version must:

1. Read data from **b10.dat**
2. Determine the average weight
3. Determine the standard deviation of the weights
4. Determine the number of players whose weights vary by more than one standard deviation from the mean
5. Determine the maximum and minimum player weights
6. Display the results in the MATLAB window along with your name, instructor initials, seat number, date, and assignment number.

Version 1: Vectorized – Write your program utilizing MATLAB's built in array operations. You may use built in MATLAB functions such as: **sum(), mean(), max(),** and **min().** Do not use any loops (e.g., for or while).

Version 2: Loops – Write your program using loops (e.g., for or while). Do not use **sum(), mean(), max()** or **min().**

$$s = \pm\sqrt{\frac{\sum_{i=1}^{n}\left(x_i - \bar{x}\right)^2}{\left(n-1\right)}}$$

Copy the file **b10.dat** from **R:\FEH\ENG_H192\Wi09\Daily Assignments\DA19B** into your working directory.

Print out **b19V.m**, **b19L.m**, and a copy of the results from each and submit them with this sheet.

NOTE: Except for comparison purposes, you are not to use the built in function **std()** for either the vectorized or the loop version of your programs.

Name_____Instructor_____Seat_____Hour_____