STAT 798C, HW Set #1, due Wednesday 2/12/03

Copy or "get" the exampfram dataframe from the directory /usr/local/StatData/SplusCrs/.Data , or retrieve the ASCII q dataset **exampfram.asc.gz** which you can re-constitute into an Splus or R data-file yourself using *read.table*, at the URL

http://www.math.umd.edu/~evs/s798C/Data

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For each of the following tasks (a)-(e), give a log of Splus
instructions accomplishing the task, together with an edited log of
the outputs they produce.

(a) Create and display a list called "tempstuff" with the following
components:

minmax = the matrix whose first column is the vector of minima of
          all of the numeric variables and whose second column is the
          vector of maximum values
labvec =  vector of variable names
typvec =  boolean vector with entry T in component i when the i'th
          variable is "numeric" and entry F otherwise

(b) Make and print a 6x10 matrix consisting of the first 6 elements
of the 1st through 8th columns of  exampfram  followed by a column
containing the first 6 elements of the "labvec" list-component and
a column containing 1's and 0's respectively in place of T's and F's
for the last 6 entries of the "typvec" list component.

HINT: what you print as a matrix need not be an Splus "matrix".

(c) First create an 8x8 matrix "check0" consisting of the first 8 rows
of the 8 numeric columns of "exampfram".  Then make and print out a
new 8x4 matrix "checker" consisting of the elements of  "check0"  with
indices (i,j) such that i+j is even, and both i=1,...,8, j=1,..,8. (So
the first row of "checker" consists of the entries (1,1), (1,3),
(1,5), (1,7), the second row of entries (2,2), (2,4), (2,6),
(2,8) etc.)
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(d) Write, test, and display with examples a function FrstMn which will output the vector of means of all numeric columns of an input data-frame:

inputs: dframnam = a data-frame

output: meanvec = a vector of column-means, with dimension equal to the number of numeric columns in dframnam

HINT: look up the help-window on the Splus-function is.numeric

(e) Generate a matrix Mmat of 1000 rows and 10 columns consisting of discrete-uniform (i.e., equiprobable random variables) from the set {1,...,150}. Create a list of 10 named components called Table1 through Table10, where the j'th component is to be a matrix with two named columns:

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Values = vector of distinct ordered-increasing values occurring
         (in the j'th col of Mmat)
Freqs  = number of occurrences of these values in Mmat[,j]
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Hand in the Splus code you use in this exercise; print out Splus statements demonstrating that you have created the desired 10-component list; and hand in a printout of the first 30 rows of the 3rd list-component.

The public data directory /usr/local/StatData *(read-only)* **is available to everyone on MathNet. But if you do not have a MathNet account, then you must access the data as above via the webpage.**