PSYC 6273 – Computer programming for experimental psychology
Fall 2018

Problem set 1

For the following problems, use the function and variable names suggested, and include sufficient help text and comments. Indicate your name in a comment just after the help text in each file.

Email your solutions to me (rfm@yorku.ca) in a single .zip or .tar file named with your last name in lowercase, e.g., murray.zip.

1. Write a function `sample.m` that takes one argument, `x`, that is a matrix. The function returns a randomly chosen element of `x`. However, the function will not return any elements of `x` that are `NaN`.

2. Write a function `randnc.m` that accepts two arguments, m and n, and returns an m × n matrix of random numbers from the standard normal distribution, except that none are more than two standard deviations away from the mean.

3. Write a script `datasim.m` that creates and analyzes some artificial data as follows.

(a) Make a 100 x 1 matrix of randomly chosen proportion correct values that range uniformly between 0.5 and 1.0.

(b) Make a 100 x 1 matrix of randomly chosen reaction times that are normally distributed with mean 0.5 and standard deviation 0.2.

(c) Make the reaction times in (b) more realistic by finding any that are less than 0.1, and setting them to 0.1.

We can think of the results so far as 100 (proportion correct, reaction time) pairs from 100 observers.

(d) Find the mean of the reaction times over all 100 samples.

(e) Find the mean reaction time, after discarding outliers that are more than two standard deviations above the mean.

(f) Find the mean proportion correct over all observers whose reaction times are not more than two standard deviations above the mean.

Due October 18, 2018