PSYC 6273 – Computer programming for experimental psychology
Fall 2022

# 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 near the top of 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. (a) Use Python's `random` module to create the following variables, which contain simulated data from 100 trials of a psychological experiment.

`stimnum` is the stimulus number on each trial. This variable is a 100-element list of integers, drawn randomly from the numbers 1, 2, and 3. (Hint: read about the function `random.choice()`.)

`rt` is the subject's reaction time on each trial. It is a 100-element list of real numbers. Each number is $0.1 + N^2$, where N is a sample from the normal distribution with mean zero and standard deviation one. (Hint: read about the function `random.gauss()`.)

`correct` indicates whether the subject gave the correct response on each trial, encoded as 0 = False, 1 = True. It is a 100-element list of random Boolean values, equal to False with probability 0.2, and True with probability 0.8. (Hint: note that, for example, `random.uniform(0,1)<0.1` is True with probability 0.1 and False with probability 0.9.)

(b) Find the mean reaction time on trials where stimulus 1 was shown.

(c) Find the mean reaction time on trials where stimulus 2 was shown and the observer gave the correct response.

(d) Make a more realistic version of the simulated reaction times `rt`: sample the reaction times from $0.1 + N^2$ on trials where the observer gives the incorrect response, and from $0.3 + N^2$ on trials where the observer gives the correct response.

2. Write a function `normclip()` that accepts one argument, `n`, and returns an n-element list of random numbers that are drawn from the standard normal distribution (mean zero, standard deviation one), except that none are more than two standard deviations away from the mean. Give the argument `n` a default value of one.

*Due October 27, 2022*