In-class exercises for Unit #1

1. Distribution plots (distributionPlotDemo.m): Give the class three mystery distributions in a .mat file, and have them plot them in different ways that are progressively more informative: bar plot (+/- sem), box plot (then add mean +/- sem), distribution plot
   1. D1 = normrnd(5,3,1000,1);
   2. D2 = chi2rnd(5,1000,1);
   3. D3 = [normrnd(2,2,500,1);normrnd(8,2,500,1)];
   4. D4 = unidrnd(10,1000,1) - 0.5;

NOTE: distributionPlot is not a built-in MATLAB function. We will not provide it to them—idea is for them to google ‘matlab violin plot’ and then download the code themselves.

1. Dual-color colorbar (dualcodeImage.m): Programmed exercise (i.e. Ng-ify)
2. PIN Data (mapPinData): Open-ended exercise. Give students PINdata.mat
3. Power of simulations for probability problems:
   1. Rattus binomialis → general function, [y] = pCorr(k,n,p)
   2. 4-choice probability
   3. birthday problem
4. Central Limit Theorem (CLTdemo.m):
   1. use distributions from #1
   2. generate own distributions
   3. plot histograms of sums of 1:n draws