Homework #2 Group component
APM115: Mathematical Modeling

Complete in groups of 3 or 4. Members of the same group can turn in the same code and write-up. Please list the names of your group members.

(20 points) **Stochastic population.** Modify the code shown in class (stochastic_simulation_logistic.m or the python version) to study the evolution of the probability distribution with time. Note that the distribution that we derived analytically in the notes is the equilibrium probability distribution, toward which the probability distribution will evolve.

To do so, make a large number (say 5000) of realizations of the same system. While the different realizations have identical parameters, because we are dealing with stochastic systems (and we are using a random number generator to simulate it), the different realizations will evolve differently.

Now run the 5000 realizations forward in time for 10000 time-steps. After every 100 time-steps, record the distribution of population among the 5000 realizations and plot it. You could do this for every time step but doing this after every 100 time-steps reduces the number of plots that you make.

Observe the evolution of the probability distributions.

Turn in your code and a brief report with plots of some representative probability distributions and a brief discussion of what are shown.