Matlab programming exercises: Additional Examples
ME345 – Modeling and Simulation

Here are some additional problems that might be used for Matlab programming practice. If you have an idea of your own that you are interested in that would be fine as well!

Blackjack (or 21) Card Game. Multiple variations are possible here (wagers, how to treat an Ace which can be either 1 or 11, etc). Recommend that you start with a simple problem and add complexity (multideck, multiplayer, etc).

Random Birthday Statistics Problem. See http://en.wikipedia.org/wiki/Birthday_problem. It can be shown statistically that, in a room of 23 people, it is more likely that two or more people will have the same birthday. To test this, one could generate random birthdays and track how many are needed until two or more match. Do this multiple times (say, for example, 1000 times) and track now many times it took less than 23 people. Plot the number of 'people' it took to have a birthday match versus the number of times it occurred. Do you results agree with the theory?

Automated RISK (the board game) dice roller. I wouldn't go through the details of the game here, but if you are familiar with the game you are familiar with how the dice rolls correspond to the 'armies' at battle. If Player A is attacking with 20 armies and Player B has 5 armies, what are the chances that Player A wins? Can you think of other scenarios that you could analyze to give you an advantage the next time you play a game?

Battleship. In a simplified 1D version, have the computer pick a number (or range of numbers) in a certain range, and track how many guesses the user must make until they score a 'hit'. For a 2D game, have the computer randomly place the ships on the board and track how many guess it takes for you to destroy all the ships.