CS 323
Dynamic Programming Problem Set

Due: Thursday, May 2nd at end of day

1. It is that time of year again!! Baseball is BACK!!!

   It is never too soon to plan for the World Series – Mets vs. Yankees!

   The World Series is a series of up-to 7 games ("best of 7"). There are no tie games, and the first team to win 4 games wins the series (and there are no more games). This means that the series may end after 4 games, or need all 7 to find the World Champion Team!!

   Your assignment is to find the probability that the Mets will win the World Series against the Yankees. (We can do it if the team stays healthy!)

   We will assume that the teams will have statistics similar to the past, with the Mets winning 46.3% of the games, and the Yankees winning 53.7% of the games

   a) Use standard probability to calculate the probability of the Mets winning the World Series against the Yankees.

   b) Devise an algorithm to solve the problem using the dynamic programming technique. (You can think "recursively" to calculate the probability for a total of 4 games, 5 games, etc to help you visualize the scenarios that have the Mets winning the series.)

   c) Write pseudo-code to solve the Mets-Yankees World Series problem.

   d) Write a dynamic (memorization) program to solve the specific Mets-Yankees World Series question and verify the answer against part a.

   Extra Credit:
   Extend the program to allow the user to enter any values for the "best-of-number of games", and the probability of one of the teams winning a single game.