College of Computer Science
Northeastern University
COM 1721: Freshman Honors Seminar

Fall 2002
Handout 9
22 October 2002

Quiz 2

Name: _____

1. Tic-tac-toe is a 2-player game played on a 3×3 board, in which the two players alternate with one player placing an and the other placing an 'O' on an unoccupied cell, respectively. The game terminates when there is a full row, column, or diagonal of symbols of the same kind, or when all the cells are occupied, whichever comes first. If it is the former, then the player whose symbols occupy the full row, column, or diagonal wins.

Place an *upper bound* on the number of different tic-tac-toe games that can be played. Comment on the feasibility of writing a program that plays "perfect tic-tac-toe".

2. Write a program that determines the nth number in the sequence: $1, 3, 9, 27, 81, \ldots$. What is the running time of the program in terms of the input n? Make your program as efficient as possible. (You can use your favorite programming language for the program.)