## Challenge I: Basic Tower of Hanoi

Instruction: You do not need to send the solutions of this exercise set back to me. But, if there is any question, you can ask by meeting me at the office (P604). Have fun with this challenge!

Towers of Hanoi problem: Wooden disks (N disk) of different sizes are stacked on three pegs, and initially, all disks are stacked on the same peg sorted by size, with the largest disk at the bottom. The objective is to transfer the entire tower to one of the other pegs, moving only one disk at a time and never putting a larger disk onto a smaller one.


Source: http://mathworld.wolfram.com/images/eps-gif/TowersofHanoiSolution_700.gif
Transfer entire disks ( $\mathbf{N}$ disks) from peg one to peg three:
a) Write a program to show moves to accomplish N disks program. You may try 4 disks first.
b) Do you agree that the optimal number of moves is $2^{N}-1$ ?

