The Tower of Hanoi or Towers of Hanoi, also called the Tower of Brahma or Towers of Brahma, is a mathematical game or puzzle. It was invented by French mathematician Eduard Lucas in 1883. It consists of three rods, and a number of disks of different sizes which can slide onto any rod. The puzzle starts with the disks in a neat stack in ascending order of size on one rod, the smallest at the top, thus making a conical shape.

The objective of the puzzle is to move the entire stack to another rod, obeying the following rules:

- Only one disk may be moved at a time.
- Each move consists of taking the upper disk from one of the rods and sliding it onto another rod, on top of the other disks that may already be present on that rod.
- No disk may be placed on top of a smaller disk.

The three-disc Tower-of-Hanoi has three rods A, B, and C, on which can be placed three discs (Labeled D3, D2, D1). Disc D3 is larger than disc D2 which is in turn larger than disc D1. We start with the three discs on rod A and want to move them to one of the other rods. Let the operators that describe actions be given by the schema move(x; y), where x can be any of the three discs D1, D2, or D3, and y can be any rod A, B, or C.

The interactive model of this puzzle can be found, for example, at http://www.mazeworks.com/hanoi/

You have to:
1) Define state description for this puzzle; 2) Identify a goal state and draw the search space containing all possible states of the puzzle; 3) Design a search tree; 4) Find solutions using the Breadth-First Search and Depth-First Search algorithms. You have to show your solution (draw search trees and show their traversal); 5) Compare these solutions in terms of their complexity/efficiency; 6) Utilize your solutions with the Breadth-First Search and Depth-First Search algorithms in a Matlab or a high level language program (for a Matlab program a source code is enough, for a high level language an executable file shall be presented along with a source code). A source code must be commented explicitly.

The cost of the tasks 1)-5) is 15% per each (so you may earn 75% for that part). The cost of the task 6) is 50% (A bonus is included). Thus you may get 125% for this project.
Important!
Put your file (files) and the report in the subfolder Project 3 (create it) located in the designated folder
(named by your last name) in the folder
\barney.tamut.local\classes$\CS 360 001
(The folder \barney.tamut.local\classes$ is mapped from all the lab computers, so you may easily find
it through My Computer in Windows XP or Computer in Windows 7 (the U: drive)