Final Report

**Tower Of Hanoi Problem**

**Artificial Intelligence**

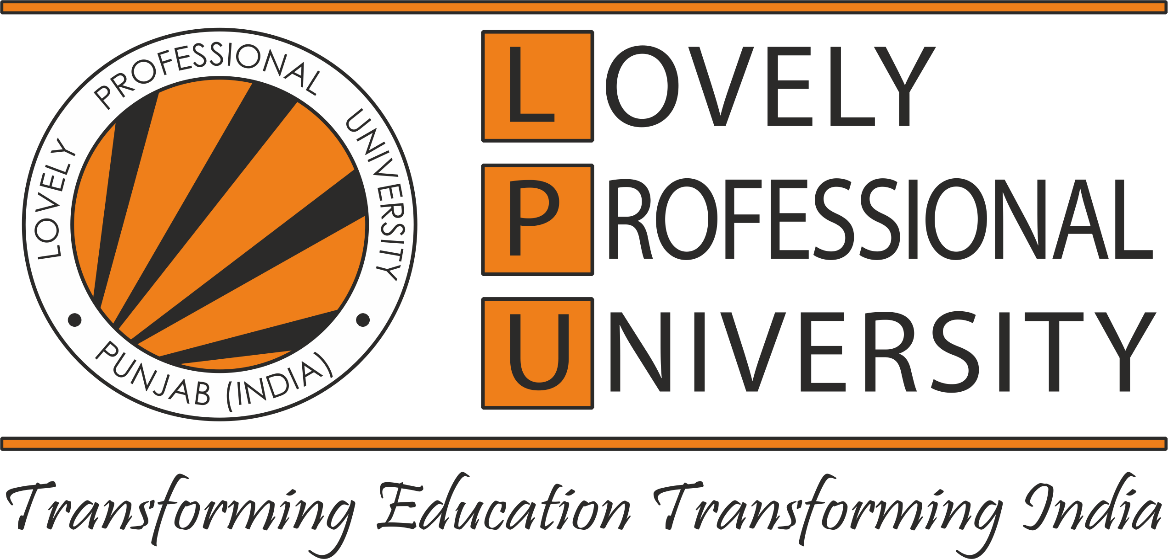
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**Introduction**

The Tower of Hanoi (also called the Tower ofBrahma or Lucas' Tower and sometimes pluralized as Towers) is a [mathematical game](https://en.wikipedia.org/wiki/Mathematical_game) or [puzzle](https://en.wikipedia.org/wiki/Puzzle). 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](https://en.wikipedia.org/wiki/Cone) shape.

**Origin**

There is an old legend about a temple or monastery, which contains three poles. One of them filled with 64 gold disks. The disks are of different sizes, and they are put on top of each other, according to their size, i.e. each disk on the pole a little smaller than the one beneath it. The priests, if the legend is about a temple, or the monks, if it is about a monastery, have to move this stack from one of the three poles to another one. But one rule has to be applied: a large disk can never be placed on top of a smaller one. When they would have finished their work, the legend tells, the temple would crumble into dust, and the world would end.  
  
But don't be afraid, it's not very likely that they will finish their work soon, because 264 - 1 moves are necessary, i.e. 18,446,744,073,709,551,615 to move the tower according to the rules.  
  
But there is - most probably - no ancient legend. The legend and the game "towers of Hanoi" had been conceived by the French mathematician Edouard Lucas in 1883.

**Rules Of The Game**

* Only one disk may be moved at a time.
* Only the most upper disk from one of the rods can be moved in a move
* It can be put on another rod, if this rod is empty or if the most upper disk of this rod is larger than the one which is moved.

**Number Of Moves**

The number of moves necessary to move a tower with n disks can be calculated as: 2n - 1

**Recursive program**

def TOH(disks, source, auxiliary, target):  
 if disks == 1:  
 print('Move disk 1 from rod {} to rod {}.'.format(source, target))  
 return  
  
 TOH(disks - 1, source, target, auxiliary)  
 print('Move disk {} from rod {} to rod {}.'.format(disks, source, target))  
 TOH(disks - 1, auxiliary, source, target)  
  
  
disks = int(input('Enter number of disks: '))  
TOH(disks, 'A', 'B', 'C')

**Work Distribution**

1. Gaurang :- finding logic and creating algorithm
2. Shivani :- Implementing in source code
3. Shabbir :- Compilation and testing