- Zip all your files and label the zip file as **[Roll number in lower case]_hw4.zip**
- The scripts will be executed and compared against the submitted PDF file.
- Submit a single zip file containing `.tex, .py, .pdf` and image files only.
- Generic instructions from previous homeworks stand.
- **This assignment is to be done entirely in Python**

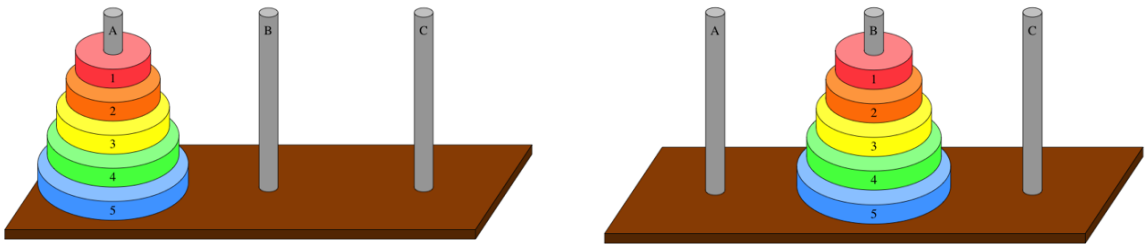
Recussive Powers

Write a simple recurssive function `power(x,n)` that returns the value of x^n, where n is an integer.

The Eight Queens

Write a recurssive program to place eight queens on a standard chess board so that they do not attack each other.

The Towers of Hanoi



(a) Initial (b) Final

Figure 1: The initial and final positions of the disks.

There are three pegs and N disks (5 in the example of Fig. 1). These disks (or different radii) are stacked such that a smaller disk always sits on top of a bigger disk. The game starts by positioning N disks stacked on top of each other on a peg. The goal is to move these disks to another peg. There are two rules,

1. You may move only one disk at a time.
2. A bigger disk cannot sit on top of a smaller disk.

You are required to do the following,

1. Write a recurssive code that outlines the sequence of moves to be performed, i.e., `Peg 1 to Peg 3, Peg 2 to Peg 3`
2. Plot the number of moves required as a function of N, the number of initial disks.
3. Your report must contain the algorithm used and the number of moves.
4. Will you ever need more than three pegs? Can it be done in two pegs?