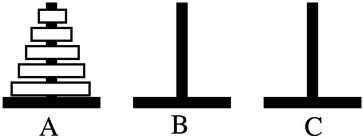
**Homework Assignment - 3**

1. Write a program to find factorial of a number using recursion and iteration.
2. a. Write a function to read a string from the console and display its contents in reverse by using recursion and iteration.

b. Write a program using recursion to find if a given string is a palindrome or not.

1. Write a program to find the nth Fibonacci number using recursion and iteration.
2. Write a program to get the largest element of an int array using recursion and iteration.
3. Write a function gcd(int n1, int n2) that takes two positive integers n1 and n2, and calculates GCD using recursion.
4. Write a function power( int n, int exp) to calculate the power of a number n using recursion.
5. Using recursion, write a function isprime(int n, int ) that checks if n is prime or not.
6. Write a function calculate\_sum(int n) that calculates sum of all the digits of number n.
7. Write a function to\_binary(int n) that prints binary number equivalent of decimal number n.
8. There are three rods A, B, C, and *n* disks of different sizes which can slide onto any rod. Initially, the disks are in a neat stack in ascending order of size on rod A, the smallest at the top, thus making a conical shape. You have to write a recursive program to move the entire stack of disks to rod B, obeying the following simple rules:

* Only one disk can be moved at a time.
* Each move consists of taking the upper disk from one of the stacks and placing it on top of another stack i.e. a disk can only be moved if it is the uppermost disk on a stack.
* No disk may be placed on top of a smaller disk.
* A disk may be placed on any rod if it obeys the above rules.
* All disks in the following figure are in A; you need to move them all to B following above rules.



You may use a function void towers(int n, char fromrod, char torod, char intermediaterod) and call it recursively, each time with different values of fromrod, torod and intermediaterod.

Take the number of disks n as input from user during runtime. Print all the movements of disks on the screen, such as:

*Disk 1 moving from rod A to rod B using C as intermediate rod, etc.*