



## Assignment 6 – Recursion-1

1. Multiply two numbers  $m$  &  $n$  using only addition & subtraction. Use Recursion.
2. Count number of zeros in an integer. Use Recursion.
3. Write a function that returns the sum of the digits of an integer.
4. Write a function that returns sum of all elements of an array.
5. Given  $k$  find the geometric Sum i.e.  $1 + 1/2 + 1/4 + 1/8 + \dots + 1/(2^k)$
6. Use recursion to check if a given String is palindrome or not.
7. Given a string, compute recursively (no loops) a new string where all appearances of "pi" have been replaced by "3.14".

Eg :

`changePi("xpix") → "x3.14x"`

`changePi("pipi") → "3.143.14"`

`changePi("pip") → "3.14p"`

8. Given a string, compute recursively a new string where all the 'x' chars have been removed.

Eg :

a. `noX("xaxb") → "ab"`

b. `noX("abc") → "abc"`

`noX("xx") → ""`

9. Write a recursive function to convert a String into the number it represents.  
e.g. for input "1231" you should return integer 1231.
10. Given two Strings check if one is reverse of the other.

11. Given a string, compute recursively a new string where identical chars that are adjacent in the original string are separated from each other by a "\*".

Eg :

- a) `pairStar("hello")` → "hel\*lo"
- b) `pairStar("xyyy")` → "x\*xy\*y"
- c) `pairStar("aaaa")` → "a\*a\*a\*a"

12. Find a recursive solution to the towers of hanoi puzzle. You don't have to write code for this. Read about towers of hanoi on wikipedia.