19CSE302 – Design and Analysis of Algorithms

Lab Assignment 1

1. Find the sum of first N natural numbers using Iterative and Recursive algorithms. Find the time taken to execute the same by varying 'N's value and plot it using python's plot function.
2. Perform linear and binary searches for an array of 10000 elements. Use random function in Python to generate the integer array elements in the range 1 to 1000. The search key is an input given by the user. Plot the time taken by the algorithm for 5 different searches when executing the two algorithms.
3. Write a recursive function to convert the entered string of digits into the integer it represents. For example, 13531 represents the integer 13,531.
4. Write a short recursive Python function that takes a character string *s* and outputs its reverse. For example, the reverse of **pots&pans** would be **snap&stop**.
5. Write a short recursive Python function that determines if a string *s* is a palindrome. For example, **racecar** and **gohangasalamiimalasagnahog** are palindromes.