

## Assignments (Lab 6)

**NB:** This paragraph is common for all the questions. The programs should work for any value of N (as high it may be). What is the complexity of the algorithms? Please state the reason with a proper explanation [Write on a white paper and submit the scan copy with the assignment PDF file]. Each program should be run for at least TWO test cases. If you are assigning any memory through malloc() function, remember to free() up that memory at the end of the program.

1. Implement an integer stack using Linked List. PUSH and POP operations should be clearly defined. WAP to calculate the factorial of a number N using the above-defined stack. The number N should be taken as user input.
  
2. Implement a character stack using Linked List. PUSH and POP operations should be clearly defined. WAP to take a random string as user input. The string should be a combination of alphabets. Traverse through the string and do the following operations.
  - If a consonant is encountered, PUSH to the stack.
  - If a vowel is encountered, POP from the stack
  - Show the content of the top of the stack after each operation
  
3. Evaluation of a Prefix expression using stack (Linked List implementation). Your program should do the following.
  - User should take an infix expression as input
  - WAP to convert this infix expression to Prefix expression
  - WAP to evaluate the above Prefix expression using stack.