Indian Institute of Technology Roorkee
MAN106 Data structures

Tutorial : Stack Applications

1. Transform each of the following infix expressions into postfix expressions (Using operand stack):
   i. (A-B)*(C/D)
   ii. (A+B^D)*(E-F)+G
   iii. A*(B+D)/E-F*(G+H/K)
   iv. (A+B)*(C$(D-E)+F)/G)$(H-J)

2. Transform the infix expressions into prefix expressions in the Q.2.

3. Transform the following prefix expressions into infix:
   i. +A-BC
   ii. ++A-*$BCD/+EF*GHI
   iii. +-$ABC*D**EFG

4. Transform each of the following postfix expressions to infix:
   i. AB+C-
   ii. ABC+-
   iii. AB-C+DEF-+$
   iv. ABCDE-+$*EF*-
   v. AB+C*DE--FG+$

5. Write following algorithms:
   Conversion of infix to postfix expression
   Conversion of infix to prefix
   Evaluation of postfix expression
   Evaluation of prefix expression

6. The Tower of Hanoi problem involves a stack of n graduated disks and a set of three needles called A , B and C. The initial setup places the n disks on needle A. The task for the player is to move the disks one at a time from needle C. The challenge is the fact that at no time a larger disk can be placed on top of a smaller disk. Your task is to develop a program that demonstrates the Tower of Hanoi problem.