COL-216 ASSIGNMENT-2

KURISETI RAVI SRI TEJA-2019CS10369
GATTU KARTHIK-2019CS10348

APPROACH USED TO SOLVE:

1)We assumed that the string will be maximum of 100 characters and allotted space of 100 bytes to it.
2)We iterated over the string to find its length so that for further processing we only iterate until we reach the last character of input string.
3)We checked if it is a proper postfix-expression using an algorithm given below and raised an invalid input message if it was not a proper-postfix expression.
4)We allocated a space of 50 words for an array which we used to implement a stack i.e., we used a pointer to denote the top address of the stack which we used to iterate over the array.
5)We iterated over the string and checked if the character was of type ‘0’-‘9’ or any operator.
6)If the char was in the range ASCII 48-57,it was converted to corresponding int value and added it to stack. In other cases we performed the corresponding operation i.e., *:multiplication,-:subtraction,+:addition between the top two elements of the array and pushed the result back into the stack.
7)Finally we printed the result which is the top element of the stack.

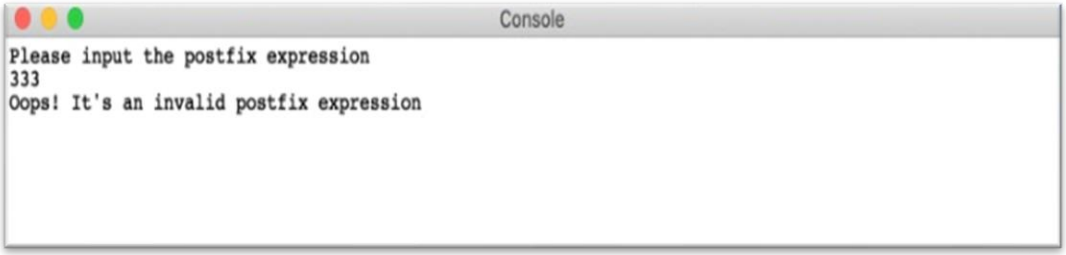
ASSUMPTIONS:
1)We used that the input string consists of characters from the set
S:={‘0’,’1’,’2’,’3’,’4’,’5’,’6’,’7’,’8’,’9’,’*’,’+’,’-‘}
2)Maximum size of input string is 100(including end of string character).

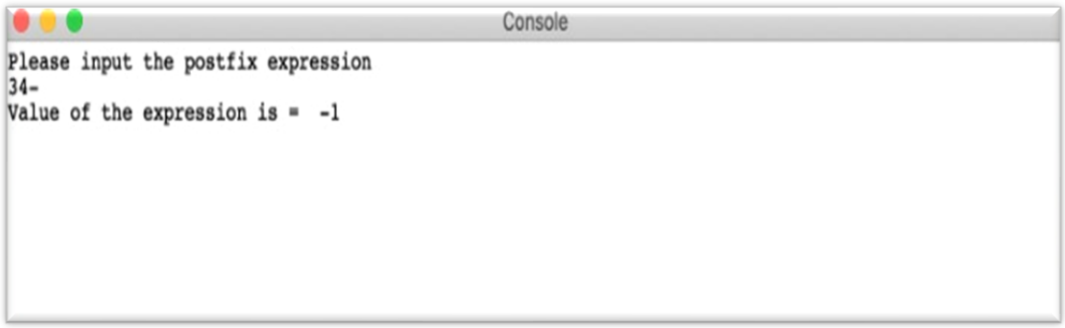
PSUEDOCODE TO VALIDATE PROPER POSTFIX EXPRESSION:

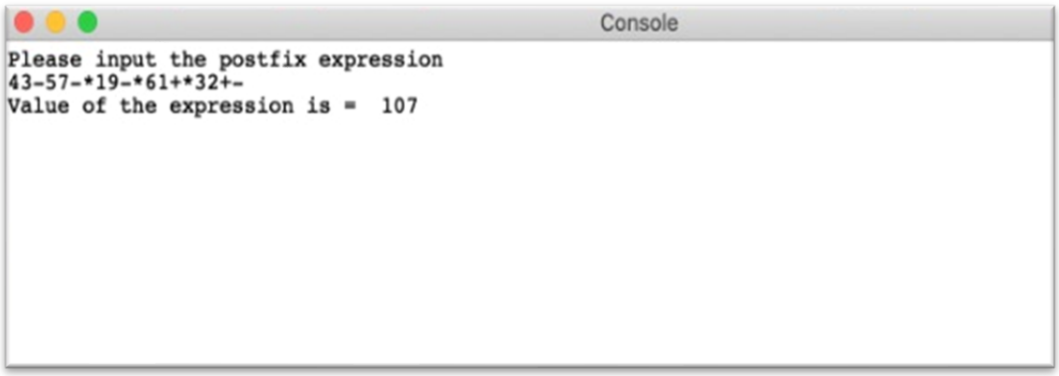
```
Algorithm validexpression(String s)
 int i=0; int counter=0;int n=s.length;
S={‘0’,’1’,’2’,’3’,’4’,’5’,’6’,’7’,’8’,’9’};
T={’*’,’+’,’-‘}

for i=1 to n do
        if(s[i] in S) then do
          counter+=1;
        else
          counter-=2;
          if(counter<0) then do
                return false;
        counter+=1;
if(counter!=1) then do
        return false;
else
  return true;
```

TESTCASES TESTED ON:

1)We tested on different types of testcases i.e., we checked some invalid expressions limited to the design choice (All characters belong to the set S={‘0’,’1’,’2’,’3’,’4’,’5’,’6’,’7’,’8’,’9’}) and some valid postfix-expressions generated from the given CPP Code.




Console
Please input the postfix expression
34-
Value of the expression is = -1


Console
Please input the postfix expression
43-57-*19-*61+*32+-
Value of the expression is = 107


Console
Please input the postfix expression
345----
Oops! It's an invalid postfix expression