COL216 Assignment2 Report

Input reading:

Input is read as a string only. Just write the postfix expression when asked to write a postfix expression on console.

Approach & Code:

First the string that we took is stored in a pre declared buffer of size 1002 bytes. Then we read the string character by character and stored each operand that we got into the stack until we saw a operator and then took the last two recent operands stored in stack and did the operation according to the operator and stored the result there only in stack. We keep on doing this until we encounter a newline character.

Example: "325*+" (without the quotes).
   execution for the above expression, using a stack structure:
3 -> push onto the stack. Stack contents: 3
2 -> push onto the stack. Stack contents: 3 2
5 -> push onto the stack. Stack contents: 3 2 5
* -> pop the top 2 stack elements, perform the multiplication, then push the result onto the
stack. Stack contents: 3 10
+ -> pop the top 2 stack elements, perform the addition, then push the result onto the stack.
At last we gave this output from stack.

Now when nothing is given as input we print: (let Error1)
  "Error empty string
   Please run again and enter a postfix expression"

When an invalid postfix expression is given we wrote: (let Error2)
   "Invalid postfix expression
     Please run again and enter a valid postfix expression"

Invalid postfix expression encounters following cases:
1. When any other character is being given in expression other than constant integer operands in the range 0-9 and operators + , - and * .
2. When any whitespace is there between input postfix expression, it will also be considerd as a invalid postfix expression.
3. When number of operands is not equal to (number of operators + 1) in the postfix expression.

We have checked our code with the following test cases.
1. "325*+" : a simple basic case.
Ans- 13.

2. "": empty string.
Ans- Error1.   (see above what is shown on console)

3. "4": only a single digit in expression.
Ans- 4.

4. "324**+": case when number of operands is not equal to (number of operators + 1)
Ans- Error2.   (see above what is shown on console)

5. "435 7++-": when whitespace was included in postfix expression.
Ans- Error2   (see above what is shown on console)