

Approach taken to solve the problem:

1. To evaluate the postfix expression, we maintain a stack (which is implemented using the stack pointer $\$sp$) with push and pop operations.
2. We scan the given input infix expression exp and do the following:
 - a. If the token is an operand (digit) then we push it into the stack.
 - b. If the token is an operator, then we pop the operands from the stack, Evaluate the expression and push the result back on the stack.
3. When the expression has ended then the last number remaining on the stack is the answer.
4. If the exp length is 0, then the output is 0.
5. If exp is an invalid postfix expression, then the output is given as: *"Invalid postfix!"*.
6. To check if the exp is invalid: when we complete the scan of the expression and the stack does not contain exactly 1 element, then exp is invalid.
7. If exp contains symbols other than as specified in the problem statement, then the result is *"Invalid input!"*.

Constraints:

1. Input – Postfix expression with constant integer operands in the range 0 – 9 and operators +, −, *.
2. Output – An integer denoting the result of the postfix expression or *"Invalid postfix!"* or *"Invalid input!"* without the quotes.
3. It is assumed that the input string length is no more than 1000 and contains no whitespaces.

Testing Strategy:

1. We have considered all the possible inputs and cross checked our program output with expected manual evaluation.
2. Some random postfix expressions were tested and then cross checked with the expected manual evaluation.

Corner Points:

Input Expression	Program Output	Expected Output
325+*	13	13
3-	Invalid Postfix!	Invalid Postfix!
434*-	-8	-8

0 3 -	-3	-3
ϵ (empty string)	0	0
$44*4^*$	64	64
+	Invalid Postfix!	Invalid Postfix!
122-12=/1	Invalid Input!	Invalid Input!

Random Points:

Input Expression	Program Output	Expected Output
122-12-34+67-122*+4-2+	Invalid Input!	Invalid Input!
91-3-3+1+9+	18	18
++++-11-+*	Invalid Postfix!	Invalid Postfix!
26+81*+49*-5+37*-	-36	-36
ϵ	0	0
03-68*+3-09*+32*-	36	36
12+3+4+5+6+7+8+91*2*3*3*3*4*+5-6-7-8-9-	1945	1945