Using Stacks to Evaluate Postfix Expressions

The algorithm:

Scan input from left to right
if (input is a number)
    push it onto the stack
else if (input is an operator)
    obtain 2 numbers from, and pop them off, the stack
    perform the operation (NOTE: 2nd number obtained must
    be made the left operand)
    push the result onto the stack
else
    do nothing (simply discard input)

The stack now contains the desired result

E.g.: Use a stack to evaluate $5 \ 3 \ 2 \ * \ + \ 4 \ - \ 5 \ +$

(NOTE: In the following, the stack has the top to the right.)

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Stack</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>5 3</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>5 3 2</td>
<td></td>
</tr>
<tr>
<td>*</td>
<td>5 6</td>
<td>$3 * 2 = 6$</td>
</tr>
<tr>
<td>+</td>
<td>11</td>
<td>$5 + 6 = 11$</td>
</tr>
<tr>
<td>4</td>
<td>11 4</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>7</td>
<td>$11 - 4 = 7$</td>
</tr>
<tr>
<td>5</td>
<td>7 5</td>
<td></td>
</tr>
<tr>
<td>+</td>
<td>12</td>
<td>$7 + 5 = 12$</td>
</tr>
</tbody>
</table>

Answer: 12