

Q Given a balanced parenthesis string,
compute the score of the string
based on:-

- ① () has score 1
- ② AB has score A+B, where A and B, are balanced parenthesis strings
- ③ (A) $\rightarrow 2 \times A$ (score)

Eg: ① () $\rightarrow 1$
② (()) $\rightarrow 2$
 1×2

③ () () $\rightarrow 1 + 1 = 2$

④ (()) (()) $\rightarrow 2 + 1 = 3 \times 2 = 6$

Diagram illustrating the calculation of the score for the string "((()()))". The string is shown with arrows indicating the matching pairs and their scores. The final score is 6.

Stack diagram showing the state of the stack during the calculation of the score for "((()()))". The stack contains 1 and 2.

Diagram illustrating the calculation of the score for the string "((()()))". The string is shown with arrows indicating the matching pairs and their scores. The final score is 6.

Stack diagram showing the state of the stack during the calculation of the score for "((()()))". The stack contains 6.

Final score: 6

```

class stack {
    getMin();
    void push();
    int pop();
    int getMin();
}

```

Stack diagram showing the state of the stack during the calculation of the score for "((()()))". The stack contains 10, 20, and 50.

getMin() $\rightarrow 3$
getMin() $\rightarrow 10$

TC $\rightarrow O(1)$
SC $\rightarrow O(1)$

Stack diagram showing the state of the stack during the calculation of the score for "((()()))". The stack contains 10, 12, and 6.

Min stack diagram showing the state of the stack during the calculation of the score for "((()()))". The stack contains ∞ , 10, and 6.

Stack diagram showing the state of the stack during the calculation of the score for "((()()))". The stack contains 10, 6, 13, 16, 3, and x-min.

push(10);
push(6);
push(13);
push(16);
push(3);
push(2-1);
push(15);
pop();
pop();
push(x);

min = 3
new element $\rightarrow x$
 $x < \min$
 $\Rightarrow x$ is the new min
 $x - \min < 0$
 $x - \min \rightarrow (-ve)$

Stack diagram showing the state of the stack during the calculation of the score for "((()()))". The stack contains 3, 2, 6, 5, 7, -4, and -1.

min = 1
min = min - st.top()
 $= 1 - (-1) = 2$
 $-2 - 2 = -4$
min \rightarrow push(x);
 $2x - \min$
 $2(14) - 15 = 13$
 $2(-12) - 15 = -39$
min = 15