

Examples on Stack & Queue

i) Leetcode Pbm No. 20 :-

$$s = "()"$$

$$o/p = \text{true}$$

$$s = "[\underline{]} \underline{)} \underline{\{ } \underline{\}]"$$

$$o/p = \text{true}$$

$$s = "[()]"$$

$$o/p = \text{true}$$

$$s = "[]"$$

$$o/p = \text{false}$$

$$s = "\{[\}]"$$

$$o/p = \text{false}$$

$$s = "]["$$

$$o/p = \text{false}$$

```
import java.util.*;
```

$$s = " \underline{\underline{[}} \underline{\underline{\{ }} \underline{\underline{\]}} \underline{\underline{\}}]" \quad \begin{matrix} 0 \\ 1 \\ 2 \\ 3 \\ 4 \\ 5 \end{matrix}$$

```
Stack<Character> st = new Stack<Character>();
```

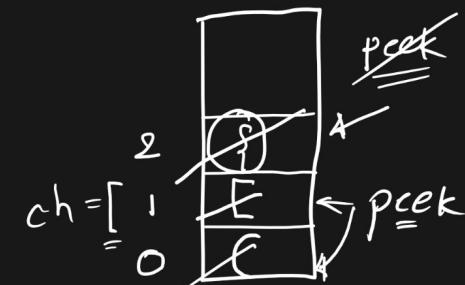
```
for(int i=0; i < s.length(); i++)
```

```
{
```

```
char c = s.charAt(i);
```

```
if (c == '(' || c == '{' || c == '[')
```

```
* { st.append(c); }
```



$$s = " [\{] }"$$

$$\begin{array}{l} i=0 \quad s[0] = [= c \\ i=1 \quad s[1] = \{ = c \end{array}$$



else
 { if (st.empty())
 return false;

 char ch = st.peek(); ch = '{'
 if ((ch == '{' && c == '}') ||
 (ch == '[' && c == ']') ||
 (ch == '(' && c == ')'))

 {
 st.pop();

 }
 }

else return false;

→ }

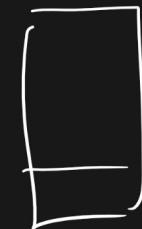
return st.empty();
 true

i=2 s[2] =] = c

s = "] [

{] x

✓



Stack

- 1) peek()
- 2) pop()
- 3) append()
- 4) empty()

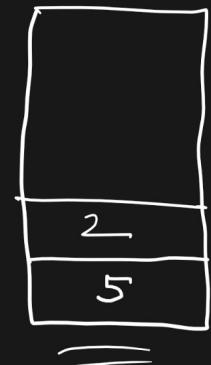
2) Leetcode 682:-

Operation = $\left[\begin{matrix} "5" \\ \underline{\underline{5}} \\ , \end{matrix}, \begin{matrix} "2" \\ \underline{2} \\ , \end{matrix}, \begin{matrix} "D" \\ \underline{D} \\ , \end{matrix}, \begin{matrix} "+" \\ + \\ , \end{matrix}, \begin{matrix} "C" \\ \underline{C} \\ \end{matrix} \right]$

O/p = sum of record



String array



A) if incoming operation integer string value
= push inside the stack that integer record

int r = Integer.parseInt("5")
st.push(r)

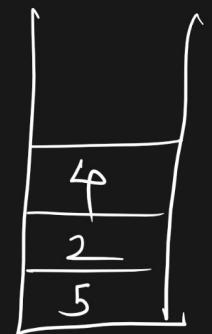
D) if incoming char string "D"

= take peek record & double that value
& push into stack

Peek = 2

$$= 2 \times 2 = 4$$

int stack



3) if incoming string operation value " + "

= take last & last_sec value of stack

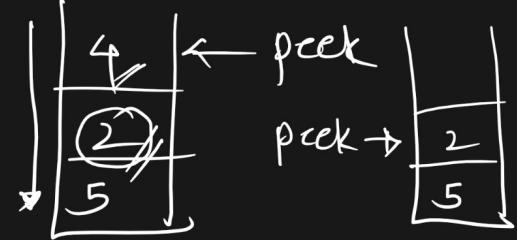
↳ int last = st.pop(); $\Rightarrow 4 \checkmark$

st.push(last); \Rightarrow remove 4

↳ int last_sec = st.pop(); $\Rightarrow 2 \checkmark$

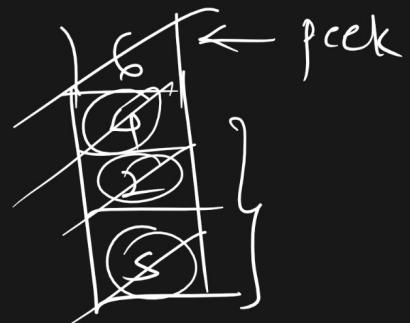
st.push(last)

st.push(last + last_sec)



4) if incoming operation " C "

then we have to removing last record



\Rightarrow st.pop();

int result = 0

5) sum of records \Rightarrow

while (st.empty())
 {
 result = result + st.pop();
 }
 }

$$\begin{aligned} 6+4 &= 10 \\ 4+2 &= 6 \\ 6+5 &= 11 \end{aligned}$$

return result; \Rightarrow || Ans =

H.W. 1) Leetcode 682

✓ 2) Infix to postfix conversion \Rightarrow Stack

2 + 5 infix
→

25+ \Rightarrow position

+ 25 ← prefix

The diagram illustrates the conversion of the infix expression $2 + 5 - 1$ into the postfix expression $25+1- =$.

Infix: $2 + 5 - 1$

Postfix: $25+1- =$

A vertical line labeled "infix" points down to the infix expression. A horizontal line labeled "postfix" points right to the postfix expression.