

Problem 1:

Exp: "5 1 2 + 4 * + 3 -"

step1: Initialize an empty stack

stack[];

step2:

Token	Action	Stack after action
5	push 5	[5]
1	push 1	[5,1]
2	push 2	[5,1,2]
+	pop 1,2->compute 1+2=3-> push 3	[5,3]
4	push 4	[5,3,4]
*	pop 3,4->compute 3*4=12-> push 12	[15,12]
+	pop 5,12->compute 5+12=17-> push 17	[17]
3	push 3	[17,3]
-	pop 17,3->compute 17-3=14-> push 14	[14]

Problem 2:

Given Input:

k=3;

Queue before reversal: [1,2,3,4,5];

step1: Push first k elements onto stack

stack(top->bottom) Queue after popping

3 [4,5]

2 [4,5]

1 [4,5]

step2: Pop from stack & Enqueue back

stack(top->bottom) Queue after enqueueing

(empty) [4,5,3,2,1]

step3: Move remaining elements to back

Queue Before Move Queue after Move

[4,5,3,2,1] [3,2,1,4,5]

Problem 3:

Step	Queue	Processing Node	Updated Distance Array
1	[0]	0	[0,1,1,...](added 1&2)
2	[1,2]	1	[0,1,1,2,2](added 3&4)
3	[2,3,4]	2	[0,1,1,2,2](No changes)
4	[3,4]	3	[0,1,1,2,2](No changes)
5	[4]	4	[0,1,1,2,2](No changes)