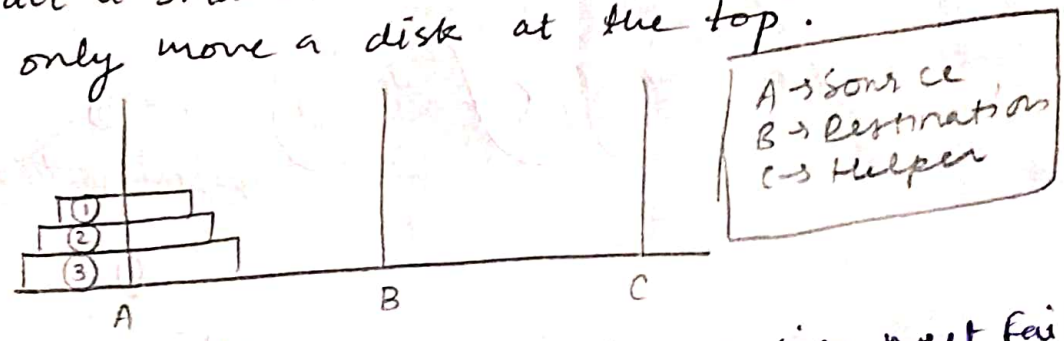
TOWER OF HANOI

- Print the instructions to move the disks.
- From tower 1 to tower 2 using tower 3
- Rules:
  1. move 1 disk at a time
  2. never place a smaller disk under a larger disk
  3. You can only move a disk at the top.



Expectations

toh(3, A, B, C)

- Humari toh function se yeh expectation hai ki yeh instructions print krega! Kesi instruction?
  ↓
  Agar unn instructions ko follow kiya jaye!
  ↓
  toh (A) tower me 3 disks hai vo sab (B) tower me ajayengi (C) tower ko use krke Aur vo instruction saare Rules ko follow krengi!

Faith

toh (2, A, B, C)

- Humare Faith hai choti problem ke liye! ki vo 2 disks ko kisi ek tower se dusre tower me thesre tower ko use krty huay move krney ki instructions janta hai!

YAKEEN HAI!

☆SUSPENSION OF DISBELIEF☆

Apne Faith pe pura belief rakho

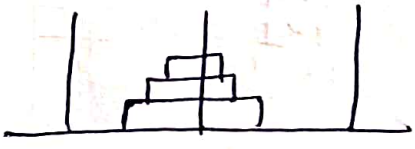
Expectation meet Faith

toh(3, A, B, C) = toh(2, A, B, C)
3[A → B]
toh(2, A, B, C)

- toh(2, A, B, C)

- 3 [A → B]

- toh(2, A, B, C)



if toh know how to print the instructions to move 2 disks (rules) then, we can definitely make toh to print the instructions to move 3 disks.

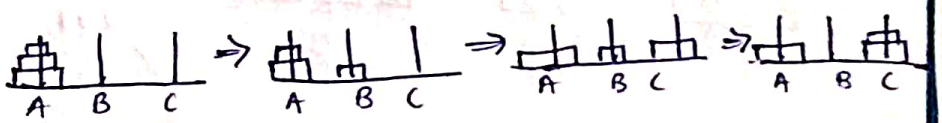
Input : 3
10
11
12

Output : 1 [10 → 11]
2 [10 → 12]
1 [11 → 12]
3 [10 → 11]
1 [12 → 10]
2 [12 → 11]
1 [10 → 11]

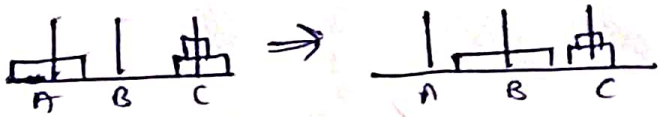
```
psvm(s[]a){
  Scanner s = new Scanner(System.in);
  int n = s.nextInt();
  int t1d = s.nextInt();
  int t2d = ____________;
  int t3d = ____________;
  toh(n, t1d, t2d, t3d);
}
psv toh(int n, int t1id, int t2id, int t3id){
  toh(n-1, t1id, t3id, t2id); (1)   if(n==0) return;
  System.out.println(n+"["+t1id+"=>"+t2id+"]"); (2)
  toh(n-1, t3id, t2id, t1id); (3)
}
```

(n-1)th disks ko humne move kiya!

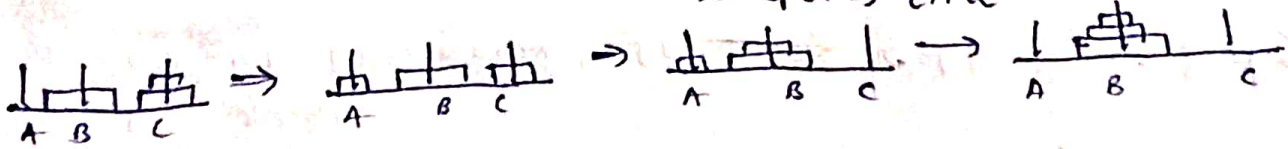
(1) t1id ⇒ source (A)
t3id ⇒ destination (C)
t2id → helper (B)



(2) nth disk ko humne move kiya t1d se t2d me!
t1id ⇒ source (A)
t2id ⇒ destination (B)



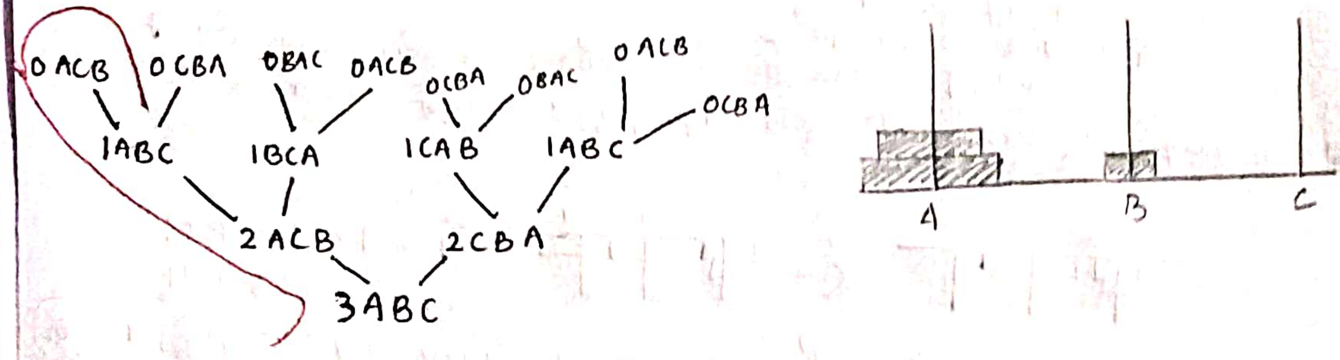
(3) Aab humne first (n-1)th disks ko jo t3id pe tai usko t2id me move kiya!
source ⇒ t3id
destination → t2id
helper ⇒ t1id

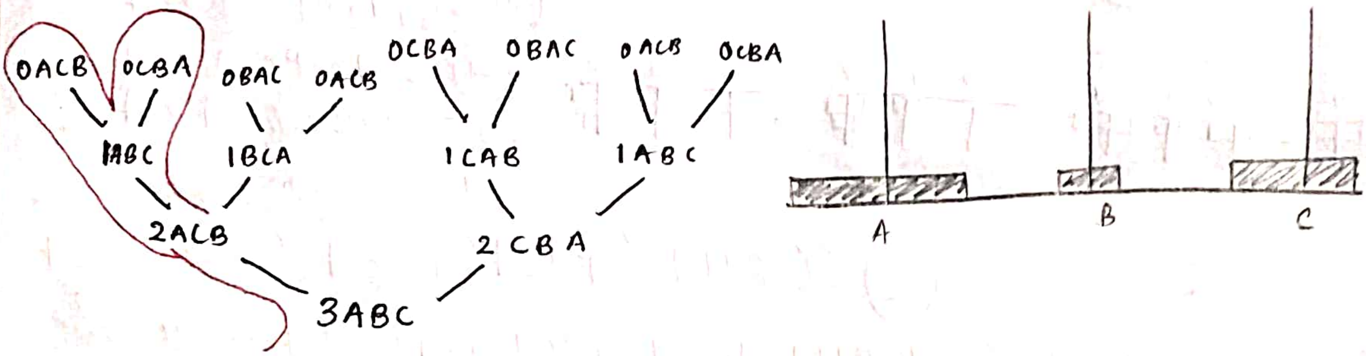


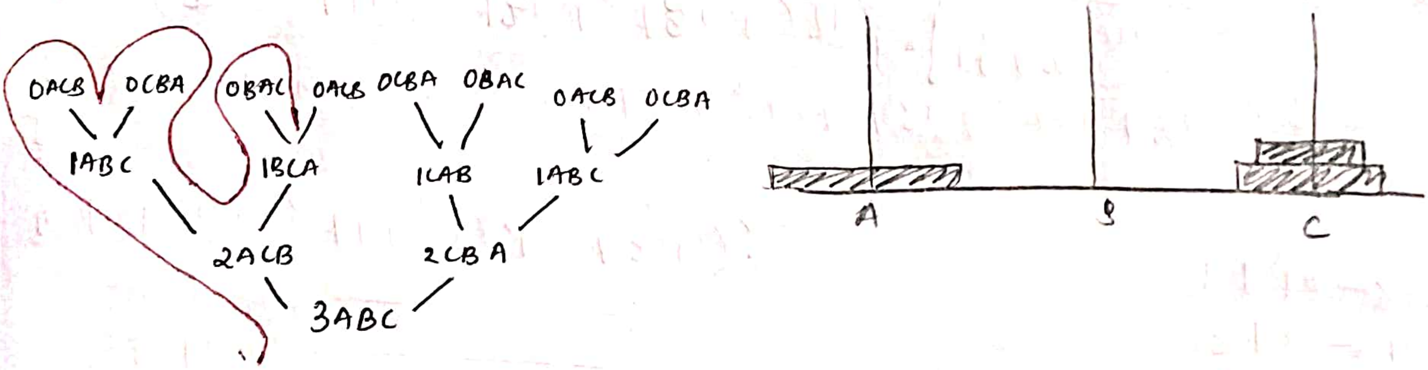
= left Recursive Call → sdh →(lc) shd

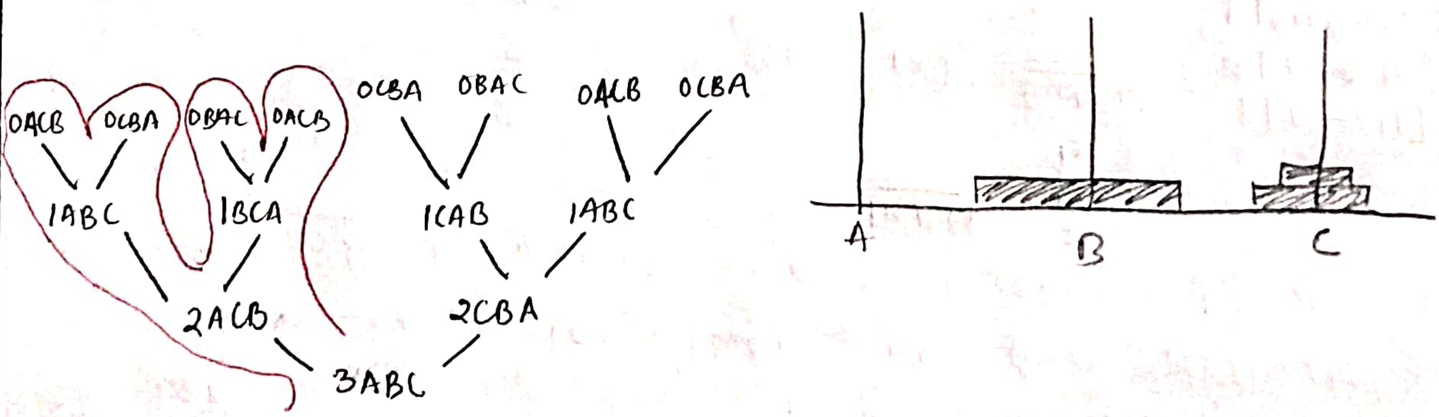
= In-region

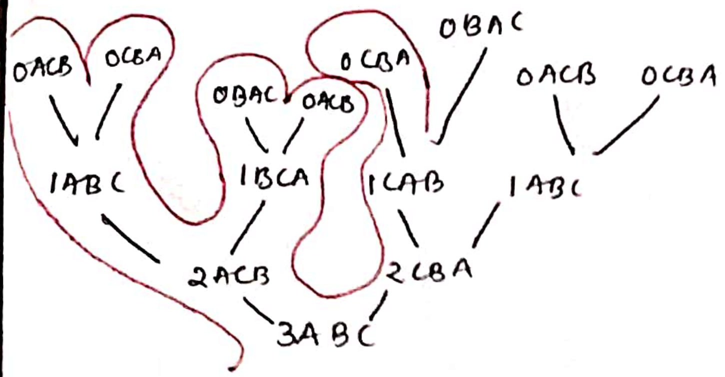
= Right Recursive Call → sdh →(rc) hds

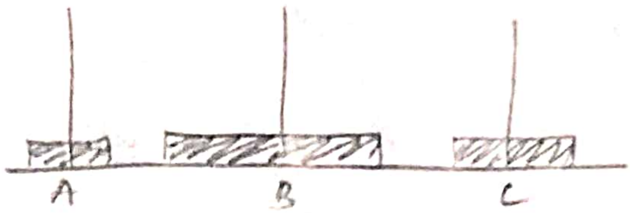


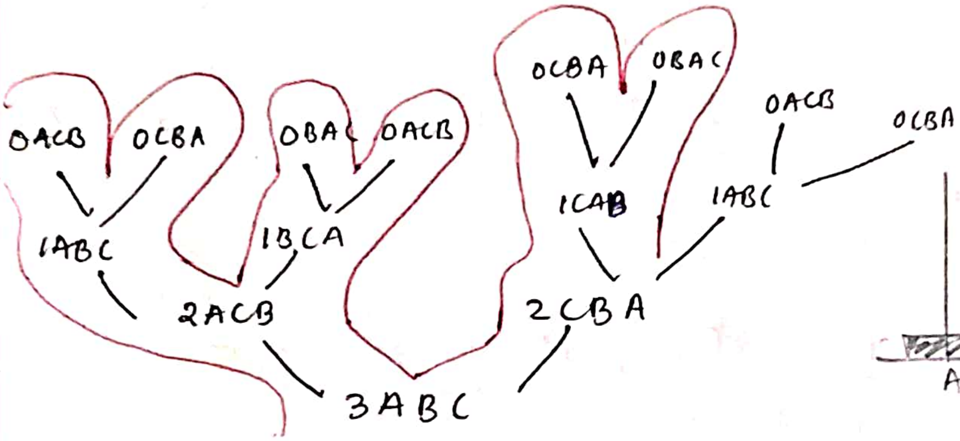







0ACB
0CBA
0BAC
0ACB
0CBA
0BAC
0ACB
0CBA
1ABC
1BCA
1CAB
1ABC
2ACB
2CBA
3ABC


A
B
C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0ACB
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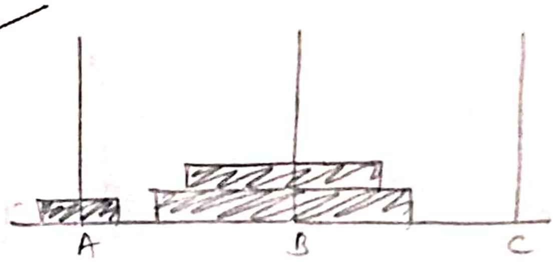
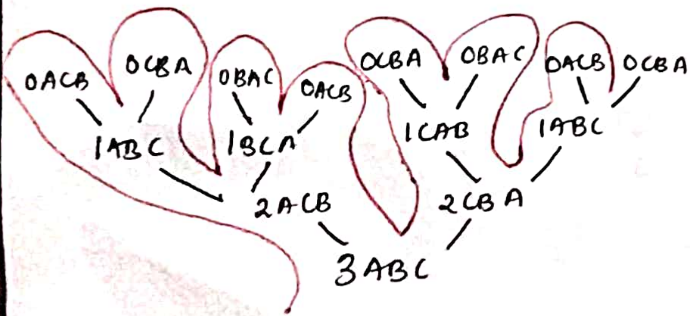
1CAB
1ABC
2ACB
2CBA
3ABC


A
B
C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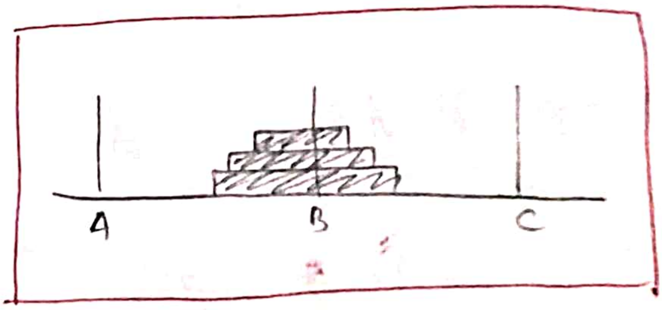
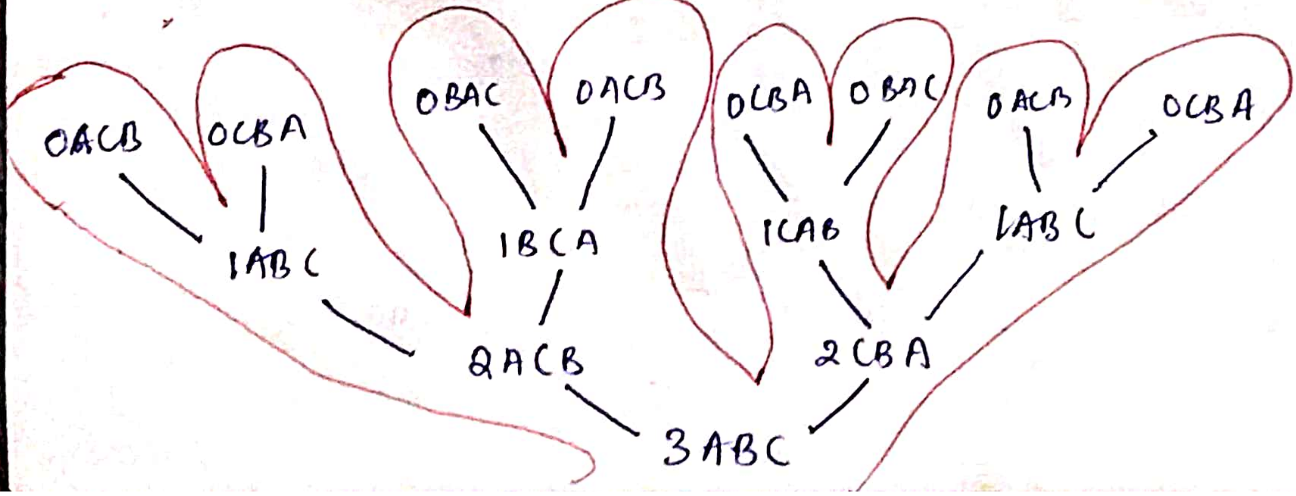
2CBA
3ABC


A
B
C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3ABC