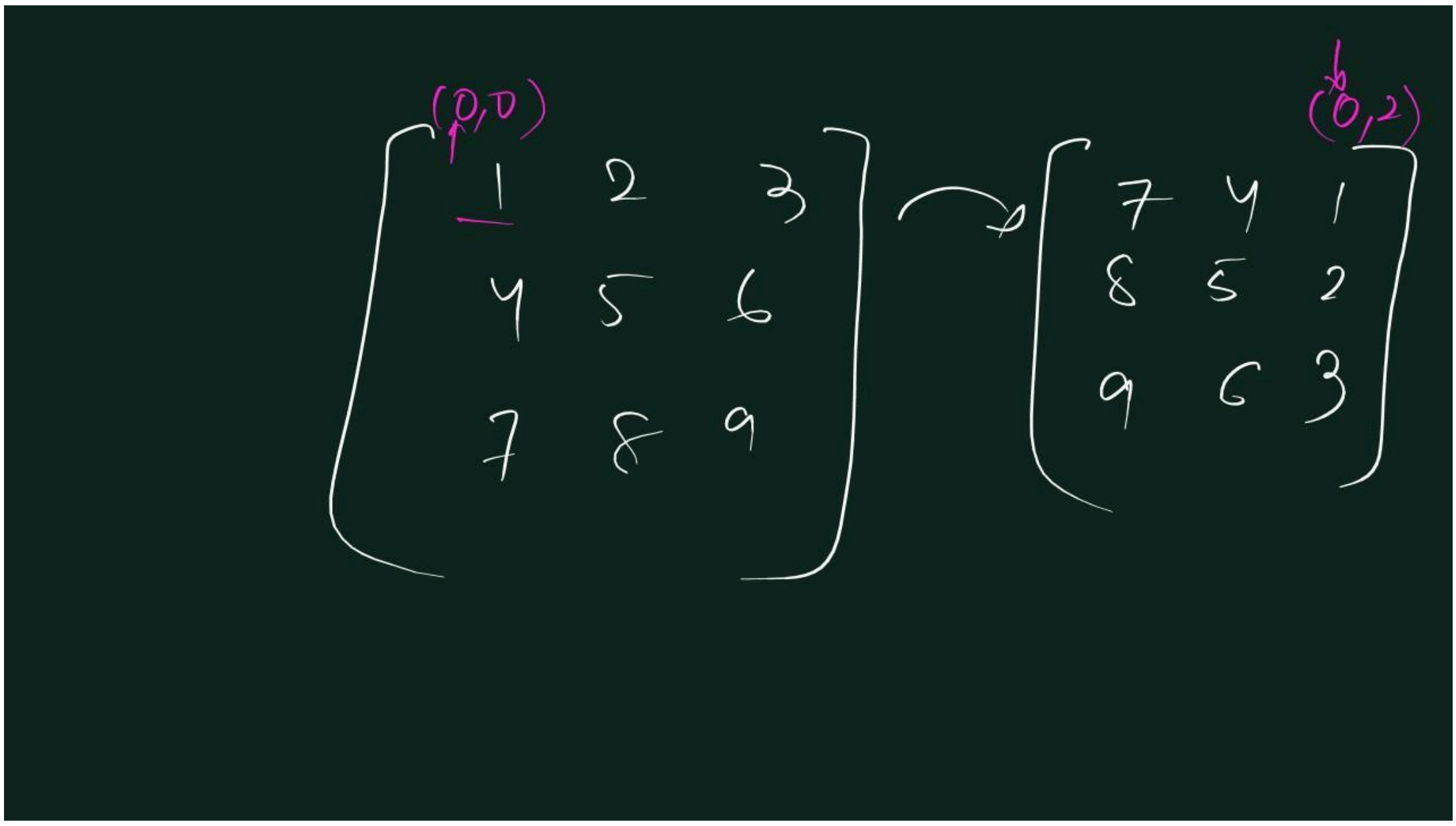
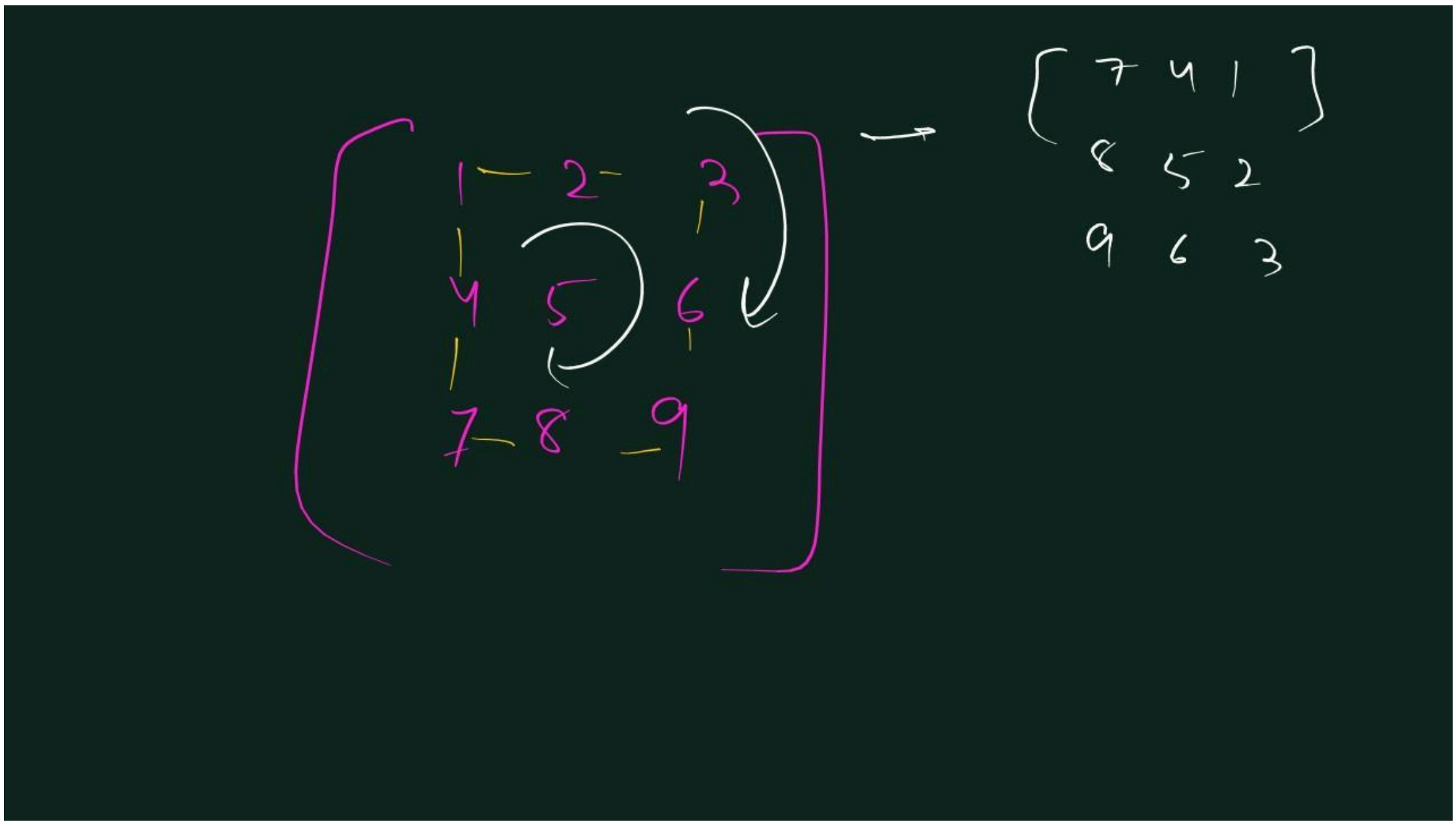
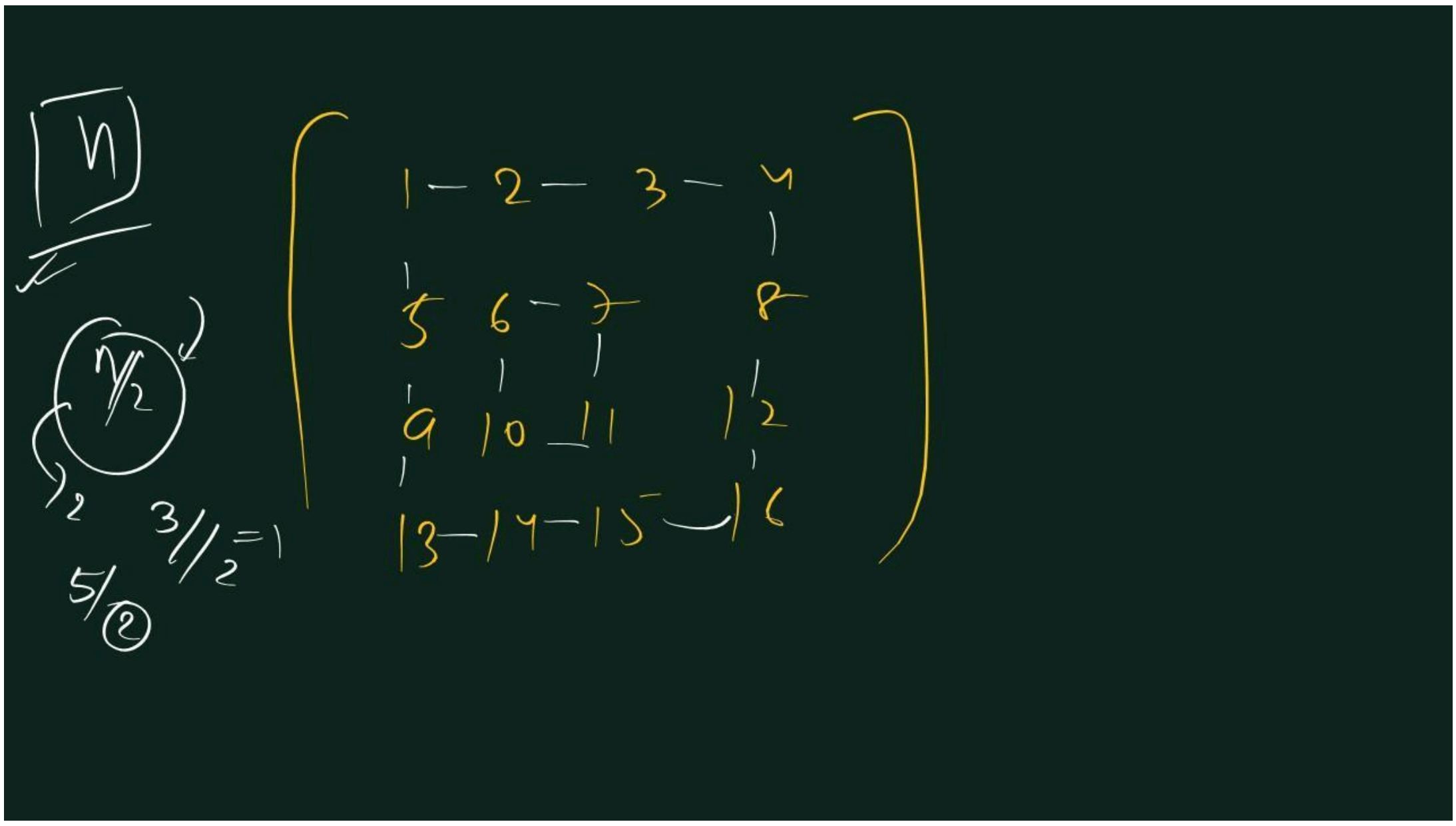
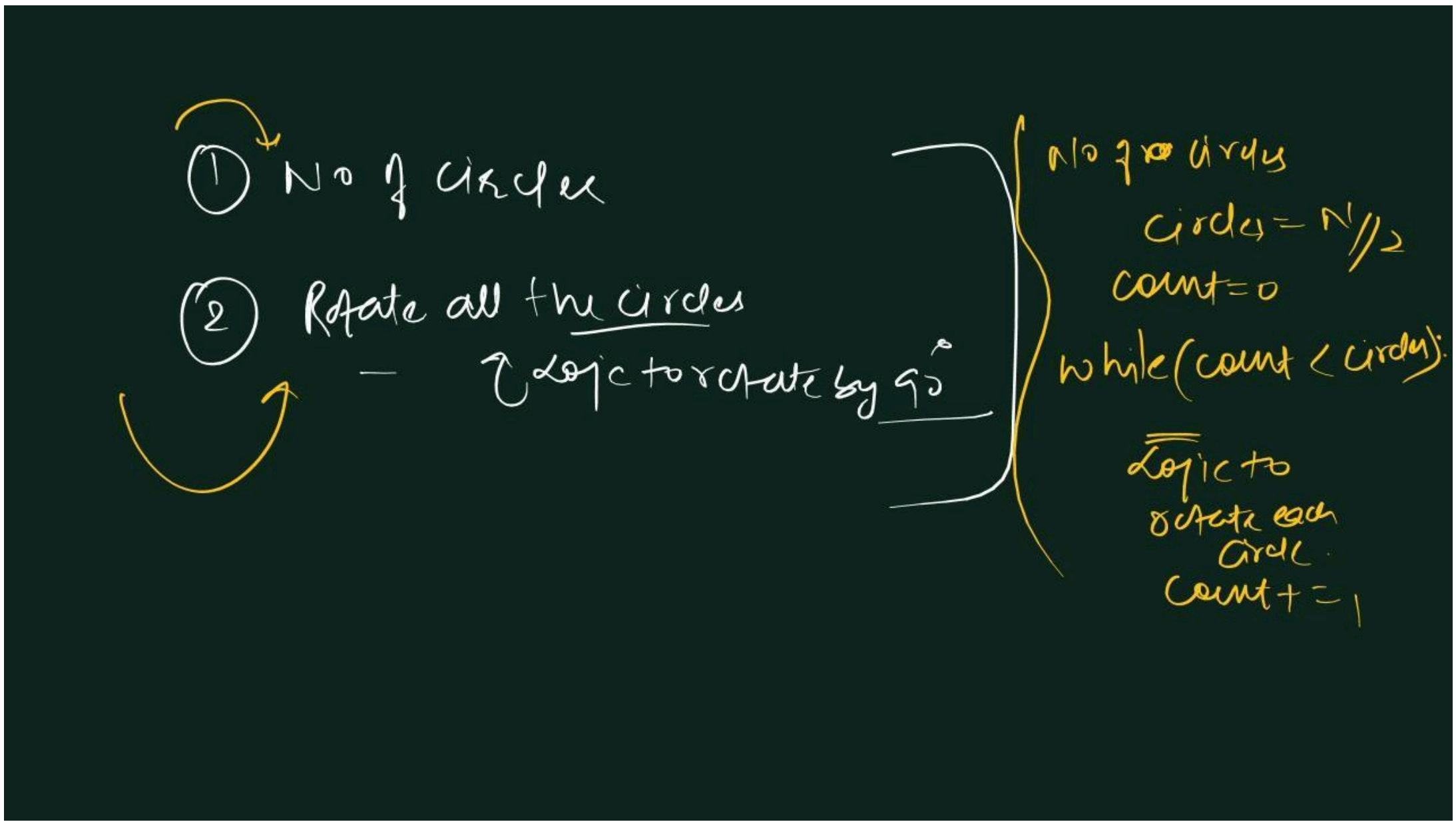
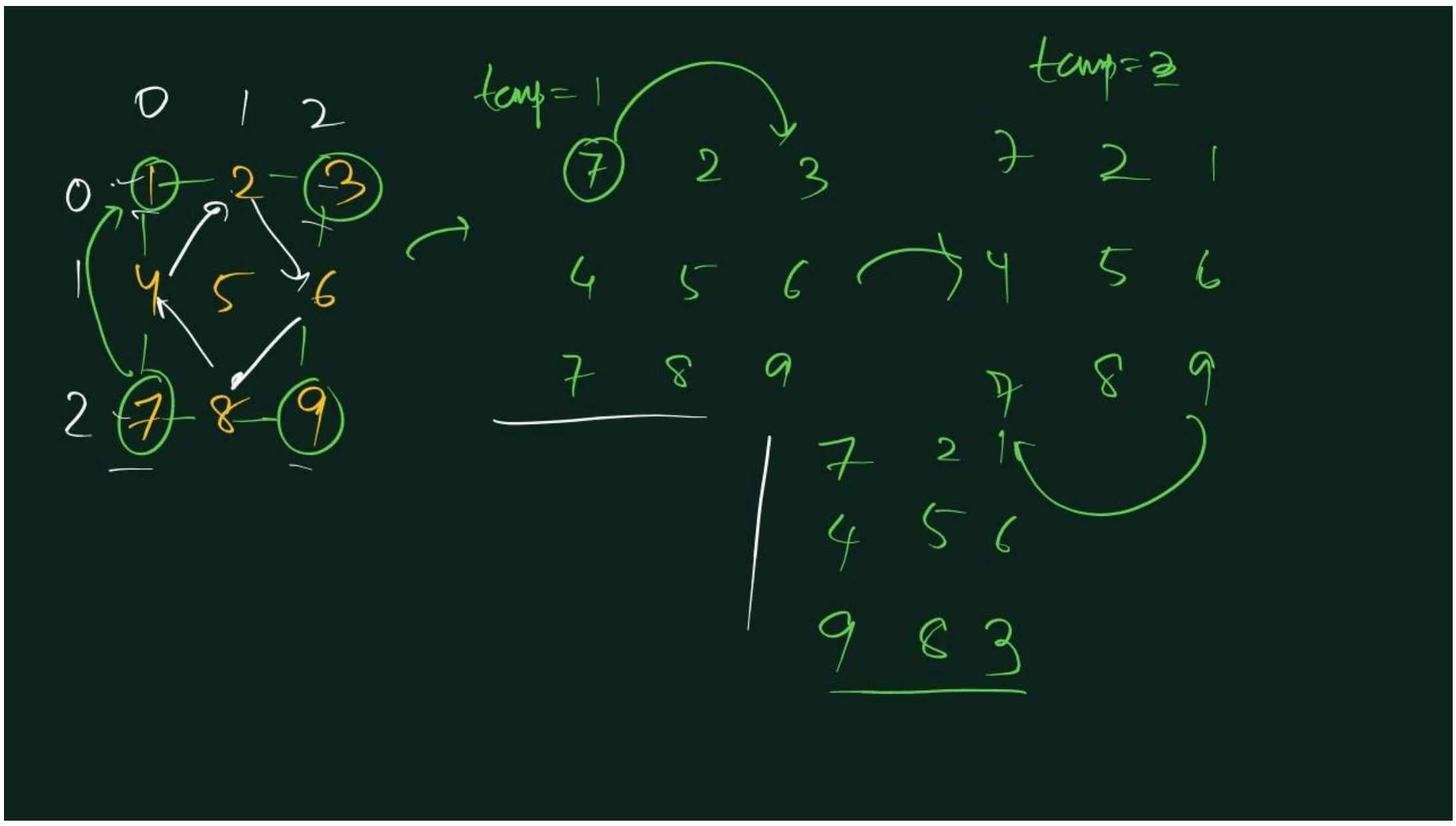
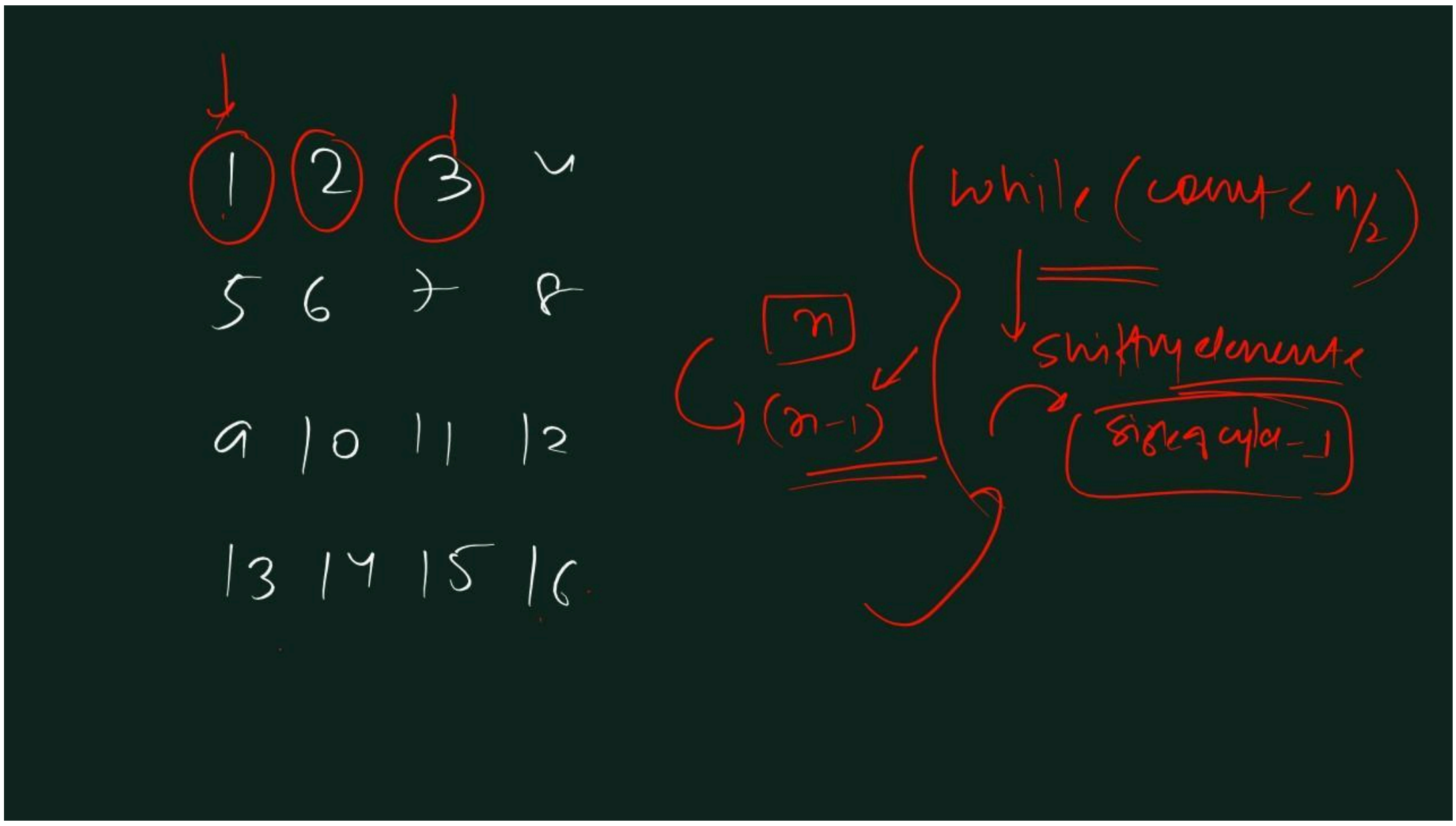

(0,0)
1 2 3
4 5 6
7 8 9
(0,2)
7 4 1
8 5 2
9 6 3

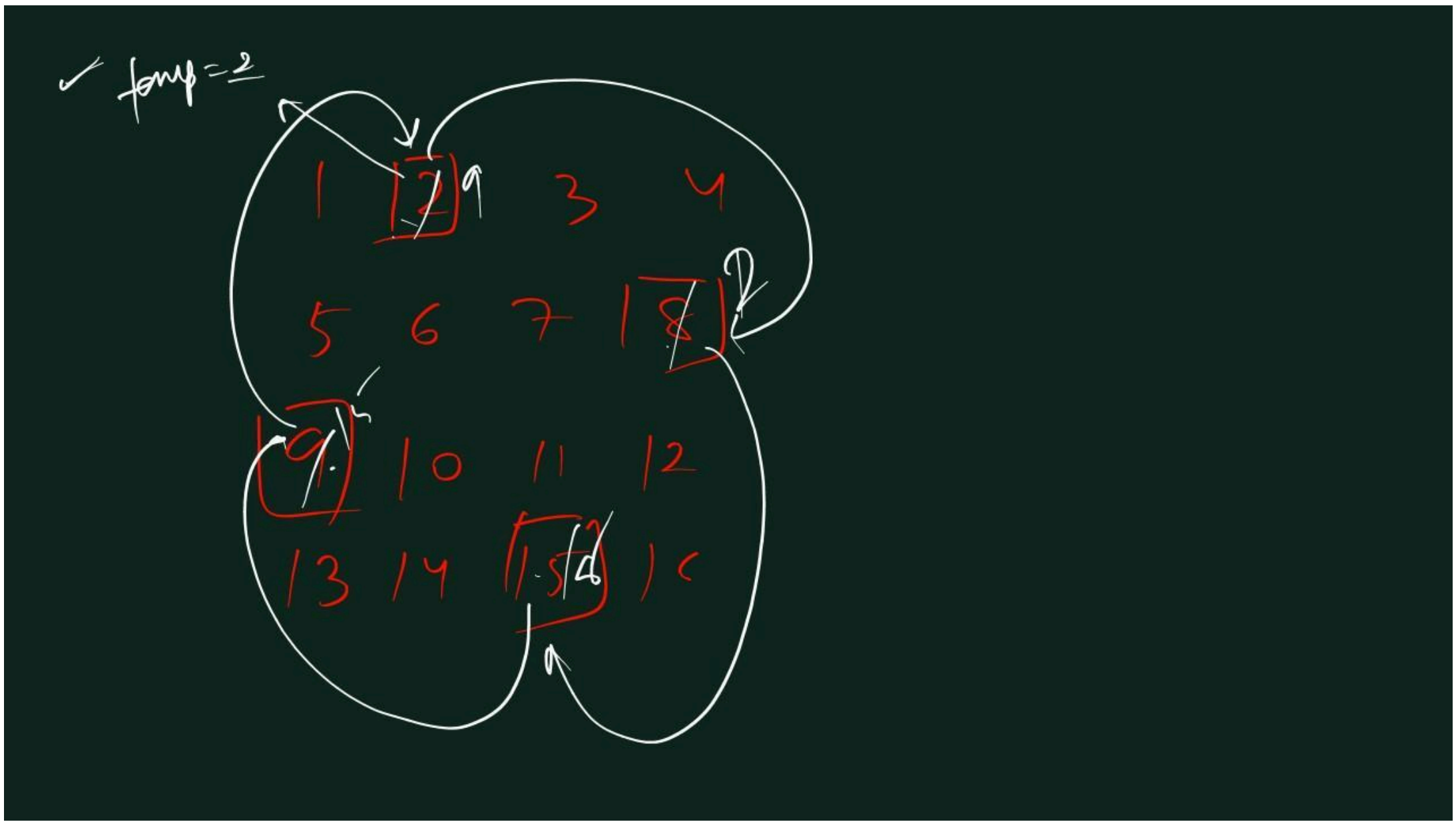

1 2 3
4 5 6
7 8 9
7 4 1
8 5 2
9 6 3

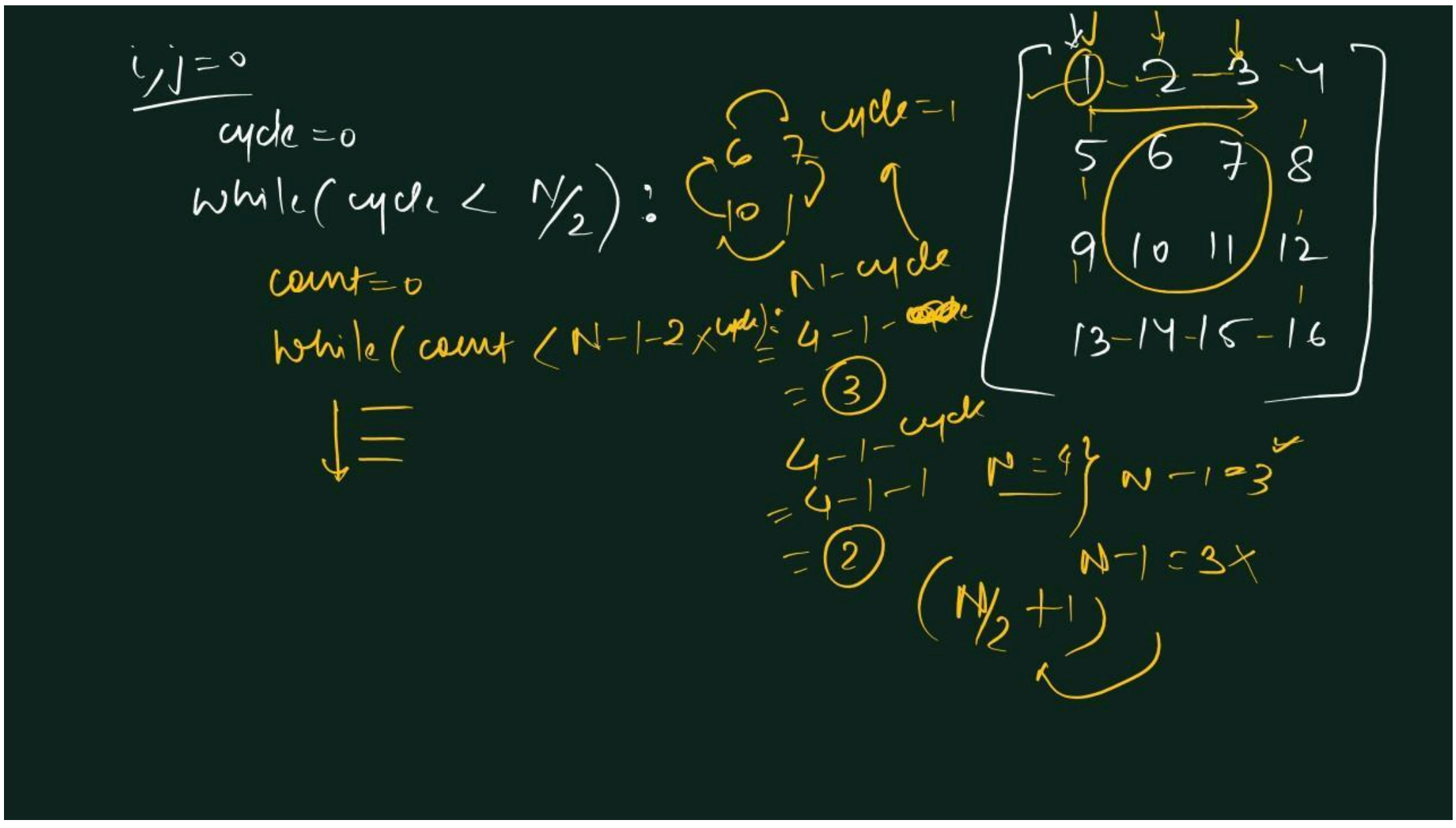

n
n/2
n/2 = 1
n/2 = 1
1 - 2 - 3 - 4
5 6 7 8
9 10 11 12
13 14 15 16

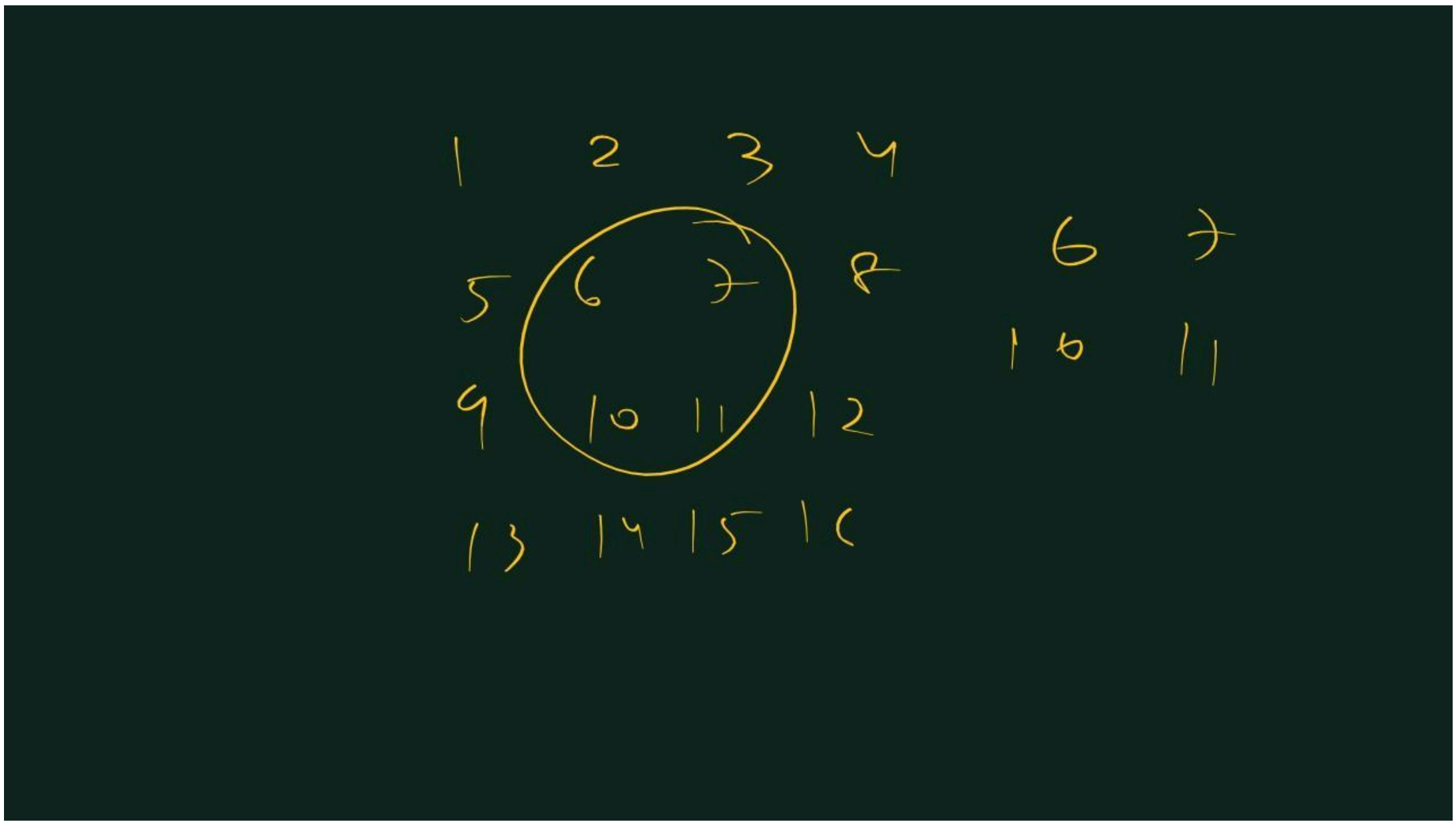

① No of circles
② Rotate all the circles
— Logic to rotate by 90°
No of circles
circles = N//2
count = 0
while(count < circles):
Logic to
rotate each
circle
count += 1

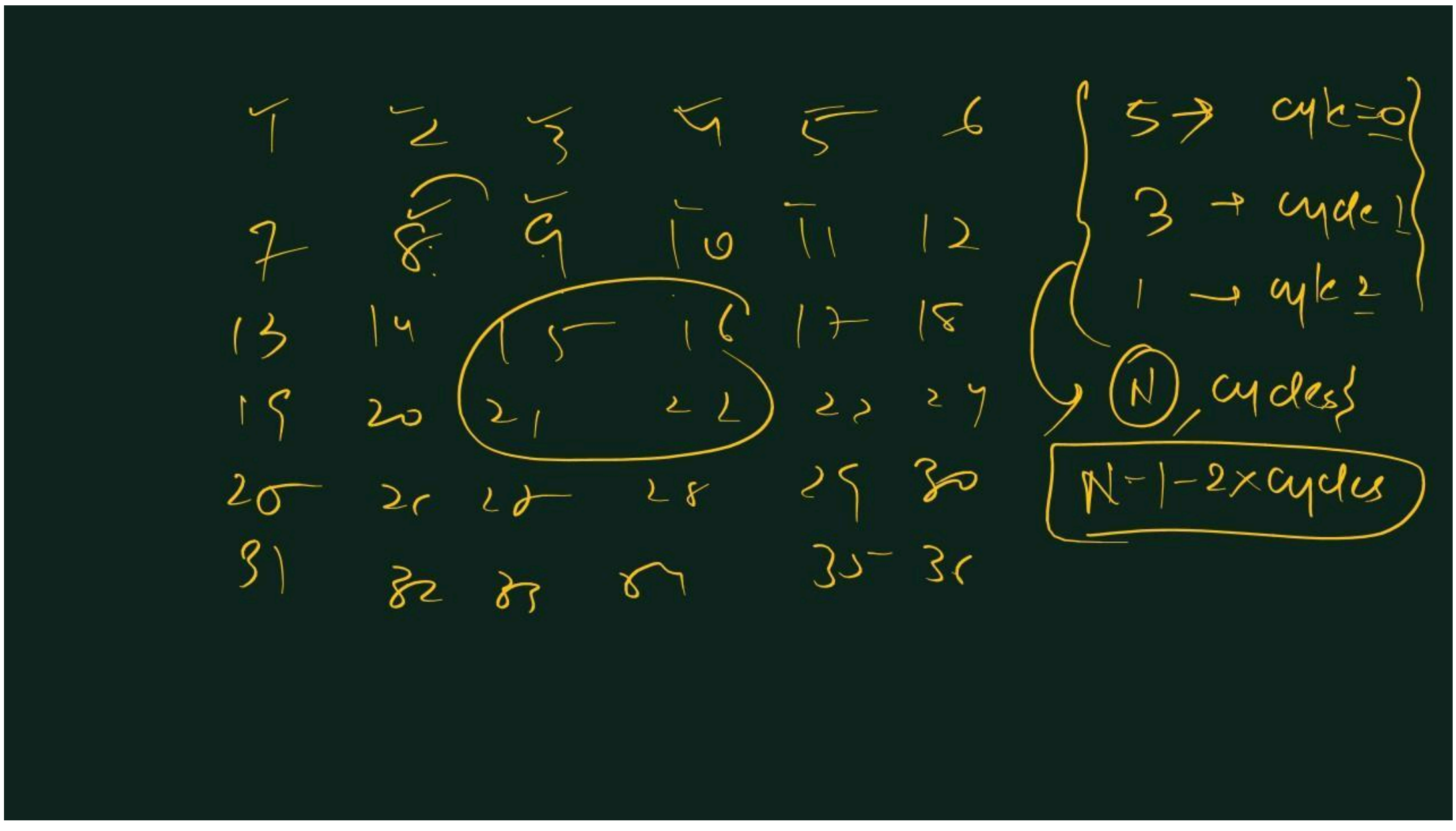

0 1 2
0
1
2
temp = 1
temp = 2
7 2 3
4 5 6
7 8 9
7 2 1
4 5 6
7 8 9
7 2 1
4 5 6
9 8 3

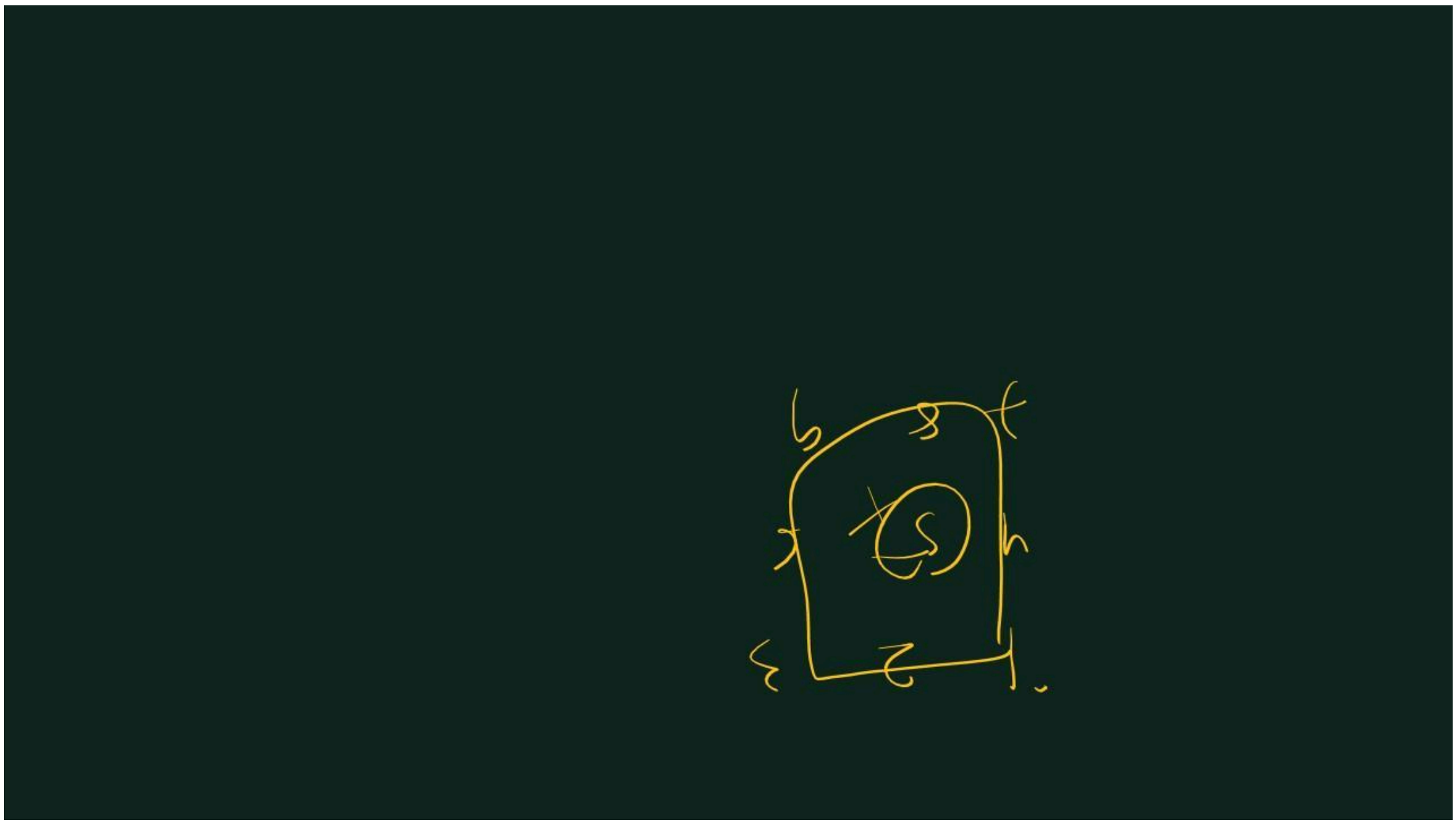

1 2 3 4
5 6 7 8
9 10 11 12
13 14 15 16
while (count < n/2)
shifting elements
n
(n-1)
single cycle - 1

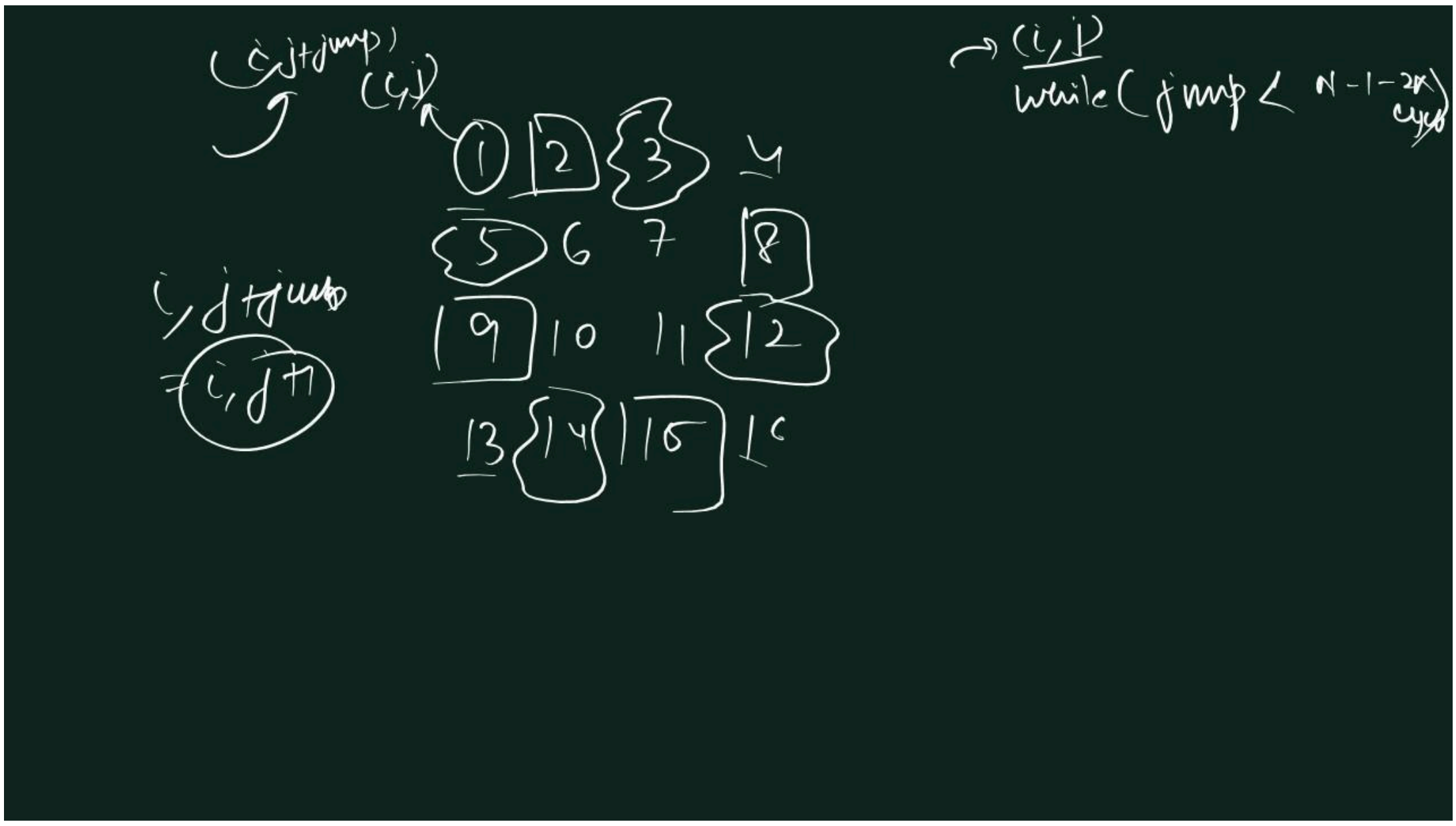

temp = 2
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16


i/j=0
cycle=0
while(cycle < N/2):
count=0
while(count < N-1-2×cycle):
cycle=1
N-cycle
4-1-cycle
=3
4-1-cycle
=4-1-1
=2
N=4
N-1=3
N-1=3×
(N/2+1)
1 2 3 4
5 6 7 8
9 10 11 12
13-14-15-16


1 2 3 4
5 6 7 8
9 10 11 12
13 14 15 16

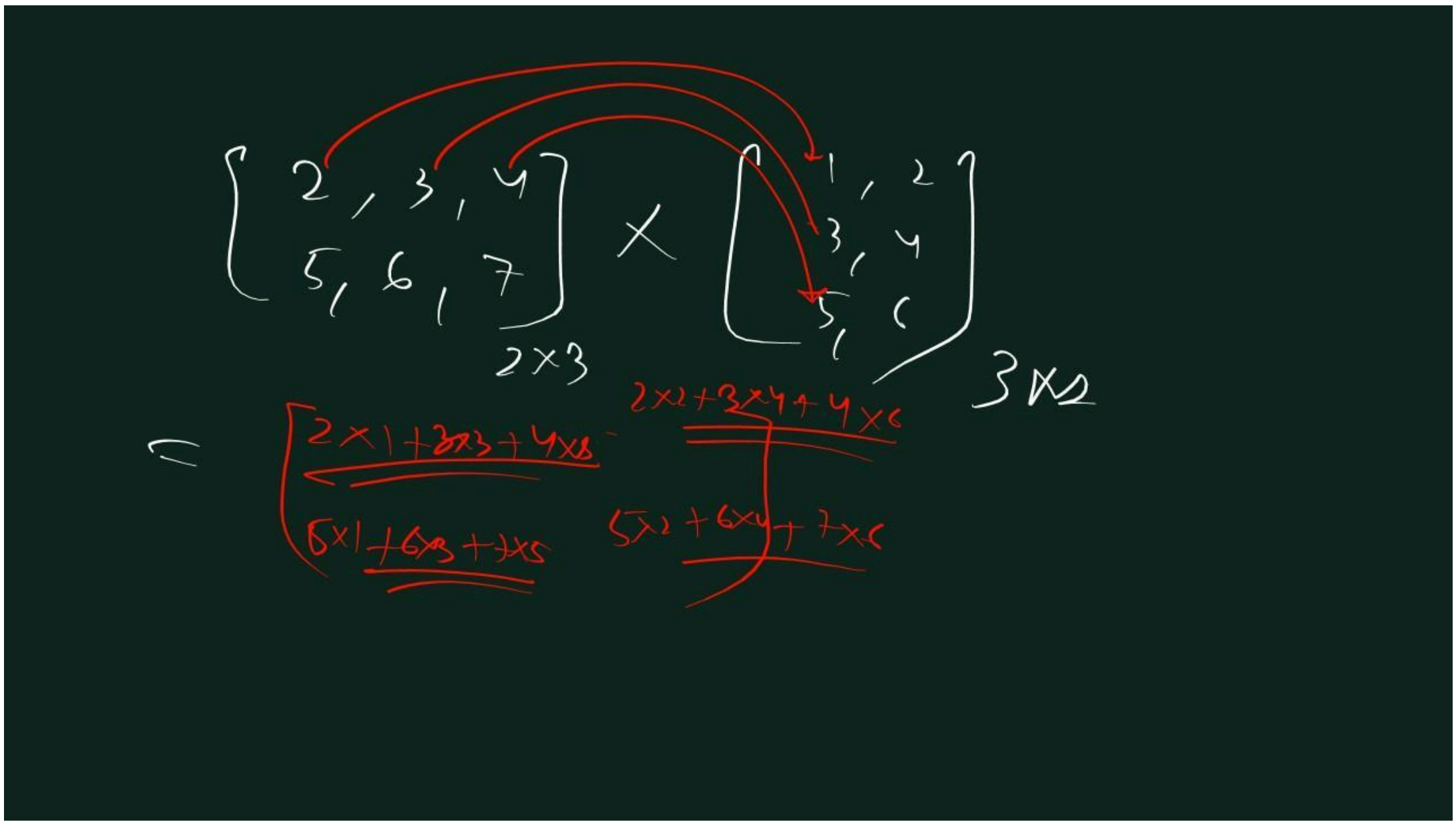

5 → cyc=0
3 → cycle 1
1 → cyc 2
N cycles
N=1-2×cycles




(i, j+jump)
(i, j)
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
i, j+jump
i, j+1
→ (i, j)
while (jump < N-1-2*)

$$M_{a\times b} \quad M_{c\times a} \left\{ \stackrel{?}{=} \right. P_{a\times a} \Big]$$

$$\boxed{b == c}$$


2, 3, 4
5, 6, 7
2×3
×
1, 2
3, 4
5, 6
3×2
=
2×1+3×3+4×5
5×1+6×3+7×5
2×2+3×4+4×6
5×2+6×4+7×6