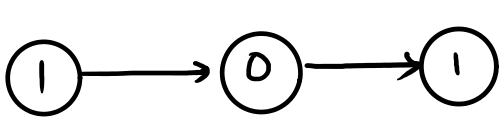
1290

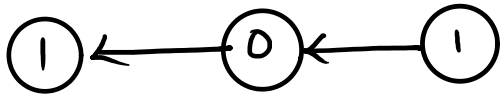
Convert Binary Number in a Linked List to Integer :

→ Given : Head of a Single Linked List
  → Each value is a bit of a number
  → Result is the number in decimal.

Ans → Reverse the Linked List
  → Iterate through the values and calculate the decimal number



orginal list



reversed list

$Res = 1 \times 2^0 + 0 \times 2^1 + 1 \times 2^2$

$= 5$

Better Way → Bit Manipulation :

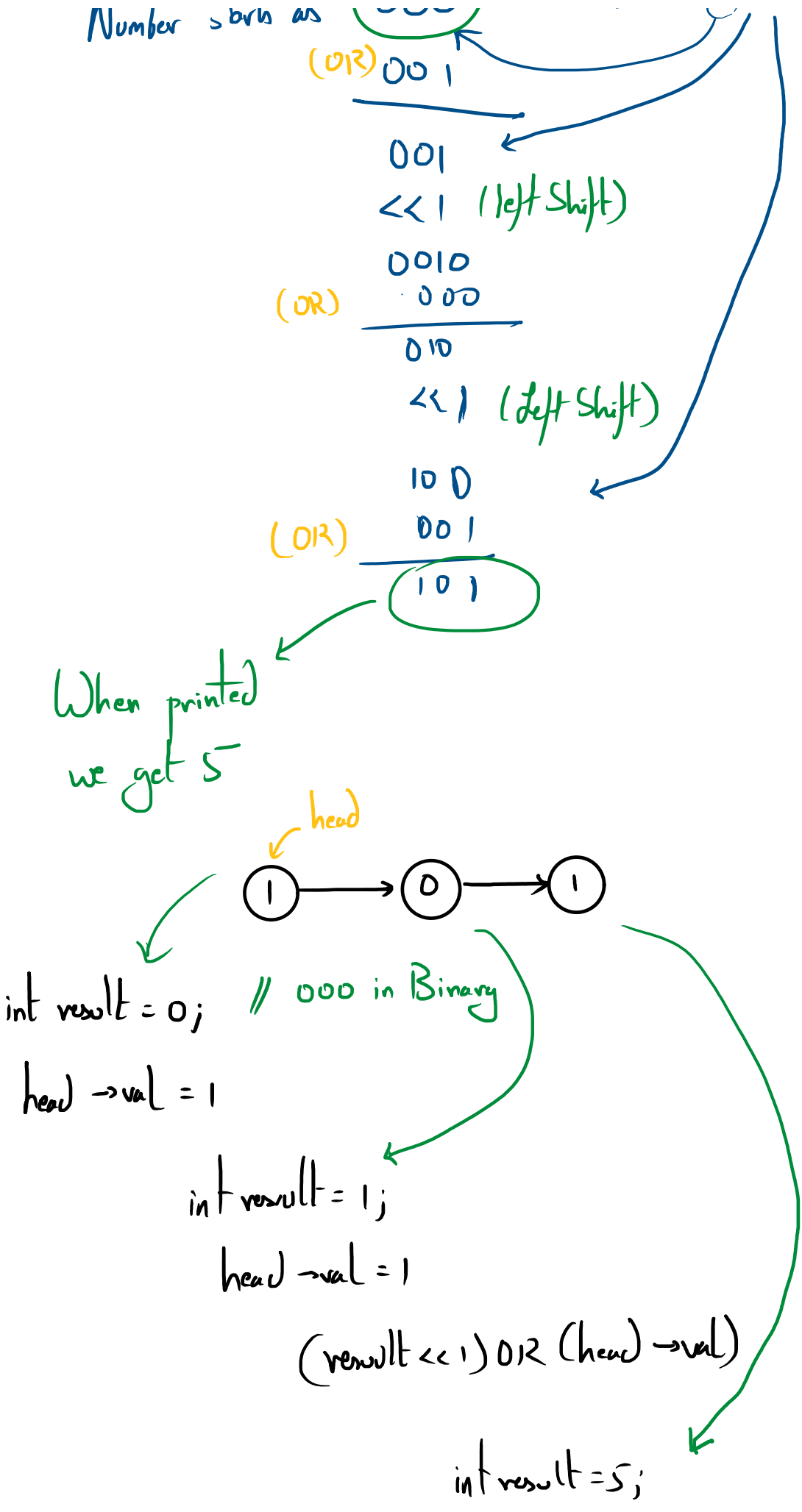
↳ No Extra Space or Reversing the list

Explanation of Bit Manipulation :

int res = 0;

Number starts as 000 (012) 001

we need 101


Number starts as
(OR) 001
001
<<1 (left Shift)
0010
(OR) 000
010
<<1 (Left Shift)
100
(OR) 001
101
When printed
we get 5
head
1
0
1
int result = 0; // 000 in Binary
head->val = 1
int result = 1;
head->val = 1
(result << 1) OR (head->val)
int result = 5;

```
int result=5;
head->val=1
(result<1) OR (head->val)
```