

14 July 2025.

LeetCode.

EASY:-

Binary linked list to Integer conversion:-

PROBLEM:-

1. Given head of singly LL.
2. Node value 0 or 1.
3. linked list holds binary repⁿ.
4. MSB at head.
5. Task: Convert to decimal value.
6. eg: $0 \rightarrow 0 \rightarrow 1 \quad = 5$

Solⁿ :

Bit manipulation 2-

1. CONCEPT:

Left shift and OR operation.

2. METHOD:-

1. Start with result = 0. (binary 000)

2. ① arrives

1) Left shift current Res. by 1.

(eg:- $000 \ll 1 \rightarrow 000$)

2. OR with new bit

($000 \text{ OR } 1 \rightarrow 001$)

3. next (eg:- 0 arrives)

1. Left shift, by 1

~~000~~
 $001 \ll 1 \rightarrow 010$

2) OR operator with new bit

$$\begin{array}{r} 010 \\ 000 \\ \hline 010 \end{array}$$

4. next 1 arrives

1) $010 \ll 1 \longrightarrow 100$.

2) OR with new bit

$$\begin{array}{r} 100 \\ 1 \\ \hline 101 \\ \hline \end{array}$$

STEPS:-

1. Initialize result to 0.

2. Iterate through linked list from head.

3. for each node:

1. $\text{result} = (\text{result} \ll 1) | \text{head} \rightarrow \text{val}$

2. move to next node.

4. return result.

TC: $O(n)$ single traversal.

SC: $O(1)$