Practice Problems - Week 2

1. You are given a binary string, (string which contains 0's and 1's), You have to perform several operations on this string, in one operation choose a non-empty even length substring containing only 0's or only 1's and remove it from the string.

Your goal is to minimize the final length of the string after performing several operations. It is possible that the final string may become empty, in that case print "KHALI" without quotes.

And it can be proved that there is always an unique string with minimal length after performing the operations.

Input:

- First line of input contains an intger *T* denoting number of testcases.
- Next *T* lines of input contains a binary string *S*.

Output:

- for each testcase print the required minimal string.

Constraints:

- $1 <= T <= 10$
- $1 <= |S| <= 10^5$

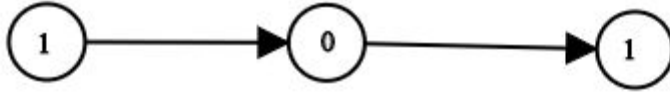```
Sample Input :
2
101001
1001
Sample Output:
10
KHALI
```

2. Given head which is a reference node to a singly-linked list. The value of each node in the linked list is either 0 or 1. The linked list holds the binary representation of a number.
Return the *decimal value* of the number in the linked list.

Example 1:

```
Input: head = [1,0,1]
Output: 5
Explanation: (101) in base 2 = (5) in base 10
```

Example 2:

```
Input: head = [0]
Output: 0
```

Example 3:

```
Input: head = [1]
Output: 1
```

Example 4:

```
Input: head = [1,0,0,1,0,0,1,1,1,0,0,0,0,0,0]
Output: 18880
```

Example 5:

```
Input: head = [0,0]
Output: 0
```

Constraints:

- The Linked List is not empty.
- Number of nodes will not exceed 30.
- Each node's value is either 0 or 1.