Aa Gya Noddy!

Noddy is back to Toyland. And started doing his job. Ya you remember it correct - Taxi Driving. He one day recieved all parcels to have addresses in binary form and was told to convert its every possible rotation to decimal form to get address of houses that each parcel had to be taken for delivery. Noddy was amazed on this strange request of taking every parcel to more than 1 house.

He knew that this would make his task very difficult because he has to visit many houses for just 1 parcel. Hence he put a condition that he would only visit house whose decimal value is even. This was because he likes everything to be even :P . He hates odd things.

He hates maths hence wants you to solve this problem for him.

Note : If two rotations yield similar decimal number, they are counted different.

Input Format

First line contains T - Total no. of parcels.
Next T lines contains binary string denoting parcel address.

Constraints

1<=T<=10
1<=Address_Length<=10^5

Output Format

For each parcel, output number of houses Noddy will take that parcel to.

Sample Input 0

```
1
101
```

Sample Output 0

```
1
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