

# BCD Code

Time Limit: 5 Seconds

Memory Limit: 65536 KB

Binary-coded decimal (BCD) is an encoding for decimal numbers in which each digit is represented by its own binary sequence. To encode a decimal number using the common BCD encoding, each decimal digit is stored in a 4-bit nibble:

Decimal:	0	1	2	3	4	5	6	7	8	9
BCD:	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001

Thus, the BCD encoding for the number 127 would be:

0001 0010 0111

We are going to transfer all the integers from  $A$  to  $B$ , both inclusive, with BCD codes. But we find that some continuous bits, named forbidden code, may lead to errors. If the encoding of some integer contains these forbidden codes, the integer can not be transferred correctly. Now we need your help to calculate how many integers can be transferred correctly.

## Input

There are multiple test cases. The first line of input is an integer  $T \approx 100$  indicating the number of test cases.

The first line of each test case contains one integer  $N$ , the number of forbidden codes ( $0 \leq N \leq 100$ ). Then  $N$  lines follow, each of which contains a 0-1 string whose length is no more than 20. The next line contains two positive integers  $A$  and  $B$ . Neither  $A$  or  $B$  contains leading zeros and  $0 < A \leq B < 10^{200}$ .

## Output

For each test case, output the number of integers between  $A$  and  $B$  whose codes do not contain any of the  $N$  forbidden codes in their BCD codes. For the result may be very large, you just need to output it mod 100000009.

## Sample Input

```
3
1
00
1 10
1
00
1 100
1
1111
1 100
```

## Sample Output

```
3
9
98
```

## References

- [http://en.wikipedia.org/wiki/Binary-coded\\_decimal](http://en.wikipedia.org/wiki/Binary-coded_decimal)