

A - Secret Message

Run-time Limit: 1 second

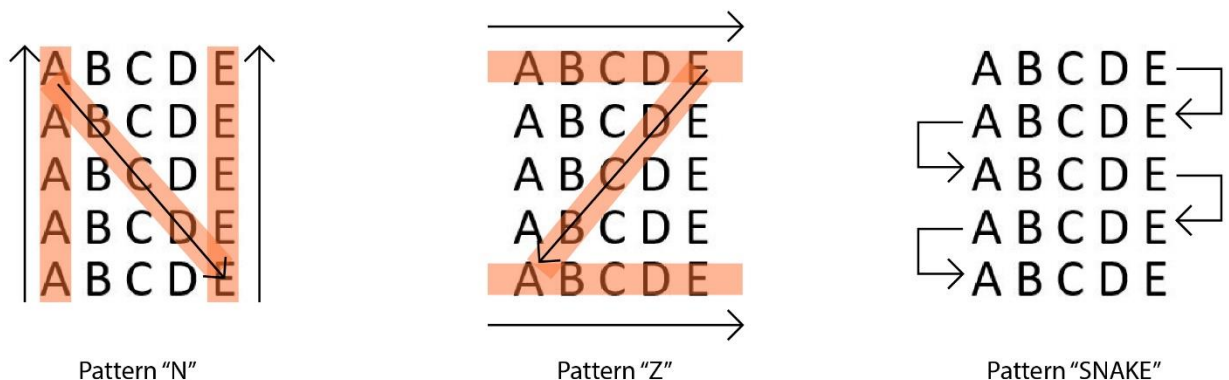
Memory Limit: 64 MB

DESCRIPTION

Blangkon, Semar, and Gareng get a game to play today, called “Tell the Truth”. It is a game with 3 roles, Giver, Receiver and Spy. Blangkon is the Giver, Semar is the Spy, while Gareng is the Receiver. This game is about telling the truth from the Giver to the Receiver, but never let the Spy know the truth, no matter what.

As Blangkon is a clever scout, he makes his secret message by combining his knowledge in scouting and programming to secure the truth from Semar the Spy. In his secret message, there are some rules applied:

1. The message has two methods to be read, pattern method and character method. We should use both of them to unveil the secret message.
2. There are three methods to read pattern, it is “N”, “Z”, and “SNAKE”. Explanation of reading the pattern is shown below :



3. There are two methods to read character, “STANDARD” and “MIRROR”. Standard means the character is read as its written, while “MIRROR” means you should split alphabet character into two, and read them mirrored, as shown below :

A	B	C	D	E	F	G	H	I	J	K	L	M
N	O	P	Q	R	S	T	U	V	W	X	Y	Z

A = N; M = Z

Try to figure out what Blangkon wants to tell Gareng.

INPUT FORMAT

The first input contains integer T ($1 \leq T \leq 100$) denoting the number of cases. For each case, it starts with an integer N denoting dimension of Blangkon Code $N \times N$ ($3 \leq N \leq 100$). The second line contains string S (**N, Z, SNAKE**) as the method to read Blangkon Code and String Q (**STANDARD, MIRROR**) to read character. The next N lines is so-called encrypted message by Blangkon, for each N line contains N characters which consist of capital character.

OUTPUT FORMAT

For each case, output “Case #X: Y” where X is the case number and Y is the result of decrypted message. Both message and decryption result only contains capital character.

SAMPLE INPUT

```
3
5
SNAKE STANDARD
JANGA
GREPN
IDISI
JASIN
AHMMM
3
N MIRROR
PKR
BBS
IPZ
4
Z STANDARD
KAMU
BXMW
KAXC
UAPA
```

SAMPLE OUTPUT

```
Case #1: JANGANPERGIDISINISAJAHMMM
Case #2: VOCOMFE
Case #3: KAMUMAUAPA
```

EXPLANATION

For case 2, Gareng will receive it IBPBZSR, it's not understandable but because it is **MIRROR** character, so $I = V$, $B = O$, $P = C$, $Z = M$, $S = F$, and $R = E$, the secret message is **VOCOMFE**.