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Scoreboard

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PROBLEMS

A: Second Hands	9 pt
B1: Second Friend	9 pt
B2: Second Second Friend	17 pt
C1: Second Meaning	14 pt
C2: Second Second Meaning	18 pt
D: Second Flight	33 pt

FAQ

Problem C1: Second Meaning

14 points Submitted

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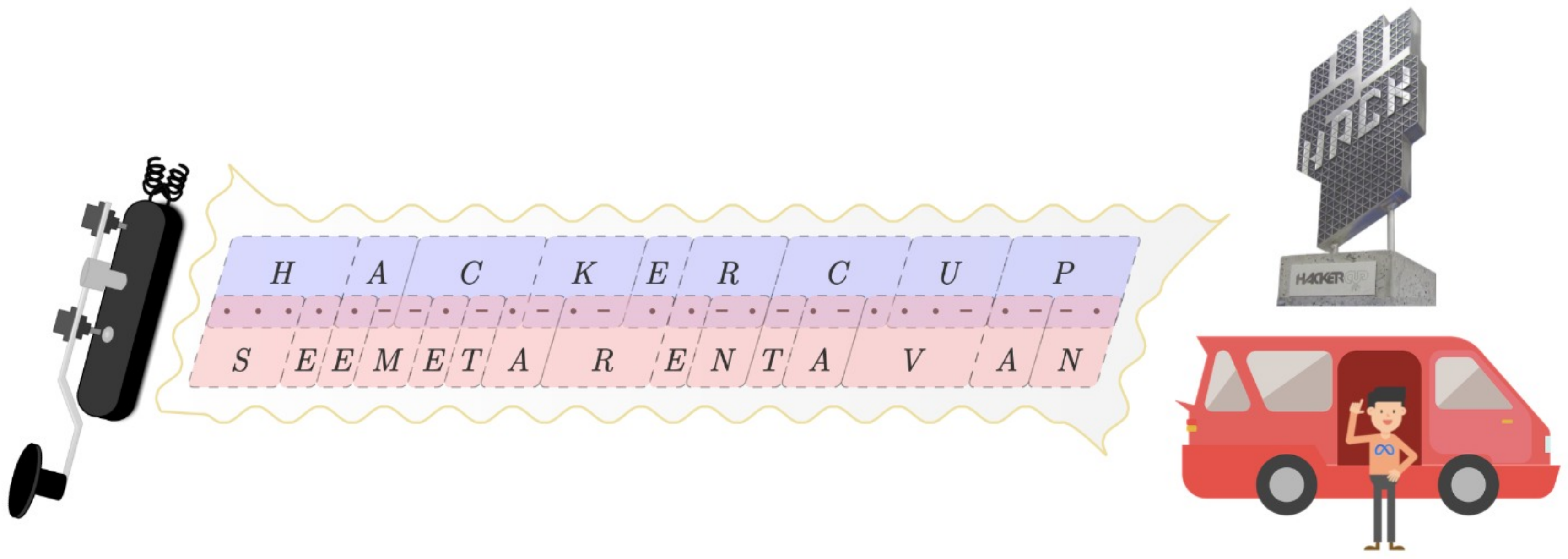
Problem My Submissions

Note: The only difference between this problem and problem C2 is that here, the length of each output codeword may be at most 200.

Morse code is a classic way to send messages, where each letter in an alphabet is substituted with a *codeword*: a unique sequence of dots and dashes. However, ignoring spaces, it's possible for a coded message to have multiple meanings. For example, "`.....--.-.-.-..-.-.-...-.--.`" can be interpreted as either "`HACKER CUP`" or "`SEE META RENT A VAN`":



Beyond Morse code, a general set of codewords is an *unambiguous encoding* if any possible sequence of dots and dashes corresponds to either zero or exactly one sequence of codewords.

Given one codeword C_1 from a set of N distinct codewords, your task is to generate another $N-1$ codewords $C_2, ..., C_N$ to yield an unambiguous encoding. It can be shown that an answer always exists. If there are multiple answers, you may print any one of them.

Constraints

$1 \leq T \leq 100$
$2 \leq N \leq 100$
The length of C_1 is between 1 and 100, inclusive.
The length of each $C_2, ..., C_N$ must be between 1 and $\mathbf{200}$, inclusive.

Input Format

Input begins with an integer T, the number of test cases. For each case, there is first a line containing a single integer N. Then, there is a line containing the codeword C_1.

Output Format

For the ith case, output a line containing only "`Case #i:`", followed by $N-1$ lines, the codewords $C_2, ..., C_N$, one per line.

Sample Explanation

In the first case, it can be shown that the codewords {"`.-.`", "`...`", "`---`"} are an unambiguous encoding. Any sequence of dots and dashes can be interpreted if and only if it has a length that's a multiple of 3, and can be broken up into instances of the three length-3 codewords.

In the second case, it can be shown that the codewords {"`-`", "`...`", "`.-`", "`..-`"} are an unambiguous encoding. For instance, "`..`" has no possible interpretation, and "`.-...--`" can only be interpreted as "`.- ... - -`".

In the third case, it can be shown that the codewords {"`..`", "`-`", "`.-`"} are an unambiguous encoding. For any sequence of dots and dashes:

- every odd group of dots followed by a dash can only be interpreted as repeated "`..`"s followed by a final "`.-`"
- every even group of dots followed by a dash can only be interpreted as repeated "`..`"s followed by a final "`-`"
- every group of dots not followed by a dash (i.e. at the end of the sequence), is interpretable if and only if there is an even number of dots
- this leaves only groups of dashes, interpreted only as repeated "`-`"s

Sample Input

```
3
3
.-.
4
-
3
..
```

Sample Output

```
Case #1:
...
---
Case #2:
...
.-
..-
Case #3:
-
.-
```

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