

Antivirus

The new system for the Reply Code Challenge works great, but R-Boy is not so convinced... It seems in fact that the famous mascot of Reply sniffed a **virus** hidden among the files sent by a participant!

We know the length of the virus and we know that it repeats the same in the four files we received, but we do not know where. Help us to identify the virus!

Details

The four files **F[1]**, **F[2]**, **F[3]**, **F[4]** are input data, represented as four character strings of length, respectively **N[1]**, **N[2]**, **N[3]**, **N[4]**.

The virus is a string of characters **V** of length **M**. The length **M** is an input data, but the contents of the **V** string of the virus are not known.

We know with certainty that the **V** virus appears within all four files, as a sub-string of **consecutive** characters. We also know that **there are not** other consecutive substrings of length **M** that are repeated the same in all four files.

The positions of the characters in the strings are numbered starting from **0**. For each of the four **F[i]** files, find the location where the virus is inserted, which is the location where the first character of the **V** virus appears within the **F[i]** string.

Assumptions

- **T** ≤ **1.000**, the number of test cases.
- **2** ≤ **N[1]**, **N[2]**, **N[3]**, **N[4]** ≤ **1.000**, the files are not longer than **1000** characters.
- **2** ≤ **M** ≤ **1.000**, the virus is not longer than **1.000** characters.
- **M** ≤ **min(N[1], N[2], N[3], N[4])**, the virus is not longer than the shortest file.
- All file characters are lowercase letters of the English alphabet (from a to z), **no** spaces are present.
- It is guaranteed that the virus exists and is unique.

Input data

The first line of the input file contains an integer **T**, the number of test cases. Followed by **T** test cases, numbered from **1** to **T**.

In each test case: - The first line contains four integer separated by spaces **N[1]**, **N[2]**, **N[3]**, **N[4]**, the lengths of each of the four files. - The second line contains only the integer **M**, the length of the virus. - The following **4** lines contain the four strings **F[1]**, **F[2]**, **F[3]** and **F[4]** respectively.

Output data

The output file must contain the answer to the test cases you could solve. For each test case you've solved, the output file must contain a line with the words:

```
Case #t: p1 p2 p3 p4
```

where t is the test case number (starting from **1**) and the values $p1, p2, p3, p4$ are the locations where the virus is located in each of the four file. Position means the index of the first character of the virus, the first character of the file has zero index.

Example of input/output

Input:

```
2
8 12 10 7
4
ananasso
associazione
tassonomia
massone

6 9 11 10
3
simone
ponessimo
milionesimo
cassonetto
```

Output:

```
Case #1: 4 0 1 1
Case #2: 3 1 4 4
```

Explanation

In the **first example case** the virus is **asso**: anan**asso**, associa**zione**, tassono**mia**, mass**one**.

In the **second example case** the virus is **one**: sim**one**, pon**essimo**, milio**nesimo**, cassono**etto**.