Problem 8 - Penny Game

Source file: `penny.(c|cpp|java)`
Input file: `penny.in`
Output file: `penny.out`

The Penny Game is a simple game typically played by two players. One version of the game calls for each player to choose a unique *three-coin* sequence such as **HEADS-TAILS-HEADS (HTH)**. A fair coin is tossed sequentially some number of times until one of the two players' sequences appears. The player who chose the first sequence to appear wins the game.

The Problem

Write a program that implements a variation of the Penny Game. You will read a sequence of 40 coin tosses and determine how many times each three-coin sequence appears. Obviously there are exactly eight such three-coin sequences: **TTT, TTH, THT, THH, HTT, HTH, HHT** and **HHH**. Sequences may overlap. For example, if all 40 coin tosses are heads, then the sequence **HHH** appears 38 times.

Input File (`penny.in`)

The input file contains multiple test cases. The first line of input contains a single integer n ($1 \le n \le 1000$), which is the number of test cases that follow on the next n lines. Each of these lines contains a sequence of 40 coin tosses. Each toss is represented by an upper case **H** or an upper case **T**, for heads or tails, respectively. There are no spaces or blank lines in the input file.

Output

For each test case there should be one line of output. Each line should contain 8 integers, the number of occurrences of each three-coin sequence, in the order: TTT, TTH, THT, THH, HTT, HTH, HHT, HHH. The integers should be separated by a single space. No leading or trailing spaces should appear in the output, and there should be no blank lines.

Sample Input File

```
4
HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
TTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT
HHTTTHHTTTHTHHTHHTTHTTTHHHTHTTHTTHTTTHTH
HTHTHHHTHHHTHTHHHHTTTHTTTTTHHTTTTHTHHHHT
```

Sample Output

```
0 0 0 0 0 0 0 38
38 0 0 0 0 0 0 0
4 7 6 4 7 4 5 1
6 3 4 5 3 6 5 6
```