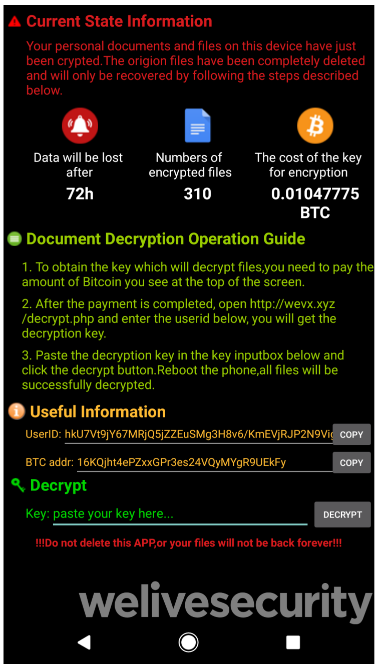
# Encrypted Contacts (`ransomware`)

Marco's phone has been attacked by hackers with a ransomware: they have remotely encrypted the phone book with all his contacts and now he has been asked to pay a ransom in bitcoins to recover his data.

He has decided to have some fun trying to perform a full reverse engineering of the malware to recover data without having to pay money. Fortunately for him, the encryption scheme is not too sophisticated. The malware encrypts each digit in isolation and substitutes it with a *code*. For every digit from 0 to 9, Marco has been able to determine which was the corresponding code.

For instance, suppose that digit `0` hash been replaced with the code `12345` and that the digit `1` has been replaced with the code `1235`; in this scenario an hypothetical number `010` would have been encrypted with the sequence of digits `12345123512345`.

After all this grueling work, Marco asks you a small help: recover the original unencrypted numbers for his $N$ contacts in the phone book.


⚠ Current State Information

Your personal documents and files on this device have just been crypted.The origion files have been completely deleted and will only be recovered by following the steps described below.

Data will be lost after
72h

Numbers of encrypted files
310

The cost of the key for encryption
0.01047775 BTC

Document Decryption Operation Guide

1. To obtain the key which will decrypt files,you need to pay the amount of Bitcoin you see at the top of the screen.

2. After the payment is completed, open http://wevx.xyz /decrypt.php and enter the userid below, you will get the decryption key.

3. Paste the decryption key in the key inputbox below and click the decrypt button.Reboot the phone,all files will be successfully decrypted.

Useful Information

UserID: hkU7Vt9jY67MRjQ5jZZEuSMg3H8v6/KmEVjRJP2N9Vi

BTC addr: 16KQjht4ePZxxGPr3es24VQyMYgR9UEkFy

Decrypt

Key: paste your key here...

!!!Do not delete this APP,or your files will not be back forever!!!

Figure 1: An Android phone infected by ransomware (source: welivesecurity.com)

> ☞ Among the attachments of this task you may find a template file `ransomware.*` with a sample incomplete implementation.

## Input

The first line contains the number of contacts $N$. The following $N$ lines contain each a string of digits representing the encrypted number. The $i$-th of the following (and last) 10 lines contains the encrypted code used to replace the digit $i$.

## Output

You need to write $N$ lines where the $i$-th contains the unencrypted number of the $i$-th contact.

## Constraints

- $1 \leq N \leq 100$.
- Each number has at most 1000 digits in its encrypted version.
- Each code used to encrypt a digit is at most 100 digits long.
- It is guaranteed that a solution exists and is unique.

## Scoring

Your program will be tested against several test cases grouped in subtasks. In order to obtain the score of a subtask, your program needs to correctly solve all of its test cases.

– **Subtask 1** (0 points) Examples.

– **Subtask 2** (30 points) All codes have length 1.

– **Subtask 3** (35 points) All codes have the same length.

– **Subtask 4** (35 points) No additional limitations.

## Examples

| input | output |
|---|---|
| 2 | 330170 |
| 333333000111777000 | 330171 |
| 333333000111777111 | |
| 000 | |
| 111 | |
| 222 | |
| 333 | |
| 444 | |
| 555 | |
| 666 | |
| 777 | |
| 888 | |
| 999 | |
| 1 | 3330025008 |
| 717171500500211150050089 | |
| 500 | |
| 3 | |
| 21 | |
| 71 | |
| 501 | |
| 11 | |
| 0 | |
| 98 | |
| 89 | |
| 42 | |

## Explanation

In the **first sample case** all codewords have the same length, three digits. The first contact can be decrypted as 333 (encrypted code for digit 3), 333 (encrypted code for digit 3), 000 (encrypted code for digit 0), 111 (encrypted code for digit 1), 777 (encrypted code for digit 7), 000 (encrypted code for digit 0). The second contact follows the same reasoning.

In the **second sample case** the contact can be decrypted as: 71 (encrypted code for digit 3) three times, 500 (encrypted code for digit 0) twice, 21 (encrypted code for digit 2), 11 (encrypted code for digit 5, 500 (encrypted code for digit 0), and 89 (encrypted code for digit 8).