7664 Priceless Treasure

Toward the end of Ming Dynasty, political corruptions and famine led to many revolutions. In January of 1644, Zicheng Li (a.k.a King Chuang), one of the leader of military troops, captured some land and founded Dashun kingdom. And then in April of 1644, he captured the capital of Ming Dynasty (Yanjing). At first, soldiers have good discipline. But after just a short while, soldiers began looting around. According the historians, some 37 million silver ingots and 10 million gold ingots were taken from the palace treasury. In today's market, those silver and gold ingots would have cost over US$800,000,000,000 dollars.

But in June 1644, Sangui Wu, and Qing army overthrown Dashun Kindom by defeating King Chuang at Yanjing. When fleeding Yanjing, King Chuang rounded up the treasures in an attempt to take the treasures with him to Xian. Unfortunately, before reaching Xian, Qing army had caught up with King Chuang. King Chuang decide to hide the treasures in mountains and rivers. King Chuang encoded the hiding place with a western proverb book and a sequence of numbers as key to the message. He then handed the proverb book to his four bodyguards and gave them four modified sequences of numbers (modified from the key). King Chuang told the bodyguards that Qing was hard to defeat now. But given time, when corruptions abound, our descendants should recover the hidden treasures and find Dashun Kingdom again.

Descendants of the four bodyguards aggregated together wanting to find the hidden treasures. A part of western proverb book and parts of the 4 sequences are given as follows:

Western proverbs:

```
the blood of the soldiers makes the glory of the general
yellow gold has its price learning is priceless
a letter from home is a priceless treasure
learning is a treasure that will follow its owner everywhere
all are not thieves that dogs bark at
...
...
...
```

Part of 4 sequences of numbers.

```
1 8 9 3 8 2 8 ...
1 5 9 8 8 2 8 ...
1 8 9 8 2 7 8 ...
6 1 9 8 8 2 8 ...
```

One of the bodyguard descents is a computer scientist. He had figured out that the longest common subsequence (LCS) of the 4 sequences is a vital cue to the hidden message. He found two LCS from the partial sequences of numbers given above, namely 1 8 8 2 8 · · · and 1 9 8 2 8 · · · .

For 1 8 8 2 8, the following message can be constructed:

The 1st word of the 1st proverb is "`the`".
The 8th word of the 2nd proverb is "`priceless`".
The 8th word of the 3rd proverb is "`treasure`".
The 2nd word of the 4th proverb is "`is`".
The 8th word of the 5th proverb is "`at`".
The above gives the first 5 words of the hidden code.

But for 1 9 8 2 8 · · · , it was found that there is no 9th word in the 2nd proverb.
So 1 9 8 2 8 · · · cannot be a proper code and is discarded.

The descendants are very excited about this discovery. They now are eager to discover the entire message in order to find the hidden treasures. Please help descendants of the four bodyguards decipher the hidden message.

Technical Specification

1. M, $1 \leq M \leq 32$, is the number of proverbs.
2. The number of words in each proverb is at most 25.
3. Each proverb contains only lower alphabets and spaces.
4. N, $1 \leq N \leq 10$, is the number of test cases, each test case contains 4 sequences of numbers.
5. For each set of 4 sequences, there are at most 7 longest common subsequences.

Input

The first line is a number M indicating the number of proverbs. The next M lines contains the M proverbs, one proverb per line. Following the proverbs is a line containing a single number N indicating the number of test cases (number of sets of 4 sequences) to follow. For each test case, there are 4 lines of sequence of numbers, separated by space. Each sequence contains at most 32 numbers.

Output

For each test case (set of 4 sequences), output the number ($= L$) of possible original messages at first line. Then in the following L lines, output the possible original messages in lexicographical ordering. (A possible original message is formatted as a sequence of words separated by a single whitespace. Take a possible original message as a string of ASCII characters, and sort them in lexical graphic ordering.)

Sample Input

```
10
the blood of the soldiers makes the glory of the general
yellow gold has its price learning is priceless
a letter from home is a priceless treasure
learning is a treasure that will follow its owner everywhere
all are not thieves that dogs bark at
there is no wool so white but a dyer can make it black
one master in the house is enough
bees that have honey in their mouths have stings in their tails
a good fame is better than a good face
you can not burn the candle at both end
2
1 8 9 3 8 2 8 6 5 4
1 5 9 8 8 2 8 6 5
1 8 9 8 2 7 8 6 5 4
6 1 9 8 8 2 8 6 5
1 4 8 2 5 8 6 6 3 3 7 7 10 11
9 9 3 3 7 7 4 1 8 2 8 5 10
6 6 9 9 1 8 4 2 5 8 7 7 10 11
6 6 8 4 1 2 8 5 9 9 3 3 10
```

Sample Output

```
1
the priceless treasure is at white house
5
glory gold is everywhere
glory gold treasure everywhere
the gold is everywhere
the gold treasure everywhere
the priceless is everywhere
```