Italian Scopa (scopa)

Scopa is an Italian card game, and one of the two major national card games in Italy. The name is an Italian noun meaning "broom", since taking a scopa means "to sweep" all the cards from the table. Watching a game of scopa can be a highly entertaining activity, since games traditionally involve lively, colorful, and somewhat strong-worded banter in between hands.

Figure 1: Italian people playing cards – © Michal Dzierza https://www.dzierza.com/

Each hand is formed by 3 cards, and there are 4 more cards which are placed on the table. Cards have a number (from 1 to 10) and a suit (Golds, Swords, Cups, Batons). When it's their turn, a player will use one of his cards to take some more cards from the table, he can do so only if the values of those cards sum up to the value of the card he's using (regardless of the suit). If he manage to obtain such a sum he will keep all those cards.

For example if in his hand he has a *seven* and on the table there is a 3, a 4, a 5 and a 10 he can choose to take the 3 and the 4.

There are many strategy to play this game, Giorgio's one is the following:

- If he can get a **sette bello** (the 7 of Golds), he will;
- If he can make a **scopa** (take all the cards from the table), he will;
- He'll try to take as many 7 as he can;
- Otherwise he will try to take as many cards as he can from the table.

As you can imagine, Giorgio is an avid scopa player. He likes this game a lot but he keeps on losing against the more experienced elders of his village. That's why he's working on a complicated Machine

Learning software that is able to beat, utterly destroy and humiliate any opponent that comes its way. This will surely earn Giorgio the respect he deserves from his fellow villagers.

After warming up his Neural Network, now he's missing the core piece of the program: the function that, given a hand of cards and the set of cards on the table, chooses *which is the best move* to make. Help Giorgio by implementing this logic.

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

Input

Each card is described by a number followed by a suit. The first line contains 3 cards separated by whitespace: those in a possible hand. The second line contains 4 cards separated by whitespace: those on the table.

Output

You need to write a single line with all the cards taken in the best move, separated by whitespace, including the one from the hand. The order of the cards does not matter.

Constraints

- Each card's number is an integer from 1 to 10.
- Each card's suit is one of four characters: `G`, `S`, `C` or `B`, respectively: golds, swords, cups, batons.
- There are no duplicate cards.
- It will always be possible to take at least one card from the table.
- The solution 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** (20 points) The solution is to use a 7 to take a 7 from the table.

– **Subtask 3** (50 points) The best move never requires to take more than a card from the table.

– **Subtask 4** (30 points) No additional limitations.

Examples

input	output
5G 7G 8S 2G 3C 7S 2C	7G 7S
5G 7S 8S 2G 3C 1S 2C	8S 2G 3C 1S 2C

Explanation

In the **first sample case** the best solution is to take the *sette bello* from the hand and the 7 from the table. According to the rules it's better to take a single seven then more non-7 cards.

In the **second sample case**, the best move is to use the 8 of Swords to sweep all the cards on the table. Note that because the 7 is not a *sette bello* it's better to score a *scopa*.