Problem 3 - The Pianist

You are a pianist, and you like to keep a list of your favorite piano pieces. Create a program to help you organize it and add, change, remove pieces from it!

On the first line of the standard input, you will receive an integer **n** – the **number of pieces** you will initially have. On the next **n** lines, the **pieces themselves** will follow with their **composer** and **key**, separated by **"|"** in the following format: **"{piece}|{composer}|{key}"**.

Then, you will be receiving different **commands**, each on a new line, separated by **"|"**, until the **"Stop"** command is given:

- **"Add|{piece}|{composer}|{key}"**:
  - o You need to **add the given piece** with the information about it to the other pieces and print:
    "{piece} by {composer} in {key} added to the collection!"
  - o If the piece **is already in the collection**, print:
    "{piece} is already in the collection!"
- **"Remove|{piece}"**:
  - o If the piece is in the collection, **remove it** and print:
    "Successfully removed {piece}!"
  - o Otherwise, print:
    "Invalid operation! {piece} does not exist in the collection."
- **"ChangeKey|{piece}|{new key}"**:
  - o If the piece is in the collection, **change its key with the given one** and print:
    "Changed the key of {piece} to {new key}!"
  - o Otherwise, print:
    "Invalid operation! {piece} does not exist in the collection."

Upon receiving the **"Stop"** command, you need to print all pieces in your collection in the following format:
"{Piece} -> Composer: {composer}, Key: {key}"

Input/Constraints

- You will receive **a single integer** at first – **the initial number of pieces in the collection.**
- For each piece, you will receive a single line of text with information about it.
- Then you will receive multiple commands in the way described above until the command **"Stop"**.

Output

- All the output messages with the appropriate formats are described in the problem description.

Examples

Input	Output
3 Fur Elise|Beethoven|A Minor Moonlight Sonata|Beethoven|C# Minor Clair de Lune|Debussy|C# Minor Add|Sonata No.2|Chopin|B Minor Add|Hungarian Rhapsody No.2|Liszt|C# Minor Add|Fur Elise|Beethoven|C# Minor Remove|Clair de Lune	Sonata No.2 by Chopin in B Minor added to the collection! Hungarian Rhapsody No.2 by Liszt in C# Minor added to the collection! Fur Elise is already in the collection! Successfully removed Clair de Lune! Changed the key of Moonlight Sonata to C# Major!

ChangeKey|Moonlight Sonata|C# Major Stop	Fur Elise -> Composer: Beethoven, Key: A Minor Moonlight Sonata -> Composer: Beethoven, Key: C# Major Sonata No.2 -> Composer: Chopin, Key: B Minor Hungarian Rhapsody No.2 -> Composer: Liszt, Key: C# Minor

Comments

After we receive the initial pieces with their info, we start receiving commands. The first two commands are to add a piece to the collection, and since the pieces are not already added, we manage to add them. The third add command, however, **attempts to add a piece, which is already in the collection**, so we print a special message and don't add the piece. After that, we receive the remove command, and since the piece is in the collection, we remove it successfully.

Finally, the last command says to change the key of a piece. Since the key is present in the collection, we modify its key.

We receive the Stop command, print the information about the pieces, and the program ends.

Input	Output
4 Eine kleine Nachtmusik|Mozart|G Major La Campanella|Liszt|G# Minor The Marriage of Figaro|Mozart|G Major Hungarian Dance No.5|Brahms|G Minor Add|Spring|Vivaldi|E Major Remove|The Marriage of Figaro Remove|Turkish March ChangeKey|Spring|C Major Add|Nocturne|Chopin|C# Minor Stop	Spring by Vivaldi in E Major added to the collection! Successfully removed The Marriage of Figaro! Invalid operation! Turkish March does not exist in the collection. Changed the key of Spring to C Major! Nocturne by Chopin in C# Minor added to the collection! Eine kleine Nachtmusik -> Composer: Mozart, Key: G Major La Campanella -> Composer: Liszt, Key: G# Minor Hungarian Dance No.5 -> Composer: Brahms, Key: G Minor Spring -> Composer: Vivaldi, Key: C Major Nocturne -> Composer: Chopin, Key: C# Minor

JS Examples

Input	Output

[
 	
  '3',
 	
  'Fur Elise|Beethoven|A Minor',
 	
  'Moonlight Sonata|Beethoven|C# Minor',
 	
  'Clair de Lune|Debussy|C# Minor',
 	
  'Add|Sonata No.2|Chopin|B Minor',
 	
  'Add|Hungarian Rhapsody No.2|Liszt|C#
Minor',
 	
  'Add|Fur Elise|Beethoven|C# Minor',
 	
  'Remove|Clair de Lune',
 	
  'ChangeKey|Moonlight Sonata|C# Major',
 	
  'Stop'
 	
]
	Sonata No.2 by Chopin in B Minor added to the collection!
	Hungarian Rhapsody No.2 by Liszt in C# Minor added to the collection!
	Fur Elise is already in the collection!
	Successfully removed Clair de Lune!
	Changed the key of Moonlight Sonata to C# Major!
	Fur Elise -> Composer: Beethoven, Key: A Minor
	Moonlight Sonata -> Composer: Beethoven, Key: C# Major
	Sonata No.2 -> Composer: Chopin, Key: B Minor
	Hungarian Rhapsody No.2 -> Composer: Liszt, Key: C# Minor

Comments
After we receive the initial pieces with their info, we start receiving commands. The first two commands are to add a piece to the collection, and since the pieces are not already added, we manage to add them. The third add command, however, **attempts to add a piece, which is already in the collection**, so we print a special message and don't add the piece. After that, we receive the remove command, and since the piece is in the collection, we remove it successfully. Finally, the last command says to change the key of a piece. Since the key is present in the collection, we modify its key. We receive the Stop command, print the information about the pieces, and the program ends.

Input	Output

[
 	
  '4',
 	
  'Eine kleine Nachtmusik|Mozart|G Major',
 	
  'La Campanella|Liszt|G# Minor',
 	
  'The Marriage of Figaro|Mozart|G Major',
 	
  'Hungarian Dance No.5|Brahms|G Minor',
 	
  'Add|Spring|Vivaldi|E Major',
 	
  'Remove|The Marriage of Figaro',
 	
  'Remove|Turkish March',
 	
  'ChangeKey|Spring|C Major',
 	
  'Add|Nocturne|Chopin|C# Minor',
 	
  'Stop'
 	
]
	Spring by Vivaldi in E Major added to the collection!
	Successfully removed The Marriage of Figaro!
	Invalid operation! Turkish March does not exist in the collection.
	Changed the key of Spring to C Major!
	Nocturne by Chopin in C# Minor added to the collection!
	Eine kleine Nachtmusik -> Composer: Mozart, Key: G Major
	La Campanella -> Composer: Liszt, Key: G# Minor
	Hungarian Dance No.5 -> Composer: Brahms, Key: G Minor
	Spring -> Composer: Vivaldi, Key: C Major
	Nocturne -> Composer: Chopin, Key: C# Minor