## Problem 1 – World Tour

A problem for exam preparation for the [Programming Fundamentals Course @ SoftUni](https://softuni.bg/trainings/3950/programming-fundamentals-with-csharp-january-2023)

Submit your solutions in the SoftUni Judge system [here](https://judge.softuni.org/Contests/Practice/Index/2518#0)

*You are a world traveler, and your next goal is to make a world tour. To do that, you have to plan out everything first. To start with, you would like to plan out all of your stops where you will have a break.*

On the **first line,** you will be given a string containing all of your **stops**. Until you receive the command **"Travel"**, you will be given some commands to **manipulate** that initial string. The **commands can be**:

* **"Add Stop:{index}:{string}"**:
  + **Insert** the given **string** at that **index** only if the index **is valid**
* **"Remove Stop:{start\_index}:{end\_index}"**:
  + **Remove** the elements of the string from the **starting index** to the **end index** (**inclusive**) if **both** indices are **valid**
* **"Switch:{old\_string}:{new\_string}"**:
  + If the **old string** is in the initial string, **replace** it with the **new one** (all **occurrences**)

***Note: After each command, print the current state of the string!***

After the **"Travel"** command, print the following: **"Ready for world tour! Planned stops: {string}"**

### Input / Constraints

* **JavaScript**: you will receive a **list of strings**
* An **index is valid** if it is **between the first and the last element index (inclusive) (0 ….. Nth)** in the sequence**.**

### Output

* Print the proper output messages in the proper cases as described in the problem description

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| Hawai::Cyprys-Greece  Add Stop:7:Rome  Remove Stop:11:16  Switch:Hawai:Bulgaria  Travel | Hawai::RomeCyprys-Greece  Hawai::Rome-Greece  Bulgaria::Rome-Greece  Ready for world tour! Planned stops: Bulgaria::Rome-Greece |
| Albania:Bulgaria:Cyprus:Deuchland  Add Stop:3:Nigeria  Remove Stop:4:8  Switch:Albania: Azərbaycan  Travel | AlbNigeriaania:Bulgaria:Cyprus:Deuchland  AlbNaania:Bulgaria:Cyprus:Deuchland  AlbNaania:Bulgaria:Cyprus:Deuchland  Ready for world tour! Planned stops: AlbNaania:Bulgaria:Cyprus:Deuchland |

## Problem 2 – Mirror Words

A problem for exam preparation for the [Programming Fundamentals Course @ SoftUni](https://softuni.bg/trainings/3950/programming-fundamentals-with-csharp-january-2023)

Submit your solutions in the SoftUni Judge system [here](https://judge.softuni.org/Contests/Practice/Index/2307#1)

*The SoftUni Spelling Bee competition is here. But it`s not like any other Spelling Bee competition out there. It`s different and a lot more fun! You, of course, are a participant, and you are eager to show the competition that you are the best, so go ahead, learn the rules and win!*

On the first line of the input, you will be given a **text string**. To win the competition, you have to find all hidden **word pairs**, read them, and mark the ones that are **mirror** **images** of each other.

First of all, you have to **extract the hidden word pairs**. Hidden word pairs are:

* Surrounded by "@" or "#" (only one of the two) in the following pattern #wordOne##wordTwo# or @wordOne@@wordTwo@
* At least **3 characters long each** (**without the surrounding symbols**)
* Made up of **letters** **only**

If the second word, **spelled backward,** is the **same** **as the first word** **and vice versa** (**casing matters**!), they are a **match,** and you have to store them somewhere. **Examples** of mirror words:

#Part##traP# @leveL@@Level@ #sAw##wAs#

* If you don`t find any valid pairs, print: **"No word pairs found!"**
* If you find valid pairs print their count: **"{valid pairs count} word pairs found!"**
* If there are no mirror words, print: **"No mirror words!"**
* If there are mirror words print:

"The mirror words are:

{wordOne} <=> {wordtwo}, {wordOne} <=> {wordtwo}, … {wordOne} <=> {wordtwo}"

### Input / Constraints

* You will recive a string.

### Output

* Print the proper output messages in the proper cases as described in the problem description.
* If there are pairs of mirror words, print them in the end, each pair separated by **", "**.
* Each pair of mirror word must be printed with **" <=> "** between the words.

### Examples

|  |  |
| --- | --- |
| **Input** | |
| @mix#tix3dj#poOl##loOp#wl@@bong&song%4very$long@thong#Part##traP##@@leveL@@Level@##car#rac##tu@pack@@ckap@#rr#sAw##wAs#r#@w1r | |
| **Output** | **Comments** |
| 5 word pairs found!  The mirror words are:  Part <=> traP, leveL <=> Level, sAw <=> wAs | There are 5 green and yellow pairs that meet all requirements and thus are valid.  #poOl##loOp# is valid and looks very much like a mirror words pair, but it isn`t because the casings don`t match.  #car#rac# "rac" spelled backward is "car", but this is not a valid pair because there is only one "#" between the words.  @pack@@ckap@ is also valid, but "ckap" backward is "pakc" which is not the same as "pack", so they are not mirror words. |
| **Input** | |
| #po0l##l0op# @bAc##cAB@ @LM@ML@ #xxxXxx##xxxXxx# @aba@@ababa@ | |
| **Output** | **Comments** |
| 2 word pairs found!  No mirror words! | "xxxXxx" backward is not the same as "xxxXxx"  @aba@@ababa@ is a valid pair, but the word lengths are different - these are definitely not mirror words |
| **Input** | |
| #lol#lol# @#God@@doG@# #abC@@Cba# @Xyu@#uyX# | |
| **Output** | **Comments** |
| No word pairs found!  No mirror words! |  |

## Problem 3 – Need for Speed III

A problem for exam preparation for the [Programming Fundamentals Course @ SoftUni](https://softuni.bg/trainings/3950/programming-fundamentals-with-csharp-january-2023)

Submit your solutions in the SoftUni Judge system [here](https://judge.softuni.org/Contests/Practice/Index/2307#2)

*You have just bought the latest and greatest computer game – Need for Seed III. Pick your favorite cars and drive them all you want! We know that you can't wait to start playing.*

On the first line of the standard input, you will receive an integer **n** – the **number of cars** that you can obtain. On the next **n** lines, the **cars themselves** will follow with their **mileage** and **fuel** **available**, separated by "|" in the following format:

"{car}|{mileage}|{fuel}"

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

* "Drive : {car} : {distance} : {fuel}**"**:
  + You need to **drive the given distance**, and you will **need the given** fuel to do that. If the car **doesn't have enough fuel**, print: "**Not enough fuel to make that ride**"
  + If the car has the required fuel available in the tank, **increase its mileage** with **the given distance**, **decrease its fuel with the given fuel,** and **print**:   
    "{car} driven for {distance} kilometers. {fuel} liters of fuel consumed."
  + You like driving new cars only, so if a car's mileage reaches **100 000** km, remove it from the collection(s) and print: "**Time to sell the {car}!**"
* "Refuel : {car} : {fuel}**"**:
  + **Refill** the tank of your car.
  + Each tank can hold a **maximum of 75 liters of fuel**, so if the given amount of fuel is more than you can fit in the tank, take only what is required to fill it up.
  + Print a message in the following format: "{car} refueled with {fuel} liters"
* "Revert : {car} : {kilometers}**"**:
  + Decrease the **mileage** of the given **car with the given kilometers** and print the kilometers you have decreased it with in the following format:  
    "{car} mileage decreased by {amount reverted} kilometers"
  + If the mileage becomes **less** **than** **10 000km** **after** it is decreased, **just set it to 10 000km** and   
    **DO NOT print anything.**

Upon receiving the "Stop" command, you need to print all cars in your possession in the following format:  
"**{car} -> Mileage: {mileage} kms, Fuel in the tank: {fuel} lt.**"

### Input/Constraints

* The **mileage** and **fuel** of the cars will be valid, 32-bit integers, and will never be negative.
* The **fuel** and **distance** amounts **in the commands will never be negative**.
* The **car** **names** in the **commands** will always be **valid cars in your possession**.

### Output

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

### Examples

|  |  |
| --- | --- |
| **Input** | **Output** |
| 3  Audi A6|38000|62  Mercedes CLS|11000|35  Volkswagen Passat CC|45678|5  Drive : Audi A6 : 543 : 47  Drive : Mercedes CLS : 94 : 11  Drive : Volkswagen Passat CC : 69 : 8  Refuel : Audi A6 : 50  Revert : Mercedes CLS : 500  Revert : Audi A6 : 30000  Stop | Audi A6 driven for 543 kilometers. 47 liters of fuel consumed.  Mercedes CLS driven for 94 kilometers. 11 liters of fuel consumed.  Not enough fuel to make that ride  Audi A6 refueled with 50 liters  Mercedes CLS mileage decreased by 500 kilometers  Audi A6 -> Mileage: 10000 kms, Fuel in the tank: 65 lt.  Mercedes CLS -> Mileage: 10594 kms, Fuel in the tank: 24 lt.  Volkswagen Passat CC -> Mileage: 45678 kms, Fuel in the tank: 5 lt. |
| **Comments** | |
| After we receive the cars with their mileage and fuel, we start driving them. When we get to "**Drive : Volkswagen Passat CC : 69 : 8**" command, our program calculates that there is not enough fuel, and we print the appropriate message. Then we refuel the Audi A6 with 50 l of fuel and Revert the Mercedes with 500 kilometers.  When we receive the "Revert : Audi A6 : 30000", we set its mileage to **10000** km, because if the current mileage of the Audi is **38543** kms and if we subtract **30000** from it, we receive **8543** kms, which is less than 10000 kms.  After all the commands, we print our current collection of cars with their current mileage and current fuel. | |
| **Input** | **Output** |
| 4  Lamborghini Veneno|11111|74  Bugatti Veyron|12345|67  Koenigsegg CCXR|67890|12  Aston Martin Valkryie|99900|50  Drive : Koenigsegg CCXR : 382 : 82  Drive : Aston Martin Valkryie : 99 : 23  Drive : Aston Martin Valkryie : 2 : 1  Refuel : Lamborghini Veneno : 40  Revert : Bugatti Veyron : 2000  Stop | Not enough fuel to make that ride  Aston Martin Valkryie driven for 99 kilometers. 23 liters of fuel consumed.  Aston Martin Valkryie driven for 2 kilometers. 1 liters of fuel consumed.  Time to sell the Aston Martin Valkryie!  Lamborghini Veneno refueled with 1 liters  Bugatti Veyron mileage decreased by 2000 kilometers  Lamborghini Veneno -> Mileage: 11111 kms, Fuel in the tank: 75 lt.  Bugatti Veyron -> Mileage: 10345 kms, Fuel in the tank: 67 lt.  Koenigsegg CCXR -> Mileage: 67890 kms, Fuel in the tank: 12 lt. |

*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}":
  + 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!"

* + If the piece **is already in the collection**, print:

"**{piece} is already in the collection!**"

* "Remove|{piece}":
  + If the piece is in the collection, **remove it** and print:

"Successfully removed {piece}!"

* + Otherwise, print:

"Invalid operation! {piece} does not exist in the collection."

* "ChangeKey|{piece}|{new key}":
  + If the piece is in the collection, **change its key with the given one** and print:

"Changed the key of {piece} to {new key}!"

* + 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  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 |