

Messages Manager

Create a program that manages **messages sent** and **received** of **users**. You need to keep information about **username**, their **sent** and **received** messages. You will **receive** the **capacity** of **possible messages kept at once per user**. You will be receiving **lines** with commands until you receive the **"Statistics"** command. There are three **possible** commands:

- **"Add={username}={sent}={received}":**
 - **Add** the **username**, his/her **sent** and **received** messages to your **records**. If person with the given **username** already **exists** **ignore the line**.
- **"Message={sender}={receiver}":**
 - **Check** if both usernames **exist** and if **they do**, **increase** the **sender's sent messages** by 1 and the **receiver's received messages** by 1. If anyone **reaches** the **capacity** (**first check the sender**), he/she should be **removed** from the **record** and you should **print** the following message:
 - **"{username} reached the capacity!"**
- **"Empty={username}":**
 - Delete **all** records of the **given user**, if he **exists**. If **"All"** is **given** as **username** - delete **all records** you have.

In the end, you have to **print the count of users**, each person with his/her **messages** (the **count** of both **sent** and **received**) sorted in **descending order** by the **received messages** and **then by** their **username** in **ascending** order in the following format:

Users count: {count}

{username} - {messages}

{username} - {messages}

Input

- On the **first line**, you will **receive** the **capacity** - an **integer** number in the range [1-10000].
- You will be receiving lines until you receive the **"Statistics"** command.
- The **initial messages** (**sent** and **received**) will **always** be **below** the **capacity**.
- The input will **always** be **valid**.

Output

- Print the appropriate message after the **"Message"** command, **if** someone reaches the capacity.
- Print the users with their **messages** in the **format** described above.



Examples

Input	Output
10 Add=Mark=5=4 Add=Clark=3=5 Add=Berg=9=0 Add=Kevin=0=0 Message=Berg=Kevin Statistics	Berg reached the capacity! Users count: 3 Clark - 8 Mark - 9 Kevin - 1
Comments	
First, we receive the capacity (10). Then we start receiving commands . The first four commands are for adding new users , so we do it. Then we have the command " Message=Berg=Kevin " and Berg reached the capacity , so we remove him, but Kevin has only his received messages incremented . When we receive the " Statistics " command, we print the output as described above .	
20 Add=Mark=3=9 Add=Berry=5=5 Add=Clark=4=0 Empty=Berry Add=Blake=9=3 Add=Michael=3=9 Add=Amy=9=9 Message=Blake=Amy Message=Michael=Amy Statistics	Amy reached the capacity! Users count: 4 Mark - 12 Michael - 13 Blake - 13 Clark - 4
12 Add=Bonnie=3=5 Add=Johnny=4=4 Empty=All Add=Bonnie=3=3 Statistics	Users count: 1 Bonnie - 6