Santa's Gifts

You will be given an **array of integers**, which represent the **house numbers** you should visit. The **commands** will lead you to them. If they lead you to **non-existing** places, **don't move**.

- **Forward {numberOfSteps}**
- **Back {numberOfSteps}**
    - When you receive the "**Forward**" or "**Back**" command, you **move the given number of times** in this **direction** and **remove** the house in **this position** from your list. Also, when you receive the next command, you **continue from this position**.
- **Gift {index} {houseNumber}**
    - Enter a **new house number**, which the dwarves have left out on purpose, **at the given position** and move to its position.
- **Swap {indexOfFirst} {indexOfSecond}**
    - Santa wants to rearrange his path and **swap the order of two houses**. You will receive the **numbers of the houses**, that need to be switched and he doesn't need to move to fulfill this command.

Input

- On the first line you will receive the number of commands – **integer in the range [1-50]**
- On the second line you will receive the array of integers, that represent the houses, split by a single space – valid **integers in the range [1 – 500]**
- On the next n lines, you will receive the commands in the **following format**:
    - **Forward {steps}**
    - **Back {steps}**
    - **Gift {index} {value}**
    - **Swap {value1} {value2}**

Output

- Print the **last position** and the **remaining houses** in the following format:

"Position {position}"

"{houseNumber}, {houseNumber}………, {houseNumber}"

Constraints

- The house numbers will be valid integers in the range [1 - 1000]
- The number of commands will be a valid integer in the range [1 - 50]
- The commands will be given in the exact format as they are written above
- There will always be at least one valid command

Examples

Input	Output	Comment
5 255 500 54 78 98 24 30 47 69 58 Forward 1 Swap 54 47	Position: 3 20, 47, 78, 24, 30, 54, 69, 58	First, we receive the "Forward" command, the sleigh will start from the beginning – index 0. He has to move 1 step, so he will move to index 1 and delete the house

Gift 1 20 Back 1 Forward 3		number, which is stored there – 500. What is left of the list: **255 54 78 98 24 30 47 69 58** and Santa's position is 1. The next command is "Swap". After it, the list looks like this: **255 47 78 98 24 30 54 69 58** and Santa's position doesn't change. The "Gift" command has to insert at index 1 the house with number 20: **255 20 47 78 98 24 30 54 69 58** and move Santa to current index – 1. The "Back" command has to move Santa back 1 step from his current position. He is at 1 position, so he has to move back to position 0, and remove the house number, which it stores: **20 47 78 98 24 30 54 69 58** The last "Forward" command will move him three steps forward from his current position, which is 0, so he goes to – 3 and removes the house: **20 47 78 24 30 54 69 58**
6 50 40 25 63 78 54 66 77 24 87 Forward 4 Back 3 Forward 3 Gift 2 88 Swap 50 87 Forward 1	Position: 3 87, 25, 88, 54, 77, 24, 50	