

3F – The filling of barrels

There are N ($1 < N \leq 100$) equal empty barrels on a horizontal surface. The volume of each barrel is 100 units. Each two of them are connected with a pipe. Each pipe is connected to the bottoms of the two barrels and it has its own valve which can be only in two positions: “OPEN” or “CLOSED”. In the beginning all valves are closed. If a valve is open, then the liquid from one connected barrel can quickly and freely flow to the other so that the amount of the liquid in these barrels becomes equal (the principle of communicating tubes). If a valve is closed, the liquid flow through this pipe is not possible. Two kinds of operations are allowed:

1. ‘ P ’ (for pouring) when some amount of the liquid is poured into the prescribed barrel. The description of the operation is: “ Pnm ”, where n is the number of a barrel and m is the amount of the liquid (in units) to be poured to this barrel (n and m are integers, $0 < n \leq N, 0 < m \leq 1000$);
2. ‘ V ’ (for a valve) when one prescribed valve is turned to the opposite position (i.e. this valve becomes closed if it has been open and becomes open if it has been closed). The description of the operation is: “ $V n_1 n_2$ ”, where n_1 and n_2 are the numbers of the barrels which are connected with a pipe that has this valve (n_1 and n_2 are integers, $0 < n_1 \leq N, 0 < n_2 \leq N, n_1 \neq n_2$). Two different descriptions “ $V n_1 n_2$ ” and “ $V n_2 n_1$ ” refer to the same valve.

Your goal is to execute the given sequence of operations. You must neglect the amount of liquid in pipes. If some pouring operation cannot be executed due to the liquid overflow, the execution of this operation sequence must be stopped after an appropriate output.

Input

The input data contain the numbers N and K (the number of operations, $0 < K \leq 1000$) in the first line and the description of the operation in the remaining K lines (one description per each line).

Output

The output must contain “OK” and the values of a minimum and a maximum amount of the liquid in all barrels at the end if the sequence execution is successively completed or “OVERFLOW” and the number of the operation during which overflow happens. The values of the liquid amount must be written as real numbers, having two signs after a decimal point.

Examples

Input :
2 6
P 1 63
P 2 37
V 1 2
P 1 50
V 2 1
P 1 20

Output :
OK 75.00 95.00

Input :
3 8
P 1 100
V 2 1
P 2 40
V 1 2
V 1 3
V 1 3
P 3 70
V 1 3

Output :
OVERFLOW 7