B. The Modcrab

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

Vova is again playing some computer game, now an RPG. In the game Vova's character received a quest: to slay the fearsome monster called Modcrab.

After two hours of playing the game Vova has tracked the monster and analyzed its tactics. The Modcrab has h_2 health points and an attack power of a_2. Knowing that, Vova has decided to buy a lot of strong healing potions and to prepare for battle.

Vova's character has h_1 health points and an attack power of a_1. Also he has a large supply of healing potions, each of which increases his current amount of health points by c_1 when Vova drinks a potion. All potions are identical to each other. It is guaranteed that $c_1 > a_2$.

The battle consists of multiple phases. In the beginning of each phase, Vova can either attack the monster (thus reducing its health by a_1) or drink a healing potion (it increases Vova's health by c_1; **Vova's health can exceed h_1**). Then, **if the battle is not over yet**, the Modcrab attacks Vova, reducing his health by a_2. The battle ends when Vova's (or Modcrab's) health drops to 0 or lower. It is possible that the battle ends in a middle of a phase after Vova's attack.

Of course, Vova wants to win the fight. But also he wants to do it as fast as possible. So he wants to make up a strategy that will allow him to win the fight after the minimum possible number of phases.

Help Vova to make up a strategy! You may assume that Vova never runs out of healing potions, and that he can always win.

Input

The first line contains three integers h_1, a_1, c_1 ($1 \le h_1, a_1 \le 100, 2 \le c_1 \le 100$) — Vova's health, Vova's attack power and the healing power of a potion.

The second line contains two integers h_2, a_2 ($1 \le h_2 \le 100, 1 \le a_2 < c_1$) — the Modcrab's health and his attack power.

Output

In the first line print one integer n denoting the minimum number of phases required to win the battle.

Then print n lines. i-th line must be equal to `HEAL` if Vova drinks a potion in i-th phase, or `STRIKE` if he attacks the Modcrab.

The strategy must be valid: Vova's character must not be defeated before slaying the Modcrab, and the monster's health must be 0 or lower after Vova's last action.

If there are multiple optimal solutions, print any of them.

Examples

input
10 6 100 17 5

output
4 STRIKE HEAL STRIKE STRIKE

input
11 6 100 12 5
output
2 STRIKE STRIKE

Note

In the first example Vova's character must heal before or after his first attack. Otherwise his health will drop to zero in 2 phases while he needs 3 strikes to win.

In the second example no healing needed, two strikes are enough to get monster to zero health and win with 6 health left.