Production of computer games are a famous and popular industry. In games, we may need to have some intelligent agents. The simplest agent is a random agent. However, the random action can only be derived from a pseudo random sequence. Write a program to simulate the move of a random agent, which takes actions according to the random number retrieved from the given pseudo random sequence.
#requirements: write a function to get a random integer by retrieving an integer from stdin.

Input

The input contains a sequence of integers and ends with EOF. The sequence can be separated into several cases. In each case, the first integer determines the number of actions n, followed by n integers. The remainder of the integer determines the action, i.e., :
0: keep, 1: up, 2: left, 3: down, 4: right, 5: Normal attack,
6: E-skill, 7: Q-skill, 8: R-skill, 9: Spell 1, 10: Spell 2.
The agent starts from (0,0), and each action of up, left, right, and down causes the agent moves one unit step towards the corresponding direction.

Output

For each case, output the log of the agent according to the format given in the sample output.

Sample Input

6 0 1 2 3 4 5 11 0 10 1 9 2 8 3 7 4 6 5 0

Sample Output

Log of Agent 1:
Normal attack at (0,0).

Log of Agent 2:
Cast spell 2 at (0,0).
Cast spell 1 at (1,0).
R-skill attack at (1,-1).
Q-skill attack at (0,-1).
E-skill attack at (0,0).
Normal attack at (0,0).