**ccu13b02: Frog on a line**

**Problem Description**

There are n cells in a line and a frog jumps on the line. The cells are consecutively labeled by 0 to n-1. The frog keeps its direction unless some instruction orders it to turn. At each cell, there is an instruction for the frog, which is a nonzero integer. An instruction of a positive integer k orders the frog to jump further k cells in its current direction. If k<0, the frog turns, i.e., changes its direction, and then jump further -k cells in its new direction.

Given an initial position and direction, there are three possible results:

Forward out-of-range: jumping to a cell with label larger than n-1;

Backward out-of-range: jumping to a cell with label smaller than 0;

Cycle: infinitely repeating among some cells.

Your job is to determine which result it will be.

**Input**

The input consists of several test cases and each case contains one array of instructions and several initial situations. The first line has two integers n and m, in which 0<=n<=10000 is the number of cells and m is the number of initial situations. The next line contains n integers which are the instructions. Followed the second line, there are m lines, one for an initial situation. Each initial situation contains two integers p and q, in which 0<=p<n is the initial cell and q is either 1 or -1, indicating the initial direction. Direction 1 means that the frog currently jumps from small to large. The case with n=0 is the end of input.

**Output**

For each case, print the result in one line: You should output  
“Forward” if it is forward out-of-range; .   
“Backward” if it is backward out-of-range; or  
“Cycle k” if it repeats in a cycle of k cells.

**Sample Input**

7 4

1 -2 4 1 -3 -5 7

1 -1

2 1

5 -1

5 1

0 0

**Sample Output**

Cycle 3

Forward

Forward

Backward