Once upon a time, there was a country named *IPCLand* with a population $N$. Each citizen was assigned an NID number in the range $1, 2, \ldots \ldots \ldots, N$. The fundamental principle of the constitution of *IPCLand* was **Synchronization**. All the citizens had to follow synchronization in every aspect of life. Race condition, Deadlock, and Starvation were considered as severe crimes there. When the citizens of *IPCLand* walked, each of them took a step of a constant length. However, number of steps taken per second by each individuals might vary. For convenience, they used to express distance between two places in the number of steps required to walk from one to another.

Every afternoon, all the people of *IPCLand* used to walk around a path as shown in the following diagram:
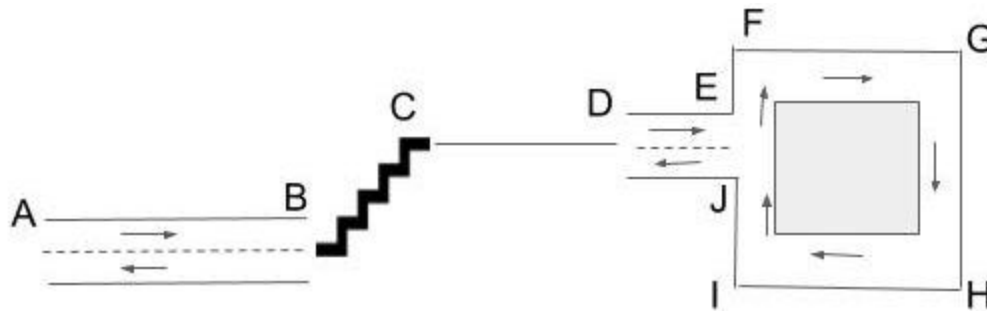


**AB** is a two-lane wide road of length `STEPS_AB` (default 100) steps where any number of pedestrians can walk side by side. Usually, people with higher walking speed cross the ones with lower walking speed along this road segment. It might happen that several people are waiting at point B (who have come from A) for proceeding to the next step when possible.

**BC** consists of `STEPS_BC` (default 5) number of stair steps. On every step, there can be at most one person moving in a particular direction, that is, on every step at a time there can be at most two persons of which one is moving upwards and the other moving downwards. No overtaking is allowed here. So, some people may be required to walk at a slower speed than they can along BC. Only one person may wait at the point C if he cannot proceed.

**CD** is a narrow bridge of length `STEPS_CD` (default 50) steps. The bridge is so narrow that, two persons cannot stand side by side on it. People can move only in one direction at a time along the bridge. As a result, one may have to wait at one side of the bridge till people coming from other side of the bridge complete crossing it.

**DEFGHIJD** is a single lane wide road circuit where arbitrary number of people can walk side by side and overtake each other. The length of the circuit (Starting from D and finishing at D) is `STEPS_DD` steps (default 300).

In this assignment, you are required to simulate the walking activity for a single session. Your program will take input from a file named ***in.txt***. The first line of the file will contain the value of N. Then there will be N consecutive lines each containing an integer. The i-th line denotes the walking speed of citizen with NID i in number of steps per second.

Create N processes simulating each person. Then for each person, ensure that he can complete his walk around the park without any synchronization problem. For every activity, print a single line in the terminal describing that activity along with the corresponding ID. Once a person has completed the walking, terminate the process corresponding to him. Your output may contain lines like the following :

```
Person 1 moved along AB from 7 to 9
Person 3 moved along AB from 6 to 10
Person 7 moved along CB from 4 to 2
Person 8 moved along DD from 20 to 23
Person 10 moved along BA from 2 to 0
Person 10 has completed his walk
```

Define all the capitalized parameters as macros (except for N, which will be read from file) so that their values can be varied during evaluation.

You are required to write your program in C using pthread library and your code must be compilable with **gcc** (any version).